



STATE OF RHODE ISLAND
**ENERGY EFFICIENCY &
RESOURCE MANAGEMENT COUNCIL**

MEETING MINUTES

Thursday, September 21, 2017 | 3:30 - 5:30 PM
Conference Room B, 2nd Floor, Department of Administration, Providence, RI

Members in Attendance: Chris Powell, Carol Grant, Roberta Fagan, Tom Magliocchetti, Anthony Hubbard, Karen Verrengia, Michael McAteer, Bob Bacon, Diane Williamson, Joe Cirillo, Shigeru Osada, Joe Garlick and Betsy Stubblefield Loucks.

Others Present: Mike Guerard, Emily Levin, Nick Ucci, Sara Canabarro, Carrie Gill, Chris Kearns, John Richards, Lindsay Foley, Seth Handy, Matt Ray, Alice Hourihan, Kat Burnham, Erika Niedowski, Courtney Lane, Angela Li, Mona Chandra, Matt Chase, Belinda Wong and Brigid Ryan.

1. Call to Order

Chairman Chris Powell called the meeting to order at 3:31PM.

2. Approval of Meeting Minutes

Chairman Powell requested a motion to approve the minutes for August, with the amended note by Shigeru Osada. Joe Cirillo made a motion to adopt the minutes as amended; Bob Bacon seconded the motion. All approved.

3. Executive Director Report

a) General Update

Commissioner Carol Grant reported that the ACEEE Energy Efficiency Scorecard will be out by 9/28, and she will share those results with the Council at the next meeting. She also shared that the nine states participating in the Regional Greenhouse Gas Initiative, have reached an agreement to go forward with even more aggressive reductions in GHG emissions. Commissioner Grant also noted that the General Assembly had held a special session and had not yet passed legislation that would change the 2018 energy efficiency plan budget cap to a system benefit charge cap. The original Three-Year Plan had not included this cap on the budget. Commissioner Grant added that OER and other stakeholders will continue to work on the impacts that any legislation might have on the 2018 EE Plan and will keep the Council informed throughout the process.

Mr. Osada asked how National Grid can honor the budget cap if the Three-Year Plan is already submitted to PUC. Commissioner Grant and Chairman Powell both explained that Annual Plans are legally binding filings, while the Three-Year Plan is meant to provide overall strategic direction. Therefore, the Annual Plan will be required to be in compliance with the law when submitted to the PUC.

4. Chairperson Report

a) General Update

Chairman Powell stated that the majority of the meeting will focus on reviewing National Grid's draft version of the 2018 annual energy efficiency and SRP Plans. During this meeting, the Council will also be voting on the Consultant Team's cost-effectiveness report for the Three-Year Plan, which is due to the PUC tomorrow. National Grid will also be giving a summary of their Q2 program progress report. During the Council Business section of the agenda, the Council will review Energy Education proposals, proposed edits to Council By-laws, and the Consultant Services RFP Evaluation Team.

5. National Grid Programs & Plans

a) Vote to Approve Cost- Effectiveness Report for Three- Year Plan

Mike Guerard reported that the Three-Year Plan is cost effective and less than the cost of supply per the LCP Standards. The Consultant Team documented these findings in the cost-effectiveness report before the Council that was distributed on September 14. He stated that the report's content is similar to other cost-effectiveness reports previously submitted to the PUC. This is the document that the Council has historically voted on and has submitted to the PUC as evidence that the Three-Year Plan complies with the Least Cost Procurement Law, and is cost effective.

Mr. Osada commented that if the cost effectiveness report shows the cost/benefit ratio detail on top, why not show the comparison of the cost of energy efficiency versus the cost of supply. Mr. Guerard answered that the numbers on the front of the report are meant only as a reference, and pages 5 through 7 provide more detail. Mr. Osada also questioned why the residential standard offer service rate is used for the price comparison in the report, instead of comparing the actual prices each sector pays. Moreover, he expressed concerns over the cost per kWh of the innovation line item, and how this uncertainty is included in the cost-effectiveness test. Chairman Powell then clarified that the Council already approved the Three-Year plan., which included the innovation line. Therefore, as long as the plan passes the cost-effectiveness test as defined in the Standards, the Council should move on to other items on the agenda. Betsy Stubblefield Loucks also asked the Council to move on to allow others to make comments. Mr. Osada stated that he did not think that approving the Three-Year Plan meant approving the cost for the innovation line item which he thinks is unreasonable.

Chairman Powell requested a motion to approve the Cost-Effectiveness Report for the Three-Year Plan. Karen Verrengia made a motion to approve; Ms. Stubblefield Loucks seconded the motion. All approved, except for Mr. Osada.

b) Intro to draft 2018 Energy Efficiency & System Reliability Plans

Emily Levin reported that the 2018 Annual Plan is due to the PUC on November 1st and that National Grid is responsible for the drafting and filing of this plan. She added that this presentation was based on a plan without a budget cap, so they will start working to update the information right away. Mike Guerard explained that the savings for 2018 are between what was represented in the Three-Year Plan and the Targets filing. The Annual Plan numbers shifted because they had to take into account recent evaluation results that were not available for the drafting of the Three-Year Plan. These new evaluations are showing more savings being attributable to the programs. Therefore, the savings are shown as adding no additional cost. Mr. Osada shared that he is very frustrated that the numbers keep changing for every draft. Ms. Levin stated that all the changes simply reflect additional information that allows National Grid to claim more savings from the currently established programs. Chairman Powell explained that the timeline available to conduct evaluations and plans in sequence is insufficient.

Mr. Bacon wants to better understand what Mr. Osada's concerns are, and what purpose the Three-Year plan has. Mr. Osada reiterated his concern over comparing the average cost per lifetime kWh saved across sectors to the residential standard offer service rate. Mr. Guerard stated that the Three-Year Plan allows for long-term planning and guides the annual plan process. Ms. Levin continued with the presentation, and shared that the written comments for the draft 2018 Annual Plan are due tomorrow to National Grid. The consultant team sent memos to each Council member highlighting the areas affecting their representative constituencies. She encouraged the Council members to send their input/comments to the consultant team in order for their comments to be incorporated into the next version of the Plan. All the Council members should also feel free to reach out to her or Mike Guerard with any questions.

c) National Grid Summary of draft 2018 Annual Plans

Courtney Lane and her team went over the draft of the 2018 Energy Efficiency Plan and System Reliability Plan. Ms. Lane stated that the first draft of the Annual Plan does include the \$12.5 million diversion of funds per the General Assembly. She shared that National Grid will work with the Council and Collaborative to identify ways to strategically make an additional ~\$10 million budget cut as a result of legislation. Ms. Lane informed the Council that National Grid and the Collaborative have a call this upcoming Monday, and will inform the Council of any changes as soon as possible, so that by October 19th the Council can vote on the final draft of the 2018 Annual Plan. Karen Verrengia asked Ms. Lane to highlight exactly where the budget cuts are going to happen to make it easier to understand when comparing to previously expected savings. Nick Ucci added that during the Collaborative phone call last week, it was agreed that the budget cuts would not impact Income-Eligible customers. Mr. Osada believes that the benefit/cost ratio is very low for 2018 and asked National Grid to show the trend of the benefit/cost ratio over time so that the Council can recognize today's situation visually. Ms. Lane explained that the plan complies with the law and the graphs displayed are truthful.

Angela Li informed the Council that October 5th is National Energy Efficiency Day, and she encouraged members to sign up for free Home Energy Assessments offered by National Grid.

Lindsey Foley and Matt Chase went over the draft System Reliability Plan, but did not have any presentation slides. Mr. Osada expressed an opinion that sometimes immediate investment is better than deferral, and he shared a concern about not having invested in certain infrastructure with a possibly hot 2018 summer. Ms. Foley explained that the premise of non-wires alternatives is that deferral of investments is better than immediate investment, and that National Grid's deferral of investment maintains an appropriate buffer to mitigate risks.

d) Public Comment on the draft 2018 Annual Plans

Chairman Powell reported that Seth Handy (from Handy Law) had sent a letter with comments, which was included in the Council's packets.

Kat Burnham from People's Power & Light (PP&L) shared that they are pleased that the Plan commits to the Least Cost Procurement Law, and demonstrates real benefits. They are pleased to see the integration of the RI test, since they had made a lot of comments over time that the Total Resource Cost test didn't sufficiently capture emissions costs and energy efficiency benefits. The RI Test is better aligned with state goals. Regarding the increased incentives for heating oil weatherization, they are very pleased these incentives are included, and they expect consumers to respond well to them. In order to maintain Rhode Island's national leadership on efficiency, we have to maintain high levels of savings. For this reason, the savings proposed in the Three-Year Plan were very welcomed. Regarding the proposed SRP document, PP&L is very excited about the storage pilot that's proposed to address the Summer Peak. However, they have heard it may be discontinued due to funding concerns. Ms. Burnham also stated that we need to emphasize how detrimental the \$12.5 million diversion to the General Fund and program budget cap is to our energy efficiency programs. PP&L had made this point at the time of the Three-Year Plan's development, and will emphasize it again for this Annual plan. She concluded that it is on all of us to educate our community on the importance of Energy Efficiency, and this plan can and should be used as a tool to educate folks.

Erika Niedowski from Acadia Center shared that they are very pleased to see additional cost effective energy savings in the Annual Plan, as compared to the Three-Year Plan. Specifically, the proposed Annual Plan not only meets, but exceeds the 2018 Natural Gas targets filed by the EERMC. They are also very pleased to see the RI test incorporated into the plan. Broadly speaking, the plan offers strategies to deliver cost effective energy efficiency savings across customer segments, and lays important ground work for future innovation. The Acadia Center also welcomes the suggestion of creating a business forum, or working group to bring more business voices to the table. Acadia Center has two serious concerns about

the 2018 Plan. First, the General Assembly appropriation of \$12.5 million in ratepayer's funds to the general revenue fund is effectively an energy tax. Second, the cap on the 2018 budget will result in an additional \$10 million in cuts towards energy efficiency at a time when electricity rates are going up. Moreover, it places an artificial limitation on cost-effective energy efficiency and violates Least-Cost Procurement law. The Acadia Center strongly recommends Income-Eligible programs to be spared from any budget cuts. While the Acadia Center supports efforts to provide efficiency to the delivered fuels sector, that sector is not covered in the Least Cost Procurement Law, so for that reason it may be appropriate to delay incentives in these programs and continue to think about the best ways to serve this sector.

e) Council discussion on draft 2018 Annual Plans

Michael McAteer stated that the benefits are large, and he encourages the Council to really dive into the plan. This plan is setting the direction for the future of energy efficiency and clean energy. Chairman Powell shared that there is a Power Sector Transformation meeting on September 25th, which is opened to the public, and he encourages the Council members to attend. Mr. Osada stated that the Annual Plan is too long to dive into, and he recommends more visuals to help quicken everyone's understanding. Chairman Powell said that the Council needs to repeat training sessions, or add more retreats, to make sure that all members understand what is going on and can have open discussions, as well as have all their questions answered. Mr. Osada and Ms. Stubblefield Loucks support this idea.

Diane Williamson asked how the Council can prevent such legislative budget cuts from happening again. Chairman Powell suggested communicating to legislators. Commissioner Grant reminded Council members that their representation in this conversation is very powerful because they understand both energy efficiency and the needs of their stakeholders, and posed the question of how to communicate benefits of energy efficiency to customers in an environment of increasing costs. Chairman Powell suggested that he, Commissioner Grant, and Becca Trietch brainstorm on how to communicate to legislators and would come back to the Council with some ideas. He also suggested having the Council's legal counsel, Marisa Desautel, talk to Council members about the legal process and how to best prevent a diversion of funds and program budget caps in the future.

f) National Grid Quarter 2 Energy Efficiency Program Update

Angela Li, Courtney Lane and John Richards went over the Quarter 2 update on the 2017 Energy Efficiency Programs. Mr. Osada recommended showing the top measures that contribute to achieving the energy savings goals. Ms. Lane explained that there is already significant data for the time allotted during EERMC meetings, and he should discuss with the Consultant Team.

6. Council Business

a) Vote on Energy Education Proposal Selection

Ms. Stubblefield Loucks shared that Becca Trietch, Karen Verrengia and herself went over the energy education proposals from NEED, RI Housing and Evergreen Economics, and after using the rubric for evaluation, they all agreed that NEED offered the best proposal. Ms. Verrengia added, however, that all three of them appreciated the needs assessment that Evergreen Economics had included in their proposal. Therefore, Ms. Verrengia proposed assigning \$60k to NEED (instead of the full amount of \$75k that is available) and allocate the remaining \$15K for a needs assessment to inform future education efforts. Ms. Stubblefield Loucks reiterated NEED's extensive experience with energy education and asked the Council to vote to approve the NEED Energy Education proposal for the amount of \$60k today, and they and Ms. Trietch will work to write a separate RFP for a needs assessment. Angela Li also commented from the audience that historically National Grid and OER have provided funding to NEED. Ms. Verrengia

explained that this year, funding sources have leveled off and the Council's funding would help NEED to expand the program's reach.

Chairman Powell requested a motion to approve the NEED Energy Education Proposal for \$60k. Bob Bacon made a motion to approve; Anthony Hubbard seconded the motion. All approved.

b) EERMC Bylaw Review

Nick Ucci stated that Becca Trietch, Marisa Desautel and DOA's legal team put together this redlined version of the EERMC Bylaws to be reviewed by the Council. The goal of the edits is to try and lessen the burden of the Executive Committee. Chairman Powell shared that the largest changes include moving the agenda creation duty to the Chairperson, specifying some duties already performed by OER under the Executive Director, and specifying a method for Council members to adjust agendas if desired. By moving the monthly agenda creation to the Chairperson, the Executive Committee could meet on an as-needed basis instead of monthly. Nick Ucci asked the Council members to review the document redlines and provide comments to Ms. Trietch. A vote on the revisions will be held in October.

c) Vote on Consultant Services RFP Proposal Evaluation Team

Chairman Powell reported that Ms. Stubblefield Loucks, Tom Magliocchetti and Anthony Hubbard have volunteered to make up the Consultant Services Proposal Evaluation Team. Chairman Powell requested a motion to approve. Ms. Verrengia made a motion to approve; Bob Bacon seconded the motion. All approved. Mr. Osada asked Mr. Ucci if anyone had submitted questions about the RFP; Mr. Ucci responded that he was not aware of any questions, but would ask Ms. Trietch to circulate that information if any came to light.

7. Other Public Comment

No public comments were made.

8. Adjournment

Chairman Powell requested a motion to adjourn the meeting. Mr. Osada made a motion to adjourn; Joe Cirillo seconded the motion. All approved.

The meeting was adjourned at 5:29PM.

Meeting Materials



STATE OF RHODE ISLAND
**ENERGY EFFICIENCY &
RESOURCE MANAGEMENT COUNCIL**

MEETING AGENDA

Thursday, September 21, 2017 | 3:30 - 5:30 PM

Conference Room B, 2nd Floor, Department of Administration, Providence, RI

1. Call to Order

2. Approval of Meeting Minutes

3. Executive Director Report

a) General Update

4. Chairperson Report (items 1-4: 3:30 - 3:40pm)

a) General Update

5. National Grid Programs & Plans (3:40 - 4:45pm)

a) Vote to Approve Cost-Effectiveness Report for Three-Year Plan (10 min, 3:50pm)

EERMC Consultant Team to present a final cost effectiveness report on the Three-Year Plan. The council will discuss and vote on approving this report for submission to the Public Utilities Commission (PUC).

b) Intro to draft 2018 Energy Efficiency & System Reliability Plans (10 min, 4:00pm)

EERMC Consultant Team to provide context for and thoughts regarding the draft 2018 Annual Plans.

c) National Grid Summary of draft 2018 Annual Plans (15 min, 4:15pm)

National Grid to provide an overview of the draft 2018 Energy Efficiency Plan and 2018 System Reliability Plan

d) Public Comment on the draft 2018 Annual Plans

Two (2) minute limit per person and/or affiliation

e) Council Discussion on draft 2018 Annual Plans (15 min, 4:40)

The Council to discuss key topics within the draft 2018 Annual Plans and to provide general feedback to National Grid.

f) National Grid Quarter 2 Energy Efficiency Program Update (5 min, 4:45pm)

National Grid to provide a Quarter 2 update on 2017 Energy Efficiency Programs

6. Council Business (4:45 - 5:15pm)

a) Vote on Energy Education Proposal Selection (15 min, 5:00pm)

The Communications Working Group will present recommendations to the full Council regarding the selection of an energy education proposal. The Council will vote to select one or more proposal(s).

b) EERMC Bylaw Review (10min, 5:10pm)

OER will present recommended changes to the Council Bylaws to lessen the burden of the EERMC Executive Committee.

c) Vote on Consultant Services RFP Proposal Evaluation Team (5 min, 5:15pm)

The Council to vote to approve those who volunteer to be a part of the Consultant Services RFP proposal evaluation team.

7. Other Public Comment

8. Adjournment



STATE OF RHODE ISLAND

ENERGY EFFICIENCY & RESOURCE MANAGEMENT COUNCIL

Vote to Approve the Three-Year Plan Cost Effectiveness Report

1. Key Discussion Question(s):

1. Does the report accurately answer the question: is the Three-Year Plan cost-effective?
2. Does the report make it clear why the Three-Year Plan is or is not cost-effective?
3. Will the report be helpful and/or informative for the PUC?
4. Is there any information that should be added to or clarified within the report?

2. Recommended vote language options:

1. a motion to approve the cost-effectiveness report as is and to have the consultant team submit the report to the PUC prior to the September 22, 2017 deadline.
2. a motion to approve the cost-effectiveness report with the following amendments: _____. And to have the consultant team submit the report to the PUC prior to the September 22, 2017 deadline.

Discussion on Draft 2018 Annual Plans

3. Key Discussion Question(s):

1. Does the Plan sufficiently address the concerns of the stakeholder groups represented by Council members?
2. Does the Plan meet the 2018 energy savings targets and follow the Standards that were recommended by the EERMC and approved by the PUC? If not, are the reasons valid and clearly described?
3. Does the Plan identify strategies and an approach to program implementation that will secure all cost-effective energy efficiency resources that are lower than the cost of supply? I.e. does the Plan fulfill the requirements of Least Cost Procurement?
4. Are there any adjustments to the Plan that should be made to better fulfill Least Cost Procurement requirements?
5. Are there any adjustments to the Plan that should be made to better support the groups represented by council members?
6. Will the PUC approve the Plan? (“The commission shall issue an order approving all energy efficiency measures that are cost effective and lower cost than acquisition of additional supply, ... 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...”)

Vote on Energy Education Proposal Selection

4. Key Discussion Question(s):

1. Does the Council agree with the evaluation team's recommendation?
2. Will the recommended proposal help the EERMC to educate the public about energy issues?
3. Are there any aspects of the evaluation team's recommendation that need more explanation?

5. Recommended vote language options:

1. a motion to approve the evaluation team's recommendation as is.
2. a motion to approve the evaluation team's recommendation with the following amendments: _____.

Vote on Consultant Services RFP Proposal Evaluation Team

6. Key Discussion Question(s):

1. Do any of the volunteers have any potential conflicts of interest?
2. Will the volunteers be able and willing to review the proposals received and present a clear recommendation to the full council?

7. Recommended vote language:

1. a motion to approve the following volunteers as the proposal evaluation team for the EERMC's 2017 consultant services RFP: _____(at least three EERMC members should be listed)_____.



STATE OF RHODE ISLAND
**ENERGY EFFICIENCY &
RESOURCE MANAGEMENT COUNCIL**

MEETING MINUTES

Thursday, August 17, 2017 | 3:30 - 5:30 PM

Conference Room B, 2nd Floor, Department of Administration, Providence, RI

Members in Attendance: Chris Powell, Michael McAteer, Tom Magliocchetti, Karen Verrengia, Joe Cirillo, Carol Grant, Shigeru Osada, Roberta Fagan, Anthony Hubbard, Bob Bacon, Diane Williamson.

Others Present: Mike Guerard, Nick Ucci, Mark Kravatz, Becca Trietch, Carrie Gill, Danny Musher, Chris Kearns, Jeff Loiter, Kate Desrochers, Lindsay Foley, Rachel Henschel, Courtney Lane, Sean Carney.

Public Comments Provided By: Doug Gablinske, Brigid Ryan, Kat Burnham, Erika Niedowski, Seth Handy

1. Call to Order

Chairman Chris Powell called the meeting to order at 3:35PM.

2. Approval of Meeting Minutes

Chairman Chris Powell requested a motion to approve the minutes for May. Shigeru Osada requested that the April meeting minutes, although they had been approved previously, be updated to indicate that he was present at the meeting. OER will adjust the April meeting minutes accordingly. Regarding the May meeting minutes, Shigeru Osada stated that the minutes did not include his comment about the EERMC's Annual Report. Specifically, he requested to modify the meeting minutes to reflect his opinion that energy usage trends be included in the EERMC Annual Report. Chairman Chris Powell then requested a motion to approve May's Meeting minutes with the modification from Shigeru Osada. Joe Cirillo made a motion, and Anthony Hubbard seconded it. All approved.

Chairman Chris Powell requested a motion to approve July's meeting minutes. Shigeru Osada asked the Council to modify the minutes to reflect his comments about it being unnecessary to approve the retreat minutes from June's meeting, his opinion that the budget and SBC rate indicated in the Three-Year Plan for 2020 be lowered, and his comment that there are still several meeting minutes missing from the EERMC website. Chris Powell requested a motion to approve July's meeting minutes with the modifications requested by Shigeru Osada. Tom Magliocchetti made a motion, and Shigeru Osada seconded it. All approved.

3. Executive Director Report

a) General Update

Commissioner Carol Grant reported that at the time of the last Council meeting the State had not yet passed a budget. Since then, the legislature did pass a State budget. The budget has two items relevant to energy efficiency: one is addressed in the Three-Year Plan, and is the \$12.5 Million reallocation of energy efficiency dollars to General Revenue in 2018. The other is that an energy efficiency program budget cap was included in the State's budget article. The cap language in the State's budget article is different from the cap language that was put forth by the House and Senate in separate pieces of proposed legislation. Because of the timing, and difference in language, it was prudent that National Grid did not try to reflect the cap in the Three-Year Plan, but will instead address the budget cap in the 2018 Annual Plan. Shigeru Osada then asked if current legislation is now reflected in the Three-Year Plan. Commissioner Carol Grant explained that the Three-Year Plan reflects the \$12.5 Million reallocation to General Revenue, but only acknowledges the potential for budget cap in the Plan's narrative. National Grid did specifically include language pointing out to the public, the Commission, and the Council, that it will address the budget cap issue in the 2018 Annual Plan.

4. Chairperson Report

Chairman Chris Powell reported that much of today's meeting will be focused on the 2018-2020 Three-Year Plan, written by National Grid, and that the Council will be voting on the approval of this plan tonight. A new structure for the meeting will also be tested: public comments will be made after the presentations on the Three-Year Plan from National Grid and the Consultant team, but prior to the Council voting on the final draft of the Three-Year Plan. Chairman Chris Powell also reported that even though the agenda says we will be voting on the cost effectiveness report, the PUC has granted the EERMC a short filling extension, to allow us to review the final version at our September meeting. The Council will also be voting on a New Chief Purchasing Officer and that Officer's authority. The Communications Working Group will also give an update on the website, and the education RFP, as well as the Final Consultant Services RFP. Lastly, although the Council would normally be reviewing National Grid's Quarter 2 Program Report, due to a packed agenda, this item has been postponed until the September meeting. He stated that the Quarter 2 report is included in today's packets, to please go ahead and review it ahead of time so that we can discuss it during September's meeting.

Commissioner Carol Grant introduced Carrie Gill, the new Programming Services Officer for OER, who is working closely with Becca.

Chairman Chris Powell also informed the Council that the Ethics Commission stated that Karen Verrengia must recuse herself from voting on the Three-Year Plan. Her ethics ruling is still being reviewed, but for now she will remain a member of the Council and simply recuse herself from certain votes.

5. National Grid Plans

a) Summary of Changes to Three-Year Plan

Mike Guerard provided an overview of the changes made to the Three-Year Plan from the first draft reviewed by the Council. He also summarized what topics the Three-Year Plan is required to cover.

As Mike Guerard was about to go over the EERMC Consultant team memos on the Three-Year Plan, Shigeru Osada and Karen Verrengia indicated that the meeting materials should be sent out at least one week prior to the meeting, and not the day of. By sending the meeting materials the day of, it does not allow enough time for the members of the Council to go over everything prior to starting the meeting. Becca Trietch and Mike Guerard stated that going forward the team will try to make sure materials are sent out further in advance of the meetings.

Mike Guerard then went over the memos put together by the EERMC Consultant team (see attached). Shigeru Osada voiced his concerns about ["Increasing 25,000 MWh just simply to match up with 2019 Projected savings in the Three-Year Target plan as "innovation" Is just guessing, with no logical support. Further, using the exact same cost of data of conventional saving in this "innovation" measure is also not logical or supportable".](#) ~~"the costs for the Three-Year Plan, as well as his belief that the 25,000MWh Goal for innovation in 2019 is unreal and not achievable".~~ Shigeru Osada wanted to consider changing the MWh amount, stating last year's MW amount was more reasonable than the one being proposed. He then asked why the Consultant Team was comfortable with such a high MWh goal. Mike Guerard explained that this number was included in the Targets document that the Consultant Team developed, was approved by the Council, and then approved by the PUC. In the evolving potential section of the Targets document, the Consultant Team qualified multiple sources for additional savings. This is where the MWh goal originated. The Consultant team also submitted further information on qualitative potential that they believe could yield further savings. Mike Guerard explained that the Standards directed them on behalf of the EERMC to develop/propose strategies to achieve the energy saving targets that are proposed by the EERMC and approved by the PUC for that Three-Year period. The Standards direct the Consultant Team on behalf of the EERMC to draw a plan that meets the Targets. Chairman Chris Powell stated that these Targets were what the Council had voted and approved.

Shigeru Osada then asked about comments that were made to National Grid on behalf of the EERMC members by the Consultant Team during Collaborative discussions about cost-effectiveness, savings targets and budget. He stated that if any comments were to be made on behalf of the EERMC, there must be a letter of agreement, or a notification, to which he states he was never aware of either. Chairman Chris Powell answered Shigeru Osada question by reading a memo letter from the EERMC attorney, Marisa Desautel, that presented findings that the Consultant Team was operating on Council direction since their actions were in accordance with the scope of work

approved by the EERMC in January. Mike Guerard reported that the positions that the Consultant Team took were in full alignment with what the Least Cost Procurement Standards, approved by the Council and PUC, set for the outcomes expected of the Three-Year Plan.

Chairman Chris Powell also added that the legislation is clear, the EERMC is meant to go after all cost-effective energy efficiency without any limits/restrictions, other than possibly a cap that would be put on the program by the Legislature if they chose to do so.

Diane Williamson and Shigeru Osada both asked for further information about the cost ratios presented. Jeff Loiter, in response, provided background on cost-effectiveness variables, including details on the various benefit categories that contribute to the cost-effectiveness ratio.

b) Review of Final Draft of Three-Year Plan

Rachel Henschel from National Grid gave an overview of the Three-Year Energy Efficiency Plan. Afterwards Courtney Lane and Lindsay Foley presented on the System Reliability Procurement Plan. Betsy Stubblefield Loucks could not be present at today's meeting, so she asked Chairman Chris Powell to read her comments about National Grid's Three-Year Plan final draft (see attached). Diane Williamson asked if the Council could approve and vote on different sections of the Three-Year plan, or if their vote is for everything as is. Chairman Chris Powell answered that, the Council can agree to change, or amend, and approve as such. Shigeru Osada also asked National Grid about their level of confidence in regards to the innovation line item included in the Three-Year Plan. Rachel Henschel answered that they were still very uncertain about it. However, National Grid is constantly looking for new, innovative ways to achieve more energy savings, and the Company also got the assurances from the settling parties that the innovation line item will be adjusted as needed when more information is available during the development of annual plans.

c) Public Comment on the Three-Year Plan

Doug Gablinske from TEC-RI stated that he believes that the targets are too high. That in order to keep reaching for innovative methods such targets need to be reasonably reduced. In regards to the budget, he believes it is a big mistake to assume that legislation will pass in September that will change the budget cap. He also stated that there needed to be more time between the 2nd and 3rd drafts of the Three-Year Plan to allow for more stakeholder engagement and consideration. He believes the process should have been started earlier. Lastly, Doug stated that he has doubts about the energy saving projections and the ability to achieve the innovation savings included in the Three-Year Plan.

Brigid Ryan from RI Housing shared that she appreciated the collaborative process used to develop the Three-Year Plan. She also appreciates National Grid's efforts to enhance their multi-family and residential energy efficiency programs. And lastly, as a participant in the Collaborative, she felt that although things moved quickly, she was kept informed of what was happening.

Kat Burnham from People's Power and Light (PP&L) stated that she believes the \$12.5 million reallocation of funds to General Revenue is not good public policy and is extremely unfair to Rhode Island ratepayers who pay for these programs. She wishes the consequences of the reallocation of funds were put on page 1, instead of page 69, in the Three-Year Plan in order to educate stakeholders and prevent such re-allocations in the future. She also stated that PP&L will continue to advocate for more energy efficiency savings with more emphasis on lifetime savings in addition to annual energy saving metrics in National Grid's energy efficiency plans. She believes the programs are not yet capturing all the cost-effective energy efficiency opportunities in Rhode Island, but applauds the inclusion of the innovation line item in the Three-Year Plan as a means of ensuring continued efforts to find more cost-effective energy efficiency.

Erika Niedowski from Acadia Center stated that, while this plan does not meet the energy savings targets for all three years, it does capture significantly more savings than initially identified. The Acadia Center lends its support for the 2018-2020 Three-Year Plan, including the innovation line item. However, it strongly opposes the \$12.5

million cut, and the cap on the 2018 Budget. Moreover, Erika mentioned Acadia Center's support for continued integration of energy efficiency efforts with the on-going Power Sector Transformation work and highlighted the fact that Rhode Island's economy and environment are better off due to the State's energy efficiency programs.

Seth Handy from Handy Law strongly supports the efforts outlined in the Three-Year Plan to support strategic electrification and thermal efficiency. He believes both of these topics are an extremely important part of our State's energy plan. He added he would like to see more detail in the Three-Year Plan about integrating energy efficiency initiatives with renewable energy programs. He provided written comments for the Council as well (see attached).

d) Vote to Approve the Final Draft of the Three-Year Plan

Karen Verrengia shared that even though she cannot vote on the Three-Year Plan, she fully supports it, and would vote yes to approve it. Joe Cirillo commented that the State needs to adopt the latest International Codes and set money aside for trainings on codes in order to increase building energy efficiency. Karen Verrengia stated that trainings are indeed available to Rhode Island code officials. Joe Cirillo explained that it's not just about trainings and implementation, it is about the codes themselves and adopting the most current versions. Michael McAteer, in response, stated that the Three-Year Plan does address the needs for advancing building codes.

Shigeru Osada reiterated his point that the budget and rate are exceeding what he believes to be acceptable limits. He stated that the renewable energy and energy efficiency charges on a bill equate to about 40% of the total distribution charge. He believes the increase in the energy efficiency charge described in the Three-Year Plan is too much. Therefore, he does not support the Three-Year Plan.

Chairman Chris Powell requested a motion to approve the Final Draft of the Three-Year Plan. Joe Cirillo made a motion, and Bob Bacon seconded it. All but Shigeru Osada approved. Karen Verrengia had recused herself from the vote.

e) Vote to Approve Cost-Effectiveness Report

Jeff Loiter and Mike Guerard went over the draft Cost-Effectiveness report prepared by the EERMC Consultant Team. The draft report shows that the Three-Year Plan, as written, is indeed cost effective. Mike Guerard also explained that the PUC extended the deadline for the EERMC to submit the final cost-effectiveness report, which will allow the Council to review and vote on the final report at the EERMC's September meeting.

f) Update on 2018 Annual Plan

Courtney Lane shared that the incorporation of the budget cut will take some work from stakeholders to determine where program offerings should be cut. This will be addressed, if a budget cap remains in place.

The first draft of National Grid's 2018 Annual Plan will be shared by September 14th, and they will present on it at the EERMC meeting on September 21st. She added that if the members have comments about the first draft to please submit them to National Grid by September 22nd. On October 12th, the final draft will be distributed and the Council will vote on approving the Plan on October 19th. From there the Plan will be sent to the parties who are willing to sign onto it, and National Grid will submit it to the PUC by November 1st.

6. Council Business

a) Vote on EERMC Chief Purchasing Officer & Authority

Chairman Chris Powell read the email from attorney Marisa Desautel that outlined the job description of the Chief Purchasing Officer (see attached). The email indicated that Commissioner Carol Grant could act as the Chief Purchasing Officer for the EERMC.

Shigeru Osada asked who would be part of a technical review team for RFP submission reviews. In addition, he asked about the timing for the upcoming consultant services RFP. Chairman Chris Powell answered that for the

upcoming Consultant Services RFP submission review, the Council will be asking for three volunteers to serve on an evaluation team. These reviewers will be determined at the September meeting and Becca Trietch will speak more about the Consultant Services RFP later in today's meeting.

Chairman Chris Powell requested a motion to approve Commissioner Carol Grant as the EERMC Chief Purchasing Officer with the authorities described in Marisa Desautel's email. Diane Williamson made a motion, Karen Verrengia seconded it. All approved.

b) Communications Working Group Update

Becca Trietch reported that the website is still in process. The Communications Working Group submitted its comments to adjust a few items, and once these changes are implemented, they will show and ask the Council for their feedback. As of right now, the website is expected to launch in late September.

Becca Trietch also shared that the Education RFP deadline had been extended to September 28th, since the University of Rhode Island's Outreach Center had reached out saying they did not believe the original deadline provided them enough time to submit a proposal.

c) EERMC Q2 Budget Update

Becca Trietch went over the 2017 budget to show the Council what has or has not been spent to date. Overall, the EERMC has spent about 43% of its budget, which is less than expected. However, the contract for Dunsky is written so that they will receive the majority of their funds once they've completed about 90% of the work. Therefore, about \$90,000 is expected to be withdrawn from the account in Quarter 4 for Dunsky. In addition, Becca Trietch also reported that she just started receiving invoices for the Stretch Code Development work. Therefore, she believes the Council is on-track in terms of spending for the year.

d) Final Consultant Services RFP Review

Last meeting, Becca Trietch had asked the Council for feedback on the Scope of work for the Consultant Services RFP. No comments were received, so she took the scope of work as-is and put it into the Council-approved RFP template. The only changes made were the inclusion of submission deadline dates to the front page of the RFP. Becca Trietch requested that the Council review these dates now to make sure it is good timing for the Council. October 5th is the deadline for submissions which provides over five weeks for any interested party to pull together a proposal. The goal will be to review the submissions with an evaluation team and present a recommendation to the full council at the October full council meeting. This should still leave enough time to get a contract in place by December.

Chairman Chris Powell asked about the scoring criteria in the RFP. Becca Trietch explained that this is a standard division of points often used in RFPs issued from the RI Division of Purchasing. She explained that the Council can modify it, but they would have to vote on it in order to do so. The scoring criteria, as shown, was approved by the Council when they approved the RFP template. Becca Trietch also explained that each of the scoring categories has a description within the RFP. Chairman Chris Powell stated that an evaluation team will work with Commissioner Carol Grant on the evaluation process. He informed the Council that by next EERMC meeting in September, they must choose members for the evaluation team. Chairman Chris Powell also mentioned that the Scope of Work is a Three-Year contract, that has to be renewed at the end of each year.

Commissioner Carol Grant stated that if anyone would like to join the evaluation team to let her, or Becca Trietch, know right away instead of waiting until September's meeting.

Michael McAteer took a moment to thank everyone involved in the Three-Year Plan, and thanked the Council for approving the Three-Year Plan.

|

7. Other Public Comment

No public comment was made.

8. Adjournment

Chairman Chris Powell requested a motion to adjourn the meeting. Tom Magliocchetti made a motion and Joe Cirillo seconded it. All approved. The meeting was adjourned at 5:50PM.

DRAFT

**Cost-Effectiveness Report:
National Grid's 2018-2020 Energy Efficiency and
System Reliability Procurement Plan**

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



Working on Behalf of the



**STATE OF RHODE ISLAND
ENERGY EFFICIENCY &
RESOURCE MANAGEMENT COUNCIL**

Submitted to the Rhode Island Public Utilities Commission

September 22, 2017

Summary of Consultant Team Findings

The EERMC Consultant Team finds that the *2018-2020 Energy Efficiency and System Reliability Procurement Plan* (“the Plan”), filed on September 1, 2017 by National Grid, is cost-effective according to both the recently adopted “Rhode Island Test” (RI Test) and the historically referenced Total Resource Cost (TRC) test. The new RI test was created by the revised Least Cost Procurement Standards approved by the Public Utilities Commission (“the Commission”) on July 28, 2017.¹

We also find that the implementation strategies outlined in the Plan will support a reasonable and credible sustained implementation of National Grid’s energy efficiency program delivery efforts, and align with the savings targets and revised Least Cost Procurement Standards proposed by the EERMC in its December 22, 2016 filing and approved by the PUC at its Open Meeting held on April 27, 2017.

Note that, as was the case with the previous Three-Year Plan, this Plan does not include any projections for System Reliability Procurement expenditures during the 2018 to 2020 period. Rather, annual SRP will be submitted as part of the Annual Plans submitted to the Commission on November 1 preceding each plan year. With no specific projects or expenditures, there is no basis for a cost-effectiveness review of the SRP Three-Year Plan.

These findings and the remainder of this report were presented to the Energy Efficiency and Resource Management Council (EERMC or “the Council”) by the EERMC Consultant Team at its September 21, 2017 meeting, and were approved and adopted in a vote of the EERMC.

Because the Plan has been approved by the EERMC and meets the cost-effectiveness requirements of R.I.G.L. § 39-1-27.7(c)(5) , the Consultant Team recommends that the Plan also be approved by the Commission. Through such approval the Plan can be used by National Grid to guide the development of more detailed annual implementation plans for 2018, 2019, and 2020, which will be submitted to the Commission by November 1st of this year and by October 15th prior to the 2019 and 2020 plans’ implementation.

¹ Section 1.2.B., http://www.ripuc.org/eventsactions/docket/4684-LCP-Standards_7-27-17.pdf

I. Introduction

This report was prepared by the Consultant Team and the EERMC to help fulfill the requirements of R.I.G.L. § 39-1-27.7(c)(5) related to the Public Utility Commission's approval of National Grid's three-year procurement plan and related annual energy efficiency plans. Since 2010, the EERMC has directed the Consultant Team to prepare this report for all three-year and annual plans filed with the Commission. This version addresses National Grid's proposed *2018-2020 Energy Efficiency and System Reliability Procurement Plan* ("the Plan"), as approved by the Council at its August 17, 2017 meeting.² **The Council voted to approve this report at its September 21 Council meeting.**

This report submits our finding that the Plan is cost-effective as evidence to the Commission. It also describes the nature and process of the review and documents the professional experience and qualifications of the Consultant Team that performed the review.

In order to assess the cost-effectiveness of the *2018-2020 Energy Efficiency and System Reliability Procurement Plan*, the EERMC Consultant Team engaged in the following plan development and review processes:

1. Consistent and on-going oversight of actual National Grid energy efficiency planning and implementation activities through direct interactions with National Grid staff and participation in the Collaborative Subcommittee process (documented in Section II).
2. Reviewing the details of National's Grid Benefit-Cost Models ("BC Models") to ensure that they accurately reflect the proposed program designs in the Plan, recent evaluation results, and relevant TRM inputs (Section III)
3. Reviewing additional inputs to the cost-effectiveness calculations, including new components resulting from the revised Least Cost Procurement Standards approved by the PUC on April 27, 2017 (Section IV).

Appendices to this report provide additional information on the relevant regulatory and legal framework for this report as well as the qualifications of the Consultant Team to perform this review.

II. Oversight of Planning and Implementation Activities

The EERMC, consistent with its statutory obligations under the 2006 Comprehensive Energy Act, continues to play an involved and active role with National Grid to guide, facilitate, and support public and independent expert participation in the review, oversight, and evolution of

² Although the Council is directed to approve the Plan by August 15 triennially, a slight delay in the Council meeting schedule was required since EERMC meetings moved to the third Thursday of the month beginning in 2017.

utility energy efficiency procurement and program implementation. The EERMC believes this input is critical to having the energy efficiency programs and new cost saving mechanisms evolve into resource acquisition tools that can effectively implement the Rhode Island law to procure all cost-effective natural gas and electric energy efficiency. The updated Standards in Docket No. 4684 require a consistent and effective process to guide the development and submission of National Grid's Plan to the Commission.

The EERMC has met its review and input requirements both at its regularly scheduled meetings with National Grid and through Collaborative meetings and phone calls. The Collaborative is comprised of EERMC members; the EERMC Consultant Team; RI Office of Energy Resources (OER); Acadia Center; the Division of Public Utilities and Carriers with representation from the Attorney General's Office and support from its consultant; People's Power and Light; and TEC-RI. National Grid coordinates and hosts the meetings, and has energy efficiency and system reliability representatives in attendance at all meetings.

For the 2018-2020 Plan, the Consultant Team reviewed and commented on two drafts of the Plan in July and August of 2017. This included attending or participating in presentations by the Company and providing comment in both written form and through in-person and telephone conversations with the Company and EERMC members.

III. Program Design and Evaluation Review

The Consultant Team reviewed the draft and final Plans to assess the proposed program designs and the extent to which they and the associated cost-effectiveness analyses reflect recent evaluation results and relevant TRM inputs. This included the following:

- Reviewing updates to the 2017 TRM to assess the measures and assumptions used in the calculations of energy and capacity savings proposed programs, and to ensure that these are accurately reflected in the BC models.
- Reviewing assumptions regarding program activity, in the form of measure quantities, to ensure they are appropriate and reflect the program design and descriptions in the Plan.
- Reviewing the mix of measures and net-to-gross values used in the BC Models to ensure they reflect the latest evaluations available.
- Comparing the BC Models to the proposed targets adopted by the Council in Docket 4684 and noting any differences, which were raised to the Company for explanation and resolution.

As a result of these activities, the Consultant Team communicated with National Grid analysts and sector managers to address pertinent issues and questions related to both program design and cost effectiveness. In some cases, this resulted in revisions to the Plan. Overall, our findings are that:

- The overwhelming majority of the modeling and cost-effectiveness assumptions reviewed were reasonable and well-supported. Any issues identified in the BC Models or in the Plan were addressed at the portfolio and program level by National Grid's analyst team.
- National Grid appropriately used new results from both Rhode Island and relevant Massachusetts evaluations that were recently completed to update multiple measure baselines, net-to-gross ratios, measure lives, and other measure assumptions.
- The objectives of the Least Cost Procurement Standards were 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

In general, the Consultant Team found National Grid's processes for revising their cost-effectiveness inputs and assumptions to be thorough and comprehensive. National Grid appropriately adjusts baselines for new building codes and federal standards, and incorporates the latest findings from evaluation studies. In addition, the Company updates anticipated program costs based on recent experience and new market information.

IV. Cost-Effectiveness Review

Defining Cost-Effectiveness

Cost-effectiveness tests for energy efficiency measures and programs compare the net present value of a stream of benefits to the net present value of a corresponding stream of costs, whether they occur at the time of implementation or over several years. When the benefits exceed the costs, the measure or program is said to be "cost-effective."³ Several tests exist, each of which assesses cost-effectiveness from a different perspective. The Total Resource Cost (TRC) has been widely accepted and used by regulators and policy-makers to evaluate demand-side management programs because it takes an expansive view of the effects of these programs, including all of the costs borne by consumers (whether directly or indirectly through utility rates) and all of the benefits that accrue to those consumers. Historically, Rhode Island relied on the TRC test to assess whether the benefits of an efficiency measure or program outweighed the costs for Rhode Island consumers.

More recently, the Rhode Island Public Utilities Commission ordered National Grid to develop a benefit-cost test that "more fully reflects the policy objectives of the State." The Commission did not specify the components of the new "Rhode Island Test" (or "RI Test") in detail, but

³ The results of this analysis can be expressed as either the net benefits (i.e., total benefits minus total costs), where cost-effective is defined as positive net benefits, or as the benefit-to-cost ratio (total benefits divided by total costs), where cost-effective is defined as a ratio of greater than or equal to 1.

provided a number of principles to follow, including symmetry, transparency, and the importance of accounting for all relevant impacts, even those that are difficult to quantify or monetize.

National Grid subsequently proposed two additional categories of benefits to include in the new RI Test in addition to those already included in the TRC. These were discussed among the EERMC Consultant Team, the Division, the Collaborative, and National Grid. Based on general agreement, these benefits have been included in the cost-effectiveness analysis presented in the Plan. They are:

- **The benefits associated with reduction in greenhouse gas (GHG) emissions** – The TRC test used in previous Plans accounted for the costs of mitigating CO₂ emissions imposed by the Regional Greenhouse Gas Initiative and the costs of reasonably anticipated future GHG regulations.⁴ The revised Standards provide for inclusion of additional value related to GHG emissions reductions.
- **The benefits associated with economic development resulting from investment in energy efficiency** – Changes in how consumers and other entities spend money in the Rhode Island economy can result in changes in overall economic activity. For example, shifting spending from goods or services produced outside of the state to those produced within the state with increase in-state economic activity. Because investing in energy efficiency in part replaces spending on energy, the Plan may result in such a shift. The economic impacts of investing in one type of energy efficiency measure (combined heat and power, or CHP) were included in previous cost-effectiveness analyses; the new RI Test extends this to capture these impacts for all Plan activity.

Assessing the Cost-Effectiveness of the 2018-2020 Plan

The final Plan presents the cost-effectiveness of the proposed 2018-2020 programs using both the TRC and the RI test. The table below summarizes the results in terms of benefit-cost ratio. Considering just the TRC, both the electric and gas portfolios are robustly cost-effective in every year; electric portfolio benefits are nearly twice the total costs of the investments, while gas portfolio benefits exceed costs by 50%.

BCR (TRC Test/RI Test)	2018	2019	2020
Electric	1.9/2.9	1.9/2.9	2.1/3.2
Gas	1.5/2.5	1.5/2.5	1.5/2.5

⁴ The cost of mitigating emissions becomes a benefit in the cost-effectiveness analysis, because energy efficiency results in lower emissions, and thus avoids some of these costs. Rather than account for them as a negative cost, they are considered a positive benefit.

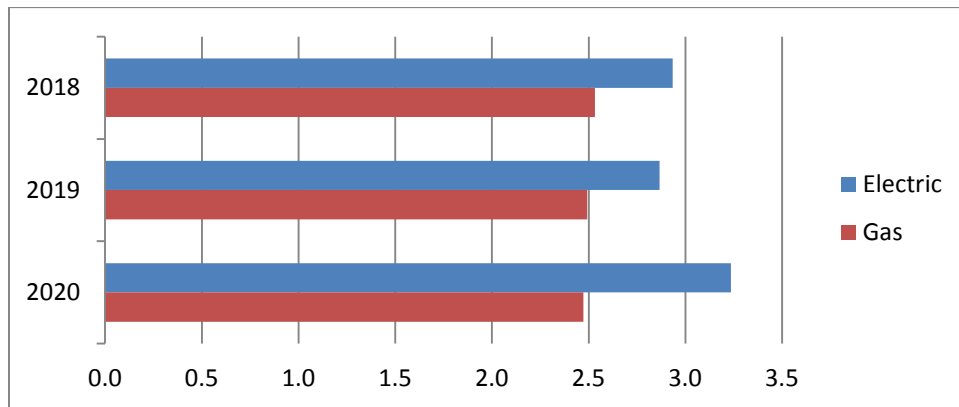
As described above, the RI Test seeks to include a more complete set of benefits that better reflects state policy. The benefits associated with reductions in greenhouse gas (GHG) emissions have been included by relying on the 2015 version of the *Avoided Energy Supply Costs in New England* report (AESC). This report projects a long-term value of reductions in carbon emission of \$100 per short ton. A small portion of this value – representing the near-term value of carbon reductions given current and likely future carbon regulation – is already included or “embedded” in the avoided energy costs that compose a portion of the benefits under the TRC Test. Therefore, the RI Test includes the remaining value of carbon emissions up to the full \$100 per ton value.⁵

It is generally acknowledged that increased spending from installing energy efficiency measures creates jobs in the local economy. Participant and program spending on efficiency often has positive benefits to the local economy as a greater portion of total energy costs are spent locally. Yet these benefits are typically not included in TRC benefit calculations because they are difficult to quantify, requiring a regional economic model. Such an analysis was conducted for National Grid in 2014, the results of which form the basis for the economic benefits included in the RI Test.⁶ Depending on the sector, fuel, and source of spending (i.e., participant or program), the study found economic benefits (above and beyond the value of avoided energy and capacity) of between \$0.56 and \$0.75 for each dollar spent. These factors were used to calculate the economic benefits in the RI Test results.

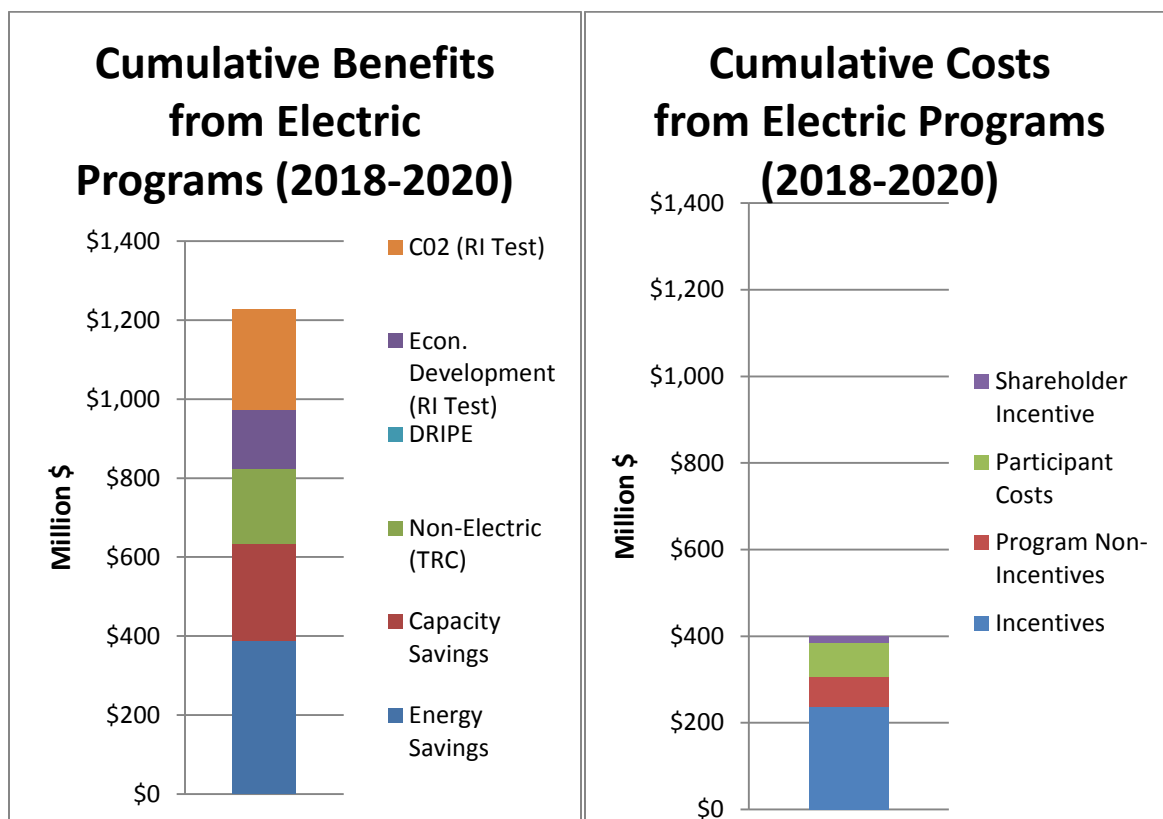
The Consultant Team has reviewed the quantification of the GHG reduction and economic benefits in the RI Test and finds them to be appropriate and in keeping with the Commission’s direction. Returning to the table above, the inclusion of the more complete set of benefits in the RI Test results in a roughly 50% increase in BCR for the electric portfolio and a 65% increase in the BCR for the gas portfolio. The figure below presents the results of the RI Test in graphical form and again demonstrates that in each program year, both the electric and natural gas efficiency programs have a BCR greater than 1.0, as required by the Commission-approved Least Cost Procurement Standards and R.I.G.L. § 39-1-27.7 (c)(5).

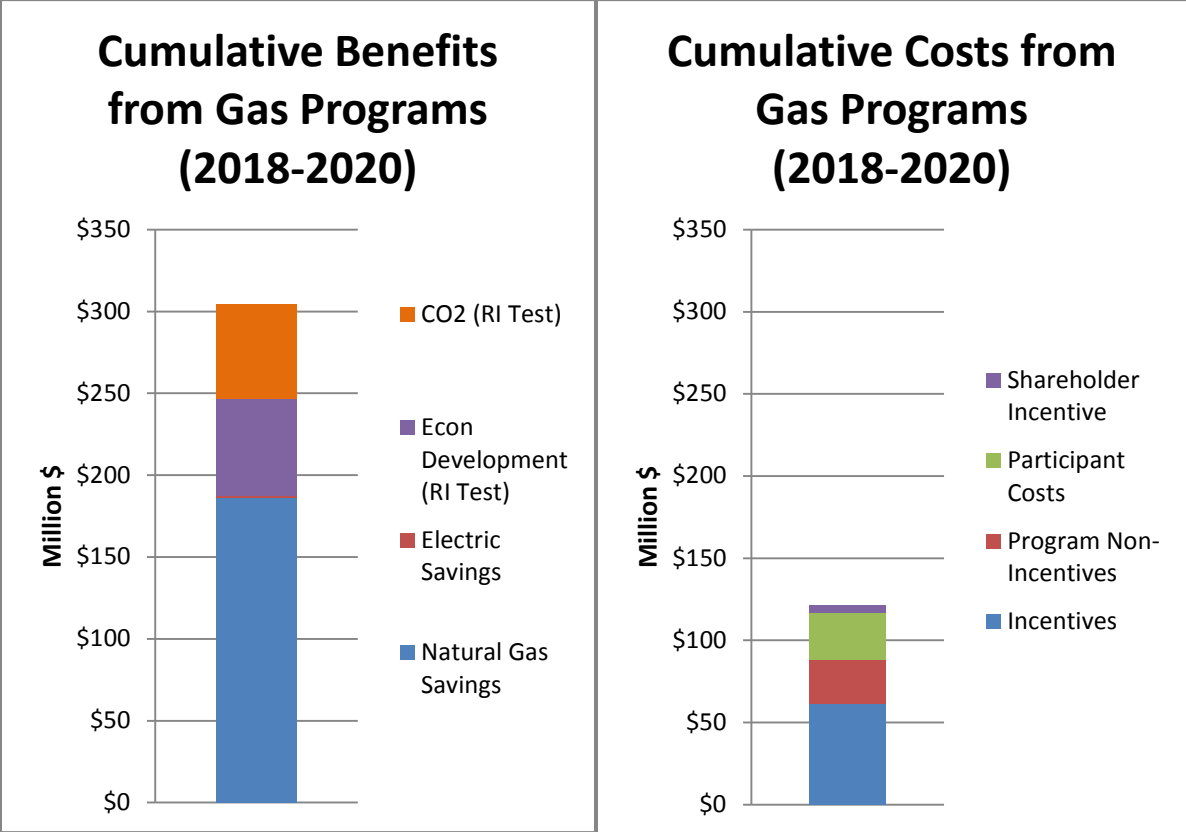
⁵ Values for non-embedded CO₂ are presented in several tables in the 2015 AESC: Exhibit 4-5 for electric savings, Exhibit 4-14 for gas savings, and Exhibit 4-18 for oil savings.

⁶ Macroeconomic Impacts of Rhode Island Energy Efficiency Investments: REMI Analysis of National Grid’s *Energy Efficiency Programs*, National Grid Customer Department, November, 2014.



The graphs below show the major components of both the costs and benefits of the portfolios for the 2018-2020 Plan in total. The total resource benefits in both the gas and electric portfolios are mostly derived from primary fuel savings. Similarly, the total resource costs are largely participant incentives. The top two sections of the benefits chart are the components that are included only in the RI Test; the lower sections are included in both the TRC and RI Tests. On the cost side, note that the BCR calculation includes an allowance for National Grid's shareholder incentive at the nominal or "target" value.





The EERMC Consultant Team concludes that the Procurement Plan meets the cost-effectiveness requirements of R.I.G.L. § 39-1-27.7(c)(5) and therefore should be approved by the Commission and used by National Grid to develop more detailed, specific annual implementation plans for 2018, 2019, and 2020 that will be submitted to the Commission.

IV. Conclusion

For the reasons stated herein, the EERMC and the EERMC’s Consultant Team finds that National Grid’s 2018-2020 Energy Efficiency and System Reliability Procurement Plan is cost-effective and lower cost than the acquisition of additional supply pursuant to R.I.G.L. § 39-1-27.7 (c)(5).

Appendices

A. 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, Rhode Island ratepayers stand to save hundreds of millions of dollars in energy bills over the next decade.

The primary guidelines informing the planning process to achieve this objective are the "standards for energy efficiency and conservation procurement and system reliability" Least Cost Procurement Standards or Standards), required in the 2006 legislation. The EERMC proposed the initial Least Cost Procurement Standards in June, 2008, and a subsequent revision was approved by the Commission in July, 2008. Updates to the Standards were proposed by the EERMC in 2011 under Docket #4202, in 2014 under Docket #4443, and in 2016 under Docket #4684, all of which were approved by the Commission. The purpose of these Standards is to provide sufficient direction to guide National Grid in its Three-Year and Annual Plans.

In the past, the Standards ordered by the PUC identified 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. The Standards for determining cost-effectiveness were modified in 2016 to include a revised definition in Section 1.2(B) that identified the Rhode Island Test (RI Test) as the basis for measuring cost-effectiveness. Briefly, the new test is intended to "more fully reflect the policy objectives of the State with regard to energy, its costs, benefits, and environmental and societal impacts." In practice, for this Three-Year Plan, the new test includes two additional categories of benefits: additional value of mitigating carbon emissions not already captured in the energy avoided costs and net economic benefits to the State resulting from efficiency program spending. To provide consistency with the previously applied TRC methodology, the Standards require the Plan to report the results of both the TRC and RI Tests.

B. Summary of EERMC Consultant Team's Qualifications

The EERMC Consultant Team is composed of Vermont Energy Investment Corporation ("VEIC") serving as the lead contractor, Optimal Energy Inc. ("OEI"), Energy Futures Group (EFG), and Ralph Prah (Consultant). The Consultant Team is led by Mike Guerard, previously in partnership with Scudder Parker. Key skills and expertise are provided by Craig Johnson (OEI) on data and analytical issues; Jeff Loiter (OEI) on cost-effectiveness review and regulatory issues; Richard

Faesy (EFG) and Glenn Reed (EFG) on the Residential market sector; George Lawrence (OEI), Zoe Dawson (VEIC and Jen Chiodo (Cx Associates) on the Commercial / Industrial sector; and Mark Kravatz (OEI) and Ralph Prah on evaluation, measurement, and verification (EM&V) activity. An additional layer of supporting staff is also in place, as well as a full range of industry experts available on an as-needed basis.

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 15-30 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.

The Team's strong familiarity with Rhode Island's 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.⁷

⁷ The EERMC and its Consultant Team also work closely with the Division and its Consultant through the Collaborative Subcommittee.



STATE OF RHODE ISLAND

ENERGY EFFICIENCY & RESOURCE MANAGEMENT COUNCIL

Draft Annual Plan

Context & Considerations

Presented By: the EERMC Consultant Team

Date: September 21, 2017



3 Year Planning Process At a Glance





2018 Annual EE Plan & SRP Report

- Due to PUC on November 1
 - Separate PUC dockets for EE Plan and SRP Report
- N-Grid is responsible for drafting and filing
 - N-Grid works closely with EERMC, C-Team, OER, and the Collaborative
- Key elements of the EE Plan →
- Separate document on SRP →

Main text / Plan overview

Residential Programs & Pilots

C&I Programs & Pilots

M&V Study Plans

Funding & Budget Tables

System Reliability Report



2018 Program Portfolio

Sector	Program
Commercial & Industrial	Large Commercial New Construction
	Large Commercial Retrofit
	Small Business Direct Install
Income Eligible Residential	Single Family – Income Eligible Services
	Income Eligible Multifamily
Residential	Energy Star® HVAC
	EnergyWise
	EnergyWise Multifamily
	Home Energy Reports
	Residential New Construction
	ENERGY STAR® Lighting
	ENERGY STAR® Products



Factors that Inform the Annual Plan

- Three-Year Plan savings targets and priorities
- Rhode Island Benefit-Cost Test (RI Test)
- Updates to program evaluations
- Evolving information on customers, markets, and technologies
- State policy objectives
- Budget or rate cap



Strong Points of Plan

- ✓ Higher electric and gas savings than 3-year plan
 - 5-6% increases due to recent evaluation results
- ✓ Comprehensive information on program plans
- ✓ Key themes:
 - Customers
 - Least cost
 - Environment
 - Future

Overall, a strong start!



2018 Enhancements: Residential

- ✓ Aggressively capturing remaining lighting savings with focus on hard-to-reach markets
- ✓ New upstream/midstream programs for heat pump water heaters and consumer products
- ✓ Increased incentives for delivered fuel
- ✓ Financing enhancements for moderate-income customers
- ✓ Exploration of new financing options like on-bill
- ✓ Expansion of smart thermostats and continued connected device and home energy management pilots



2018 Enhancements: Commercial

- ✓ Main themes:
 - Better customer experience
 - Market sector approach
 - Affordability and financing
 - Education, awareness and trainings
- ✓ Increased focus on operational and behavioral savings through retro-commissioning, Strategic Energy Management, and benchmarking
- ✓ Improved coordination with RIIB on financing delivery and results



Issues to Monitor

- Drivers for increased cost per unit of energy saved
- Strategic electrification still at pilot stage
- EnergyWise:
 - Large budget increase with higher DF incentives
 - Need to test new delivery approaches beyond lighting
- Opportunities to deepen understanding of market and supply channel barriers and motivations
- Integration of benchmarking with program delivery
- Continued focus on appropriate allocations and support for various financing options for both sectors



Other Issues

Other factors that may cause changes to the Plan:

- The **Benefit/Cost Model** review
 - Review of measure units, cost, savings & benefits ongoing
- The **“Funding Plan”** attachment
 - Still being reviewed and vetted
 - Final plan will be cost-effective with significant benefits
- **Legislative developments** that may occur via a special session of the General Assembly, which may result in a budget or rate cap on spending



Next Steps

-
- Build on strong 1st draft toward a solid plan to maximize benefits of EE for RI customers
 - Written input from EERMC and Consultants, OER, Division & Collaborative due 9/22
 - Review & input on 2nd draft (final) delivered on 10/12 to EERMC & Collaborative
 - EERMC Vote on Plan at 10/19 meeting

**Cost-Effectiveness Report:
National Grid's 2018 Energy Efficiency and
System Reliability Procurement Plan**

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



Working on Behalf of the



**STATE OF RHODE ISLAND
ENERGY EFFICIENCY &
RESOURCE MANAGEMENT COUNCIL**

Submitted to the Rhode Island Public Utilities Commission

November 14, 2017

Summary of Consultant Team Findings

The EERMC Consultant Team finds that the *Annual Energy Efficiency Plan for 2018* (the “EE Plan”), filed on **November 1, 2017** by National Grid, is cost-effective according to both the recently adopted “Rhode Island Test” (RI Test) and the historically referenced Total Resource Cost (TRC) test. The new RI test was created by the revised Least Cost Procurement Standards approved by the Public Utilities Commission (“the Commission”) on July 28, 2017.¹ **<new text here about the EE cost being less than the cost of supply, i.e. standard offer>**

We also find that the implementation strategies outlined in the Plan will support a reasonable and credible sustained implementation of National Grid’s energy efficiency program delivery efforts, and align with the savings targets and revised Least Cost Procurement Standards proposed by the EERMC in its December 22, 2016 filing and approved by the PUC at its Open Meeting held on April 27, 2017.

<Summarize findings on the SRP (“the SRP Report” here, need to wait until the 2nd draft of the SRP to begin drafting this.>

These findings and the remainder of this report were presented to the Energy Efficiency and Resource Management Council (EERMC or “the Council”) by the EERMC Consultant Team at its **October 19, 2017** meeting, and were approved and adopted in a vote of the EERMC.

Because the EE Plan and the SRP Report have been approved by the EERMC and meet the cost-effectiveness requirements of R.I.G.L. § 39-1-27.7(c)(5), the EERMC recommends that they also be approved by the Commission based on the Consultant Team’s analysis and report.

¹ Section 1.2.B., http://www.ripuc.org/eventsactions/docket/4684-LCP-Standards_7-27-17.pdf

I. Introduction

This report was prepared by the Consultant Team and the EERMC to help fulfill the requirements of R.I.G.L. § 39-1-27.7(c)(5) related the Public Utility Commission's approval of National Grid's three-year procurement plan and related annual energy efficiency plans. Since 2010, the EERMC has directed the Consultant Team to prepare this report for all three-year and annual plans filed with the Commission. This version addresses National Grid's proposed *Annual Energy Efficiency ("the EE Plan")* and *System Reliability Procurement Report ("the SRP Report")*, as approved by the Council at its October 19, 2017 meeting. The Council voted to approve this report at its October 19 Council meeting.

This report submits our finding that the EE Plan and SRP Report are cost-effective as evidence to the Commission. It also describes the nature and process of the review and documents the professional experience and qualifications of the Consultant Team that performed the review.

In order to assess the cost-effectiveness of the EE Plan and SRP Report, the EERMC Consultant Team engaged in the following plan development and review processes:

1. Consistent and on-going oversight of actual National Grid energy efficiency planning and implementation activities through direct interactions with National Grid staff and participation in the Collaborative Subcommittee process (documented in Section II).
2. Reviewing the details of National's Grid Benefit-Cost Models ("BC Models") to ensure that they accurately reflect the proposed program designs in the Plan, recent evaluation results, and relevant TRM inputs (Section III)
3. Reviewing additional inputs to the cost-effectiveness calculations, including new components resulting from the revised Least Cost Procurement Standards approved by the PUC on April 27, 2017 (Section IV).

Appendices to this report provide additional information on the relevant regulatory and legal framework for this report as well as the qualifications of the Consultant Team to perform this review.

II. Oversight of Planning and Implementation Activities

The EERMC, consistent with its statutory obligations under the 2006 Comprehensive Energy Act, continues to play an involved and active role with National Grid to guide, facilitate, and support public and independent expert participation in the review, oversight, and evolution of utility energy efficiency procurement and program implementation. The EERMC believes this input is critical to having the energy efficiency programs and new cost saving mechanisms evolve into resource acquisition tools that can effectively implement the Rhode Island law to procure all cost-effective natural gas and electric energy efficiency. The updated Standards in

Docket No. 4684 require a consistent and effective process to guide the development and submission of National Grid's Plan to the Commission.

The EERMC has met its review and input requirements both at its regularly scheduled meetings with National Grid and through Collaborative meetings and phone calls. The Collaborative is comprised of EERMC members; the EERMC Consultant Team; RI Office of Energy Resources (OER); Acadia Center; the Division of Public Utilities and Carriers with representation from the Attorney General's Office and support from its consultant; People's Power and Light; and TEC-RI. National Grid coordinates and hosts the meetings, and has energy efficiency and system reliability representatives in attendance at all meetings.

For the EE Plan, the Consultant Team reviewed and commented on two drafts of the Plan in **September and October of 2017**. This included attending or participating in presentations by the Company and providing comment in both written form and through in-person and telephone conversations with the Company and EERMC members.

III. EE Plan Program Design and Evaluation Review

Comment [JML1]: might not need much revision

The Consultant Team reviewed the draft and final Plans to assess the proposed program designs and the extent to which they and the associated cost-effectiveness analyses reflect recent evaluation results and relevant TRM inputs. This included the following:

- Reviewing updates to the 2017 TRM to assess the measures and assumptions used in the calculations of energy and capacity savings proposed programs, and to ensure that these are accurately reflected in the BC models.
- Reviewing assumptions regarding program activity, in the form of measure quantities, to ensure they are appropriate and reflect the program design and descriptions in the Plan.
- Reviewing the mix of measures and net-to-gross values used in the BC Models to ensure they reflect the latest evaluations available.
- Comparing the BC Models to the proposed targets adopted by the Council in Docket 4684 and noting any differences, which were raised to the Company for explanation and resolution.

As a result of these activities, the Consultant Team communicated with National Grid analysts and sector managers to address pertinent issues and questions related to both program design and cost effectiveness. In some cases, this resulted in revisions to the Plan. Overall, our findings are that:

- The overwhelming majority of the modeling and cost-effectiveness assumptions reviewed were reasonable and well-supported. Any issues identified in the BC Models or in the Plan were addressed at the portfolio and program level by National Grid's analyst team.

- National Grid appropriately used new results from both Rhode Island and relevant Massachusetts evaluations that were recently completed to update multiple measure baselines, net-to-gross ratios, measure lives, and other measure assumptions.
- The objectives of the Least Cost Procurement Standards were 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

In general, the Consultant Team found National Grid's processes for revising their cost-effectiveness inputs and assumptions to be thorough and comprehensive. National Grid appropriately adjusts baselines for new building codes and federal standards, and incorporates the latest findings from evaluation studies. In addition, the Company updates anticipated program costs based on recent experience and new market information.

IV. SRP Report Project Screening Review

<this will be a new section describing the process of our review of the SRP Report and our findings. Emphasis will likely be on the pilot programs, the NWA screening that is not producing any projects, and the proposed other activities (e.g., heat map).>

- No NWA passing screening, basically all of the opportunities are "asset condition" issues
- Discontinuing the Tiverton/Little Compton pilot
- Proposing a battery storage project in Tiverton
- Proposing a heat map and data access project

V. Cost-Effectiveness Review

Defining Cost-Effectiveness

Cost-effectiveness tests for energy efficiency measures and programs compare the net present value of a stream of benefits to the net present value of a corresponding stream of costs, whether they occur at the time of implementation or over several years. When the benefits exceed the costs, the measure or program is said to be "cost-effective."² Several tests exist, each of which assesses cost-effectiveness from a different perspective. The Total Resource Cost (TRC) has been widely accepted and used by regulators and policy-makers to evaluate demand-side management programs because it takes an expansive view of the effects of these programs, including all of the costs borne by consumers (whether directly or indirectly through

² The results of this analysis can be expressed as either the net benefits (i.e., total benefits minus total costs), where cost-effective is defined as positive net benefits, or as the benefit-to-cost ratio (total benefits divided by total costs), where cost-effective is defined as a ratio of greater than or equal to 1.

utility rates) and all of the benefits that accrue to those consumers. Historically, Rhode Island relied on the TRC test to assess whether the benefits of an efficiency measure or program outweighed the costs for Rhode Island consumers.

More recently, the Rhode Island Public Utilities Commission ordered National Grid to develop a benefit-cost test that “more fully reflects the policy objectives of the State.” The Commission did not specify the components of the new “Rhode Island Test” (or “RI Test”) in detail, but provided a number of principles to follow, including symmetry, transparency, and the importance of accounting for all relevant impacts, even those that are difficult to quantify or monetize.

National Grid subsequently proposed two additional categories of benefits to include in the new RI Test in addition to those already included in the TRC. These were discussed among the EERMC Consultant Team, the Division, the Collaborative, and National Grid. Based on general agreement, these benefits have been included in the cost-effectiveness analysis presented in the Plan. They are:

- **The benefits associated with reduction in greenhouse gas (GHG) emissions** – The TRC test used in previous Plans accounted for the costs of mitigating CO₂ emissions imposed by the Regional Greenhouse Gas Initiative and the costs of reasonably anticipated future GHG regulations.³ The revised Standards provide for inclusion of additional value related to GHG emissions reductions.
- **The benefits associated with economic development resulting from investment in energy efficiency** – Changes in how consumers and other entities spend money in the Rhode Island economy can result in changes in overall economic activity. For example, shifting spending from goods or services produced outside of the state to those produced within the state with increase in-state economic activity. Because investing in energy efficiency in part replaces spending on energy, the Plan may result in such a shift. The economic impacts of investing in one type of energy efficiency measure (combined heat and power, or CHP) were included in previous cost-effectiveness analyses; the new RI Test extends this to capture these impacts for all Plan activity.

Assessing the Cost-Effectiveness of the 2018 EE Plan

The final Plan presents the cost-effectiveness of the proposed 2018 programs using both the TRC and the RI test. The table below summarizes the results in terms of benefit-cost ratio. Considering just the TRC, both the electric and gas portfolios are robustly cost-effective in every

³ The cost of mitigating emissions becomes a benefit in the cost-effectiveness analysis, because energy efficiency results in lower emissions, and thus avoids some of these costs. Rather than account for them as a negative cost, they are considered a positive benefit.

year; electric portfolio benefits are nearly twice the total costs of the investments, while gas portfolio benefits exceed costs by 50%.

BCR	TRC Test	RI Test
Electric	1.9	3.0
Gas	1.7	2.8

Comment [JML2]: These first draft will likely change in final draft

As described above, the RI Test seeks to include a more complete set of benefits that better reflects state policy. The benefits associated with reductions in greenhouse gas (GHG) emissions have been included by relying on the 2015 version of the *Avoided Energy Supply Costs in New England* report (AESC). This report projects a long-term value of reductions in carbon emission of \$100 per short ton. A small portion of this value – representing the near-term value of carbon reductions given current and likely future carbon regulation – is already included or “embedded” in the avoided energy costs that compose a portion of the benefits under the TRC Test. Therefore, the RI Test includes the remaining value of carbon emissions up to the full \$100 per ton value.⁴

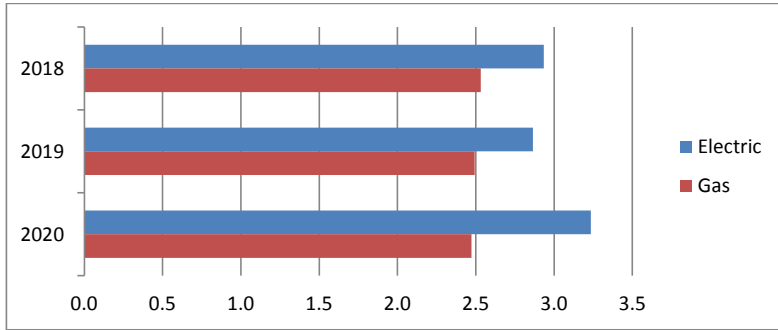
It is generally acknowledged that increased spending from installing energy efficiency measures creates jobs in the local economy. Participant and program spending on efficiency often has positive benefits to the local economy as a greater portion of total energy costs are spent locally. Yet these benefits are typically not included in TRC benefit calculations because they are difficult to quantify, requiring a regional economic model. Such an analysis was conducted for National Grid in 2014, the results of which form the basis for the economic benefits included in the RI Test.⁵ Depending on the sector, fuel, and source of spending (i.e., participant or program), the study found economic benefits (above and beyond the value of avoided energy and capacity) of between \$0.56 and \$0.75 for each dollar spent. These factors were used to calculate the economic benefits in the RI Test results.

The Consultant Team has reviewed the quantification of the GHG reduction and economic benefits in the RI Test and finds them to be appropriate and in keeping with the Commission’s direction. Returning to the table above, the inclusion of the more complete set of benefits in the RI Test results in a roughly xx% increase in BCR for the electric portfolio and a xx% increase in the BCR for the gas portfolio. The figure below presents the results of the RI Test in graphical form and again demonstrates that in each program year, both the electric and natural gas

⁴ Values for non-embedded CO₂ are presented in several tables in the 2015 AESC: Exhibit 4-5 for electric savings, Exhibit 4-14 for gas savings, and Exhibit 4-18 for oil savings.

⁵ Macroeconomic Impacts of Rhode Island Energy Efficiency Investments: REMI Analysis of National Grid’s Energy Efficiency Programs, National Grid Customer Department, November, 2014.

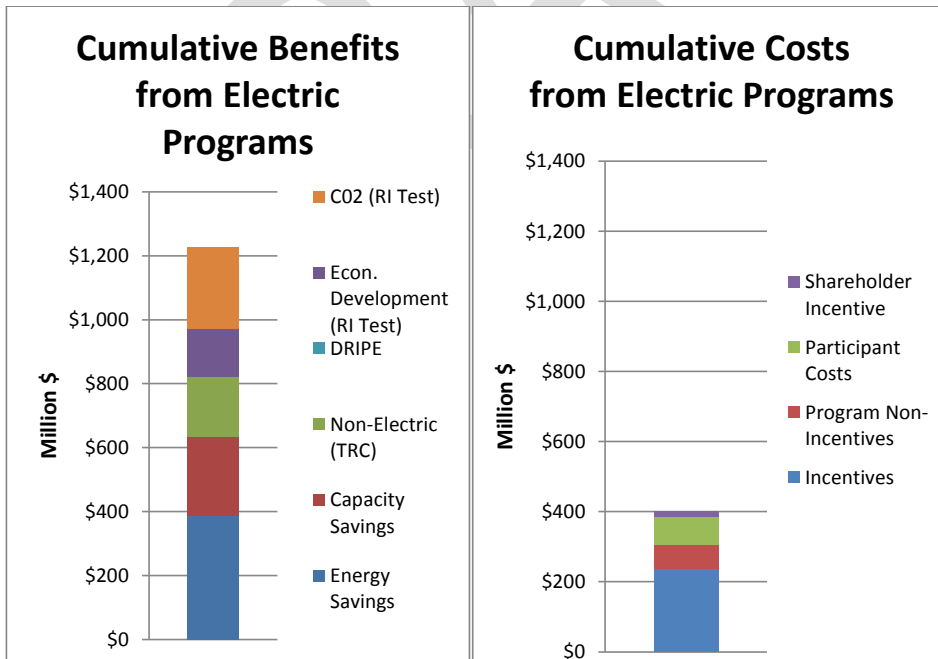
efficiency programs have a BCR greater than 1.0, as required by the Commission-approved Least Cost Procurement Standards and R.I.G.L. § 39-1-27.7 (c)(5).

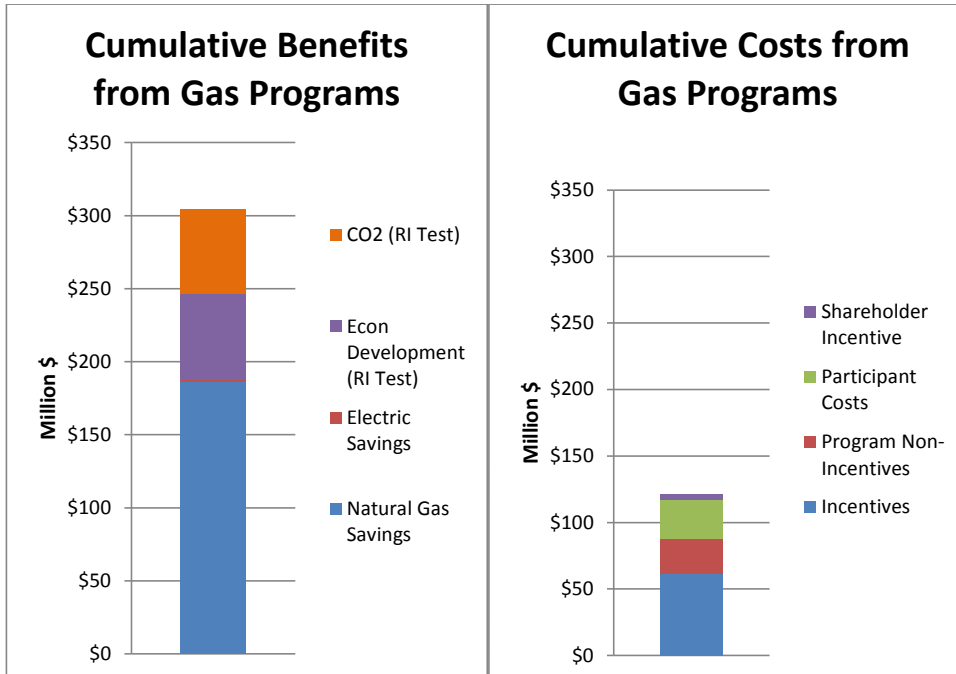


Comment [JML3]: replace with final version for just 2018

The graphs below show the major components of both the costs and benefits of the portfolios for the 2018-2020 Plan in total. The total resource benefits in both the gas and electric portfolios are mostly derived from primary fuel savings. Similarly, the total resource costs are largely participant incentives. The top two sections of the benefits chart are the components that are included only in the RI Test; the lower sections are included in both the TRC and RI Tests. On the cost side, note that the BCR calculation includes an allowance for National Grid's shareholder incentive at the nominal or "target" value.

Comment [JML4]: Revise to show 2018 only





<new text discussing findings on cost of EE less than cost of supply>

The EERMC Consultant Team concludes that the EE Plan meets the cost-effectiveness requirements of R.I.G.L. § 39-1-27.7(c)(5) and therefore should be approved by the Commission.

Assessing the Cost-Effectiveness of the 2018 SRP Report

<use a similar structure as for EE Plan: provide the results first, then any commentary on aspects of the screening. If they use RI Test for SRP, then refer back to previous discussion on those new topics, don't repeat here>

Comment [JML5]: New section to address the SRP directly.

V. Conclusion

For the reasons stated herein, the EERMC and the EERMC's Consultant Team finds that National Grid's 2018 Energy Efficiency Program Plan and their 2018 System Reliability Procurement Report are cost-effective and lower cost than the acquisition of additional supply pursuant to R.I.G.L. § 39-1-27.7 (c)(5).

Appendices

A. 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, Rhode Island ratepayers stand to save hundreds of millions of dollars in energy bills over the next decade.

The primary guidelines informing the planning process to achieve this objective are the "standards for energy efficiency and conservation procurement and system reliability" Least Cost Procurement Standards or Standards), required in the 2006 legislation. The EERMC proposed the initial Least Cost Procurement Standards in June, 2008, and a subsequent revision was approved by the Commission in July, 2008. Updates to the Standards were proposed by the EERMC in 2011 under Docket #4202, in 2014 under Docket #4443, and in 2016 under Docket #4684, all of which were approved by the Commission. The purpose of these Standards is to provide sufficient direction to guide National Grid in its Three-Year and Annual Plans.

In the past, the Standards ordered by the PUC identified 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. The Standards for determining cost-effectiveness were modified in 2016 to include a revised definition in Section 1.2(B) that identified the Rhode Island Test (RI Test) as the basis for measuring cost-effectiveness. Briefly, the new test is intended to "more fully reflect the policy objectives of the State with regard to energy, its costs, benefits, and environmental and societal impacts." In practice, for this Three-Year Plan, the new test includes two additional categories of benefits: additional value of mitigating carbon emissions not already captured in the energy avoided costs and net economic benefits to the State resulting from efficiency program spending. To provide consistency with the previously applied TRC methodology, the Standards require the Plan to report the results of both the TRC and RI Tests.

B. Summary of EERMC Consultant Team's Qualifications

The EERMC Consultant Team is composed of Vermont Energy Investment Corporation ("VEIC") serving as the lead contractor, Optimal Energy Inc. ("OEI"), Energy Futures Group (EFG), and Ralph Prah (Consultant). The Consultant Team is led by Mike Guerard, previously in partnership with Scudder Parker. Key skills and expertise are provided by Craig Johnson (OEI) on data and analytical issues; Jeff Loiter (OEI) on cost-effectiveness review and regulatory issues; Richard

Cost-Effectiveness Report on National Grid's 2018 Energy Efficiency Plan and System Reliability Procurement Report

Faesy (EFG) and Glenn Reed (EFG) on the Residential market sector; George Lawrence (OEI), Zoe Dawson (VEIC) and Jen Chiodo (Cx Associates) on the Commercial / Industrial sector; and Mark Kravatz (OEI) and Ralph Prah on evaluation, measurement, and verification (EM&V) activity. An additional layer of supporting staff is also in place, as well as a full range of industry experts available on an as-needed basis.

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 15-30 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.

The Team's strong familiarity with Rhode Island's 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.⁶

⁶ The EERMC and its Consultant Team also work closely with the Division and its Consultant through the Collaborative Subcommittee.

2018 EE Annual Plan First Draft

nationalgrid

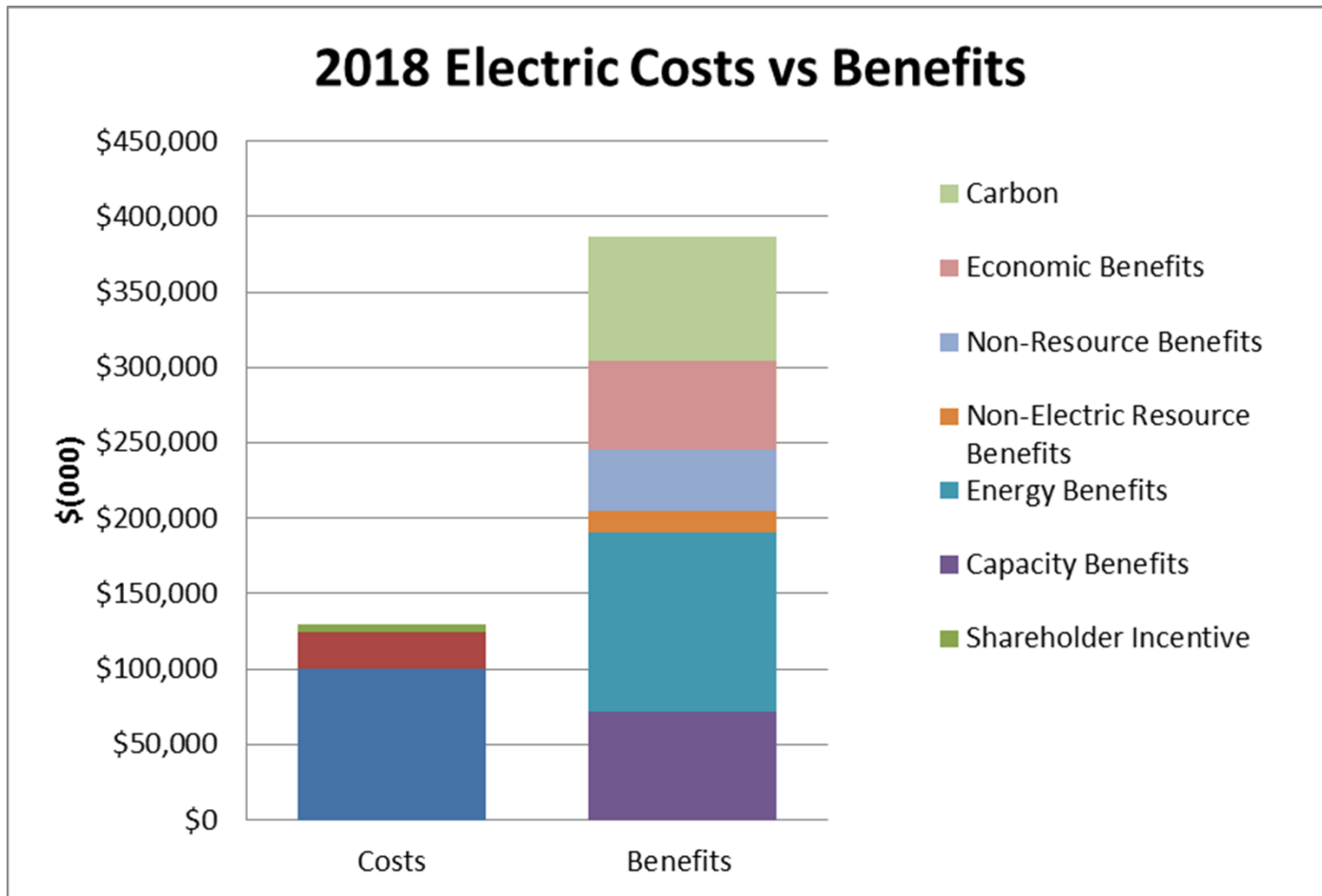


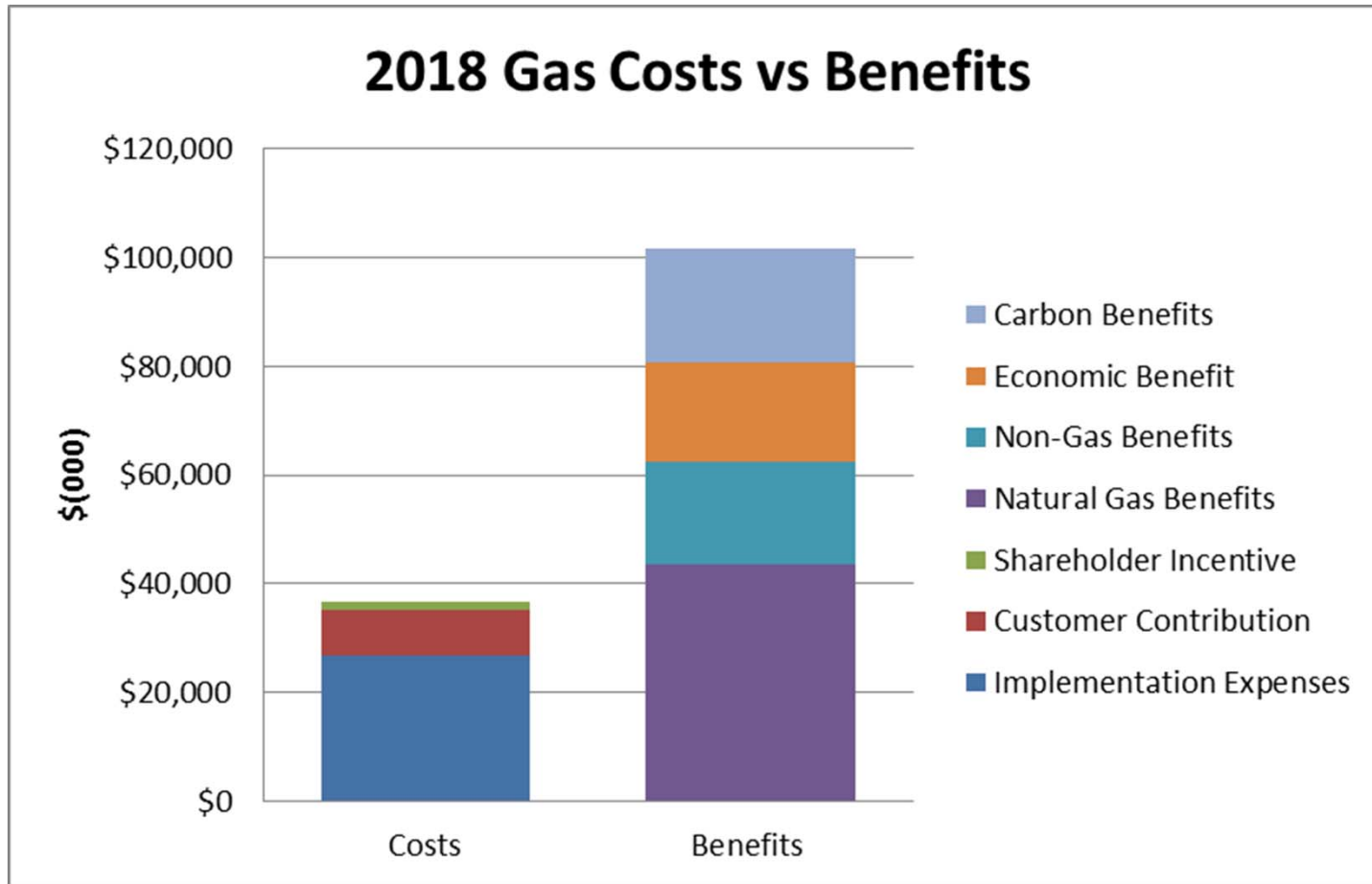
RI EERMC

September 21, 2017

- 2018 Plan exceeds savings targets of Year Plan (3YP)
 - Electric goals increase by 6% and gas goals increase by 5% from application of evaluations.
 - Reduces electric sales 2.54% and gas sales 1.01% from 2015 base load.
 - Cost-effective and less expensive than supply.
- Savings will generate \$488 million in direct benefits over life of projects.
 - Will add \$81.9 M to RI GDP
 - Avoid over 1.3 million tons of carbon
- Continues with nation-leading EE programs and innovates for the future.

- 2018 Plan includes line item for \$12.5M allocation to the RI State budget.
- September legislative session has a bill that replaces 'budget cap' with 'rate cap'.
 - If 'rate cap' passes then first draft complies.
 - If 'budget cap' passes then a potential \$10M in budget needed to comply.
- Collaborative working on where to make those cuts.
 - Customer services, savings, and benefits will be impacted.
- This is all changing rapidly and the Company is working to ensure the best outcome its customers.





Comparison to 3 Year Plan Illustration

nationalgrid

Electric Programs	2018 3 Year Plan	2018 Annual Plan	% Change
Annual MWh Savings	179,968	190,468	6%
Lifetime MWh Savings	1,712,064	1,789,663	4%
Annual Peak kW Savings	29,639	30,622	3%
Total Benefits	\$ 373,004,694	\$ 386,959,550	4%
Total Spending	\$ 103,047,860	\$ 105,272,064	2%
Benefit Cost Ratio (RI Test)	2.93	2.98	2%
Cost/Lifetime kWh	\$ 0.071	\$ 0.070	-2%
EE Program Charge per kWh	\$ 0.01090	\$ 0.01123	3%

Gas Programs	2018 3 Year Plan	2018 Annual Plan	% Change
Annual MMBtu Savings	396,113	414,795	5%
Lifetime MMBtu Savings	4,552,056	4,756,052	4%
Cost/Lifetime MMBtu	\$ 8.17	\$ 7.42	-10%
Total Benefits	\$ 97,702,163	\$ 101,491,385	4%
Total Spending	\$ 29,399,869	\$ 27,950,093	-5%
Benefit Cost Ratio (RI Test)	2.53	2.77	9%
C&I EE Program Charge per Dth	\$ 0.721	\$ 0.721	0%
Residential EE Program Charge per Dth	\$ 0.882	\$ 0.898	2%

Updates since 3YP:

- Savings updated based on evaluation results.
- Refinement of budgets.
- Updates to projected 2017 year-end expenses & revenues.

■ Finance

- Pilot finance concepts that test
 - comprehensiveness,
 - reduce incentives and
 - increase participation

Third Party Finance

C-Pace

■ Retrofit

- Market Sector Approach
 - Industrial
 - Restaurant Initiative

RCx

SEMP

SEM

Technologies – gas technologies, upstream

■ New Construction

- Accelerated Performance
- Indoor Agriculture
- Dedicated Sales Staff

■ Small Business

- Wi-Fi T-stats and other go to market strategies that are market sector based

■ Pilots and demonstrations

- Demand response
- ZNE
- Emerging Lighting technologies and strategies

■ Marketing

- Market tiers
- Micro-segments
- Digital Path-to-participation

2018 Annual Plan Residential Highlights **nationalgrid**

- Increased delivered fuels incentives.
- Investment in the Capital Good Fund revolving loan fund to support moderate and income eligible customers.
- Retail Product Platform design for consumer products to be offered in second half of 2018.
- Home Energy Management pilot (Sense or Whisker Lab devices).
- New web-based sign-up platform for Multifamily Condominium developments.
- Customer segmentation through Home Energy Reports.
- Strategic electrification in HVAC electric program.

- Important Dates

- September 22nd – Written comments on first draft due
- October 12th – Second and final draft circulated
- October 19th – EERMC meeting and vote on final draft
- October 20th – Collaborative call to review EERMC vote
- October 23rd – Final version circulated for signature
- November 1st – Plan filed with PUC

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
PUBLIC UTILITIES COMMISSION

In Re: The Narragansett Electric Company
d/b/a National Grid
Annual Energy Efficiency Plan for 2018

|
|
| Docket No. ---
|
|

FIRST DRAFT

ANNUAL ENERGY EFFICIENCY PLAN FOR 2018

SETTLEMENT OF THE PARTIES

November 1, 2017

Table of Contents

1.	Introduction and Summary	- 1 -
2.	Annual Plan Compared to Three-Year Plan for Year 2018	- 7 -
3.	Strategies to Achieve Goals	- 9 -
4.	Delivering 2018 Goals	- 10 -
a.	Residential Programs	- 10 -
b.	Residential Income Eligible Programs.....	- 13 -
c.	Commercial and Industrial Programs	- 13 -
d.	Participation	- 15 -
e.	Equity.....	- 19 -
f.	Creating and Sustaining Energy Jobs	- 21 -
g.	System Reliability Procurement	- 22 -
5.	Funding and Budgets	- 22 -
a.	2018 Annual Plan Funding Sources.....	- 22 -
i.	ISO-NE Capacity Market Revenue	- 23 -
ii.	Exceptions to the Natural Gas Energy Efficiency Program Charge.....	- 24 -
iii.	2018 Appropriations Legislation	- 25 -
b.	Budgets	- 25 -
c.	Transferring of Funds	- 26 -
d.	Budget Management	- 28 -
6.	Reconciliation	- 29 -
7.	Goals and Cost-Effectiveness	- 30 -
8.	Bill Impacts.....	- 31 -
9.	Measurement and Verification Plan.....	- 31 -
10.	Reporting Obligations.....	- 32 -
11.	Incentive.....	- 33 -
12.	Miscellaneous Provisions.....	- 35 -

ATTACHMENTS

1. 2018 Residential Energy Efficiency Solutions and Programs
2. 2018 Commercial and Industrial (C&I) Energy Efficiency Solutions and Programs
3. 2018 Measurement and Verification Plan
4. Rhode Island Benefit Cost Test Description
5. 2018 Electric Energy Efficiency Program Tables
6. 2018 Gas Energy Efficiency Program Tables
7. 2018 Energy Efficiency Program Plan Bill Impacts

1. Introduction and Summary

The Narragansett Electric Company d/b/a National Grid (National Grid or Company) is pleased to submit this Annual Energy Efficiency Plan (Annual Plan or Plan) for 2018 to the Rhode Island Public Utilities Commission (PUC). This Plan has been developed by National Grid in collaboration with the Energy Efficiency Collaborative (Collaborative) and has been endorsed by the Energy Efficiency and Resource Management Council (EERMC).¹

This Plan is submitted in accordance with the Least Cost Procurement law, R.I. Gen. Laws § 39-1-27.7, the basis for which is the Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006, R.I. Gen. Laws § 39-2-1.2, and the Least Cost Procurement Standards (Standards), as revised by the EERMC and approved by the PUC at an Open Meeting on April 27, 2017 in Docket 4684. This Plan is being jointly submitted as a Stipulation and Settlement, entered into by the Rhode Island Division of Public Utilities and Carriers (Division), the Office of Energy Resources (OER), the EERMC, TEC-RI, Acadia Center, People's Power & Light (PP&L), and National Grid (collectively, the Parties), and addresses all issues raised by members of the Collaborative concerning the Company's electric and natural gas energy efficiency (EE) programs for calendar year 2018.

The 2018 Plan satisfies the statutory requirements for Least Cost Procurement and is consistent with the Three-Year Energy Efficiency Procurement Plan (Three-Year Plan) for 2018-2020.² The 2018 Annual Plan is cost-effective and has a cost that is lower than the cost of acquisition of additional supply for both electricity and natural gas, satisfying the requirements prescribed in R.I. Gen. Laws § 39-1-27.7 (a)(2).

The primary goal of the 2018 Annual Plan is to create energy and economic cost savings for Rhode Island consumers through energy efficiency, as required by R.I. Gen. Laws § 39-1-27.7. To that end, the 2018 Plan will create annual savings of 190,468 MWh and 414,795 MMBtu and lifetime savings of 1,789,663 MWh and 4,756,052 MMBtu. The Plan will generate benefits of more than \$488 million over the life of the measures (with \$386.9 million in benefits coming from electric efficiency and \$101.5 million in benefits

¹ Since 1991, a collaborative group (Collaborative) has been meeting regularly to analyze and inform the Company's electric and gas energy efficiency programs. Presently, members of the Collaborative presently include the Company, the Division and the Division's consultant, Synapse Energy Economics (Synapse), PP&L, TEC-RI, RI Housing, and Acadia Center. In addition, the OER and several EERMC members and representatives from the EERMC's Consulting Team participate in the Collaborative group. Since 1991, membership in the Collaborative has varied because some organizations have withdrawn and others have joined.

² The Company submitted the Three-Year Plan to the PUC on August 30, 2017 in Docket 4684.

from natural gas efficiency), which represents a large and urgently needed benefit for Rhode Island's residential, commercial, industrial, and income eligible energy customers.

These savings will provide a meaningful contribution to the Resilient Rhode Island Act. Under the Act, the State of Rhode Island set forth the goal to reduce greenhouse gas (GHG) emissions to 80% below 1990 levels by 2050.³ The Rhode Island Greenhouse Gas Emissions Reduction Plan (GHG Plan) identifies energy efficiency as an important component to achieving the Resilient Rhode Island Act GHG targets.⁴ The electric, gas, and oil energy efficiency measures proposed within this Plan will avoid over 1.3 million tons of carbon over the lifetime of the installed measures.⁵

In addition to providing customers with cost-savings and contributing to the State's carbon reduction goals, the 2018 Annual Plan will also create significant economic benefits in Rhode Island. The Company expects that investments made in energy efficiency under this Plan will add \$81.9 million to Rhode Island's state gross domestic product (GDP) and create more than 1,202 job-years of employment.⁶ The vast majority of jobs created as a result of energy efficiency investments are local because they are tied to the installation of equipment and other materials. An analysis of National Grid's 2016 energy efficiency programs found that 82% companies involved in the Company's energy efficiency programs were located in Rhode Island.⁷ These findings confirm that job creation is an additional significant benefit that National Grid's investments in energy efficiency contribute to Rhode Island's economy overall and directly to the business owners and their employees who deliver these programs and services.

³ R.I. Gen. Laws §42-6.2.

⁴ Rhode Island Greenhouse Gas Emissions Reduction Plan, December 2016.

⁵ Takes into account the net impact of EE measures on carbon emissions. The marginal carbon emission rates are from "Avoided Energy Supply Costs in New England: 2015 Report" Figure 4-15 on page 4-39. The report is available online at: <http://ma-eeac.org/wordpress/wp-content/uploads/2015-Regional-Avoided-Cost-Study-Report1.pdf>.

⁶ Macroeconomic multipliers for the economic growth and job creation benefits of investing in cost-effective energy efficiency from National Grid's 2014 Regional Economic Model (REMI) Analysis as presented by the Company to the Collaborative on May 29, 2014. To maintain consistency with RI Test economic benefits multiplier, the Company is only including construction phase impacts to GSP and job-years to account for only direct and indirect impacts.

⁷ Peregrine Energy, "Analysis of Job Creation from 2016 Expenditures for Energy Efficiency in Rhode Island by National Grid", April 24, 2016 (filed as part of National Grid's 2016 Year-End Report).

Table 1: 2018 Energy Efficiency Program Plan Summary

Electric Programs by Sector	Implementation Spending in 2018 (\$000)	Customer Contribution (\$000)	Annual MWh Savings	Annual kW Savings	Lifetime MWh Savings	Total Benefits (\$000)	RI Test B/C Ratio	¢/lifetime kWh	Participants
Non-Income Eligible Residential	\$37,701.2	\$5,166.1	79,858	9,262	361,139	\$97,715.8	2.18	11.9	473,793
Income Eligible Residential	\$11,921.5	\$0.0	7,472	865	59,935	\$53,417.6	4.27	19.9	7,550
Commercial and Industrial	\$49,089.6	\$19,286.7	103,138	20,495	1,368,590	\$235,826.2	3.33	5.0	2,921
Regulatory	\$1,624.1								
Subtotal	\$100,336.4	\$24,452.9	190,468	30,622	1,789,663	\$386,959.5	2.98	7.0	484,264
Gas Programs by Sector	Implementation Spending in 2018 (\$000)	Customer Contribution (\$000)	Annual MMBtu Savings		Lifetime MMBtu Savings	Total Benefits (\$000)	RI Test B/C Ratio	\$/lifetime MMBtu	Participants
Non-Income Eligible Residential	\$12,490.2	\$5,548.6	146,706		1,467,079	\$38,849.6	2.08	12.30	111,108
Income Eligible Residential	\$6,374.6	\$0.0	28,842		539,054	\$20,868.1	3.27	11.83	4,175
Commercial and Industrial	\$7,194.6	\$3,111.0	239,246		2,749,920	\$41,773.8	3.92	3.75	1,992
Regulatory	\$587.7								
Subtotal	\$26,647.1	\$8,659.6	414,795		4,756,052	\$101,491.4	2.77	7.42	117,275
Total for Plan	\$126,983.6	\$33,112.5				\$488,450.9	2.94		601,539

(1) Implementation spending does not include customer contributions, shareholder incentive, or commitments.

(2) Regulatory Includes contributions to OER and EERMC

As noted above, these savings meet the requirements for cost-effectiveness. The revised Standards set forth new requirements for a cost-effectiveness test called the Rhode Island Benefit Cost Test (RI Test), which “more fully reflects the policy objectives of the State with regard to energy, its costs, benefits, and environmental and societal impacts.”⁸ In accordance with the Standards, the Company worked in collaboration with the Division consultants, EERMC consultants, the Office of Energy Resources (OER), and the Collaborative to incorporate new benefits and costs into the RI Test that were approved as part of the 2018-2020 Three-Year Plan in Docket 4684. The RI Test includes greenhouse gas reduction values and economic benefits as described in Attachment 4.

As defined by the Standards in Docket 4684, the Plan’s RI Test benefit-cost ratio - the ratio of Total Benefits/Total Costs – must be greater than 1.0.⁹ The overall electric EE Program RI Test ratio is 2.98, and the overall natural gas EE Program RI Test ratio is 2.77. This means that for each \$1 invested, electric programs will create \$2.98 of benefits

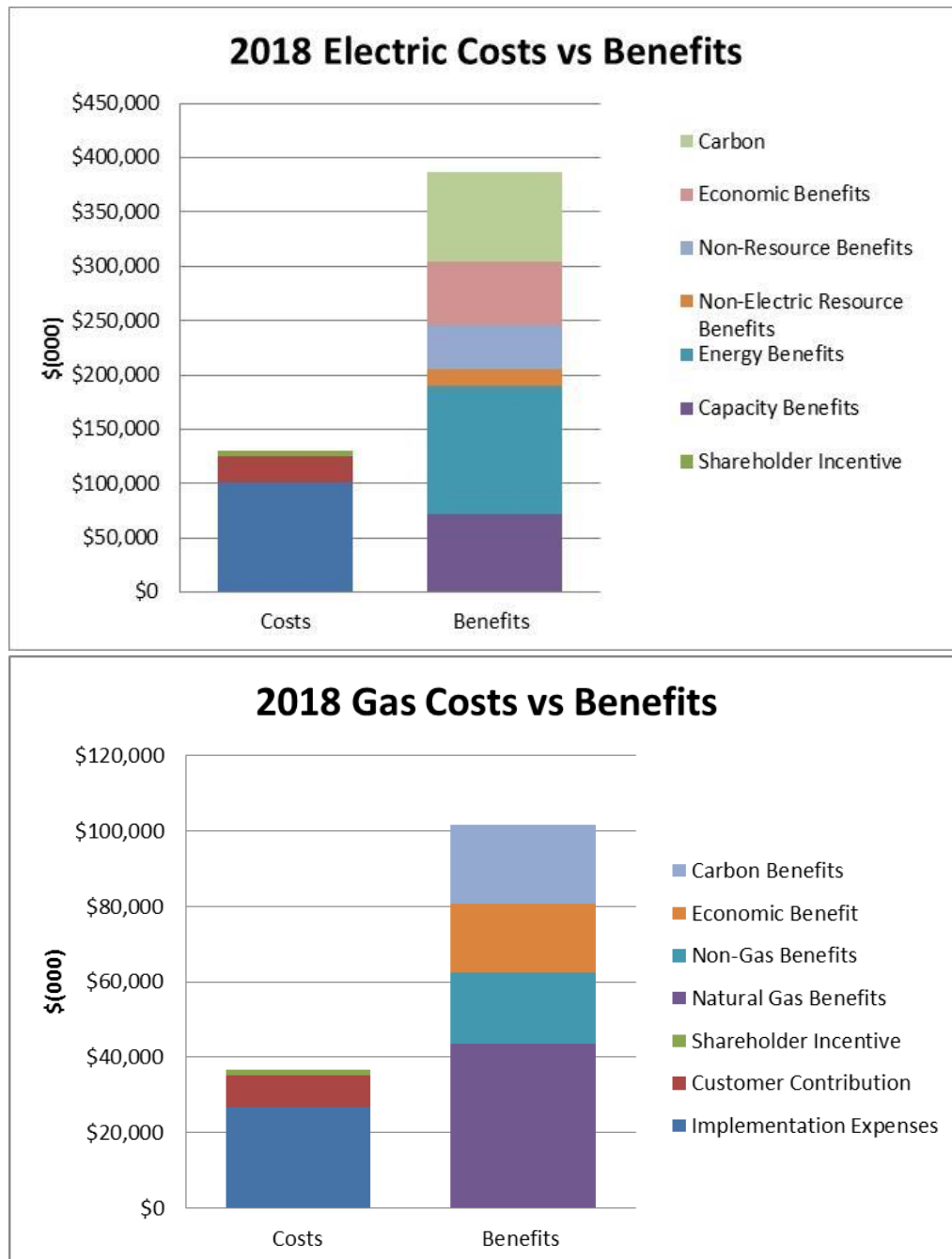
⁸ Least Cost Procurement Standards (Standards) approved at the Open Meeting on April 27, 2017 in Docket 4684.

⁹ Standards, Section 1.4(C).

over the lifetime of the investment, and natural gas efficiency investments will create \$2.77 in benefits over the lifetime of the investments.

The Standards further require the Company to show a comparison between the RI Test and the Total Resource Cost (TRC) Test. The overall electric EE Program TRC Test ratio is 1.90, and the overall natural gas EE Program TRC Test ratio is 1.71. The TRC Test comparison is included in Table E-5A and G-5A.

Graph 1. 2018 Annual Plan Total Benefits and Total Costs (RI Test)



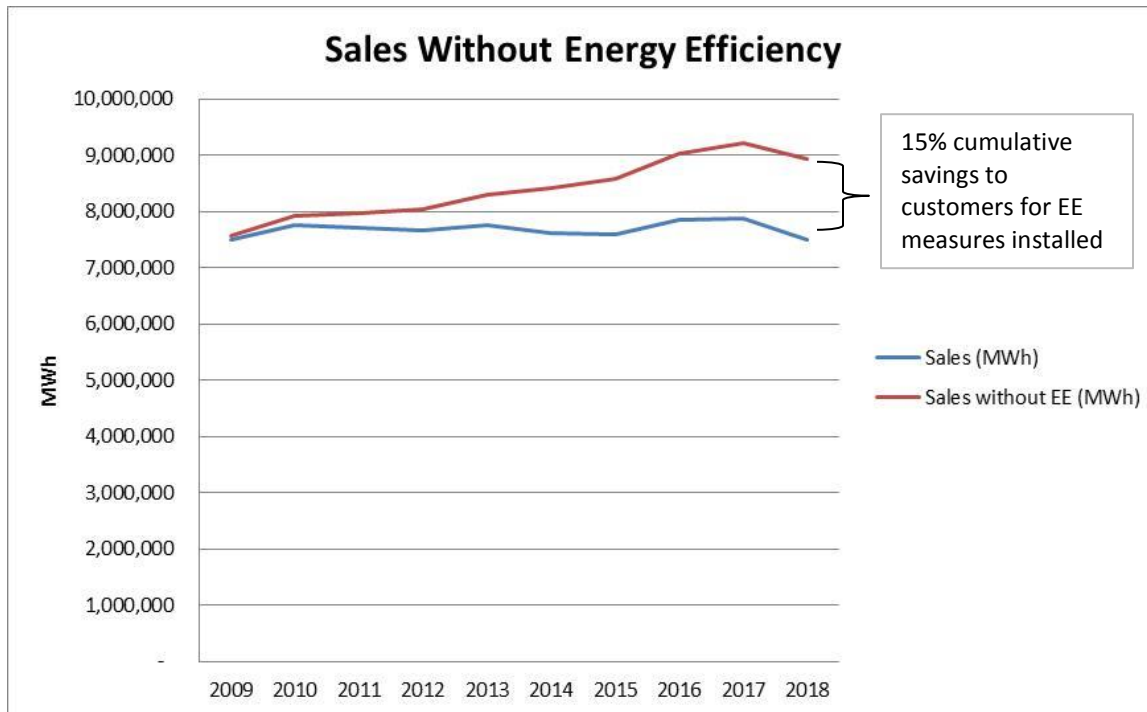
In addition to satisfying the primary statutory requirement of cost-effectiveness, the Plan satisfies the additional requirement that the cost of energy efficiency procured be less expensive than the cost of supply. The cost of electric energy efficiency is 6.97¢ per lifetime kWh saved, which is 3.70¢ less than the cost of supply, 10.67¢ per kWh.¹⁰ The cost of natural gas energy efficiency is \$7.42 per lifetime MMBTU saved, which is \$0.04 less than the cost of supply for residential heating customers, \$7.46 per MMBTU.¹¹

Over time, the benefits of procuring energy efficiency at a cost less than supply accrue to customers. Graph 3 shows the cumulative energy savings for just those energy efficiency measures installed since 2009 (the first year of programs implemented under Least Cost Procurement). Because the average measure life of energy efficiency measures is 10 years, the Company expects that measures installed in 2009 are still providing the same level of energy savings through 2018. This is true for those measures installed in and after 2009. The only exception is the savings from Home Energy Reports. This program only has a one-year measure life so those savings are only counted in one year. In Graph 3 below, the area between the blue and red lines represents the cumulative annual MWh savings for measures installed since 2009. All these MWh savings were obtained at a cost lower than the cost of supply. From 2009 to projected year-end 2017, electric energy efficiency programs will have saved a cumulative 5,701,588 MWh. Without these energy savings, Rhode Island customers would have had to purchase 15% more energy at a higher cost.

¹⁰ The electric supply cost is based on the Residential Standard Offer Charge effective from October 1, 2016 until March 31, 2017. Please see: http://www9.nationalgridus.com/narragansett/non_html/SOS_Rates_Table_Residential.pdf. It is levelized over the average lifetime of all measures in the plan. Additionally, the Commercial Customer Group fixed price option for October 1, 2016 until March 31, 2017 is a levelized cost of 10.48¢. Please see: http://www9.nationalgridus.com/narragansett/non_html/SOS_Rates_Table_Commercial.pdf

¹¹ The natural gas supply cost is based on the residential heating gas avoided cost calculation from the Avoided Energy Supply Costs in New England: 2015 Report Update for year 2017, and is levelized over the average lifetime of all measures in the plan. The C&I gas charge is also a levelized cost of \$6.69.

Graph 2: Cumulative Impacts of Energy Efficiency



This cost-effective 2018 Annual Plan includes an investment of \$105.3 million for electric energy efficiency implementation in 2018. If approved, this will be funded by the existing energy efficiency program charge of \$0.01124 per kWh, and additional funding sources including ISO-NE Forward Capacity Market (FCM) proceeds. Pursuant to R.I. Gen. Laws § 39-1-27.7(c)(5), a fully reconciling mechanism of negative \$0.00001 per kWh is needed to fully fund the cost-effective electric energy efficiency programs for 2018.

This Plan also includes a \$27.9 million investment in cost-effective natural gas energy efficiency implementation. If approved, this investment will be funded by the existing energy efficiency program charge of \$0.888 per dekatherm for residential customers and \$0.726 per dekatherm for non-residential customers. Pursuant to R.I. Gen. Laws § 39-1-27.7(c)(5), a fully reconciling mechanism of \$0.010 per dekatherm for residential customers and negative \$0.005 per dekatherm for non-residential customers will be needed to fully fund the cost-effective natural gas energy efficiency programs for 2018.

The savings that customers will realize from participating in the energy efficiency programs will offset the energy efficiency program charge. Bill impacts analyses of both the gas and electric programs shows that the average participant will save more than they invest through the energy efficiency program charge. Non-participants benefit from power market effects and avoided investment in infrastructure due to energy efficiency that are also reflected in rates. When the impacts on both participants and

non-participants are averaged, the analysis shows that the average Rhode Island customer sees bill savings from energy efficiency. One of National Grid’s objectives is to reach as many customers as possible to increase the participant and overall bill savings in Rhode Island.

2. Annual Plan Compared to Three-Year Plan for Year 2018

The ambitious energy and cost savings for the 2018 program year are consistent with the objectives and requirements of Least Cost Procurement and exceed the savings targets proposed in the Three-Year Plan in Docket 4684. The electric savings goal proposed for 2018 is 190,468 MWh, or 2.54% of the referenced 2015 load. The natural gas savings goal for 2018 is 414,795 MMBtu, or 1.01% of 2015 natural gas load. Proposing higher electric and gas goals in the Annual Plan, compared to the Three-Year Plan, demonstrates National Grid’s continued commitment to a data-driven process whereby goals will be set at the most aggressive and nation-leading levels that are achievable in practice, a principle described in the Three-Year Plan.

The following table compares the 2018 Annual Plan components to the 2018-2020 Three-Year Plan.

Table 2: Annual Plan compared to Three-Year Plan for Year 2018

Electric Programs	2018 3 Year Plan	2018 Annual Plan	% Change
Annual MWh Savings	179,968	190,468	6%
Lifetime MWh Savings	1,712,064	1,789,663	4%
Annual Peak kW Savings	29,639	30,622	3%
Total Benefits	\$ 373,004,694	\$ 386,959,550	4%
Total Spending	\$ 103,047,860	\$ 105,272,064	2%
Benefit Cost Ratio (RI Test)	2.93	2.98	2%
Cost/Lifetime kWh	\$ 0.071	\$ 0.070	-2%
EE Program Charge per kWh	\$ 0.01090	\$ 0.01123	3%

Gas Programs	2018 3 Year Plan	2018 Annual Plan	% Change
Annual MMBtu Savings	396,113	414,795	5%
Lifetime MMBtu Savings	4,552,056	4,756,052	4%
Cost/Lifetime MMBtu	\$ 8.17	\$ 7.42	-10%
Total Benefits	\$ 97,702,163	\$ 101,491,385	4%
Total Spending	\$ 29,399,869	\$ 27,950,093	-5%
Benefit Cost Ratio (RI Test)	2.53	2.77	9%
C&I EE Program Charge per Dth	\$ 0.721	\$ 0.721	0%
Residential EE Program Charge per Dth	\$ 0.882	\$ 0.898	2%

Each year, the Company creates an Annual Plan that attempts to meet the savings targets set out in the Three-Year Plan while meeting the requirements of the law that the Plan must be cost-effective and less than the cost of supply. However, as noted in previous PUC dockets, Annual Plans may contain budgets and EE Program Charges that vary from those contained in the Three-Year Plan.¹² The Three-Year Plan creates savings targets and illustrative budgets to guide the Company in the development and long-term strategy of its Annual Plans over the upcoming three-year period. After the Company files the Three-Year Plan, there are numerous factors that may lead to changes in funding needs and savings availability. These include: updates to the avoided cost study, electric and gas sales, available fund balance, Regional Greenhouse Gas Inc. (RGGI) auction revenue, ISO-New England’s (ISO-NE) Forward Capacity Market (FCM) auction proceeds, evaluation results, market conditions, customer preferences, and changes in legislation.

For the 2018 Annual Plan, the electric and natural gas energy efficiency portfolio savings, benefits, budgets, and EE Program Charges differ compared to the illustration presented in the Three-Year Plan. There are several factors contributing to this difference.

Annual and lifetime electric and gas savings are higher in the Annual Plan than in the Three-Year Plan. This is due to the completion of several evaluations after the Three-Year Plan was filed. The evaluations include C&I Custom Realization Rate studies, C&I Free Ridership and Spillover Study, and the C&I Upstream Lighting Study. Together, these studies increased the Annual MWh savings from 179,968 to 190,468 and the Annual MMBtu savings from 396,113 to 414,795.

¹² PUC Order No. 21781 approving National Grid's September 2, 2014 Energy Efficiency and System Reliability Procurement Plan for three-year period 2015-2017. Written Order issued 12/19/14.

Lifetime benefits from both electric and gas savings also increased as compared to the Three-Year Plan. This is due to the increased energy savings described above. Electric benefits increased from \$373 million to \$387 million and gas benefits increased from \$97.7 million to \$101.5 million.

The EE Program Charge for the electric and gas sectors varies from the Three-Year Plan to the Annual Plan for several reasons, including updates to the sales projections, fund balance projections, and program budgets, which are all factors in the calculation of the charge.

The electric EE Program Charge increased slightly from \$0.01090 to \$0.01123 due to several factors.

- The updated electric sales projections are _ (available for final draft) than the version used in the Three-Year Plan by xx kWh.
- The projected FCM Payments from ISO-NE were updated and increased from \$24.7 million to \$26.1 million.
- The electric fund balance was updated with revised year-end spend projections, and an additional month of actual revenues and expenses. It is now \$1.8 million lower than what was included in Three-Year Plan.
- The electric budget was illustrated in the Three-Year Plan at a high-level and has been refined for the Annual Plan. It changes from \$103.0 million to \$105.3 million.

[First draft note: If there are budget cuts in the final draft due to legislation, text will be inserted here explaining the difference in the budget from 3YP to this plan, the rationale and the impact on savings, benefits, jobs, and the EE Customer Charge for both gas and electric programs]

The gas EE Program Charge increased from \$0.882 to \$0.898 per Dth for residential customers and remains at \$0.721 for C&I customers. While the gas sales projection remains the same as in the Three-Year Plan and the gas budget decreased by \$1.4 million, the updated gas fund balance is lower by \$1.9 million which places upwards pressure on the charge.

3. Strategies to Achieve Goals

The primary goal of the 2018 Annual Plan is to create economic value and cost savings for Rhode Island through energy efficiency. The Plan achieves this goal by implementing the following key priorities, introduced in Docket 4684:

1. **Customers** - Deliver comprehensive services encompassing all market segments and customers. Such services will enable customers to control their energy use, reduce their bills, and help support their financial well-being.
2. **Least Cost** - Deliver energy efficiency services as cost-effectively as possible through optimizing finance and promoting upstream initiatives. Continuing to deliver cost-effective energy savings under Least Cost Procurement will create cost savings to all customers, while creating economic benefits that create and maintain local jobs and businesses.
3. **Environment** - Provide solutions that maximize greenhouse gas emission reductions and contribute to Rhode Island's clean energy policy goals, including the Resilient Rhode Island Act.
4. **Future** - Innovate to capture savings from new technologies and strategies to position energy efficiency programs for the future including the integration of energy efficiency with demand response, renewable energy, and smart grid technologies. This includes incorporating outcomes from the Rhode Island Power Sector Transformation Initiative and Docket 4600.

The application of these priorities is more fully described in the detailed program and marketing descriptions in Attachments 1 and 2.

4. Delivering 2018 Goals

National Grid will build on its almost thirty years of experience in order to deliver the energy and cost savings goals in this Plan.¹³

a. Residential Programs

In 2018, the Parties agree to continue the residential programs offered in 2017. The Parties also agree to offer new programs and demonstrate the development of new technologies for potential inclusion in programs in future years. The programs are summarized below and described in further detail in Attachment 1. The description of each program includes proposed changes from 2017 that are intended to help meet the savings targets for 2018.

¹³ Throughout the program year, the Parties may consider additional enhancements beyond those identified in this Plan as more information becomes available to support an informed review of those potential changes. As part of this process of identifying additional enhancements, in addition to continuing to meet with the Collaborative, the Company will continue its work sessions with the EERMC's consultants.

Table 3. Residential Energy Efficiency Programs	
<p>EnergyWise Program (Funded by Electric and Gas)</p>	<p>EnergyWise offers single-family customers home energy assessments and information on their actual energy usage. Participants in this program receive recommendations and technical assistance as well as financial incentives to replace inefficient lighting fixtures, appliances, thermostats, and insulation levels with models that are more energy efficient. The program addresses base load electric use and heating and cooling energy loads in all residential buildings. The program recommends efficient products that are delivered through National Grid’s various programs as well as solar opportunities provided through statewide solar initiatives. The program will continue to deliver finance opportunities to customers such as the Heat Loan and Property Assessed Clean Energy (PACE) when it begins in the latter half of 2017. In 2018, the Company is interested in establishing a \$500,000 revolving loan opportunity for the Capital Loan Fund to support more EnergyWise customers.</p>
<p>Multifamily Programs Income Eligible, Residential and Commercial sectors (Funded by Electric and Gas)</p>	<p>Comprehensive energy services for multifamily customers include energy assessments, incentives for heating and domestic hot water systems, cooling equipment, lighting, and appliances. Coordinated services will be offered for all types of multifamily properties. An approach tailored for multifamily properties designates a primary point-of-contact to manage and coordinate services offered through the Company’s existing portfolio, including EnergyWise, C&I Retrofit, Residential New Construction, Income Eligible, and the ENERGY STAR® HVAC programs. In 2018, the Company will use a number of avenues to meet the needs of its customers including: heat pumps and smart technologies, a customer centric recruiting process, building benchmarking data, and a continued focus on finance opportunities</p>
<p>Income Eligible Single Family (Funded by Electric and Gas)</p>	<p>Income Eligible Services, also known as the Single Family Low Income Services, are delivered by local Community Action Program (CAP) agencies with oversight provided by a Lead Industry Partner. Three levels of home energy assessments will be offered: (1) lighting and appliance focus, (2) heating and weatherization focus, and (3) comprehensive focus. Customers who qualify for LIHEAP are eligible and receive all services and equipment upgrades at no cost. In 2018, the Company will collaborate with the Rhode Island Department of Human Services (RI DHS) to leverage job development and explore the possibility of new program offerings like smart home technologies, Wi-Fi thermostats, and mini splits.</p>

<p>Residential New Construction (Funded by Electric and Gas)</p>	<p>The program promotes the construction of high-performing energy efficient single family, multifamily, and low income homes, as well as the education of builders, tradesmen, designers, and code officials. In 2018, the Company will adopt a new User Defined Reference Home (UDRH) baseline that will reflect the current energy efficiency of new construction single-family homes in Rhode Island.</p>
<p>Residential Home Energy Report Program (Funded by Electric and Gas)</p>	<p>The Home Energy Reports (HER) program is the Company's key program to achieve energy savings through changes in customer behavior by presenting personalized energy usage data and encouraging desired behaviors to reduce energy consumption. The Company will continue to deliver Home Energy Reports that offer enhanced feedback tools to inspire customers to take actions that reduce their energy consumption and also increase their participation in other energy efficiency programs.</p>
<p>ENERGY STAR® Lighting (Funded by Electric Only)</p>	<p>This is an initiative implemented jointly with other regional utilities. It provides discounts to customers for the purchase of ENERGY STAR® lighting through instant rebates, special promotions at retail stores, mail-order catalog, pop-up retailer, and social marketing campaigns. In 2018, there will be additional emphasis on providing incentives to hard-to-reach communities where the traditional retail channels may not have as large of a presence as discount retailers. In addition, the Company will continue to use online flash sales in 2018.</p>
<p>Residential Consumer Products (Funded by Electric Only)</p>	<p>The program is run in collaboration with other regional utilities to promote the purchase of high efficiency household appliances, including kitchen appliances and electronics. These appliances carry an ENERGY STAR® label. The program also offers refrigerator recycling, which promotes more efficient refrigerators while removing non-efficient units from the market. In 2018, the program will support dehumidifiers, dryers, refrigerator and freezer recycling, room air cleaners, room air conditioners, advanced power strips, and efficient shower heads.</p>
<p>ENERGY STAR® HVAC Program (Funded by Electric and Gas)</p>	<p>This program promotes the installation of high efficiency central air conditioners for electric customers and new energy efficient natural gas related equipment including boilers, furnaces, water heating equipment, thermostats, boiler reset controls, and furnaces equipped with high efficiency fans. The program provides training of contractors in installation, testing of the high efficiency systems, tiered rebates for new ENERGY STAR® systems, and incentives for checking new and existing systems. The program also includes oil and propane heating equipment rebates.</p>

<p>Community Based Initiatives (C&I and Residential, Funded by Electric and Gas)</p>	<p>The initiative is designed to leverage trusted community partnerships and develop targeted marketing strategies in order to promote all energy efficiency programs, residential and commercial, in specific targeted communities or businesses.</p>
<p>Residential Demonstration and Research and Development (Funded by Electric and Gas)</p>	<p>The demonstrations test innovative technologies for saving both gas and electricity. In 2018, innovative technologies which are planned to be tested include: energy storage, emerging lighting controls, energy monitoring, zero energy homes, and other new technologies.</p>
<p>Education Programs (Funded by Electric Only)</p>	<p>The Company promotes energy education to private and public schools and youth groups through the National Energy Education Development (N.E.E.D) Program. This program provides curriculum materials and training to students and teachers in grades K-12.</p>

b. Residential Income Eligible Programs

The Company and the Collaborative want customers who have a high energy burden and/or difficulty paying their electric bills to participate in, and benefit from, the Company’s energy efficiency programs, especially in these difficult economic times. For that reason, this segment of the customer base is designated as a unique sector, and funding for this sector will be subsidized by both non-low-income residential customers and commercial and industrial customers using 12% of total implementation funding for the electric programs, and 24% for natural gas programs.

In addition to the Income Eligible Single Family and Multifamily programs, the Residential New Construction Program also works with housing authorities and developers to build energy-efficient multifamily properties. Additional details about the services offered to economically disadvantaged customers are described in the residential programs in Attachment 1.

c. Commercial and Industrial Programs

The Parties agree to continue in 2018 the commercial and industrial programs offered in 2017, and pilot the development of new technologies for potential inclusion in programs in future years. These programs are summarized in Table 4 below.

Table 4. Commercial and Industrial Energy Efficiency Programs	
<p>Large Commercial New Construction (Funded by Electric and Gas)</p>	<p>Promotes energy efficient design and construction practices in new and renovated commercial, industrial, and institutional buildings. The program promotes and incentivizes the installation of high efficiency equipment in existing facilities during building remodeling and at the time of equipment failure and replacement. Large Commercial New Construction is known as a lost opportunities program because a customer who does not install energy efficient equipment at the time of new construction or equipment replacement will likely never make the investment for that equipment or will make the investment at a much greater cost at a later time. The program provides both technical and design assistance to help customers identify efficiency opportunities in their new building designs and to help them refine their designs to pursue these opportunities. Incentives are also offered to owner’s design teams for their time and effort to meet program requirements. Operations Verification or quality assurance is also offered to ensure that the equipment and systems operate as intended.</p>
<p>Large Commercial Retrofit (Funded by Electric and Gas)</p>	<p>Large Commercial Retrofit is a comprehensive retrofit program designed to promote the installation of energy efficient equipment such as lighting, motors, and heating, ventilation and air conditioning (HVAC) systems, thermal envelope measures, and custom measures in existing buildings. All commercial, industrial, and institutional customers are eligible to participate. The Company offers technical assistance to customers to help them identify cost-effective efficiency opportunities, and pays incentives to assist in defraying part of the material and labor costs associated with the energy efficient measures.</p>
<p>Small Business Direct Install (Funded by Electric and Gas)</p>	<p>The Small Business Direct Install Program provides direct installation of energy efficient lighting, non-lighting retrofit measures, and gas efficiency measures. Electric customers with average monthly demand of less than 200 kW are eligible to participate. There is no eligibility criterion for gas consumption. The program’s lighting and non-refrigeration measures are delivered through one labor and one product vendor selected through a competitive bidding process. The customer pays 30% of the total cost of a retrofit. This amount is discounted 15% for a lump sum payment or the customer has the option of spreading the payments over a two-year period interest free.</p>

Table 4. Commercial and Industrial Energy Efficiency Programs	
Commercial and Industrial Demonstrations and Research and Development (Funded by Electric and Gas)	The demonstrations test innovative technologies for saving both gas and electricity. In 2018, innovative technologies which are planned to be tested include: zero energy projects, Power over Ethernet (PoE) lighting system, performance based procurement, and indoor agriculture.

Descriptions of these programs are provided in Attachment 2. Included in the description of each program are proposed changes from 2016 that are intended to help meet the savings targets for 2018.

d. Participation

Each program described in this Plan seeks to drive customer participation in order to deliver the benefits of energy efficiency to customers throughout Rhode Island. The Plan is designed to provide equitable access to savings and programs across sectors and market segments. For 2018, the Company will continue to plan and report participation in ‘net’ terms, which takes into account free-ridership and spillover, which are commonly referred to as net-to-gross factors. This method of accounting for participants aligns participation numbers with energy savings numbers, which are already recorded in net terms. This approach provides a more accurate connection between energy savings and those customers who benefit efficiency programs. Planned participation estimates may be found in Attachment 5, Table E-7 and Attachment 6, Table G-7

The following table describes the definitions for how National Grid projects, tracks, and reports participation in the efficiency programs.

Table 5: Participation Definitions

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

Fuel	Sector	Program	Participation Unit
		Multifamily	
	Residential	Energy Star® HVAC	Unique Billing Account
		EnergyWise	Unique Billing Account
		EnergyWise Multifamily	Housing Units
		Home Energy Reports	Adjusted* Unique Billing Account
		Residential New Construction	Housing Units
Electric	Commercial & Industrial	Large Commercial New Construction	Unique Billing Account
		Large Commercial Retrofit	Unique Billing Account + Unique Customer names from Upstream Lighting
		Small Business Direct Install	Unique Billing Account
	Income Eligible Residential	Single Family – Income Eligible Services	Unique Billing Account
		Income Eligible Multifamily	Housing Units
	Residential	Energy Star® HVAC	Unique Billing Account
		EnergyWise	Unique Billing Account
		EnergyWise Multifamily	Housing Units
		Home Energy Reports	Adjusted* Unique Billing Account
		Residential New Construction	Housing Units
		ENERGY STAR® Lighting	Estimated Housing Units
			ENERGY STAR® Products

* For Home Energy Reports, participants will be counted as the number of customers receiving reports (i.e., the “treatment group”) adjusted by the “Read Rate” of 75% from the most recent Customer Engagement Tracker Survey.

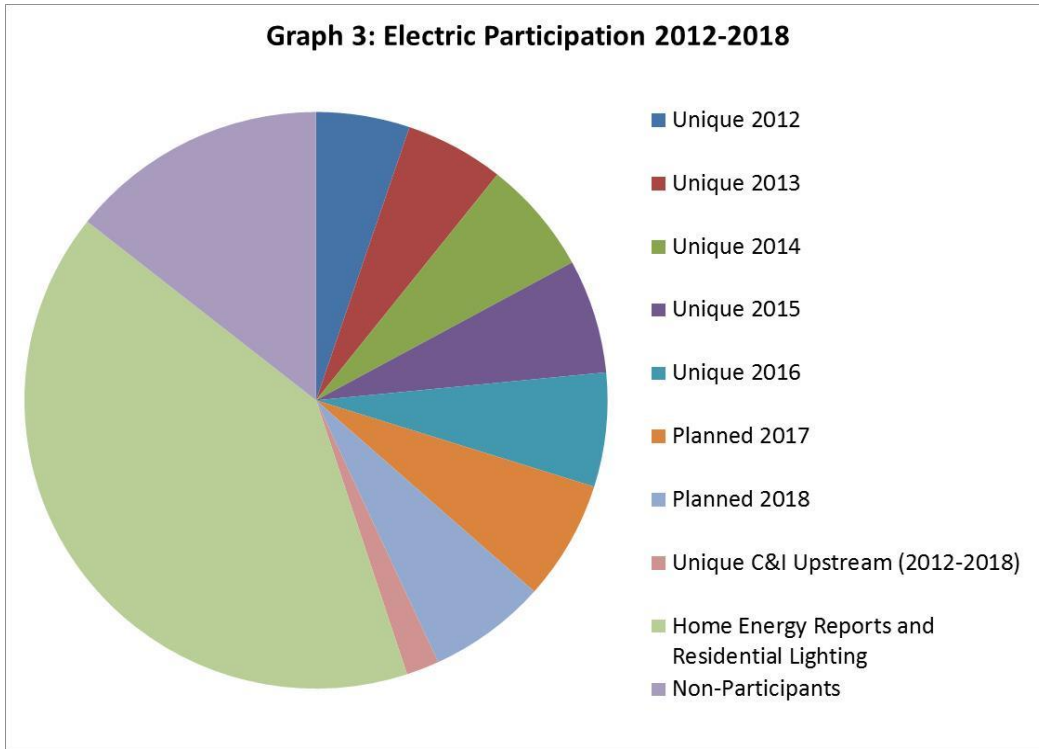
The Company also aims to estimate the number of unique participants for each program. For some programs such as ENERGY STAR® Lighting and ENERGY STAR® HVAC, one measure does not necessarily equal one participant. This is because a customer can purchase more than one measure. Therefore, the Company also considers the previous year’s unique accounts to savings ratio in order to estimate the planned unique

participants in 2018. This method allows for a better estimation of unique participants but can make it more difficult to compare planned numbers across years.

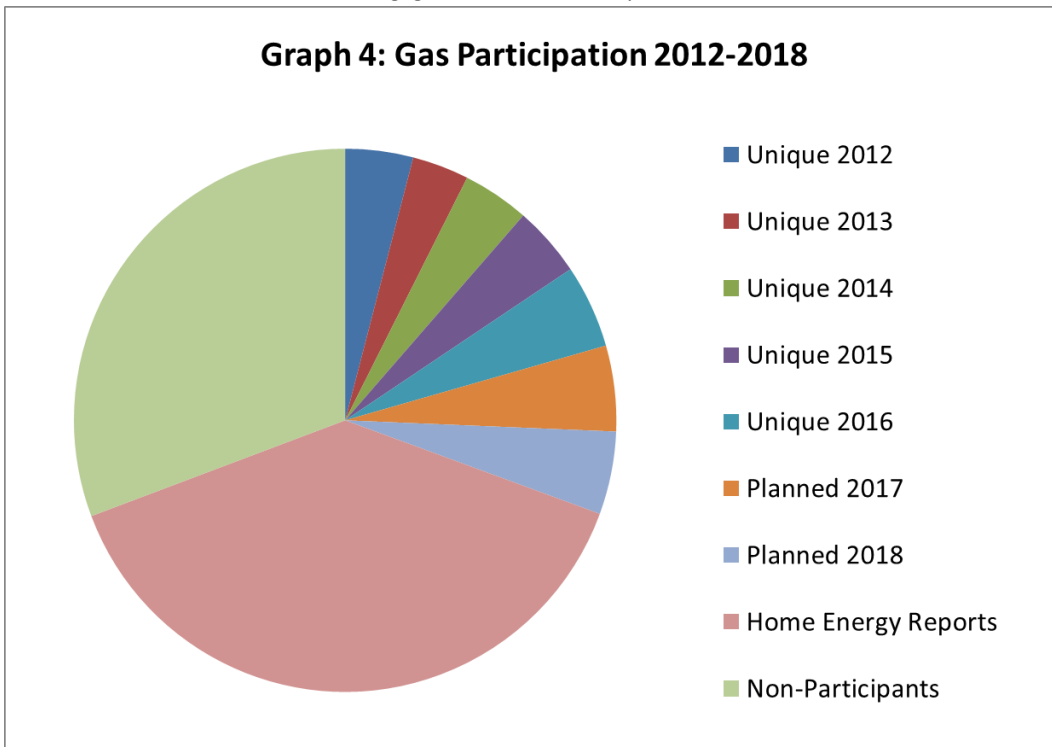
In 2018, the Company will continue to drive participation through two main pathways – targeted programs and broad based programs. Targeted programs include the Company’s retrofit, new construction, product rebate, and direct install initiatives. These programs serve to drive deeper savings to targeted customer segments and offer a wide array of energy efficiency measures. The Company also reaches broad participation through its upstream commercial and residential lighting programs, and Home Energy Reports. These broader based programs provide value by reaching a wide and diverse set of customers, helping to provide more customers with access to energy savings, as well as acting as a gateway to drive participation in other National Grid EE programs.

A recent analysis of unique participation since 2012 is detailed in Graphs 3 and 4 below. From 2012-2016 the Company served approximately 30% of its electric customers and 21% of its gas customers from its targeted based programs at least once (these graphs have removed duplicate participation across programs and years 2012-2016). When Home Energy Reports and C&I upstream lighting participation is added to these counts, a total of 82% of electric customers and 69% of gas customers participated over this period. Home Energy Reports are included here because the program offers significant savings and benefits to customers as well as drives customers to participate in other energy efficiency programs.¹⁴ Planned 2017 and 2018 participants are also included in these graphs for illustrative purposes.

¹⁴ The full participation analysis can be found in Docket 4580 - National Grid Electric and Gas Energy Efficiency Programs 2016 Year-End Report, filed May 1, 2017.



*2017 and 2018 planned values are preliminary until the year-end reports are finalized and duplicate participation across programs and years can be applied. Home Energy Reports participation is adjusted by the "Read Rate" of 75% from the most recent Customer Engagement Tracker Surveys.



*2017 and 2018 planned values are preliminary until the year-end reports are finalized and duplicate participation across programs and years can be applied. Home Energy Reports participation is adjusted by the "Read Rate" of 75% from the most recent Customer Engagement Tracker Surveys.

In 2018, the Company will work to reach even more unique customers, or those that have never participated in its EE programs, and customers that have previously participated that can still benefit from the installation of additional EE measures. Many of the unique participants captured above are still eligible for additional programs, for example a participant in the EnergyWise Single Family program may participate in the HVAC program.

In an effort to increase participation in its EE programs, the Company contracted with a third party to assess customer participation in its residential and small business programs.¹⁵ The study characterized customers that participate in energy efficiency programs and identified non-participants that are likely to participate in each of the programs. The study also identified customer segments that are underrepresented and derived targeting strategies and recommendations that may increase participation rates. The Company will use the results of this study to try to reach customers that have not yet participated. The study will be submitted as part of the filing of this Plan.

To provide more detail on trends in participation, the Company will again provide a detailed analysis in its 2017 Year-End Report showing additive and cumulative portfolio participation.

e. Equity

The 2018 Annual Plan is designed to reach as many customers as possible and to provide energy efficiency services equitably across all customer classes. Since each customer pays into the energy efficiency programs, the Company designs programs to allow for all customers to participate and receive benefits. All customers, regardless of participation, benefit from energy efficiency financially because of lower future costs of energy – this is demonstrated through the bill impact analysis and described in detail in other sections of this Plan.

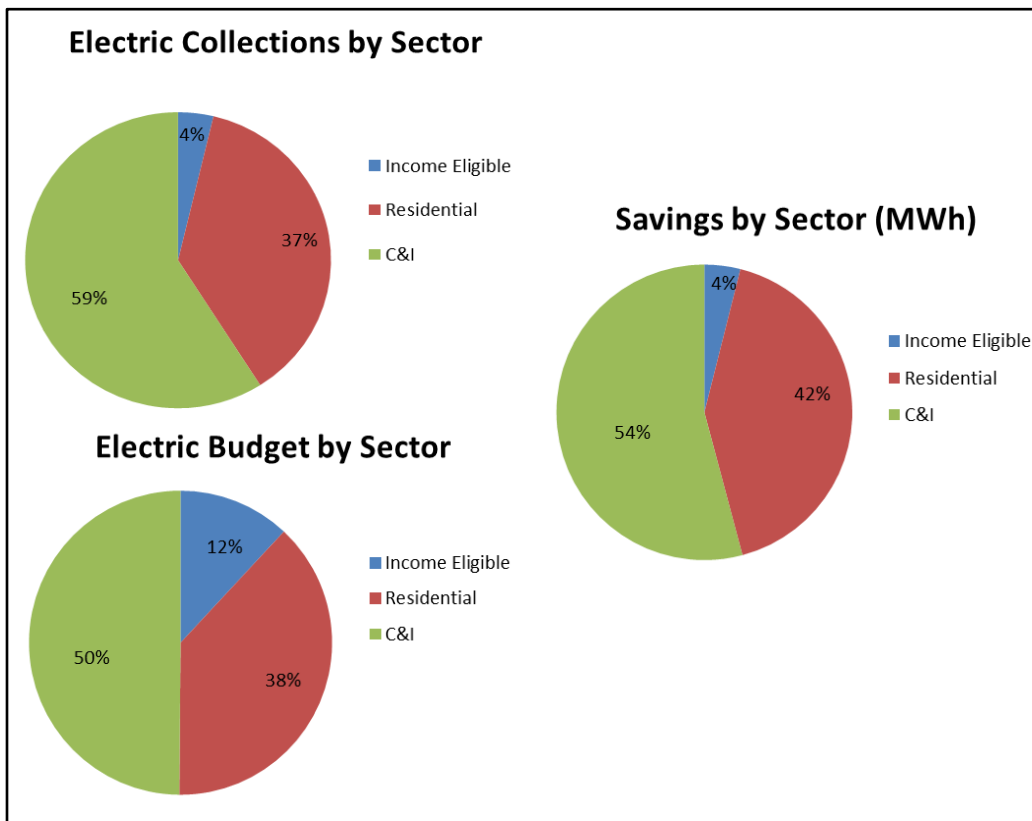
The pie charts below are a graphical representation of Attachments 5 and 6, Tables E-1 and G-1. The Company first provided these charts at the 2017 Annual Plan hearing and has included them again in this Plan to better display the difference between customer class rates, budgets, and savings.

As shown in Graph 5, there is parity between the collections by a customer class and its resulting budget and savings in the electric portfolio. The only exception is the income-

¹⁵ The programs in this study include EnergyWise Single Family, Income-Eligible Single Family, EnergyWise Multifamily, Income-Eligible Multifamily, Residential New Construction and Small Business Direct Install.

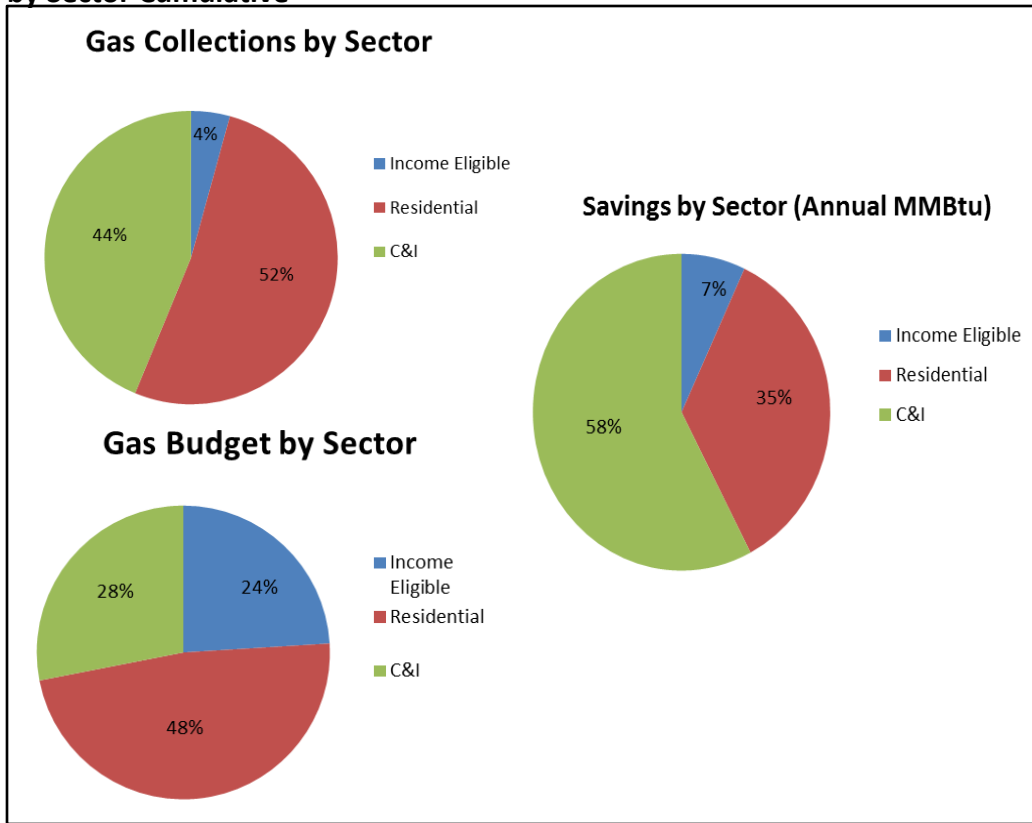
eligible sector where there is an established agreement amongst the Parties that the residential and C&I customer classes use part of its collections to help cover the income-eligible sector funding needs. The income-eligible budget is higher compared to its savings due to several factors: incentives are 100% of the cost, the programs are more expensive because they are delivered in-home (compared to at retail sites or via rebates) which requires more labor and management, and the programs also have fewer economies of scale (compared to C&I).

Graph 5: Graphical representation of Attachment 5 Table E-1 and total Electric Savings by Sector Cumulative



For the gas portfolio, there is also parity between the collections by a customer class and the resulting savings. There is less parity between budgets and savings. This is due to several reasonable factors. First, the EE Program Charge varies by customer segment, which changes collections. Second, C&I projects tend to create more savings per dollar. That is due to larger economies of scale, larger projects, different delivery channels that require less labor or management and are more cost-effective, evaluation factors such as free-ridership and spillover, and different customer opportunities.

Graph 6: Graphical representation of Attachment 6 Table G-1 and total Electric Savings by Sector Cumulative



f. Creating and Sustaining Energy Jobs

Delivery of energy efficiency savings is a large effort, involving a large number of people. One of the most evident economic benefits that energy efficiency creates in RI is the number of jobs created or sustained in the energy sector. Each year, National Grid reports on the number of jobs supported by its RI energy efficiency programs. The report is included in National Grid’s Year-End Report, which is submitted to the PUC, and available on the Council’s website. The 2016 report found that the energy efficiency programs supported 702 full-time equivalent (FTE) workers across 923 different firms, more than 82% of which were located in Rhode Island.

State policies promoting energy efficiency have enabled a rapid growth in energy efficiency jobs across job functions and skill levels throughout the state, especially among small businesses. Together with partners, National Grid will explore opportunities for engaging local businesses and employers in a conversation about economic development, growth opportunities, and policies that will grow and sustain local jobs in the future. The opportunities will take shape in 2018 and may include creating a forum or working group for business to come together.

Additionally, National Grid has conducted a number of workforce development activities throughout the state that it will continue in 2018. Examples of the Company's activities include the Codes Initiative, which offers continuing education credits related to energy codes for design and construction professionals. In order to help our contractors develop the skills needed to effectively deliver our programs, the Company has also conducted the following trainings: code training for residential new construction; in-field technical training for residential new construction; weatherization training for our Community Action Partners and their weatherization staff; and technical training for HVAC contractors. Additionally, the Company offers professional certifications for facility managers through its Building Operator Certification course, which teaches energy efficient techniques for optimizing energy management. National Grid also sponsors the Rhode Island Home Show, and in 2018, the show will promote job and workforce development.

g. System Reliability Procurement

In a contemporaneous filing, the Company is submitting its System Reliability Procurement (SRP) Annual Report for 2018 for the PUC's review and consideration. The SRP Annual Report describes the strategies, goals, and funding request for SRP in 2018. The cost of the existing programs that may be leveraged is part of the energy efficiency budget illustrated in Attachment 5, Table E-2. However, the estimated incremental cost of targeting and implementing energy efficiency programs in a specific area for System Reliability is provided in several tables in Attachment 5 for informational purposes only. The request for incremental funds for SRP is being made in the separate SRP filing.

5. Funding and Budgets

Funding, budgets, goals, and cost-effectiveness information is provided in Attachment 5 for the proposed electric energy efficiency programs and in Attachment 6 for the proposed natural gas energy efficiency programs.

a. 2018 Annual Plan Funding Sources

The sources of funding and the amounts of the funding proposed for the cost-effective 2018 EE Programs are shown in Table E-1 for electric programs and Table G-1 for natural gas programs.

The sources of funding for the 2018 electric programs are shown in Attachment 5, Table E-1. To collect these funding sources for the 2018 cost-effective programs, the Company proposes: (1) one line on the customers' bill labeled "Energy Efficiency Charge" at

\$0.01123 per kWh, as calculated in Attachment 5, Table E-1 (composed of the existing energy efficiency program charge of \$0.01124 per kWh minus a fully reconciling funding mechanism charge of \$0.00001 per kWh in accordance with the requirements of R.I. Gen. Laws § 39-1-27.7); (2) projected Large C&I commitments from 2017, if any; (3) projected carryover of the year-end 2017 fund balance, as applicable, including interest at the rate in effect for customer deposits; (4) forecast revenue generated by ISO-NE's Forward Capacity Market (FCM); and (5) anticipated revenues generated through RGGI permit auctions. Funding sources do not include revolving loan funds.

The sources of funding for the 2018 natural gas programs are shown in Attachment 6, Table G-1. The Company proposes that the 2018 budget should be funded from the following sources: (1) one line on the customers' bill labeled "Energy Efficiency Charge" at \$0.898 per dekatherm for residential customers and \$0.721 per dekatherm for non-residential customers as calculated in Attachment 6, Table G-1 (composed of the existing energy efficiency program charge of \$0.888 per dekatherm plus a fully reconciling funding mechanism of \$0.010 per dekatherm for residential customers and the existing energy efficiency program charge of \$0.726 per dekatherm minus a fully reconciling funding mechanism of \$0.005 for non-residential customers in accordance with the requirements of R.I. Gen. Laws § 39-1-27.7); (2) projected carryovers or under-recoveries of the year-end 2017 fund balance, including interest at the rate in effect for customer deposits; and (3) low income weatherization funding in base rates. Funding sources do not include revolving loan funds.

The 2018 budgets for cost-effective electric and natural gas efficiency investments are dependent on a number of projections that inform the amount of funding, including projections of kWh or therm sales of electricity and natural gas, year-end 2017 large C&I program commitments, capacity payments received from ISO-NE (electric only), and year-end 2017 spending. The Company estimates that the electric projected fund balance at year-end 2017 will be \$8.9 million, as shown in Attachment 5, Table E-1; the gas fund balance at year-end 2017 is estimated to be negative \$2.3 million, as shown in Attachment 6, Table G-1.

Other considerations regarding funding sources include:

i. ISO-NE Capacity Market Revenue

Consistent with the PUC's Standards, the 2018 Annual Plan, and PUC decisions regarding Annual Plans since 2008, the Company and the Parties agree that kW-demand savings achieved via the electric energy efficiency and Combined Heat and Power programs continue to participate in the FCM as Passive On-Peak Demand Resources. The Company will manage and direct the revenues by bidding the demand savings attributed to

energy efficiency measures and Combined Heat and Power facilities in the FCM and managing the associated capacity resources to maximize the resulting FCM revenue. The revenues from measures installed through this Plan, as well as all previous Plans, will continue to be reinvested in energy savings for the life of the measure.

The Parties fully agree that the Company should recover all prudently incurred FCM expenses from ISO-NE capacity-payment revenue generated by the demand savings from efficiency programs represented by the Company. The Company expects that capacity payments received from the ISO-NE will exceed its administrative and Measurement and Verification (M&V) compliance costs of participation in the FCM, and will result in additional funds being made available to fund efficiency programs for customers. If these participation costs exceed the capacity payments, the Parties agree that the Company may recover its prudently incurred costs from the energy efficiency program fund. The Parties reserve the right to examine the actions and expenses of the Company to ensure that only prudently incurred expenses are deducted from ISO-NE capacity payments or the energy efficiency program fund.

In addition, as part of the FCM, all qualified auction participants are required to post Financial Assurance to provide security that the promised resource will deliver the promised MW at the promised time. If, as a result of circumstances beyond the Company's control,¹⁶ the Company is unable to provide all or a portion of the megawatts of capacity proposed in its qualification packages and capacity auction bids, some or all of the financial assurance monies would be forfeited.

ii. Exceptions to the Natural Gas Energy Efficiency Program Charge

All natural gas used for distributed generation projects approved since 2014 will be subject to the gas energy efficiency surcharge.¹⁷

The 2006 Act allows the PUC to exempt natural gas used for manufacturing processes from the energy efficiency surcharge where the customer has established a self-directed program to invest in and achieve best effective energy efficiency in accordance with a plan approved by the PUC and subject to periodic review and approval by the PUC.

¹⁶ Such circumstances may include legislative action to alter the EE Program Charge or discontinue the Company's authority to implement the energy efficiency programs underlying the Qualifications Package or a PUC decision limiting the Company's role in bidding the demand savings acquired through program efforts into the FCM.

¹⁷ Natural gas used for distributed generation (excluding natural gas used by emergency generators) for distributed generation projects approved under the energy efficiency programs in 2013 and prior years - independent of the date those facilities become commercially operable - are not subject to the energy efficiency surcharge when natural gas used for that purpose can be clearly identified through uniquely metered use and when so requested in writing by the customer.

Consistent with prior PUC decisions, the Parties have developed recommendations for a process under which a manufacturer may submit its self-directed program and the required annual reports for approval. The Parties recognize that this process may need to be reviewed and modified after the PUC has accumulated sufficient experience with these programs. Any customer that receives this exemption from the natural gas energy efficiency program charge will not be eligible to receive energy efficiency program services.

iii. 2018 Appropriations Legislation

On August 3, 2017, the Governor signed RI H5175, "Relating To Making Appropriations For The Support Of The State For The Fiscal Year Ending June 30, 2018." This legislation includes the following language pertaining to the state budget for fiscal year 2018 on page 36:¹⁸

"SECTION 17. Notwithstanding any provisions of Chapter 2 in Title 39 of the Rhode Island General Laws, the Electric and Gas Distribution Company shall transfer to the State Controller the sum of twelve million and five hundred thousand dollars (\$12,500,000) by June 30, 2018 from the Public Utilities Commission approved 2018 System Reliability and Energy Efficiency and Conservation Procurement Programmatic Budget Plan."

To comply with this law, the Company proposes to transfer \$12.5 million to the RI General Fund after the PUC approves this Plan. The transfer has been accounted for on line 7 on Table E-1.

b. Budgets

The Parties agree that the portfolio of energy efficiency programs and services for 2018 will have an overall budget of approximately \$105.3 million for electric programs and \$27.9 million for natural gas programs. The Parties agree to segment the budget into three sectors: residential income eligible, residential non-income eligible, and commercial and industrial (C&I). Proposed sector and program budgets are provided in Attachment 5, Table E-2 and Attachment 6, Table G-2. The derivations of the spending budget and implementation expenses are illustrated in Attachment 5, Table E-3 and Attachment 6, Table G-3. A comparison of these proposed budgets to the 2018 budget is provided in Attachment 5, Table E-4 and Attachment 6, Table G-4.

¹⁸ Full Bill available at: <https://legiscan.com/RI/text/H5175/id/1636288>

The Parties agree that the Company should make every attempt to spend or commit all the funds available for energy efficiency during the program year, including any increases in the fund balance due to increased sales or other factors. Although this Plan includes a projection of the fund balance expected at year-end 2017 as a funding source (or deficit) to carry into 2018, it is likely that the actual year-end 2017 fund balance will be more or less than that amount. Within 30 days after the filing of the 2017 Year-End Report, the Company will calculate the difference between the actual year-end fund balance and the projected year-end fund balance included in this Plan. If excess funds are available, the Company is permitted to move the excess funds into financing mechanisms for the sectors in which the excess occurs, support possible overspending during the year, reduce the energy efficiency program charge, or carry the excess funds over into the next program year. The Company will include a description and reflect the application of excess funds in quarterly reports, annual reports, and Annual Plans as applicable. If the use of the funds supports overspending of current year program budgets, then, in addition to the above requirements, the Company will follow the provisions for overspending in Section D, below. Use of excess funds for financing mechanisms will not be considered as overspending.

The Parties also agree to review the status of budgets regularly to assess whether they are likely to come to a successful completion. If not, the Parties agree to review the advisability of transferring funds to other programs where the money could be more effectively used. Fund transfer guidelines are presented in Section C, below.

The Company proposes to continue the practice of funding commitments that were established in the 2014 Plan, Docket 4451. Namely, the Company will continue to make commitments for projects with a projected incentive in excess of \$3 million.¹⁹ For all other projects, except those with incentives greater than \$3 million, there would be no commitment budget and the Company will fund and pay all incentives in the year in which they are completed.

c. Transferring of Funds

The Parties will regularly review the amount of funds needed and available for each program (as well as any changes to the overall fund balance, as discussed in Section III.A above) and will transfer monies as needed. Transfers during the program year may occur as follows:

¹⁹ As noted below in Section D, the Company will be required to notify the PUC of all incentive offers in excess of \$3 million. Such notifications will also include a description of how the Company intends to fund the incentive.

- i. Transfers within a Sector: For transfers of less than 20% of the originating program's budget, the Company can transfer funds from one program to another program within the same sector. For transfers of 20% or more of the originating program's budget, the Company can transfer funds from one program to another program within the same sector with prior approval of the Division. Upon seeking such approval from the Division, the Company shall simultaneously notify the EERMC. For all transfers within a sector, the Company will reflect changes in the quarterly report(s) following the transfer and the year-end report.
- ii. Transfers between Sectors. The Company can transfer funds from one sector to another sector with prior approval of the Division. Upon seeking such approval from the Division, the Company shall simultaneously notify the EERMC. If a transfer reduces the originating sector's budget by more than 20% in aggregate over the course of the program year, the transfer will also require PUC approval. For all transfers between sectors, the Company will reflect changes in the quarterly report(s) following the transfer and the year-end report.
- iii. Transfers among residential retrofit programs. The Company can transfer among EnergyWise, EnergyWise Multifamily, Income Eligible Multifamily, and C&I Multifamily (which are in different sectors) programs in order to achieve the overall savings goals of all programs. Although these are listed as separate lines in the program tables, they are essentially one program from an implementation standpoint. For all transfers between residential retrofit programs, the Company will reflect changes in the quarterly report(s) following the transfer and the year-end report.
- iv. For transfers requiring Division and/or EERMC, but not PUC approval, the Parties will inform the PUC of the transfers, both between sectors and within sectors, in a timely fashion.
- v. The Company will not be permitted to adjust its goals or incentive target calculations as a result of any transfers between sector budgets. However, after any budget transfers between sectors are made, the sector spending budgets will be recalculated for the purposes of the shareholder incentive calculation.

d. Budget Management

It is possible that there could be deviations from the planned budget for 2018 that could occur during the program year. The Parties contemplate three scenarios, and have agreed to address them as follows:

1. The Company's expenditures and commitments for 2018 may exceed the total budget by up to 10% so long as a written explanation is provided to the EERMC and the PUC for any deviation and the expenditures and commitments are reasonably consistent with the original 2018 plan.
2. The Company agrees that, during 2018, if the Company anticipates that continued operation of its programs is likely to result in actual expenditures and commitments exceeding the total budget by more than 10%, the Company will seek a vote of approval from the EERMC at its next meeting. Following EERMC action, the Company will be required to obtain approval from the PUC for expenditures in excess of 10% higher than the total budget, which would be collected through reconciliation in the next year's Energy Efficiency Program Charge.
3. If the Company did not anticipate during the program year that its actual expenditures and commitments would exceed the total budget by more than 10%, but actual expenditures and commitments do exceed such threshold, the Company will bear the burden of demonstrating the reasonableness of its actions, including an explanation of why the over-spending occurred and how the expenditures and commitments are reasonably consistent with the original plan. Such demonstration would be required to be part of the 2018 Year-End Report, if not sooner.

In each of these three instances, the PUC retains its traditional ratemaking authority to review the prudence and reasonableness of the Company's actions.

In addition, the Company will file a written notification with the PUC of any energy efficiency incentive offer in excess of \$3 million. The project, the incentive, and any other related proposals will be authorized to proceed after thirty days from the notice filing unless the PUC suspends the filing and/or issues an order within such 30-day period to extend the time for purposes of further review.

If the dollar value of a proposed incentive for a single project is such that it would cause a program to exceed the overall energy efficiency plan budget for the current program year, the Company will follow the provisions related to overspending, per the rules established above.

6. Year End Rate Adjustments

As of 2017, the EE Program Charge (EEP Charge) is approved in the Annual Plan and becomes effective January 1 of the program year, typically for the entire year. The electric Energy Efficiency Program Tariff, R.I.P.U.C. 2114, states “The Company may file to change the EEP Charge at any time should significant over- or under-recoveries occur. Each adjustment of the prices under the Company’s applicable rates shall be in accordance with a notice filed with the Commission setting forth the amount of the increase or decrease and the new EEP Charge.” A similar provision is included in the gas tariff, RIPUC NG-GAS No. 101, Section 1, Schedule C, Sheet 2, section 4.0.

Each year’s electric and gas EEP Charge includes an estimate of fund balance at December 31. Although adjustments to the EEP Charge have been rare in the past, the Company and the Parties propose that adjustments to the EEP Charge be made during the year if there are significant changes in the over- or under-recovery included in the EEP Charge to those presented in the Year End Reports filed with the Commission on May 1. A significant change is defined as \$4 million and would be applicable to the individual electric and gas fund balances. If the Year End Report’s ‘Ending Balance after Incentive’ is different than that included in the EEP Charge in effect for the year in which the Year End Report is filed by more than \$4 million, then the Year-End Report may include a proposed increase or decrease to the EEP Charge, the amount of the increase or decrease, and the bill impact of the proposed increase or decrease. The EEP Charge, subject to PUC review and approval, would take effect July 1 through the end of the current plan year for electric customers and July 1 through the end of the current plan year for gas customers.

If the PUC determines that the implementation of system reliability and energy efficiency and conservation procurement has caused or is likely to cause under or over-recovery of overhead and fixed costs of the company implementing said procurement, the commission may establish a mandatory rate adjustment clause for the Company in order to provide for full recovery of reasonable and prudent overhead and fixed costs.

7. Goals and Cost-Effectiveness

The Company has projected cost-effectiveness for the proposed 2018 programs using the RI Test. The use of the RI Test was required by the Standards, as revised by the EERMC, and approved by the PUC at the Open Meeting on April 27, 2017 in Docket 4684. The RI Test requires that the total lifetime savings from the efficiency measures will exceed the total costs of the measures (i.e., program and customers' costs).

As provided for under the Standards, benefits include primary fuel energy savings (electricity and natural gas), the value of other resource (fuel and water) benefits, price effects, non-embedded greenhouse gas reduction benefits, economic development benefits, and non-energy impacts (NEIs). Costs include all projects costs, as well as program planning and administration, sales, technical assistance and training, and evaluation. To illustrate the detailed components of the RI Test as well as the sources of the values, the Company has provided Attachment 4.

Two key supporting documents for cost effectiveness are the Technical Reference Manual and the Avoided Cost Study. For the 2018 Annual Plan, the Company developed the 2018 Rhode Island Technical Reference Manual (TRM), which documents the savings or savings algorithms and costs for measures proposed to be offered through its programs in 2018. The TRM identifies the sources for the savings estimates: evaluation studies, engineering analyses, and/or other research. This TRM is a public document and was provided to the EERMC and its consultants to support and facilitate the determination of the Plan's cost-effectiveness. It will be available at <https://www.nationalgridus.com/EnergyEfficiencyReports.asp>. The TRM is reviewed and updated annually to reflect changes in technology, baselines, and evaluation results.

The cost-effectiveness analyses of the proposed programs use avoided energy supply costs that were developed by Tabors, Caramanis, and Rudkevich (TCR) as part of the Avoided Cost Study, "Avoided Energy Supply Costs in New England: 2015 Report," that was sponsored by all the electric and gas efficiency program administrators in New England and was designed to be used for cost effectiveness screening in 2016 through 2018.²⁰ In the fall of 2016, TCR prepared a limited update of Appendices B (Avoided Electricity Cost Results), C (Avoided Natural Gas Cost Results), and D (Avoided Electricity Cost Results) in the report for Maine, New Hampshire, Rhode Island, and Vermont based on new estimates for six categories of inputs starting in 2017 that the Company applied

²⁰ The report is available online at: <http://ma-eeac.org/wordpress/wp-content/uploads/2015-Regional-Avoided-Cost-Study-Report1.pdf>. This study forecasts avoided costs for three years, compared to prior studies which developed avoided costs applicable to a two-year period.

to the 2018-2020 Three-Year Plan and this 2018 Annual Plan. These avoided costs reflect current and expected market conditions and are highly influenced by the cost of fossil fuels and expectations about ISO-NE's emerging forward capacity market. Company-specific transmission and distribution capacity values are also included. The avoided costs from the report used for 2018 are shown in Attachment 5, Table E-8 and Attachment 6, Table G-8. There were several noted changes to the avoided costs in the 2015 study update. Futures prices for natural gas at the Henry Hub are approximately 20% less than the AESC 2015 levelized costs for 2016-2025. These lower prices have a downward impact on avoided wholesale electric energy costs as well as on avoided costs of natural gas by end-use. The Update also projects lower avoided wholesale electric capacity costs. Avoided capacity costs are approximately 15% lower due to the assumed procurement of incremental supply of hydro power from Canada, offshore wind, and renewables that create a multi-year capacity surplus. Due to all these factors the avoided costs benefits have decreased in 2018 compared to 2017.

Attachment 5, Table E-5 and Attachment 6, Table G-5 provide the calculations of 2018 program year cost-effectiveness. Attachment 5, Table E-6 and Attachment 6, Table G-6 show the energy savings goals based on the proposed budgets. Attachment 5, Table E-7 and Attachment 6, Table G-7 show a comparison of the goals with the approved program goals from 2017. Attachment 5, Table E-5 shows that the proposed portfolio of electric programs is expected to have a benefit/cost ratio of 2.98, which means that approximately \$2.98 in benefits is expected to be created for each \$1 invested in the programs. Attachment 6, Table G-5 shows that the proposed portfolio of gas programs is expected to have a benefit/cost ratio of 2.77, which means that \$2.77 in benefits is expected to be created for each \$1 invested in the programs. This increase in efficiency investment continues the progress of acquiring all energy efficiency resources that are cost-effective and lower cost than supply.

8. Bill Impacts

To be included in Final Draft

9. Measurement and Verification Plan

To verify the impacts that programs are having on energy savings, the Company hires independent consulting firms to regularly conduct program evaluations as part of its measurement and verification process. These evaluations include engineering analysis, metering analysis, billing analysis, site visits, surveys, and market studies to realize the actual energy savings that particular measures are having. Every year, the results of the

surveys are used to update the TRC test calculations during planning. Attachment 3 lists the evaluations that have occurred since 2007, that are still being used, and their influence on program planning.²¹ The executive summaries of recently completed evaluations are submitted electronically to the PUC; executive summaries of evaluations completed in prior years are available in the dockets for previous years, or upon request.

Additionally, the M&V Plan for 2018 is presented in Attachment 3, and includes brief descriptions of each of the proposed studies. The areas proposed for study in 2018 have been chosen based on a number of factors: the relative amount of savings in that program or end use, the vintage of the most recent evaluation study, the relative precision of the recent evaluation study, and the available evaluation budget. In addition, some new program areas are designated for both impact and process evaluations. This list may be added to as the year progresses and different evaluation priorities are identified. In particular, the parties will consider the value of using evaluations from other jurisdictions as well as adding Rhode Island-specific impact or process evaluations, as appropriate, that will help inform the Company's efforts towards achieving the goals of least cost procurement.

10. Reporting Obligations

- a. During 2018, the Company will provide quarterly reports to the EERMC, the Division, the Collaborative, and the PUC on the most currently available program performance for both natural gas and electric efficiency programs. These reports will include a comparison of budgets and goals by program to actual expenses and savings on a year-to-date basis, and a status report on the C&I revolving loan funds. The reports will also include a brief summary of program progress and will highlight issues by sector for EERMC, Division, and Collaborative attention. Within the C&I sector, there will be separate highlighting of large and small customer program progress and issues. Beginning in the second quarter, the quarterly reports also include a forecast of expected results.
- b. During 2018, for months for which quarterly reports are not produced, the Company will provide to the EERMC, the Division, and the Collaborative monthly summaries of year-to-date spending and savings and results by sector.

²¹ The information in the Attachment is also intended to meet the specific requirement from the 2016 EE Program Plan to provide "a summary of evaluation results obtained since October 1, 2015, together with an attachment summarizing the impact of those results in planning the Company's 2018 programs."

- c. The Company will provide to the Parties and file with the PUC its 2018 Year-End Report no later than May 1, 2019. This report will include achieved natural gas and electric energy savings in 2018 and earned incentives for 2018.
- d. The Company will provide the Parties with a summary of evaluation results obtained since October 1, 2016, including a description of the impact of those results in planning the Company's 2018 programs, in the 2018 Plan to be filed by November 1, 2017.

11. Incentive

Consistent with the Three-Year Plan, the proposed shareholder incentive mechanism for 2018 will be based on the same metric applicable to the 2017 Plan. Under the current incentive structure, the Company can earn a target based-incentive rate equal to 5.0% of the eligible spending budget in a program year for achieving electric and gas energy savings goals.

- For electric savings, the Company can earn a target-based incentive rate equal to 3.5% of the eligible annual spending budget for achieving MWh savings goals and 1.5% of the annual spending budget for achieving MW savings goals.
- For gas, where there is no demand savings component, the Company can earn a target-based incentive rate equal to 5.0% of the eligible annual spending budget for achieving MMBtu savings goals.

As in 2017, the proposed incentive mechanism establishes an incentive of 1.25% of the annual spending budget for achieving 75% of the savings goals in a sector. This would increase linearly to 5% of the annual spending budget for achieving 100% and increase linearly from that point to 6.25% of the annual spending budget for achieving 125% of the savings goals.

Expressed mathematically, the shareholder incentive would be calculated as follows for both energy and demand savings, where SB is the Annual Spending Budget in the sector:

- From 75% of savings to 100% of savings:
 - Incentive = $SB \times (0.15 \times \% \text{ of savings achieved} - 0.10)$
 - x 0.7 for electric energy savings
 - x 0.3 for electric demand savings
 - x 1.0 for natural gas savings
- From 100% of savings to 125% of savings:
 - Incentive = $SB \times (0.05 \times \% \text{ of savings achieved})$

The Company believes that this structure will incent the Company to achieve savings that approach or exceed 100% of the annual goals. It does so by setting the threshold for savings required to earn an incentive at 75% of the annual savings goals, by creating a steep slope to earn a greater incentive in the range of 75% of savings to 100% of savings, by establishing the target incentive at 5.0% of the annual spending budget, and by offering a higher incentive for exceeding 100% of the annual goals.

The threshold performance level for energy savings by sector will be set at 75% of the annual energy and demand savings goal for the sector. The Company must attain at least this threshold level of savings in the sector before it can earn an incentive. The Company will have the ability to earn an incentive for each MWh, MW or MMBtu saved, once threshold savings for the sector are achieved. The cap for the target incentive amount of energy savings will remain at 125%.

The ability to earn up to 125% of the target incentive is worthwhile because Rhode Island customers will realize additional energy and cost savings if the Company achieves a high level of energy savings performance. Given budget control requirements, this feature will provide the Company with an incentive to improve the efficiency of its program implementation efforts while providing Rhode Island customers with value in excess of the incremental incentive that may be earned by the Company. That is, the Company will have an incentive to increase customers' savings and customers will realize an overwhelming majority of the savings.

The savings goals are based on a set of assumptions of savings per measure and other impact factors in each program as well as the proposed budget. The determination of achieved savings will be based on the same set of savings and impact assumptions as is used to develop the savings goal in this Annual Plan. These assumptions have been reviewed and accepted by the Parties.

Attachment 5, Tables E-3 and Attachment 6, Table G-3 provide the derivations of the eligible electric spending budget that are used to determine the incentive amounts that the Company may earn if it is successful in achieving its goals for energy savings. Attachment 5, Table E-9 and Attachment 6, Table G-9 provide a summary of the incentives related to annual energy-savings goals by sector. These goals by sector reflect the expected cost of savings in each sector informed by evaluation studies, and these goals have been adjusted to take into account changing rebate policies and the changing market being served. As described above, these goals have been carefully reviewed by the Collaborative and EERMC representatives to ensure that they represent reasonable and challenging goals for the year.

For electric energy efficiency programs, the proposed target base-incentive rate in 2018 is equal to 5.0% of the eligible spending budget for 2018. The projected electric eligible spending budget for 2018 is approximately \$98.7 million (see Attachment 5, Table E-3). The total electric target incentive for 2018 is 5.0% of the proposed spending budget, or approximately \$4.9 million (see Attachment 5, Table E-9).

For natural gas efficiency programs, the proposed target base incentive is equal to 5.0% of the eligible budget. The projected natural gas eligible spending budget for 2018 is approximately \$26.1 million (see Attachment 6, Table G-3). The total natural gas target incentive for 2018 is 5.0% of the proposed spending budget, or approximately \$1.3 million (see Attachment 6, Table G-9).

In addition, in order to promote cost efficiency in spending in the achievement of the energy savings goals, an adjustment will be made under certain circumstances to MWh and MMBtu savings goals in the shareholder incentive calculation. If the actual implementation expenses in a sector at year-end are less than the planned implementation expenses for that sector by more than five percent, and if achieved savings in the sector exceed 100% of the target savings goal, the savings goal for that sector will be adjusted by the ratio of actual implementation expenses to the planned implementation expenses. Conversely, if the actual implementation expenses²² in a sector at year-end are greater than the planned implementation expenses by more than five percent, and if achieved savings in the sector are less than 100% of the target savings goal, the savings goal for that sector will be adjusted by the ratio of actual implementation expenses to the planned implementation expenses.

The Company will report final program results and earned incentive in its Year-End Report regarding 2018 Energy Efficiency Program efforts.

As indicated in the Three-Year Plan, the Company will also work with the OER, the DPUC, the Council and the Collaborative during 2018 to consider new performance metrics for future Annual Plans to align energy efficiency plans with the state's goals for power sector transformation and greenhouse gas emissions reduction.

12. Miscellaneous Provisions

- a. Other than as expressly stated herein, this Settlement establishes no principles and shall not be deemed to foreclose any party from making any contention in any future proceeding or investigation before the PUC.

²² Expenses related to overspending for deliverable fuels will be excluded from implementation expenses in this calculation.

- b.** This Settlement is the product of settlement negotiations. The content of those negotiations is privileged and all offers of settlement shall be without prejudice to the position of any party.
- c.** Other than as expressly stated herein, the approval of this Settlement by the PUC shall not in any way constitute a determination as to the merits of any issue in any other PUC proceeding.
- d.** The Parties agree that the Collaborative shall meet no less than six times in 2018 to review the status and performance of the Company's 2018 energy efficiency programs and advise the Company on potential energy efficiency programs for 2018.

The Parties respectfully request that the PUC approve this Stipulation and Settlement as a final resolution of all issues in this proceeding.

Respectfully submitted,
THE NARRAGANSETT ELECTRIC COMPANY D/B/A NATIONAL GRID

By its Attorney,
Raquel J. Webster

Date

2018 Residential Energy Efficiency Solutions and Programs

Table of Contents

1.	Introduction.....	1
a.	Solutions and Programs Featured in Attachment 1	2
2.	Whole House Programs and Solutions	3
3.	EnergyWise Single Family (Electric and Gas).....	4
a.	Overview.....	4
b.	2018 Goals.....	5
c.	How Goals Are Achieved	5
i.	Customers.....	6
ii.	Least Cost	7
iii.	Environment.....	7
iv.	Future	8
4.	Multifamily (Electric and Gas)	8
a.	Overview.....	8
b.	2018 Goals.....	10
c.	How Goals Are Achieved	11
i.	Continued 2017 Enhancements	11
ii.	Heat Pumps and Smart Technologies.....	11
iii.	Customer-Centric Recruitment Process	11
iv.	Building Benchmarking Data	12
v.	Continued Focus on Finance Opportunities.....	12
5.	Income Eligible Services (Electric and Gas)	12
a.	Overview.....	12
b.	2018 Goals.....	14
c.	How Goals Are Achieved	15

i.	Technical Training and Financial Incentives	15
ii.	Streamlining the Customer Experience	15
iii.	Collaboration	16
iv.	New Efforts and Strategies Incorporated in 2018	16
v.	Workforce Development	17
6.	Residential New Construction (Electric and Gas)	17
a.	Overview	17
b.	2018 Goals	19
c.	How Goals Are Achieved	20
i.	Technical Training and Financial Incentives	20
ii.	Collaboration	20
iii.	New Efforts and Strategies Incorporated in 2018	21
iv.	Codes and Standards	21
7.	Behavior and Products Programs	22
8.	Home Energy Reports (Electric and Gas)	23
a.	Overview	23
b.	2018 Goals	24
c.	How Goals Are Achieved	25
i.	Seasonal Efficiency Modules	25
ii.	Customer Notifications and Segmentation	25
9.	ENERGY STAR® Lighting (Electric)	26
a.	Overview	26
b.	2018 Goals	26
c.	How Goals Are Achieved	27
10.	Residential Consumer Products (Electric)	27
a.	Overview	27
b.	2018 Goals	28
c.	How Goals are Achieved	28
11.	High-Efficiency Heating, Cooling and Hot Water (Electric and Gas)	29
a.	Overview	29

b.	2018 Goals	30
c.	How Goals Are Achieved	30
i.	Technical Training and Financial Incentives	30
ii.	Streamlining the Customer Experience	31
iii.	Collaboration	31
iv.	New Efforts and Strategies Incorporated in 2018	32
v.	Gas Conversion	32
12.	Initiatives	33
13.	Community Based Initiatives	33
a.	Overview	33
b.	2018 Goals	33
14.	Residential Demonstration and Research and Development	34
a.	Connected Device Demonstration	34
b.	Energy Storage	35
c.	Emerging Lighting Controls	35
d.	Residential Energy Monitoring	36
e.	Zero Energy Homes	36
f.	New Technology	37
15.	Marketing	38
a.	Overview	38
b.	Delivery and 2017 Success	38
i.	Micro-Segment Targeting	38
ii.	Advancing Digital Path to Participation	39
iii.	Activating Influencers	39
c.	Energy Innovation Hub	41
16.	Residential Measures and Incentives	43

1. Introduction

Rhode Island residential customers place a great deal of trust in National Grid. They look to the Company to keep their homes comfortable, their lights on, and to be there in moments of crisis. The Company takes this charge incredibly seriously as it and its employees are part of the very community it serves. As such, the Company is always looking for more ways to provide even greater value to these customers through valuable services that give them control of their energy, help reduce their bills, ensure financial wellbeing, and provide equity for all.

National Grid's Residential Energy Efficiency solutions are one way to contribute to all of the above-mentioned goals. For the customer building a new home, the Company has a program to help you do so in an incredibly efficient manner. For the tech-savvy customer looking to integrate new technologies into their existing residence, the company works with retail and wholesale channels that sell energy products and provides incentives that help customers get the "latest and greatest" in energy saving devices at an affordable cost. For the customer working two jobs to put their children through school, the Company can help reduce energy bills and increase comfort in the home through its retrofit programs, many times at no-cost at all.

The following sections cover these solutions, the energy saving goals the Company has set for 2018, and how the Company plans to achieve these goals in an ever-changing energy landscape. In the 2018-2020 Three-Year Plan, the Company noted the confluence of widespread adoption of light emitting diode (LED) technology, reduced manufacturing costs, and robust efficiency programs and policies has reduced opportunities of efficiency savings from lighting, which has been a key source of savings since the energy efficiency program's inception. This change creates opportunities for increased focus on new energy saving technologies and program design models.

For the Company, 2018 aims to be a transformative year for Rhode Island residential energy efficiency. Smarter products will make their way into the programs and upstream, program designs will begin a shift towards increasingly customer-centric models (e.g. online sign up forms for assessments), and new ideas will be tested to better understand how customers interact with their products and energy. The Company is excited to bring this new energy future to its customers.

The 2018-2020 Three-Year Plan details four central principles that encompass an advanced and innovative approach to serving to serving all residential customers. The Company finds that these four principles are apparent in all aspects of the 2018 Plan and incorporates the planning process, which included many brainstorming sessions from internal teams to external stakeholders. In addition, each of the Company’s strategies, programs, and initiatives are focused on meeting the needs of customers, the environment, and preparing for the future. Below are the four key priorities the Company has identified for the 2018-2020 Plan.

Customers - Deliver comprehensive services encompassing all market segments and customers. Such services will enable customers to control their energy use, reduce their bills, and help support their financial well-being.

Least Cost - Deliver energy efficiency services as cost-effectively as possible through optimizing finance and promoting upstream initiatives. Continuing to deliver cost effective energy savings under Least Cost Procurement will create cost savings to all customers, while creating economic benefits that create and maintain local jobs and businesses.

Environment - Provide solutions that maximize greenhouse gas emission reductions and contribute to Rhode Island’s clean energy policy goals, including the Resilient Rhode Island Act.

Future – Innovate to capture savings from new technologies and strategies to position energy efficiency programs for the future including the integration of energy efficiency with demand response, renewable energy, and smart grid technologies. This includes incorporating outcomes from the Rhode Island Power Sector Transformation Initiative and Docket 4600.

a. Solutions and Programs Featured in Attachment 1

Solutions	Programs Highlighted
Whole House Programs	Single Family and Multifamily retrofit programs where customers experience no-cost assessments and comprehensive upgrades. Also included are the Residential New Construction program,

	and the Income Eligible Services program.
Behavior and Products Programs	Home Energy Reports, ENERGY STAR Lighting, Residential Consumer Products, and HVAC programs.
Initiatives	The Community-Based Energy Efficiency initiative to educate customers and increase program participation.
Residential Demonstration and R&D	Various demonstrations of projects and new technologies such as Home Energy Disaggregation, Automated Lighting controls and more.
Marketing	Efforts to build awareness, educate customers, and drive participation in the Company's efficiency offerings and services.

2. Whole House Programs and Solutions

Whole Home Solutions provide the most comprehensive level of energy and cost savings for both single family and multifamily customers. The home energy assessment is the first step to identify how much energy the home uses as well as any structural or mechanical problems, that when corrected, save significant amounts of money over time.

The home energy assessment for a single family customer connects energy specialists at a customer's residence to both educate the resident on where the home may be losing energy through air leaks and inefficient energy systems, and to also provide solutions that reduce the energy losses. These solutions require a commitment by the customer in both time and money to the home and may require multiple visits. The end result of implementing all the energy solutions will be a home that is more comfortable and energy efficient.

An initial home energy assessment can take several hours with an energy specialist acquiring information from the homeowner about heating, cooling, and ventilation concerns. Next, the energy specialist conducts a diagnostic assessment of the attic,

walls, basement, doors, windows, mechanical systems and appliances to assess existing levels of insulation and air sealing and equipment safety and efficiency. During the initial visit the energy specialist will install quick energy saving upgrades including lighting upgrades, pipe insulation, water aerators, and advanced power strips for electronic systems. If the consumer decides to move forward with recommended energy efficiency solutions - insulation and sealing air leaks or heating/cooling system or appliance replacement - additional savings will be realized. Energy efficiency solutions require subsequent visits from a respective service or product provider, and could take several days to complete. While the home energy assessment is at no-cost to the customer, the subsequent visits may require a financial investment by the home owner.

For those customers who reside in multifamily facilities (footnote directing to definition in MF section) the no-cost assessment experience is still comprehensive, yet the process is a bit different. The Company's Multifamily Coordinator will work directly with property managers, facility owners and/or condominium associations to coordinate the audit and subsequent upgrades. The first on-site assessment will review a representative sample of units to build a plan for retrofit opportunities. The owners and/or tenants are then provided with a list of measures that could be installed in their units and common areas. Incentives are available for weatherization (air sealing, insulation), heating and domestic hot water, cooling, lighting, and appliances.

With a wide variety of customer and site-specific needs, National Grid approaches the whole home solutions market through channels that address the housing structure by number of housing units in the building as well as by income eligibility to ensure as many customers as possible can participate in the program and receive the benefits of energy savings at discounted, low or no cost.

3. EnergyWise Single Family (Electric and Gas)

a. Overview

EnergyWise is the whole home solution that addresses single family (1-4 units in one building), non-income eligible customers. In 2017, EnergyWise received the joint federal Environmental Protection Agency and Department of Energy ENERGY STAR® Partner of the Year Award in Program Implementation for the second consecutive year. The volume of homes served and savings achieved were noted as success factors for the programs. The Rhode Island EnergyWise program in 2016 installed over twenty-five lighting products during home energy assessments which support continued delivery of

no-cost first visits to the customer. The combination of instant savings and a no-cost initial visit is a very powerful tool to engage customers in whole home services.

Since 2009, the Company has provided home energy assessments to over 15% of single family, market rate customers in Rhode Island. Customers that have participated in the program learn how their home functions from an energy perspective and are provided solutions to improve energy performance when opportunities exist. EnergyWise participants include renters and homeowners of all heating fuel types. Customers are also able to finance the cost of weatherization improvements through the 0% HEAT Loan.

b. 2018 Goals

The overall goal of EnergyWise is to educate consumers about energy efficiency and introduce instant savings through efficient lighting upgrades, water efficiency solutions, and advanced power strips. Customers can then learn about the areas in their home that could benefit from air leakage reduction and additional insulation (aka weatherization) while experiencing actual energy savings from immediate upgrades. If the customer chooses to invest in weatherization for their homes, deeper energy savings and added comfort can be achieved.

2018 EnergyWise Electric and Gas Goals

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
286	6,174	10,000

Gas

Energy Savings (Annual MMBtu)	Customer Participation
26,787	2,275

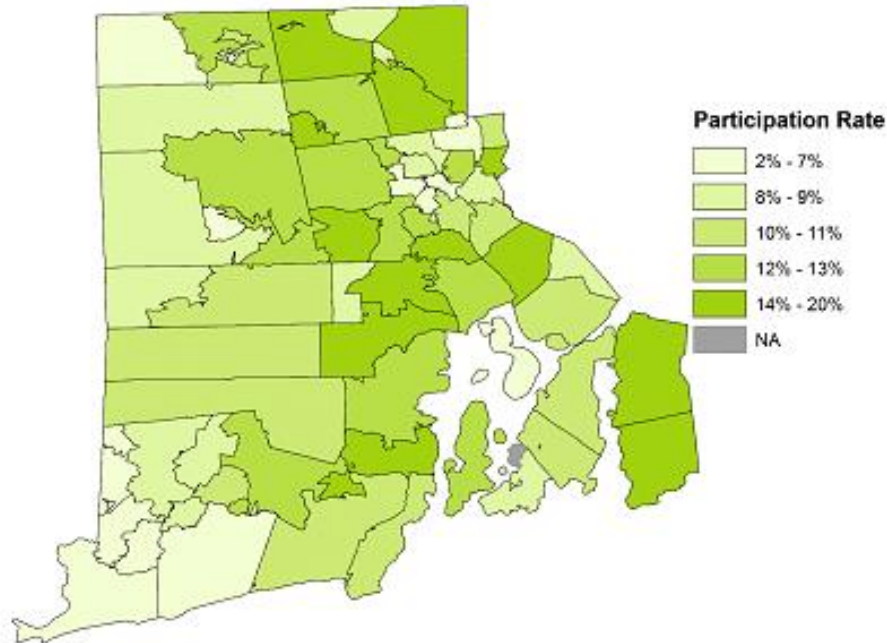
c. How Goals Are Achieved

In 2018 EnergyWise will focus on the following strategies to achieve the aggressive targets:

i. **Customers**

National Grid conducted a participation study in 2017 to investigate the number of unique customers served from 2009 – 2015 and to the extent possible, demographic and economic factors were observed. Some positive insights from the study showed that all areas of the state have taken advantage of EnergyWise with more activity in the Eastern part of the state. More home owners than renters take advantage of the program as well as homeowners with an area median income (AMI) above 120%. This information was not surprising since direct marketing efforts from prior propensity research have focused on homeowners with those characteristics. Also of note, the data showed that homeowners with an AMI in the 60% - 100% range, moderate income customers, have participated in the program at a representative level to their statewide population. The Company will apply the findings from the study to target customers with a higher likelihood of participating in EnergyWise.

Figure ES-1. EnergyWise Single Family Electric Participation Rate by ZIP Code: 2009-15



Source: Navigant analysis of National Grid data

The team also looked at income equity in terms of participation where data were available in the Single Family programs. Error! Reference source not found. shows that the participation rates of low income customers are similar to the population as a whole, with a higher low income participation rate among electric customers, and a slightly lower low income share among gas customers.

During the past two years, the program has increased marketing efforts to achieve annual targets. A combination of low fuel prices and a recovering economy has made

saving energy costs less of a priority for homeowners. Consumers are engaging in home improvement projects, not necessarily energy efficient ones, with their discretionary income.

ii. Least Cost

Since 2011, EnergyWise has helped customers address the initial “first cost” investment in energy efficiency by offering the 0% HEAT Loan which allows consumers the opportunity to spread the cost of efficiency upgrades over multiple years. The Company has also offered a lender of last resort, The Capital Good Fund, since 2013. The Capital Good Fund allows EnergyWise customers that may not have perfect credit, to receive financing from an organization that specializes in helping people fix their finances. In order to support more EnergyWise customers receiving Capital Loan Fund financing, the Company is interested in establishing a \$500,000 revolving loan opportunity for the Capital Loan Fund. This will support customers that may not receive financing through traditional lender scoring. National Grid also anticipates promoting other efficiency financing opportunities that will benefit customers. The Rhode Island Infrastructure Bank anticipates introducing a residential offering in 2018.

Another program feature which will continue to support lower program costs is the aggressive installation of energy efficient lighting products. The rapid transformation of the residential lighting market for energy efficient lighting is a success story for the overall market and highlights the need for the EnergyWise program to install lighting products while there are still available lighting opportunities. 2018 will be one of the final years for robust savings in this area and the Company is optimistic that all actionable sockets be addressed during home energy assessments.

iii. Environment

One of the target areas for Rhode Island’s Green House Gas (GHG) emission reductions sectors is residential heating. EnergyWise supports GHG emissions reductions by tightening the home building envelope thereby reducing air leaks so less heating is required during the winter and less cooling is needed during the summer. The more customers that take advantage of weatherization services, the greater the reduction in GHG emissions. In 2018, National Grid will be increasing the weatherization incentive to delivered fuel customers to spur weatherization among this customer segment and support Rhode Island state goals.

iv. **Future**

National Grid is very aware that savings from energy efficient lighting will contribute less to overall residential savings in the coming years. In preparation for this reduction in kWh savings, *EnergyWise* has tested new products and processes that may increase savings. Most recently, the program incorporated air sealing benefits from recessed lighting trim kits. In 2016, the program piloted mechanical ventilation installations to assess the feasibility of streamlining installations and reducing overall costs. The findings from the work showed that the traditional pathway for mechanical ventilation was to upgrade bathroom fans which led to many different configurations. Further investigation into this process will be given to see if hallway ventilation can allow for a uniform installation process and bulk purchase of mechanical ventilation. In 2017 the program installed a limited number of home energy monitoring devices within vendor homes to assess the requirements needed for home setup.

To reach savings goals *EnergyWise* will be promoting Wi-Fi thermostats for energy savings as well as the opportunity to partner with National Grid's Connected Solutions demand response demonstration.

4. Multifamily (Electric and Gas)

a. Overview

The Rhode Island Market Rate and Income Eligible Multifamily programs are poised for an exciting year in 2018. In early 2017, the Company undertook a deep review of the current program design and process before going through an extensive Request for Proposals (RFP) process for lead vendor services. As a result, new ideas, technologies and approaches were identified and will be implemented in 2018. It remains National Grid's goal to offer a comprehensive program that is both cost effective yet thorough in treating this diverse segment of the population. The Rhode Island Multifamily program has a single lead vendor that utilizes a network of Rhode Island sub-contractors to serve all customers, including income eligible.

Eligible Multifamily program participants are defined as the following:¹

¹ Stand-alone 1-4 unit buildings that do not meet these requirements are considered "single-family" and are served traditionally through *EnergyWise* Single Family or Income Eligible Services Single Family programs, as appropriate.

- Buildings with 5 or more units
- Properties consisting of four or more 1-4 unit buildings that meet both of the following requirements:
 - Are connected or neighboring to each other, or to a 5+ unit building, and
 - Are owned by the same individual or firm.²

Both market-rate and income-eligible/affordable multifamily properties are subject to the above-outlined multifamily eligibility requirements for coordinated services. For the income-eligible properties, co-payments for energy efficiency services and measures may be waived.

The income-eligible multifamily sector is defined by properties that meet one of the following criteria:

- Owned by public housing authorities or community development corporations
- Receive affordable housing tax credits or any type of low-income funds/subsidies from the state or federal government
- Consist of building units where a majority of customers qualify as income-eligible customers (receive utility service on the A-60 Low-Income rate and/or have a household income of less than 60% of the Area Median Income)

Furthermore, a multifamily property may be eligible for services and incentives under both residential and commercial programs. For example, a building with 20 units that is electrically sub-metered (20 residential accounts) with a commercial electric account for common areas and one commercial gas account serving a central heating/hot water system will likely qualify for incentives through Multifamily and the Commercial & Industrial Multifamily programs. While this adds a layer of complexity for the Company, it is critical that the Company maintain accounting via these various program budgets in order to ensure equity for all customers funding energy efficiency through the energy efficiency program charge. In contrast, the customer will not need to deal with this

² Should it be cost effective to do so, and provide a better customer experience, the vendor and Company, at their discretion may choose to serve buildings that fall outside of this definition. For example, four three-unit buildings (i.e. triple-deckers) not adjacent to each other but in close geographic proximity and under the same ownership may be served through the Multifamily program.

added layer of complexity, and will instead receive a consolidated incentive for all efficiency work completed at the site³.

b. 2018 Goals

The use of LED lighting is becoming more commonplace, making it increasingly difficult to achieve savings from the traditional direct install-model, or “low-hanging fruit”. However, the Company remains committed to aggressively seeking avenues for continued energy savings. As such, the Company is proposing the following goals which represent an increase over those filed in the 2017 Annual Plan.

Electric Program	Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
Income Eligible Multifamily	170	3,287	4,800
Market Rate Multifamily	329	4,207	6,000

Gas Program	Gas Savings (Annual MMBtu)	Customer Participation
Income Eligible Multifamily	16,222	3,500
Market Rate Multifamily	12,069	2,500
C&I Multifamily	6,643	1,698

In addition to achieving megawatt hour and therm reductions, the Company aims in 2018 to do so by creating greater customer benefits, contributing to a healthier environment and taking steps to a clean energy future. To achieve these goals the

³ For the past three years National Grid has offered a Multifamily Coordinator for RI customers looking to participate in the multifamily program. The single point of contact is considered a national best practice as many multifamily programs contain complexities that can be quite confusing for a customer, such as different budgets, incentives, and rules. The Multifamily Coordinator role was developed to alleviate all of the stress and confusion and ensure the process is as smooth as possible for any prospective customer.

Company is extending some enhancements that were identified in the prior year, as well as suggesting some new ideas for implementation.

c. How Goals Are Achieved

i. Continued 2017 Enhancements

In 2017, the Company put forth multiple program enhancements that it will continue through 2018 and beyond. Offering heating systems in the income eligible multifamily program provided great pipeline and opportunity through 2017 with central boilers installed in over 30 buildings. As such, the Company will continue to offer these replacements⁴. Further, the Boiler Monitoring & Optimization effort of 2017 is showing favorable, though preliminary, results. The Company will continue learning from this technology in 2018 and consider including it as a standard program offering.

Finally, in 2018 the Company remains committed to treating a number of facilities served by delivered fuels through both the market rate and income eligible electric programs.

ii. Heat Pumps and Smart Technologies

As proposed in the 2018-2020 Three-Year Plan, the Company intends to focus on introducing more innovations to secure untapped energy savings. In the multifamily sector specifically, this will include offering more smart thermostats and introducing the installation of ductless mini-split heat pumps in electrically-heated facilities. Especially relevant in the case of heat pumps, customers will benefit from training on how to use these products to ensure a reduction and not an increase in energy usage. The company will evaluate a number of buildings and customers where mini-splits have been installed and compare those who have received a level of training to those who did not. Understanding how customers in multifamily facilities interact with this technology will help the Company better understand how to expand this offering in the future.

iii. Customer-Centric Recruitment Process

Giving customers the opportunity to participate is the first and most important step on the road to energy savings. By offering customized online invitations and sign-up processes that are site-specific, customers will be able to take part in the program in a

⁴ Due to the higher cost and limited quantities, heating systems in the income eligible multifamily program will be offered on a first-come, first-served basis and at the discretion of the Company.

more convenient manner than ever before. Increasing condominium unit-level participation and offering opportunities for renters remain areas of interest for the Company. By allowing an off-site condo owner who may only live in a property seasonally to electronically sign up for an audit, select measures, and authorize installations, the Company plans to address this recognized barrier.

iv. Building Benchmarking Data

For the past three years the Company has supported the benchmarking of income eligible multifamily facilities, resulting in over 500 buildings going through the program. Beginning in 2018, the Company will be offering automated uploads of aggregate energy usage to the US Environmental Protection Agency's Portfolio Manager. This will benefit multifamily building owners and operators of both income eligible and market rate properties by allowing them to track energy use across their portfolio of buildings.

v. Continued Focus on Finance Opportunities

With new, often more expensive technologies entering the marketplace (e.g. mini-split systems), financing opportunities may allow more customers to participate and achieve deeper savings. As such, the Company is increasing the amount of funds dedicated to the Multifamily Heat Loan for condo owners in 2018. Furthermore, the Company will work with stakeholders and partners such as the Rhode Island Infrastructure Bank (RIIB) and RI Housing to explore new sources of capital and potential financial products and mechanisms such as on-bill repayment for residential customers.

5. Income Eligible Services (Electric and Gas)

a. Overview

National Grid's Income Eligible Services (IES) Program provides comprehensive, fuel neutral, no-cost services to educate customers about energy efficiency, and helps them to reduce their electric and heating bills and improve the thermal comfort of their home. Income Eligible Services are available for customers who live in 1-4 unit residences and qualify for the Low Income Heating Assistance Program (LIHEAP)⁵, also

⁵ The federal government has set an income level, tied to the median income of each state, which defines the uppermost income boundary for LIHEAP participation. Individual states have some flexibility in defining income eligibility as long as it is not set above the federally defined maximum. Eligibility in this program will track the eligibility for LIHEAP set by the State of Rhode Island.

known as “fuel assistance,” or who qualify for the National Grid discount utility rates (A-60 and or 1301 rates).⁶

Services Provided – IES Program and WAP/LIHEAP

Income Eligible Services (IES) Program*	Weatherization Assistance Program (WAP)*
<ul style="list-style-type: none"> ● Conduct whole house Energy Assessment and provide customer education <ul style="list-style-type: none"> ○ Review utility bills ○ Assess whole – house energy efficiency from attic to the basement. ○ Replace incandescent and halogen light bulbs with LED light bulbs ○ Install smart power-strips ○ Install water efficient showerheads ○ Discuss opportunities to save energy and money with customer ● Install weatherization measures <ul style="list-style-type: none"> ○ Insulation, air sealing and duct sealing if needed ● Replace eligible heating/cooling systems and appliances if they are deemed inefficient or unsafe 	<ul style="list-style-type: none"> ● Conduct whole house audit/energy efficiency evaluation (not appliances) ● Install weatherization measures (insulation, air sealing, duct sealing) ● Replace inefficient heating equipment if deemed inefficient or unsafe ● Improve minor health and safety issues in the home.

*Both the IES and the WAP offer all services and products at no-cost to the customer.

⁶ These eligibility requirements are subject to change as a result of any regulatory directives, or as deemed necessary by the Company to enhance participation and/or savings.

IES is administered through a Lead Vendor that manages the day-to-day operations of the Program. The Lead Vendor maintains consistency and quality assurance of the services among the CAPs by providing ongoing technical and best practices training for the CAPs' energy efficiency auditors and home performance professionals. The Vendor also performs field verifications and testing to verify consistency and quality of completed work.

The Lead Vendor works directly with the six Rhode Island territorial-based Community Action Program agencies (CAPs) which manage the customer intake and application processes for IES. National Grid provides the CAPs with marketing collateral, videos, and tools to increase awareness of – and comfort level for – the IES Program services.

The Income Eligible Services program works in close collaboration with the State of Rhode Island Department of Human Services Weatherization Assistance Program (WAP), overseen by the federal Department of Energy, and the Low Income Home Energy Assistance Program (LIHEAP), overseen by the federal Department of Human Services. IES leverages its ratepayer-funds and the federally-funded Weatherization Assistance Program (WAP) and Low Income Home Energy Assistance Program (LIHEAP). This collaboration ensures that customers receive the greatest possible benefits to reduce their energy use and costs.

b. 2018 Goals

The overall goal of the Income Eligible program is to provide comprehensive energy efficiency services that help to reduce energy costs and improve a home's thermal comfort. In addition the program seeks to increase its participation goals through targeted marketing, collaboration and by leveraging National Grid's efforts to offer the discount rate to new eligible customers.

2018 Income Eligible Services Electric and Gas Goals

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
696	4,185	2,750

Gas

Energy Savings (Annual MMBtu)	Customer Participation
12,620	675

c. How Goals Are Achieved

In order to achieve these goals the Company will utilize several strategies and tactics.

i. Technical Training and Financial Incentives

- Conduct trainings and best practices meetings throughout the year:
 - Weatherization Technical Committee to ensure consistent measure installation across the state.
 - ASHRAE trainings.
- Provide updates as necessary to the WAP/IES Operations Manual and conduct training addressing all updates.
- Partner with the RI Department of Human Services to conduct and or host trainings as well as update program implementation materials.
- Participate in relevant training sponsored by third-party organizations including:
 - RI Department Human Services (DHS)
 - DOE Weatherization Assistance Program
 - Industry experts
- Provide whole-house no-cost energy efficiency solutions to income eligible customers.

ii. Streamlining the Customer Experience

- Participate in Community Expos to help customers understand how to reduce their energy bills and manage their energy expenses.
- Make available to CAPs the use of the Energy Innovation Hub to provide education and training to their respective communities.
- Ensure that customers who are newly added to the income eligible rate (A-60) are connected directly to income eligible services (IES) for energy efficiency.

iii. Collaboration

- Conduct quarterly budget and performance meetings with each agency to assess progress toward budget and goals and provide CAPs with clear direction on opportunities.
- Collaborate with other programs and/or organizations to implement the IES program and assess improvements in 2018. Key organizations that IES will engage include:
 - Community Action Programs
 - Rhode Island Housing
 - Office of Energy Resources
 - The State's Zero Energy Buildings initiative
 - The State's Community Solar initiatives
- Continue to work closely with Rhode Island Department of Human Services (DHS) Management team to coordinate the integration of budgets – National Grid's energy efficiency funds and funding from Federal DOE and LIHEAP programs – to maximize leveraged funds, match funding to capacity, and build a reliable funding stream for the Community Action Program (CAP) agencies.

iv. New Efforts and Strategies Incorporated in 2018

- Add new measures to the program offerings:
 - Dehumidifiers
 - Clothes Washers
- Explore the possibility of new measures to add to the program offerings:
 - Wi-Fi thermostats
 - Smart-home technologies to allow customers to see and manage energy use (behavior)
 - Exploring the potential of adding mini splits in the program
- Use segmented marketing strategies to help income eligible customers learn about programs that will specifically benefit them. For example, the ability to notify customers of upgrades that would be relevant to their specific situation (e.g. promoting heat pumps to customers heating with electricity).
- Collaborate with Rhode Island Housing and Office of Energy Resources to develop a moderate income/income eligible zero energy home(s) as part of its focus on developing a zero energy model. This demonstration will provide

important information to guide the development of a zero energy offering in 2018 or 2019.

- Develop a protocol for serving customers in triple decker buildings.

v. Workforce Development

Collaborate with RI DHS to leverage job development. Agencies will hire staff to be trained in AMP audits. AMP audits are relatively quick to learn, and no stipend (other than available AMP opportunities and training) will be provided. This will determine the character and quality of the employee. Are they empathetic with the customer, are they punctual, do they follow program protocols? This will be a 6-month process. Successful candidates will then receive OSHA & BPI training, sponsored by DHS. The candidate will then work for the agency as a Junior Auditor for 3-6 months based on performance. Successful candidates will then be promoted to Auditor and receive additional training.

6. Residential New Construction (Electric and Gas)

a. Overview

The Residential New Construction and Renovation/Rehabilitation (RNC) program is a fuel neutral program that provides comprehensive energy savings opportunities for single-family and multi-family projects for both the market rate and income eligible⁷ markets. The program offers a combination of no-cost services and incentives to assist in the design and development of high-efficiency homes. In 2017, the Program set a goal of 550 projects with approximately 50% planned for new construction projects and 50% for renovation/rehabilitation projects.

The RNC program baseline for efficiency is derived from the average energy performance of a home built in RI, referred to as the User Defined Reference Home (UDRH). The RNC program has a tiered energy-efficiency incentive structure that compares a home's energy performance against the UDRH. In 2017, the RI UDRH was updated and resulted in a substantial improvement in the baseline. The new 2017 UDRH will present a challenging goal for developers and builders to achieve incremental improvements above the UDRH. As the UDRH results demonstrate market transformation, they will also provide the basis for a comprehensive review of the

⁷ Customers who qualify for LIHEAP assistance or who qualify for the National Grid discount utility rates.

existing RNC program structure and will inform how the program incentives will be offered in the future.

The 2018 tiered incentive structure will be as follows:

Tier Level	2017 % More Energy Efficient Than Baseline*	2018 % More Energy Efficient Than Baseline**
Tier I	15% - 30%	15% - 30%
Tier II	31% - 44%	31% - 44%
Tier III	45% or more	45% or more

*Based on the 2011 User Defined Reference Home

**Based on the 2017 User Defined Reference Home

The RNC program offers the follow resources to assist builders, developers, and owners design and build energy-efficient homes with lower operating costs and increased durability, comfort and safety.

- Code compliance and technical trainings
- Energy modeling and design assistance
- In-field inspections
- HERS Rating
- Optional ENERGY STAR® Homes verification for projects seeking the EPA label
- Complimentary ENERGY STAR bulbs and WaterSense® showerheads
- Financial incentives based on the level of energy efficient structure and equipment.

The RNC program works closely with many RI builders and developers to bring them into the program and help them advance their building practices, construct high-efficiency homes, and earn the available incentives. Through the combination of RNC education and training, program incentives, and code testing enforcement, builders are improving the quality of projects and are an excellent example of market transformation.

As Rhode Island adopts the new International Energy Conservation Code (IECC) energy codes for Residential New Construction Program (RNC), the energy savings needed to warrant energy efficiency incentives diminishes. Therefore, the Company is considering

a re-design of the RNC program over the next three years to optimize the available savings and will push toward a zero energy home that will also support the Zero Energy Task Force Recommendations and the Power Sector Transformation efforts.

Multifamily: There has been a recent increase in the construction and rehabilitation of large multifamily projects in Rhode Island, both in the market rate and affordable housing sector. While some of these projects fall clearly under residential programs and others commercial, there are many occasions where projects intersect, and design and construction teams interact with both programs for services and incentives. Examples include: mixed-use buildings; mid to high rise residential buildings; housing developments with extensive common areas, parking lots and garage lighting; and master-metered residential projects. To provide comprehensive, seamless service on behalf of both programs, and capture all potential savings opportunities for National Grid's customers, the RNC program, in close collaboration with the C&I program, will serve as the main point of contact for these projects, and will develop a custom program specifically designed for these types of projects.

Zero Energy Homes: In 2017 the Company partnered with Rhode Island Housing and Office of Energy Resources (OER) to issue an RFP to design and construct a Zero Energy Building (ZEB) housing unit(s) to serve low- and moderate-income residents in Rhode Island. The project will be required to employ solar PV and air-source heat pump technologies to achieve ZEB status. In 2018, the Company will partner with OER to issue an RFP for a similar demonstration project, but targeted at the market-rate community. The alignment with OER will provide a connection to the State's Zero-Energy Building initiatives. The 2018 demonstration project will be required to be an all-electric project and employ smart technologies as well as energy management systems. For more information see section 14e.

b. 2018 Goals

The overall goal of the Residential New Construction program is to incorporate energy efficiency design features into the building of new homes. Having these design features incorporated during the construction process is more cost effective than retrofitting homes at a later date.

2018 Residential New Construction Electric and Gas Goals

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
49	619	756

Gas

Energy Savings (Annual MMBtu)	Customer Participation
3,117	510

c. How Goals Are Achieved

Program elements for the Program in 2017 include:

i. Technical Training and Financial Incentives

- Partner with the RI Code Compliance Enhancement Initiative (CCEI) to conduct hands-on infield training. These trainings provide a unique opportunity for participants to view projects during the construction phase to learn about both energy code requirements and best building practices.
- Comprehensive no-cost technical services to educate project teams how to design and build a high-efficiency home.
- Tiered incentives based on the efficiency of the building envelope.
- Incentives for eligible high-efficiency heating and cooling systems.
- Competition – the Zero Energy Home Challenge will be offered again in 2018. The Challenge awards a zero energy home, or net-zero energy home that is designed and built by a Rhode Island Based project team. The award is a cash award and will be presented at the 2018 Home Show.

ii. Collaboration

- Collaborate with other programs and/or organizations to implement the RNC program and assess improvements for re-designing the program in 2018. Key organizations that RNC will engage include:
 - Rhode Island Builders Association.
 - Rhode Island Housing.

- Renewable Energy Growth and Renewable Energy Fund distributed generation initiatives.
- The State's Zero Energy Buildings initiative.
- Participate in local and regional events to promote energy efficiency and the RNC program.

iii. New Efforts and Strategies Incorporated in 2018

- In 2018, the Company will adopt a new User Defined Reference Home (UDRH) baseline that will reflect the current energy efficiency of new construction single-family homes in Rhode Island.
- Based on both the new UDRH and Participation Study, the Company plans to develop a re-design of the RNC program in 2018. The program may include packages of offerings in order to maximize savings, smart home technologies to engage the customer in their energy management or move to a zero energy home model.
- National Grid will support the expansion of the local HERS Rater community by training, certifying, and mentoring Rhode Island based individuals and companies to perform HERS ratings on behalf of the RNC program. This will create a larger local network of trained energy efficiency professionals, promote workforce training and development, and facilitate the successful transition to a fully open-rater program model in which Rhode Islanders can compete effectively with experienced HERS Raters from surrounding states.

iv. Codes and Standards

A new residential baseline study completed in 2017 replaces the 2011 Baseline Study of Single-family Residential New Construction and serves as the basis for the Rhode Island User Defined Reference Home. The 2017 Study shows that, while increasing compliance rates have reduced the remaining savings from energy code support, some homes are still built to levels below the state's building energy code. Since there remains an opportunity to elevate all projects to increased code compliance, the RNC program continues to support code trainings to educate contractors. Additional energy code savings potential would become available in the event that the state updates its energy code. Considerable opportunities to streamline HERS Rating support across both the RNC and Codes and Standards are available in anticipation of such an update. See the Large Commercial and Industrial New Construction Program for details for the Codes and Standards training program.

Residential Codes Savings*

*Code Savings is included in the 2018 Goals for Residential New Construction listed in section 6b.

Electric: Energy Savings (Annual MWh)	Gas: Energy Savings (Annual MMBtu)
167.4	955.9

7. Behavior and Products Programs

Behavior and Products Programs serve customers in a different way and at a different point-in-time than Whole Home Solutions. With the Whole Home Solutions, a customer may not be familiar with all aspects of energy efficiency but can rest assured they are learning more about their home from trusted energy professionals. Products Programs generally work with the customer during the point-of-purchase either in a retail environment or by energy professionals assessing heating and water heating systems whereas Behavior programs target and influence “how” a customer interacts with those products.

For example, a customer may replace a household energy item upon failure and may not have spent much time researching varying options since the last time a similar product was purchased. Replacing simple light bulbs twenty-years ago required considering size and overall wattage. With today’s lighting purchase, a customer could consider how bright they would like the light to be (lumens per watt), the wattage, type of color, and the number of lifetime hours. Moreover, while switching to an efficient product is a great step, customers who leave lights running all day, or wash clothes on the hottest setting, are not fully realizing the benefits of living an efficient lifestyle.

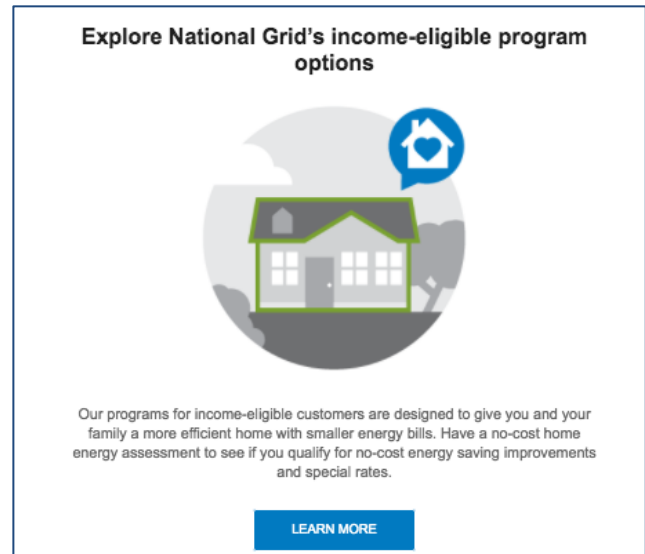
The above example highlights the need to educate consumers about efficient products prior to the purchase period and the need to continue working with customers on how they interact with these products through the years. The education process can be a complicated endeavor since the challenge is to engage customers when they are not in the market for a new item, when a bad usage habit has already formed, and National Grid’s messaging is competing against other life demands. In 2018, to reach a wider range of customers, the Company will consider how it could present efficiency solutions alongside renewable energy measures a customer may be considering.

8. Home Energy Reports (Electric and Gas)

a. Overview

The Home Energy Reports (HER) program is the Company's key program to achieve energy savings through changes in customer behavior. This is achieved by presenting personalized energy usage data and encouraging desired behaviors to reduce energy consumption. Globally, over 15 million homes receive HERs from more than 100 utilities serviced by the Company's vendor. Since its launch in Rhode Island in April 2013, the HER program has helped the Company to achieve

portfolio-wide savings goals while also maintaining cost efficiency. In 2016 alone, the program generated over \$6.7 million in customer bill savings.



The HER program is a statewide energy efficiency program that provides benefits for all Rhode Island residential customers. While over 300,000 customers receive HERs (i.e., the treatment group) by way of direct mail and/or e-mail, all account holders have access to insight into their energy consumption via the web tools located on the National Grid website. The program has evolved since 2013 from offering only mailed insights to now being integrated into the Company's website with online assessment tools, sending Non-Advanced Metering Infrastructure (AMI) High Usage Alerts, and utilizing segmentation to target different populations with relevant messaging.

Program savings are derived from sending hardcopy or electronic HERs with personalized energy insights, normative messages, efficiency tips and recommendations, and promotional messages for efficiency programs in National Grid's wider portfolio. The program measures energy savings by comparing on-bill energy usage between a treatment group (customers who receive the HER) and control group (customers who do not receive the HER), using both pre and post-treatment data (i.e. A Randomized Control Trial or RCT).

Since the country’s first HER programs began in 2008, there have been numerous evaluations that validate the savings generated from these behavioral programs. Furthermore, while customers may move forward with taking an action such as changing their lighting to LED or purchasing a new piece of energy efficient equipment, the simple act of receiving the report alone often creates habitual energy saving behaviors that account for the majority of savings attributed to the program. The frequency or persistence of these habitual actions, such as turning off lights or adjusting the thermostat, is directly correlated to the cadence and even medium (i.e. print or digital version) of the reports.

The program is administered by a Lead Vendor that developed and launched the first HERs in the country. Since 2013, the Company has employed the Lead Vendor to implement the HERs in all three of its jurisdictions (Massachusetts, New York, and Rhode Island). The Lead Vendor is responsible for maintaining HER distribution groups, tracking data, managing the Web Portal, and documenting energy savings. The Lead Vendor works with the Company to craft the messaging and delivery of the HERs, and also works with the Company to introduce additional program enhancements, aligning with the Company’s state-wide comprehensive marketing efforts.

b. 2018 Goals

In 2017, the program underwent an updated impact evaluation that resulted in adjustments to the realization rates the program was operating under. These new realization rates are applied to the 2018 goals resulting in greater gas savings but a slight reduction in electric savings. In both cases, planned savings are higher than those filed in 2017.

Program	Demand Reduction (Annual kW)	Savings (Annual MWh or MMBtu)	Customer Participation
Home Energy Reports Electric	3,325	25,054	213,750
Home Energy Reports Gas	N/A	77,220	104,250

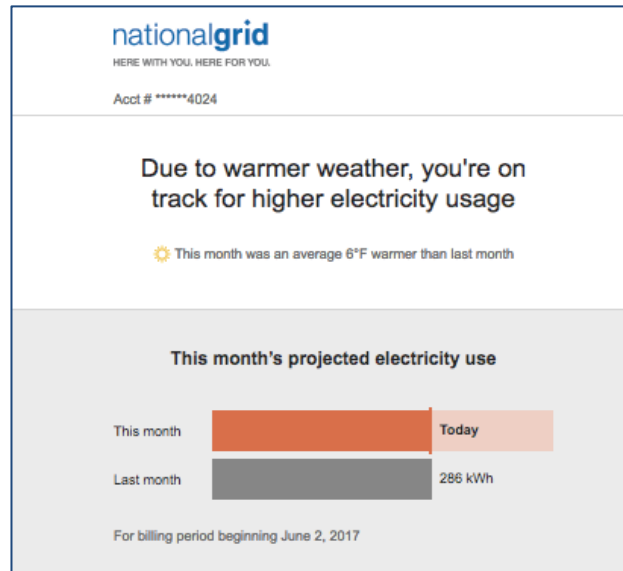
c. How Goals Are Achieved

i. Seasonal Efficiency Modules

Rather than providing a static experience for customers, the Company will continue to include messaging in the digital and print versions of the HERs that align with the seasons. For example, this could take the form of a “Prep for Winter” module sent to gas customers with the goal of reminding them to be aware of their thermostat settings as winter approaches. In the case of inclement winter weather, the Company could offer an “Ice Dam Prevention” module and drive customers to have their *EnergyWise* Home Energy Assessment. These seasonal campaigns have shown a clear boost to savings rates.

ii. Customer Notifications and Segmentation

In June of 2017, the Company began emailing Non-Advanced Metering Infrastructure (AMI) High Use Alerts to customers who were trending to exceed the prior month’s usage by 30% due to seasonal change. Weather-based forecast algorithms are able to predict customers’ bills without AMI Data. These insights are delivered via email on an opt-in or opt-out basis, and are designed to help residential customers become aware of their trend toward higher energy usage and giving them the option to modify their behavior, thus saving energy and money. This is similar to phone plans that alert customers when they are trending to exceed their allotted data. Giving customers this information can help plan for what would have been an unexpected high-bill.



Further, in fall of 2017, the Company began offering a different email alert to those customers on income eligible rates directing them to RI assistance programs such as no-cost home energy assessments, information on health and safety, budget billing options, and other payment assistance opportunities. This approach to segmentation has also been applied to the standard print HER and eHER and will continue through 2018.

9. ENERGY STAR® Lighting (Electric)

a. Overview

National Grid has offered residential lighting incentives since the mid 1990's and the savings from this program has consistently contributed to the overall residential portfolio. During the intervening decades, lighting technologies have changed for the better and combined with supporting legislation (Energy Independence and Security Act), a full market transformation of residential lighting is anticipated by the end of this decade. An Energy Efficient light bulb has become so synonymous with energy efficiency that it is frequently used to represent the "green" concept and National and Regional campaigns have revolved around challenging consumers to take the first step with installing an energy efficient lamp. Another nice aspect of lighting leading the efficiency charge was the low purchase cost and simplicity of installation and operation.

National Grid has been a leader in lighting market transformation through the early application of upstream and midstream lighting incentives thereby influencing more lighting products at retail shelves and encouraging retailers to stock more ENERGY STAR lighting products. This continuous program influence still impacts the overall marketplace today when compared to program states that have discontinued direct lighting support. Recent shelf surveys show that states with continuous programs have a larger percentage of ENERGY STAR lighting products than states without program support. Another key strategy that has made the lighting program successful and created consumer engagement is quick, online flash sales. Customer response over the past several years to these short-term offerings has been robust. Finally, the use of a pop-up retailer that communicates the benefits of efficient lighting while selling the product at non-traditional retail locations supports education as well as energy savings.

b. 2018 Goals

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
4,413	38,891	231,817

c. How Goals Are Achieved

In 2018, the ENERGY STAR Lighting program will contribute almost 50% of the non-income eligible electric energy savings. These robust targets will require that the program still target all consumers and sockets that currently do not use or have efficient lighting installed. A majority of the promotion will occur through mass market channels with information shown at the point-of-sale. There will be additional emphasis on providing incentives to hard-to-reach communities where the traditional retail channels may not have as large of a presence as discount retailers. Lighting is still a well-recognized cornerstone of efficiency and with the success of the flash sales, the program has been using these promotions to cross promote items that are not as well-known such as some of the hot water saving shower products and advanced power strips. One large benefit of the rapid lighting transformation has been a corresponding drop in the cost of efficient lighting. This allows the program to reduce the incentives paid on lighting products. The program will also be following the results of the Emerging Lighting Control demonstration to see if there are savings to be realized with smart, controllable lighting combined with behavior messaging.

The Lead Vendor of the program, which is also the Lead Vendor of the Residential Consumer Products program, has introduced online training modules to provide up-to-date and easily accessible product information about both ENERGY STAR lighting products as well as Residential Consumer Products. This tool allows for retailers and their employees to engage in product specific training as their schedule allows. Online education is also supported with in-store visits that verify accurate signage, discuss customer interest in various product lines, and support customer education and outreach events.

10. Residential Consumer Products (Electric)

a. Overview

Residential Consumer Products incorporates both the federal Department of Energy and Environmental Protection Agency categories of consumer appliances and electronics as well as some energy savings items not included by the federal agencies. The program supports a combination of upstream and midstream incentives as well as post purchase consumer incentives. The upstream and midstream incentives encourage retailers and manufacturers to support ENERGY STAR with production and availability of products.

Consumer incentives are designed to bring efficient products costs in line with less efficient equipment, thereby encouraging the adoption of the more efficient item.

In 2018, the program will support dehumidifiers, dryers, refrigerator and freezer recycling, room air cleaners, room air conditioners, advanced power strips, and efficient shower heads. Historically, the program has been most successful when there is continuity in product lines as well as incentive levels to reduce both retailer and consumer confusion. The rapidly evolving consumer marketplace has made continuous support challenging due to overall improvement of appliance and consumer electronics standards. National Grid will be looking for opportunities to incorporate new items as well as continuing to support consumer products that are cost effective.

b. 2018 Goals

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
429	2,849	9,682

c. How Goals are Achieved

In 2018, the Residential Consumer Products program will investigate the support of ENERGY STAR’s Retail Products Platform which is a collaborative midstream initiative that engages retailers nationwide in supporting energy efficient consumer products. This effort will allow the program to support additional appliances and electronics at a lower incentive level. The nationwide approach supports participating retailers with a dedicated scale and benefits program administrators with better tracking information. National Grid anticipates designing the program in the first half of 2018 and launching the initiative in the second half.

The Company will also continue special, limited time promotions to draw consumer interest in specific items at different periods of the year. An enhanced refrigerator recycling promotion and advanced power strip flash sale have been positively received.

11. High-Efficiency Heating, Cooling and Hot Water (Electric and Gas)

a. Overview

The High-Efficiency Heating, Cooling and Hot Water Program (HVAC Programs), for both gas and electric systems, promote the installation of high efficiency space heating and cooling equipment, water heating measures, and controls through the use of tiered customer rebates. The programs also provide contractor training and incentives for proper equipment sizing, quality installation verification and distribution system improvements.⁸

The programs are administered by one lead vendor that provides outreach and programmatic support to participating contractors and distributors to ensure they have the knowledge to effectively communicate the program offering to customers, and the technical expertise to offer quality installations. The Lead Vendor provides contractor meetings and trainings during the year, participates in relevant industry events and offers ongoing technical assistance to participating contractors.

While the Lead Vendor is the face of the Program, contractors continue to serve as the Program's primary delivery mechanism. The Lead Vendor works closely with the contractor community to provide trainings and outreach to ensure accurate and efficient delivery of Program services to customers, while also improving contractors' skills and capabilities. In 2018 contractor outreach events will continue to cover equipment specifications, right-sizing equipment, proper installation of outdoor reset controls for condensing boilers, sealing and insulating equipment to achieve optimal performance, awareness of current code requirements, and the best ways to assist customers with rebate submissions. Targeted training on the proper installation of the condensing boiler systems will remain a focus in 2018.

Participation in the Program is attributed to two channels: contractors offering energy efficient products/incentives and customers' request for efficient equipment to reduce energy bills.

⁸ Residential programs do not promote or fund fuel switching. It is only after a customer decides to switch to natural gas that they are eligible for an energy efficiency rebate. At the time the customer switches from another fuel to natural gas, they become eligible for an energy efficiency incentive that covers part of the incremental cost of higher efficiency gas equipment.

In 2018, the Company will offer heat pump water heaters in either an upstream (to the manufacturer) or midstream (distributors and contractors) delivery model. The outcome of this initial launch will inform the process for delivering future HVAC equipment up/midstream. The potential shift in where the energy efficiency incentive is offered has been shown to increase sales which result in more savings based on quantity. Importantly, increased sales result in increased incentive costs, which could cause a dramatic shift in program budgets. Offering an up/midstream model simplifies residential customer participation because the high efficiency product is already discounted and the customer is not required to submit rebate forms or wait for rebate checks. In light of all of these factors, the Company will continue to evaluate how the mid/upstream model for other equipment within its programs.

b. 2018 Goals

The overall goal of the HVAC programs is to provide a range of high efficiency space heating and cooling equipment, water heating measures, and controls that encourage a customer to make the choice to purchase the energy-efficient equipment.

2018 High Efficiency “HVAC” (Electric and Gas) - Heating, Cooling and Hot Water Goals:

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
431	2,064	1,788

Gas

Energy Savings (Annual MMBtu)	Customer Participation
27,513	1,573

c. How Goals Are Achieved

In order to achieve these goals the Company will utilize several strategies and tactics.

i. Technical Training and Financial Incentives

- Provide regular trade ally engagement events at local supply houses throughout the year to provide updates and training opportunities. Trainings will focus on

pertinent topics including seasonal preparations, best practices for installation of condensing boilers, demand response, identifying opportunities for cold climate heat pumps, etc.

- Educate customers and contractors on cost savings and comfort associated with using cold climate heat pump systems for heating. This effort will focus on proper operation and maintenance of systems after they are installed. Customer-focused materials will be developed by the Program and distributed by contractors to their customers. The Lead Vendor will train contractors on the best techniques for efficient operation so that they can provide consistent guidance to their customers.

ii. Streamlining the Customer Experience

- Marketing strategies will make broader use of segmentation to ensure customers are fully aware of HVAC programs that would be relevant to their specific situation; such as promoting heat pumps to customers heating with electric resistance systems.

iii. Collaboration

- Collaborate with other programs and/or organizations to cross-promote the HVAC program:
 - EnergyWise Home Energy Assessments to provide a path for customers to reduce energy load and subsequently right-size heating, cooling and hot water equipment. EnergyWise assessments can also gather detail on homes that current use electric resistance for water heating and/or space heating.
 - Community Engagement Program
 - Add high-efficiency heating, cooling and hot water systems as one of the metrics
 - ConnectedSolutions demonstration program
 - Wireless thermostats
 - Heat pump water heaters
 - DemandLink™ pilot in Tiverton and Little Compton (SRP Report (Docket No. 4655))
 - Rhode Island's Zero Energy Buildings initiative
 - Gas Conversion (Gas Sales)

- promote high efficiency heating systems during the conversion process

iv. New Efforts and Strategies Incorporated in 2018

- Increasing incentives:
 - Wireless Thermostats
 - Boiler 95%
 - Combo condensing boiler units
 - Furnace 97%
 - On-demand water heater 94%
- Adding the Combo Furnace into the gas program offering
- Developing an up/midstream incentive offering for qualified heat pump water heaters
- Adding electric heat pumps as a fuel switching measure (oil fuel switching, oil fuel switching replace on failure, and electric resistance fuel switching)
- Working with vendors to provide promotional sales opportunities of equipment during the year. An example would be to have a vendor contribute an extra incentive in addition to the National Grid offering and co-market the sale.
- Researching co-branding energy-efficient equipment with respective manufacturers.
 - Allow manufacturers to use a “National Grid Product Mark” to promote the Energy Efficiency Programs and heighten public awareness of the Company’s brand and EE campaign.
- Assess ways to improve condensing boiler effectiveness such as providing a special incentivize to contractors who demonstrate that they are setting up systems with proper temperature drop and outdoor setback control.)

v. Gas Conversion

The Company continues to receive high demand from residential customers to convert to natural gas heating options due to real or perceived cost benefits, convenience, or home improvements. In Rhode Island, the Company’s Gas Sales Program is currently responding to this market shift, allocating resources to natural gas conversions, as well as piloting new implementation strategies, such as the Rhode Island Gas Expansion Pilot Program. Natural gas conversions present a strong opportunity for energy efficiency, especially with regards to the new heating equipment that is installed. In 2018, the

Company will continue coordinate between the High Efficiency Gas Program and the Gas Sales Program to promote high efficiency heating systems during the conversion process. Furthermore, the Company will utilize these conversions as opportunities to leverage its other energy efficiency offerings, such as the EnergyWise Home Energy Assessment and the HEAT Loan's 0% financing, to deliver an even better and more cost-effective product for the customer. This seamless integration will provide the maximum value for the customer at the time of conversion – when energy efficiency improvements make the most sense.

12. Initiatives

13. Community Based Initiatives

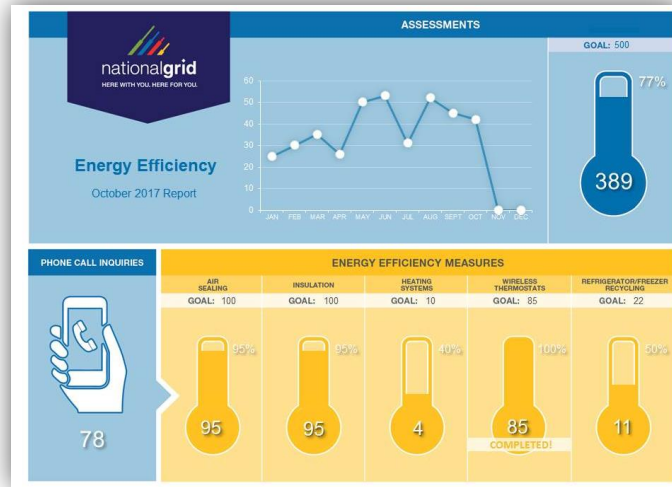
a. Overview

For the past four and a half years, the Company has been on-the-ground in 17 of Rhode Island's 39 cities and towns speaking directly with customers about the benefits of energy efficiency. The initial call to action was for customers to pledge to find four ways to save by making simple behavioral changes in their homes over the course of approximately 20 weeks. Mayors, Administrators, and other local elected officials lent their voices to the message of efficiency through passage of resolutions, mailed communications, and attendance at events. When the participation goal was achieved, the town was named an *Energy Champion* and granted \$5,000-\$10,000 to be used for energy efficiency improvements on a municipal project.

The program evolved over the years; from a simple ask to save more energy by turning off lights to running a Video Challenge engaging thousands of students across the state and encouraging the creation of Energy Task Forces in local communities. For 2018, the Company proposes to continue this evolution in creating a slightly different community model focused more directly on participation and savings goals.

b. 2018 Goals

Early in the program year, two Rhode Island municipalities will be recruited and assigned goals based on historical performance (e.g. mini-split heat pumps installed, refrigerators recycled, weatherizations, home energy assessments, etc.). These municipalities will then be provided with start-up funding, comprehensive marketing toolkits, and supported with training to have a discussion



about energy efficiency with their residents. Frequent check-in calls will allow the communities to speak with the Company regarding progress and share tactics and ideas with other participating towns. At the end of the year, towns will be rewarded with grant monies directly correlated to the increase in volume of the identified measures.

The Company will work closely with municipal leadership to identify community voices in the schools, local clubs and businesses. Unique to the initiative in 2018, the Company will engage more directly with large and small business owners within the community to not only engage them as energy saving advocates for their employees, but to also encourage their participation in the Company’s C&I energy efficiency programs.

14. Residential Demonstration and Research and Development

a. Connected Device Demonstration

National Grid will continue its connected device demonstration project which began in 2016. The main focus of this pilot in 2018 will be to reduce program administration, marketing, software, and vendor costs while maintaining customer incentives in order to make this a cost effective program (BCR > 1). This will involve putting the demand response management system (software) and the vendor fees out for competitive bids. Early in 2018 National Grid will finish a load potential study and a study on the applicability of various residential appliances for demand response. The Company will expand its program to include any appliances that have a reasonable chance of being cost effective. The Company will also improve the customer experience in 2018 by

including information on customers' demand response enrollments in their National Grid portal and by streamlining the enrollment process.

b. Energy Storage

The Company would like to test residential battery storage. Existing programs leverage energy curtailment at the customer level during times of peak system load. The current DR program utilizes communicating thermostats and will eventually offer communicating appliances. Battery storage will move DR to the next level by allowing the Company to dispatch storage systems during peak load periods and providing customers a tool to shift peak loads to less constrained periods.

This demonstration project will use a modest number of installations to test the complexity of this technology implementation. The devices will be installed by an installation vendor with the appropriate qualifications. Customers will be compensated by receiving a free device and free installation. The Company will receive access to the usage data of the battery storage unit and utilize the findings based on the previous year's energy storage study to determine optimal residential customers for battery storage based on demographic, load profile, economic value, and intangible value to customers.

The demonstration will provide insight towards the costs and benefits of battery storage and help The Company customers, and key players in the energy storage industry understand the true value of residential battery storage, the optimal houses for battery storage, and attractive pricing models. The Company seeks to obtain this information through continuous interaction with customers that have the battery storage unit through surveys and questionnaires. The following metrics will be measured to determine the success and impact of the demonstration: demand response load relief, customer load shifting, reliability, customer assessment of technology benefits, customer program experience, and likelihood of a customer recommending participation in a similar program to fellow Rhode Islanders.

c. Emerging Lighting Controls

The Company seeks to evaluate the potential opportunity presented by lighting controls to customers in comparison to LED lighting. The prior year's demonstration consisted of 85 customers split between Rhode Island and Massachusetts receiving these lighting controls which included advanced functions like occupancy, vacancy, and dimming for wall switch applications. The Company will compare the economic and energy savings of

lighting controls versus LEDs based on the savings recorded from the prior year's study. The lighting study demonstration showed signs of promising savings. Having an evaluation comparison would allow The Company to understand the additional potential savings of this technology.

This evaluation will test the value of offering lighting control technology and potential energy savings compared to the average savings from LEDs. The following metrics will be measured to determine the comparable value between lighting control technology and LEDs: customer total bill savings for electric, customer total energy savings (kWh) for electric, customer satisfaction, customer assessment of technology benefits, and likelihood of a customer recommending lighting controls and/or LEDs to fellow Rhode Islanders. The findings of this evaluation will help The Company to determine if lighting control technology offers an added benefit to customers compared to LED lighting.

d. Residential Energy Monitoring

The Company is interested in understanding the value of residential energy monitors. There are multiple vendors offering similar products to customers where users are able to see real-time disaggregated energy usage and the dollars associated per appliance, heat source, and lighting. The Company would like to partner with vendor(s) that offer residential home energy monitors and deploy the devices to particular residential customers in Rhode Island based on the specific use cases The Company identifies as beneficial.

Initial interactions show that technologies used by vendors to identify energy disaggregation in homes and value streams are unique to each vendor. The Company is seeking to understand through this demonstration which technology best pairs with The Company's current programs and potential future program offering(s), and which value streams resonate with its customers the most. This demonstration is the first opportunity to understand the future, scalable offering of residential monitoring devices. The metrics of the demonstration will include, but are not limited to, measuring customers' energy usage, dollars spent/saved, customer satisfaction, usage patterns, and customer assessment of technology benefits.

e. Zero Energy Homes

In 2017, National Grid worked with Rhode Island Housing and Office of Energy Resources to issue an RFP for the development a moderate income/income eligible zero energy home(s). This demonstration will be completed in 2018 and will provide

important information to guide the development of a zero energy offering for this market sector.

Following the moderate income/income eligible demonstration, in 2018 the Company is proposing to develop a market-rate zero energy home that includes energy efficiency, demand response, solar, electric vehicle charging, battery storage, and smart devices to empower the homeowner to adjust their energy loads to meet the zero energy goal at the end of the year. This project would be used as a customer facing marketing and engagement tool for a period of time prior to its sale in order to obtain feedback on acceptance of zero energy homes. Based on the recommendations set forth in the Zero Energy Task Force Whitepaper, “Zero Energy Building Pathway to 2035” development of “proof of concept” or “demonstration projects” to showcase ZEB “Ready” design were recommended as a resource for demonstrating effective design, construction and operation of a zero energy home. In order to the meet the goal set out by the Whitepaper of 100% of new construction to be ZEB after 2035, it is imperative to develop a program to support the market.

The Company will convene a small working group to design the “proof of concept” plan as well as the metrics that will be used to determine customer acceptance, energy efficiency and integration of renewables and controls. The “proof of concept” will potentially include both a new construction project and a renovation project and will engage all parties early in the process, and no later than the design stage. The “proof of concept”/“demonstration projects” may include a study of renewable systems and their performance, in addition to the efficiency elements.

The Company will provide technical support and incentives for high performance measures that will result in high efficiency design and technology that will result in a low energy use for the home. Support for ZEB growth in RI will require education and training for the building community, technical assistance, and improvements to codes and standards. Education for the homeowner will also be a priority as occupants will need to learn “how” to live in a zero energy home and maintain its efficiency and efficacy.

f. New Technology

The Company is open to receiving recommendations on promising new technologies, strategies, and programs that could be tested through future demonstration efforts. In order to provide a platform to receive suggestions and foster communication, the

Company will work towards adding a suggestion box on the RI Energy Saving Programs webpage in 2017.

15. Marketing

a. Overview

The goals of the Company's marketing efforts are to build awareness, educate customers, provide a positive customer experience, and drive participation in the Company's efficiency offerings and services. The Company uses an integrated approach with general awareness tactics (i.e. print ads and radio) as well as digital and direct one-to-one tactics (such as e-mail and direct mail) at the program level to generate interest.

b. Delivery and 2017 Success

Rhode Island continues to see strong residential customer familiarity levels of energy efficiency, increasing 1 percentage-point year-over-year (as of July, 2017). In support of growing familiarity with energy efficiency programs, a new channel, cable television, launched mid-June, 2017. This offline channel has shown significant impact on online metrics, tying broad-based, high-frequency awareness channels to consumer interest and intent to participate. During the first month, the Company saw a 77% increase in related search volume and a 13% participation increase in the featured program.

In addition for 2017, the Company set several key strategic marketing approaches to meet 2017 goals. These approaches were included as part of an overarching strategic marketing plan and were developed based on residential customer research, propensity modeling, media habits research and understanding behavior data. The key strategic marketing approaches include: targeting micro-segments, advancing the digital path to participation and activating influencers, discussed below.

i. Micro-Segment Targeting

With program saturation occurring among "low-hanging fruit" customers, an even more targeted approach was developed to reach new audiences and meet 2017 objectives. Psychographic micro-segments were developed allowing for value-specific communications to be designed for each target. The first to launch was millennial new homebuyers (June '17). Targeted efforts were deployed to align with millennial media use including Hulu video advertising which resulted in strong completed video views.

Targeting efforts for male do-it-yourselfers will launch in the fall and empty nesters in early 2018.

ii. Advancing Digital Path to Participation

Given increased customer demand and to enhance customers' experience digitally, the Company has improved digital platforms in several areas. To support customers while in their research phase online to find information on energy efficiency and the Company's programs, native in-feed / long-form paid content marketing was expanded. Digital content "hubs" were designed to enable customer research of energy topics, delivering in-depth content on energy efficiency products and programs through articles, videos and infographics and positioning National Grid as an energy resource. Native efforts have resulted in 15,435 engagements with National Grid energy efficiency content (through June, 2017). Additionally, the Company has streamlined the customer experience and expanded the online purchasing path thru shopping promotions with special offers of Nest Wi-Fi thermostats, advanced power strips, LED's and room air purifiers. In total, nearly 5,000 products have been sold in RI via online shopping thru August 2017.

iii. Activating Influencers

The objective for this strategic approach is to develop influencer "channels" through community (customer) word-of-mouth and third-party validation. Residential customer case study videos are being used on Facebook to support key energy efficiency programs and the Company will be leveraging the media partnership with the Rhode Show to promote energy efficiency.

Overall the residential energy efficiency marketing activities year to date have delivered over 300,000 website visits to energy efficiency landing pages and more than 24,000 onsite actions that customers have taken on the National Grid website indicating interest including downloading rebate forms, clicking on signup buttons and mobile click-to-calls. In the fall of 2017, the Company will determine which strategic approaches to continue and/or modify for 2018. On an overarching basis, the Company will continue to elevate and broaden awareness marketing, continue to finely target specific audiences with appropriate select program offerings, and to continue to improve customers' digital experience as they explore energy efficiency content and purchase online. Trade allies play an important role in this work. National Grid's residential trade ally program and outreach is through a long-standing vendor who aligns homebuilders,

residential contractors and other trade professionals with the Company's energy efficiency solutions, whether for new construction or HVAC. National Grid augments this vendor's reach through direct mail and digital promotion to the Company's in-house database of residential trade professionals to help increase awareness and engagement with the vendor's program.

For example, over the past year the vendor sponsored and National Grid promoted 8 webinars specifically targeting RI trade allies. These webinars attracted more than 150 RI participants who contacted the Company for further information and/or support of upcoming projects. Vendor-sponsored webinar dates are being considered for 2018. The Company's series of targeted trade professional newsletters were also updated with a new look and feel. Annual Open Reach⁹ of these newsletters exceeds 40% for the RI based circulation of over 1,250.

In addition, print/digital trade advertising builds on the Life on the Grid messaging described above in ways that are directly relevant to the Trade community ("Business on the Grid"). The themes are built around how National Grid's energy solutions help trade allies grow their businesses by providing more value to their customers -- by bringing National Grid in early, the Company can provide energy efficiency expertise, improve building performance, and lower project costs.

Since trade professionals have an advisory role to the end-customer, the Company created the National Grid Professional Network to best serve their specialized needs. It is a unifying umbrella affiliation that supports easy access to information, programs, and incentives that help these professionals incorporate energy efficiency into their projects. It is accessed through the Company's recently introduced Trade-specific website (www.ngrid.com/ProNet) to serve as an organizing marketing framework to deliver fast, easy access to National Grid information relevant to trade professionals; the Company will continue to enhance this Trade-specific website in 2018.

⁹ "Annual Open Reach" represents the percentage of unique recipients who opened the newsletter during the past year.

c. Energy Innovation Hub

In 2017 the Company designed and built the Rhode Island Energy Innovation Hub, located in the southwest corner of the Dunkin' Donuts Center, Providence, RI. The Energy Innovation Hub ("Hub") is a community engagement destination designed to expand customer education and outreach and enrich the customer's understanding of energy. The space and exhibits will reflect energy solutions accessible to all customers, innovative solutions for system reliability and will provide visitors with a vision of a sustainable future. Exhibits will present technologies available to create smart, energy-efficient homes, information about demand response programs, examples of renewable technologies, information on electric vehicles, storm management and core utility services. The exhibits are designed to encourage customers to take action and sign up for the many services and incentives offered to help reduce energy consumption. The Hub will also serve as a convening space for gatherings to discuss, and elevate, energy-related issues.

The three main goals of the Hub are to educate customers about energy topics, empower customers to take action to sign up for ways to reduce their energy consumption, and to provide a convening space for organizations to discuss the clean energy future.

The Hub will be reserved on Thursdays for organizations to hold meetings in the space. The Company will proactively reach out to the following categories of organizations to encourage them to visit the Hub as well as reserve the space for meetings:

- State and local government
- Non-Profit organizations
- Businesses (owners, developers, tenants)
- Residents
- Energy Thought Leaders
- Universities and Colleges, Technical/Vocational Schools, Schools K – 12
- Trades
- Employees and Executives

By partnering with local colleges and universities National Grid envisions the Hub as a multi-faceted nexus thriving with innovation, excitement and passion. The Company intends to empower students and faculty to join us by integrating their disciplines in

areas such as energy, engineering, hospitality, policy, marketing and community service. By including educational partners in the development of the Hub, National Grid will create stewards for the energy future of tomorrow.

16. Residential Measures and Incentives

The following tables list the groups of measures offered in the residential programs, their planned quantities and incentives. Each group may be comprised of many measures.

Electric Programs			
Program	Measure	Units	Incentive
EnergyWise Single Family	Aerator - Dual Fuel Only	100	Average Incentive based on measure mix
	Air Sealing Kit (Oil)	1000	
	FIXTURES	400	
	LED Bulbs	220000	
	LED Fixture	250	
	LED Outdoor Fixture	500	
	Pre-Wx	100	
	Refrig rebate	60	
	Refrigerator Brush	6300	
	Showerhead	250	
	Smart Strip	13000	
	Thermostat - Elec Heat only	300	
	Thermostat - Oil Only	60	
	Torchiere	15	
	WiFi Thermostat	100	
	WiFi Thermostat - DR Enabled	150	
	Wx - GAS	2275	
	Wx - OIL	2000	
	Wx Elec - Elec Heat only	183	
Pipe Insulation	30		
Participant	10000		
EnergyWise Multifamily	Participant	6000	Average Incentive based on measure mix
	Aerator	569	
	Aerator Oil	489	
	Air Sealing- Electric with AC	1461	
	Air Sealing - Oil	156	
	Common External LED Fixture	1457	
	Common External Reflector	217	
	Common Internal LED Fixture	3955	
	Common Internal Reflector	651	
	Dwelling External LED Fixture	31	
	Dwelling External Reflector	3	
	Dwelling Internal EISA Exempt	6595	
	Dwelling Internal Reflector	2630	
	Insulation-electric with AC	1090	
	Insulation-Oil	125	
	Pipe Wrap Domestic Hot Water- Oil	187	
	Pipe Wrap Heating Oil	42	
	Refrig rebate	19	
	Showerhead Elec	221	
	Showerhead Oil	201	
	Smart Strip	4225	
	Thermostat Elec with AC	2263	
	Thermostat-Oil	112	
	TSV Showerhead-Electric	63	
	TSV Showerhead-Oil	120	
	Common External LED Bulbs	1301	
	Common Internal LED Bulbs	4368	
	Dwelling Internal LED Bulbs	15840	
	Custom	11	
Vending Miser	9		

Residential New Construction	CODES AND STANDARDS	1	
	LED Bulbs	10000	
	Renovation Rehab CP	50	
	Renovation Rehab Tier 1 Home	40	
	Renovation Rehab Tier 2 Home	2	
	Renovation Rehab Tier 3 Home	2	
	Tier 1 Home	85	
	Tier 2 Home	60	
	Tier 3 Home	7	
ENERGY STAR® HVAC	Central Air QIV	65	\$ 175.00
	Central Air SEER 16.0 EER 13	376	\$ 250.00
	Central Air SEER 18.0 EER 13	18	\$ 250.00
	Down Size 1/2 Ton	20	\$ 250.00
	Duct Sealing	5	\$ 100.00
	ECM Furnace	328	\$ 100.00
	Circulator Pump	2400	\$ 100.00
	Mini Split Heat Pump QIV	27	\$ 175.00
	Heat Pump SEER 16.0 EER 12 HSPF 8.5	15	\$ 250.00
	Heat Pump SEER 18.0 HSPF 9.6	13	\$ 500.00
	Mini Split HP SEER 18.0 HSPF 9	400	\$ 250.00
	Mini Split HP SEER 20.0 HSPF 11	551	\$ 500.00
	Heat Pump Water Heater <55 gallon, Electric	750	\$ 750.00
	WiFi Enabled Thermostat with Cooling - Gas	750	\$ 25.00
	Oil Fuel Switching	15	\$ 3,000.00
Oil Fuel Switching ROF	5	\$ 3,000.00	
Electric Resistance Fuel Switching	25	\$ 3,000.00	
ENERGY STAR® Products	Dehumidifier Rebate	400	\$ 30.00
	Dehumidifier Recycling	150	\$ 30.00
	Energy Star Dryer	300	\$ 50.00
	Freezer Recycling	300	\$ 63.00
	Ladybug shower adapter electric hot water	40	\$ 11.00
	Ladybug shower adapter Gas Hot Water	40	\$ 11.00
	Ladybug shower adapter Oil or Propane Hot Water	10	\$ 11.00
	Pool pump - 2 speed	50	\$ 250.00
	Pool Pump - variable	100	\$ 600.00
	Refrigerator Recycling	2000	\$ 63.00
	Refrigerator Recycling (Primary)	2500	\$ 63.00
	Roadrunner Showerhead Gas Hot Water	75	\$ 15.00
	Roadrunner shower head electric hot water	100	\$ 15.00
	Roadrunner Showerhead Oil or Propane Hot Water	75	\$ 15.00
	Room Air Cleaners	120	\$ 40.00
	Smart Strip	5000	\$ 20.00
	Advanced Power Strip	100	\$ 35.00
Room Air Conditioner 10.8	100	\$ 40.00	
ENERGY STAR® Lighting	LED (15,000) -Hard to reach	120000	\$ 2.00
	LED Bulb (15,000)	600000	\$ 2.00
	LED Bulb (Hard to Reach)	40000	\$ 4.00
	LED Bulbs	200000	\$ 4.00
	LED Bulbs (EISA EXEMPT)	20000	\$ 5.00
	LED Fixture	220000	\$ 10.00
	LED Outdoor Fixture	2300	\$ 10.00
	LED Reflectors	240000	\$ 6.00
	LED School Program Bulb	8000	\$ 7.50
	School Program	120000	\$ 5.00
Speciality Bulbs	36000	\$ 7.50	

Home Energy Reports	New Mover electric	23135	\$ 8.65
	New movers dual fuel	13736	\$ 8.65
	Opt-out dual fuel	99951	\$ 8.65
	Opt-Out electric	118910	\$ 8.65
	Refills	29268	\$ 8.65
Single Family - Income Eligible Services	Window AC Replacements	550	Average Incentive based on measure mix
	Appliance Removal	5	
	Dehumidifier Rebate	30	
	DHWater Measure (elec)	20	
	DHWater Measure (gas&other)	20	
	DHWater Measure (OIL)	20	
	Participants	2750	
	Replacement Freezer	165	
	Heat System Replacement	270	
	LED Bulbs LI	63250	
	Refrig rebate	1760	
	Smart Strip	3575	
	Waterbed	3	
	Wx DelFuel	440	
Wx Elec	35		
EnergyWise Income Eligible Multifamily Retrofit	Aerator- Oil	320	Average Incentive based on measure mix
	Air Sealing- Electric with AC	2	
	Air Sealing- Oil	102	
	Common External LED Fixture	1189	
	Common External Reflector	468	
	Common Internal LED Fixture	4999	
	Common Internal Reflector	43	
	Custom	20	
	Dwelling External LED Fixture	29	
	Insulation - Electric with AC	90	
	Insulation- Oil	82	
	Participant (Non-energy Benefits)	4800	
	Pipe Wrap Domestic Hot Water- Oil	122	
	Pipe Wrap Heating Oil	41	
	Refrigerator Rebate	65	
	Showerhead Electric	27	
	Showerhead Oil	210	
	Smart Strip	1802	
	Thermostat AC Only	2	
	Thermostat Elec with AC	2	
	Thermostat Heat Pump	2	
	Thermostat Oil	205	
	TSV Showerhead Electric	186	
	Dwelling External Reflector	20	
	Dwelling Internal EISA Exempt	1317	
	Dwelling Internal Reflector	122	
	Common External LED Bulbs	866	
Common Internal LED Bulbs	3088		
Dwelling Internal LED Bulbs	7137		
Vending Miser	4		

Gas Programs			
Program	Measure	Units	Incentive
EnergyStar® HVAC	BOILER RESET	25	\$ 100
	Boiler90	250	\$ 450
	Boiler95	350	\$ 800
	COMBO CONDENSING	100	\$ 650
	COMBO CONDENSING 95	375	\$ 1,200
	Furnace95ECM	225	\$ 300
	Furnace97ECM	135	\$ 500
	WATER HEATER - ON-DEMAND 82	225	\$ 250
	TANK WATER HEATER 67	30	\$ 100
	WATER HEATER - ON-DEMAND 94	250	\$ 600
	WiFi Thermostat - cooling and htg	300	\$ 75
	WiFi Thermostat - gas ht only	300	\$ 100
	Programmable Thermostat	100	\$ 25
Combo Furnace	300	\$ 450	
EnergyWise	Aerator	150	Average incentive based on measure mix
	Weatherization	2,275	
	Air Sealing Kit (Gas)	1,000	
	Showerhead	260	
	Pipe Wrap	1,250	
	THERMOSTAT	400	
WiFi THERMOSTAT	95		
EnergyWise Multifamily	Air Sealing	3,914	Average incentive based on measure mix
	Custom Non-Lighting	30	
	Participant	2,500	
	Faucet Aerator	1,517	
	Insulation	3,511	
	Low-Flow Showerhead	593	
	Pipe Wrap (Water Heating)	509	
	Programmable Thermostat	480	
	TSV Showerhead	346	
WiFi thermostat gas	140		
Home Energy Reports	New movers dual fuel	13,738	\$ 3.80
	Opt-out dual fuel	73,908	\$ 3.80
	Opt-out gas only	16,971	\$ 3.80
	Refill	34,383	\$ 3.80
Residential New Construciton	CODES AND STANDARDS	1	Average incentive based on measure mix
	CP	15	
	CP-DHW	15	
	RR CP	70	
	RR CP-DHW	70	
	RR Tier 1	3	
	RR Tier 1 - DHW	3	
	RR Tier 2	60	
	RR Tier 2 - DHW	60	
	RR Tier 3	1	
	RR Tier 3 - DHW	1	
	Tier 1	31	
	Tier 1 - DHW	31	
Tier 2	75		
Tier 2 - DHW	75		

Gas Programs			
Program	Measure	Units	Incentive
Single Family - Income Eligible	Heating System Replacement	175	Average incentive based on measure
	Weatherization	500	
Income Eligible Multifamily	Air Sealing_LI	759	Average incentive based on measure mix
	BOILER Commercial_LI	33	
	BOILER_LI	15	
	CUST NON-LGT_LI	40	
	Faucet Aerator_LI	2,549	
	FURNACE_LI	15	
	Insulation_LI	774	
	Low-Flow Showerhead_LI	1,126	
	Participant (NEB)_LI	3,500	
	Pipe Wrap (Water Heating)_LI	701	
	Programmable Thermostat_LI	780	
	TSV Showerhead_LI	294	
Wifi Thermostat gas_LI	20		

2018 Commercial and Industrial (C&I) Energy Efficiency Solutions and Programs

Table of Contents

1.	Introduction	1
a.	Structure of C&I Energy Efficiency Programs and Initiatives - Attachment 2	2
2.	Central Themes for Efficiency	3
a.	Better Customer Experience & Analytics.....	3
i.	Improving Efficiency in Project Cycle Times.....	3
ii.	Data Analytics.....	3
iii.	Tools for Customers’ Management of Energy Usage.....	4
iv.	Automated Benchmarking Systems	4
v.	Green Button.....	4
vi.	Building Labeling.....	5
b.	Market Sector Approach.....	5
i.	Approach to Large and Mid-Sized Customers Based on Usage	5
ii.	Grocery Sector.....	6
iii.	Municipal and State Buildings	7
iv.	Project/Energy Management Support	7
v.	State SEMP.....	8
vi.	Manufacturing/Industrial	9
vii.	Small Manufacturing/Industrial	12
viii.	Restaurants.....	12
ix.	Lodging.....	12
x.	Specialty Buildings.....	13
xi.	Multifamily Sector	14
xii.	Approach to Other Market Sectors	14

- xiii. Trade Ally Engagement (TRAEN) 16
- c. Education and Training 16
 - i. Building Operator Certification Training (BOC)..... 17
- a. Affordability and Financing..... 17
 - i. On Bill Repayment (OBR) 22
 - ii. Rhode Island Infrastructure Bank – Efficient Buildings Fund..... 24
 - iii. Commercial Property Assessed Clean Energy (C- PACE) 25
 - iv. Third Party Products: Ascentium..... 27
- 3. Commercial and Industrial Energy Efficiency Programs..... 28
- 4. Large Commercial and Industrial New Construction Program 29
 - a. Overview 29
 - b. 2018 Goals 29
 - c. New Buildings, Additions, Major Renovations and Tenant Fit-Ups..... 29
 - i. Systems Approach for New Construction 30
 - ii. Whole Building Approach for New Construction..... 31
 - iii. Operational Verification 31
 - d. Initiatives specific to New Construction Program 32
 - i. Building Energy Code and Appliance Standards 32
 - ii. Exterior Performance Lighting and Controls..... 36
 - iii. Energy Efficiency Integration with Solar 36
 - e. Demonstration/R&D Projects specific to New Construction..... 36
 - i. Zero Energy Demonstration Projects..... 36
 - ii. Power over Ethernet (PoE) lighting system for new construction or major renovation..... 38
 - iii. Accelerate Performance: Performance Based Procurement 38
 - iv. Indoor Agriculture 39
- 5. Large Commercial Retrofit Program 40
 - a. Overview 40
 - b. 2018 Goals 40

c.	Pathways to Meet Program Requirements	40
i.	Prescriptive Path	40
ii.	Custom Path	41
d.	Initiatives Specific to Commercial Retrofit Program: Gas Technologies	42
i.	Heat Exchanger Cleaning.....	42
ii.	Xeros Polymer Laundry Solutions	42
iii.	On-Premise Laundry (OPL)	42
iv.	Steam Trap Smart Tags.....	43
v.	EcoThermal Grease Filters	43
vi.	Removable Insulated Jackets for Big Steam Plants	44
e.	New Gas Measures Being Developed	45
i.	Tub Spout Water Saving Trickle Device	45
f.	Initiatives specific to Retrofit Program	45
i.	Retro-Commissioning.....	45
ii.	Boiler Tune-Up Initiative	46
iii.	Strategic Energy Management Planning (SEMP).....	46
iv.	Lighting Designer Incentives (LDI)	48
v.	Solid State Street Lighting	48
vi.	Strategic Energy Management (SEM).....	51
vii.	SEM Strategy.....	52
viii.	Peak Load Reduction Strategies	53
ix.	Products Offered Through “Upstream”	54
x.	Combined Heat and Power Initiative	58
g.	Retrofit Program Demonstration/R&D Projects.....	67
i.	Demand Response.....	67
ii.	Energy Efficiency upgrades in pumping systems for water/wastewater plants	68
iii.	Behavior change through education of small/medium plant personnel	69
iv.	Emerging Lighting Market Interventions.....	70

v.	Emerging Lighting Technologies.....	72
vi.	Advanced Workforce & Channel Development	73
6.	Small Business Direct Install Program.....	75
a.	Overview	75
b.	2018 Goals	76
7.	Business to Business Marketing.....	79
8.	Appendices.....	83
a.	Appendix 1 Sample list of custom measures in the energy efficiency program ...	83
c.	Appendix 2: Retrofit Logic Model	84
d.	Appendix 3: New Construction Logic Model	85
e.	Appendix 4: Subprogram and Measure Savings Goals and Incentives.....	86

1. Introduction

The 2018-2020 Three-Year Plan details four central principles that encompass an advanced and innovative approach to serving commercial and industrial customers and the building industry at large. The Company believes that these four principles are apparent in all aspects of the 2018 Plan and incorporates the planning process, which included many brainstorming sessions from internal teams to external stakeholders. In addition, each of the Company's strategies, programs and initiatives are focused on meeting the needs of customers, the environment, and preparing for the future. Below are the four key priorities the Company has identified in the 2018–2020 Three-Year Plan.

Customers - Deliver comprehensive services encompassing all market segments and customers. Such services will enable customers to control their energy use, reduce their bills, and help support their financial well-being.

Least Cost - Deliver energy efficiency services as cost-effectively as possible through optimizing finance and promoting upstream initiatives. Continuing to deliver cost effective energy savings under Least Cost Procurement will create cost savings to all customers, while creating economic benefits that create and maintain local jobs and businesses.

Environment - Provide solutions that maximize greenhouse gas emission reductions and contribute to Rhode Island's clean energy policy goals, including the Resilient Rhode Island Act.

Future – Innovate to capture savings from new technologies and strategies to position energy efficiency programs for the future including the integration of energy efficiency with demand response, renewable energy, and smart grid technologies. This includes incorporating outcomes from the Rhode Island Power Sector Transformation Initiative and Docket 4600.

Affordability and financing for the Company's customers are important criteria to achieve all the energy efficiency strategies and innovations that the Company is proposing in this plan. In addition to the Company's On Bill Repayment (OBR) initiative, the timing in Rhode Island is right for enhancing affordability through the Rhode Island Infrastructure Bank that is further enhancing energy efficiency investments for its

customers. In the 2017 plan, in addition to the successful collaboration between the Company's financing and EBF, the Company highlighted the recently launched C-PACE program through RIIB that allows for additional financing for commercial building customers. This program will continue in 2018.

a. Structure of C&I Energy Efficiency Programs and Initiatives - Attachment 2

Four Main C&I Themes

1. A Better Customer Experience
2. Market Sector Approach
3. Affordability and Financing
4. Education, Awareness and Trainings

Three Types of Programs

1. Large C&I New Construction – Focuses on offerings that target ground up new construction, major renovations, tenant fit-outs and end of life replacement equipment.
2. Large C&I Retrofit - Focuses on all services and technologies towards retrofits needed for existing buildings.
3. Small Business/ Direct Install (SMB/DI) program that focuses providing turn-key solutions to many small businesses.

It should be noted that the offerings for Large C&I New Construction and Retrofit Programs are also available to small business customers.

The Appendices provide further details to the three programs mentioned above. Following figures and tables are in the appendix:

1. Sample list of custom measures for new construction and retrofit programs
2. Program logic model for retrofit program
3. Program logic model for new construction program
4. Goals and incentive description of each of the electric sub-programs
5. Goals and incentive description of gas program measures

2. Central Themes for Efficiency

a. Better Customer Experience & Analytics

i. Improving Efficiency in Project Cycle Times

The Company is committed to provide its customers with a more expedited project initiation and enrollment and incentive application (transactional) experience. The Company's internal Process Excellence Team made significant progress in applications processing, and the building Technical Assistance (TA) review process. For example, a revised post inspection protocol is expected to reduce turnaround time after project completion thereby ensuring faster incentive payment to customers. In addition there have been reductions in cycle times from application creation to project incentive payment. Beginning in late 2017, the Company will begin the design and implementation of a new web-based portal for customers to create and submit fully digital incentive applications replacing the PDF based forms that have been used for years. This new portal will greatly improve the customer experience, accelerate application review and incentive payments, and potentially increase participation.

The following section describes the four broad areas mentioned previously and how they will connect with all the Commercial and Industrial (C&I) Efficiency Programs and strategies: Large Commercial New Construction, Large Commercial Retrofit and Small Business Direct Install.

ii. Data Analytics

National Grid, like many other utilities and other companies around the globe, is focused on how data can improve its decisions, inform its strategic planning, and understand its customers more completely. The Company plans to use customer intelligence software that will help with customer insights and enhance customer satisfaction. The software will allow the Company to drive higher awareness and participation in the programs and more impactful interactions with customers that deepen the value of energy projects. The Company will continue to examine new pathways to obtain more detailed information on its large customers.

iii. Tools for Customers' Management of Energy Usage

The Company intends to help customers access their energy data to allow for greater awareness of energy consumption. The Company will seek to achieve this through various methods described below:

iv. Automated Benchmarking Systems

National Grid has been working diligently with internal partners to develop a path towards automating data uploads into Energy Star's Portfolio Manager. The Company acknowledges automated usage data transfer to customers as an import tool in the future for building labeling intentions, supporting prior OER commitments to support state/municipal facilities improvements, and as a tool for helping customers to better understand their energy environment. The Company currently is in the process of automating data uploads to Portfolio Manager, for customers. The process is slated for completion in early 2018 whereby customers will be able to automatically upload aggregate energy usage data into Portfolio Manager. This process will also support the City of Providence's benchmarking ordinance, the City is looking to implement in 2018. The goal of the benchmarking ordinance is to improve energy efficiency in buildings within the City of Providence. The Company is currently supporting the City's stakeholder process for the development of this ordinance.

v. Green Button

The Green Button initiative is an industry-led effort that responds to a White House call-to-action to provide utility customers with easy and secure access to their energy usage information in a consumer-friendly and computer-friendly format. Customers are able to securely download their own detailed energy usage with a simple click of a literal "Green Button" on electric utilities' websites.¹ In 2016-2017, more than 500 C&I and residential customers downloaded their energy use data with Green Button. This included both gas and electric customers. IN 2018, National Grid will explore engaging with customers who download their energy use data with automatic email outreach that details how the programs can help them manage their energy use and achieve their energy goals.

¹ <https://energy.gov/data/green-button>

vi. Building Labeling

The Company will continue to work with the Office of Energy Resources (OER) and other stakeholders to identify strategies for building labeling in the commercial and multifamily real estate sectors in Rhode Island. Building labeling will provide greater transparency in the energy performance of a given building. This initiative, currently led by OER, is working to establish building labeling parameters and mechanisms for commercial and multifamily properties. This will likely require the linking of the Company's energy usage database with operational and asset based rating systems that property owners will use to benchmark their buildings. The Company will continue to work closely with OER to support property owner and tenant access to usage data. Benchmarking and Labeling efforts will also help towards achieving Zero Energy Building (ZEB) goals for existing buildings as detailed in the Company's ZEB white paper (see more details in the ZEB section below).

b. Market Sector Approach

Specific enhancements to some sectors are highlighted below:

- Grocery/Supermarkets
- Industrial/Manufacturing
- Municipal & State
- Hospitality (Restaurants & Lodging)
- Specialty buildings including: Farm/Agriculture and Extended Care Facilities
- Hospitals
- Colleges and Universities
- Commercial Real Estate
- Multifamily

i. Approach to Large and Mid-Sized Customers Based on Usage

The Company's sales and operations teams will continue to address unique needs of customers depending on their annual usage, peak demands and market segmentation. Customers with annual average demand of 500 kW or greater and 75,000 Therms or greater gas usage are classified as large and are managed by individual sales representatives. Since 2015, customers with annual average monthly peak demand between 200 to 500 kW and less than 75,000 Therms of gas are being served through the Channel Sales group.

Both sales teams work with customers either directly or through project expeditors and vendors and offer pathways to upgrade various systems within a facility including, not limited to, lighting, HVAC, and compressed air. They can also call on the Company's Technical Assistance (TA) Vendors to help the customer with a more comprehensive look at their entire facility where appropriate. In many cases, this more comprehensive look helps customers uncover opportunities for savings previously unknown to them or beyond common measures.

In some cases the Sales teams customizes solutions to meet the needs of the customers. Sales may work with large customers to hold and/or manage incentives in escrow accounts for future EE.

The sections below provide details on each of the current market sectors.

ii. Grocery Sector

The Company will continue to provide targeted energy savings opportunities to Rhode Island's grocery customers through the EnergySmart Grocer (ESG) Initiative. ESG has been in operation since 2013 and the third party contractor has been working with grocers to identify a wide array of retrofit and new construction opportunities. The ESG initiative delivered over 6.9 million kWh and 49,000 therms of savings in 2015 as part of its strongest year to date and reflective of several large projects which pushed delivery well above goals for that year. ESG is showing solid delivery through June 2017 towards the 3.36 million kWh 2017 goal. Therm savings are projected at 13,000 therms for 2017. This initiative is expected to save another 3.36 million total kWh in 2018 and over 13,000 therms in 2018.

The customers served by this initiative include a combination of local, regional, national and even international grocers and other retail establishments who sell food and have heavy refrigeration usage. ESG provides "unitized" incentives – i.e., \$ per unit physical unit such as linear feet, square feet, horsepower, etc. -- for the most common measures relevant to these customers which provides an easy to understand offering which leads to easier project planning and investment decisions. ESG also offers custom project engineering support to help customers pursue all cost effective measures in their facilities.

The measure mix to date includes infiltration measures (night covers, strip curtains), lighting (LED case lighting, LED shelf or end-cap lighting, LED fixtures or solutions for walk-in refrigeration, LED parking lot lighting), refrigeration (adding doors to open refrigerated cases, EC motors in refrigerated walk-ins and cases), refrigeration controls (floating head pressure control and floating suction pressure control), and HVAC measures (controls and VFD's). ESG has delivered over 59% of its savings from refrigeration measures, 21% came from HVAC measures and 18% from lighting with the remainder coming from various other areas.

ESG is considering adding a hot water heat reclaim measure to the offering and is in the process of reviewing the calculation methodology. Additional new technologies being brought forward are permanent magnet synchronous motors, an even more efficient motor than existing technologies used in fractional horsepower applications, as well as hybrid condensers that utilize evaporative pre-cooling during warmer months for more efficient refrigeration system operation. In addition, ESG will identify supermarket dishwasher demo projects through its customer contacts. (highlighted in later sections under Demonstration Projects)

Over the last couple of years of implementing ESG, the Company learned that marketplace understanding has grown tremendously through targeted outreach and this is reflected in the strong delivery of the initiative. The Company also learned that greater integration across other offerings like the Small Business program could lead to better customer service and more successful projects. As a result the Company has begun to incorporate ESG services for all small grocery customers as well.

iii. Municipal and State Buildings

The three year (2012-2015) DOE funded Public Energy Partnership (RIPEP) led to approximately 123 municipal and state buildings reaching an average of 28.6% projected energy reduction, way beyond the DOE goal of 20% for the partnerships. In combination with the Efficient Building Fund (EBF) through RIIB and the Company's existing collaboration with municipal customers, the Company forecasts a continued momentum in energy efficiency in the municipal sector. In addition to incentives and technical support that will continue to be offered in 2018, in specific areas like:

iv. Project/Energy Management Support

In 2016, Rhode Island Infrastructure Bank's (RIIB) Efficient Buildings Fund (EBF) was created to provide capital for comprehensive projects. Qualifying projects will tend, by

their very nature, to be costly and technically complex. The time and expertise required to identify, develop, and oversee these projects can be beyond the resource capacity of many towns and cities. In 2016 the Company supported several municipalities who applied for EBF applications. Support included reviewing project submittals, supporting city/town Council approvals, implementation planning, reviewing efficiency project proposals, RFP development and bidder selection.

The support for energy efficiency project implementation and street lighting that the Company and its vendor provided in 2016 has produced significant results. Municipalities have recognized the value in this type of support as it provided a trusted partner to bring the time and expertise municipalities lack to identify, develop and oversee complex projects. To continue to serve this sector, there are several support mechanisms in place for 2018:

- RIIB has hired project management support to provide auditing and project installation services to municipal customers URI will be supporting municipalities as they learn to use Portfolio Manager as well as meet the EBF's energy reporting and energy management plan development requirements.
- The Company will continue to support municipal engagement in OER and RIIB programs like vendor selection, engineering support and implementation of upgrades through the EE programs.
- The Company will also provide energy audits to select municipal/school/wastewater customers to support their EBF applications.
- For financing in this sector, the Company will continue to offer On-Bill Repayment for electric and gas measures. The Company and other partners such as OER will assist the RIIB with municipal projects currently enrolled in the EBF program through RIIB, and on municipal projects that subscribe in 2018. The Company plans to serve on the committees in order to ensure that customers have access to finance, that the process is easy, and that the Company and RIIB are working with customers in a coordinated way.

v. State SEMPs

In June 2016, a joint Memorandum of Understanding (MOU) was signed between the Company, OER, Department of Administration (DOA) and Department of Capital Asset Management (DCAMM). The purpose of this three year period MOU is to strengthen the State's commitment to economic growth and climate change mitigation, and to lead by

example through the Governors Executive Order (EO 15-17) that requires all State facilities to reduce their energy consumption by 10% by 2019. Consistent with this EO, this MOU is designed to integrate strategic energy planning across State facilities and to leverage the Company's programs and best practices to achieve a minimum cumulative energy savings of ten percent (10%) below fiscal year 2014 levels by the end of fiscal year 2019. This MOU pertains to building projects (both retrofits and new construction) for State facilities. Specifically in 2018, the goal of this MOU states electric reduction of 8.7 Million kWh and 260,000 Therms. These goals are an increase of 8% for electric and 9% for gas savings from 2017.

National Grid plans to assist with the state SEMP with:

- Identifying and prioritizing projects from the two dozen scoping studies and retro-commissioning reports that have been completed thus far.
- Working with the agencies and purchasing departments to develop and request for qualifications and proposals for the \$4,000,000 to be spent fiscal year ending June 30, 2018.
- Identifying remaining projects and proposing a budget for the remaining buildings to be included in the FY 2019 budget (due in January, 2018).

In addition, National Grid will continue to offer building operator certification training.

In 2018, National Grid proposes to try a few different approaches to delivering energy efficiency based on the building size and building function:

- For smaller buildings, one measure such as lighting will be installed in multiple facilities. This will provide economy of scale for 8-15 buildings.
- Multiple measures (such as lighting, HVAC, etc.) will be installed in one or a group of buildings such as the prison system or all the DOT buildings.
- Within some of the facilities, the Company will have a more comprehensive approach, following the Lead by Example. These measures will include Lighting, HVAC, controls, Photovoltaic, etc.

vi. Manufacturing/Industrial

The industrial sector accounts for one-third of the total U.S. energy consumption, and as such represents a substantial opportunity for cost-effective energy savings. Effectively managing and reducing industrial energy use has increasingly become a key priority.

The Industrial Initiative was started in 2013 as a demonstration project and enrolled seven customers over the course of 2013 and 2014. During the demonstration phase, the initiative surpassed its goals by identifying more than 800,000 Therms and 7.5 million kWh in estimated² technical potential savings. In addition, this helped the Company build trusting relationships with its top industrial customers in Rhode Island. In 2015, National Grid formalized the program and expanded outreach to include 17 large industrial/manufacturing customers. From 2015-2018, 47 electric customers with complete or active projects in Rhode Island represent 16,000 annual MWh and 133 applications. Gas participation over the same period of time consists of 328,000 annual therms and 34 applications.

The National Grid Industrial Initiative assists busy plant managers identifying process improvements and energy efficiency projects. Tight budgets and limited staff time often make it difficult for businesses to take advantage of the savings these projects provide. The Industrial Energy Advisors' services are targeted towards large industrial facilities with significant electric and/or gas usage and are available at no cost to the customer. Unlike most commercial buildings, industrial facilities are likely to find that the majority of their energy consumption is production-related, instead of space lighting and conditioning. The Industrial Initiative team focuses on process measures including:

- Free Cooling on Process Chillers
- Heat Recovery Projects
- Thermal Oxidizers
- Process Controls and Automation
- Drives, Motors, Vsd Compressors
- Lighting Upgrades

As a result of the Industrial Energy Advisors' engagement, the proportions of process-related projects have increased, along with overall savings.

² Technical potential is an ideal scenario which sums all energy efficiency measures that are feasible given technological limitations. Typically, only a portion of this potential is achievable given cost-effectiveness, program design structure and customer limitations - such as scheduling and availability of capital.

Case Study

Aaron Industries reduced their energy use, increased material production using the same amount of energy, and reduced their carbon footprint. As a result they are able to deliver their quality product at a more competitive price point.



In 2017, the Company continues to maintain the key features of the initiative and the results, so far, have been extremely promising.

Current program components and highlights:

- An industrial-specific technical expert team from the Company's specialty engineering partner provides support to its sales team and technical solutions to its industrial customers. These solutions include process energy related measures, management change recommendations, project management support, and other HVAC and lighting related options.
- A scoping study of the technical and energy management opportunities for the facility, at no cost to the customer. If a detailed analysis, in addition to a scoping study, is required (e.g. a detailed compressed air study), the costs of the study are shared with customers on a case by case basis.
- An incentives package that meets customer payback and financial hurdle rate criteria.
- Customer needs assessment: The sales team and the Company's engineering partner will conduct needs assessments in order to provide the best solutions for its customers. The Company recognizes that some customers may need more assistance in management of their energy, such as examining interval data anomalies and working to correct them (frequently scheduling or equipment setting errors), before implementing energy saving measures. National Grid will categorize customers based on their levels of engagement

and will develop different implementation paths based on each customer's needs.

- National Grid will also provide project progress tracking and support to overcome implementation barriers.

In 2018, National Grid and its engineering partner plan to reach out to more customers as well as following up with customers who have successfully completed projects to see if more collaboration can be done.

vii. Small Manufacturing/Industrial

The Company continues to serve small and medium industrial/manufacturing facilities through its direct install and large retrofit programs in Rhode Island. The Company also works closely with vendors and trade allies to support energy efficiency upgrades in these industrial facilities. In 2018, the Company will continue working towards identifying go-to market strategies for 150 to 300 kW small industrial customers as that's a market size where there is more potential in Rhode Island.

viii. Restaurants

The Company will continue to offer energy efficiency services to its small to medium sized restaurants through the Direct Install and Large retrofit/new construction programs. In addition to this, the Company implemented a new strategy for chain restaurants in 2016, which was very successful. The strategy was to approach a corporate office with an energy efficiency action plan that can be tailored to the needs of a particular chain. An MOU is signed with the corporate office and the Company that outlines the plan. The ideal candidates for this initiative are chain restaurants, with 24/7 operations and large number of stores. In 2016-2017 a large franchise restaurant in Rhode Island participated in this initiative specifically designed for chains and franchises. 88 restaurant locations have participated in this program so far, with total annual savings of 3,629,347 kWh from this initiative. In 2018 the Company will look to expand this initiative with other restaurant chains.

ix. Lodging

Lodging facilities in Rhode Island have participated in the Company's programs in the area of lighting. However, there is potential for more savings. The Company is researching several areas that could help this segment reduce energy consumption even further. The Company is looking at things as simple as more efficient pool pumps to more complex interventions such as ozone or polymer bead laundry washing systems. There is also potential in room key controls for lighting, electronics, and HVAC that are

very popular in hotels in other parts of the world. The Company currently has offerings for some of these items and needs to further investigate other options.

x. Specialty Buildings

Extended Care Facilities such as Nursing Homes/Assisted Living

The Company has, over the past couple of program years, investigated different ways to try and serve nursing homes, rehabilitation facilities, and assisted living spaces beyond simple lighting retrofits. The latest attempt included trying to share the cost of an experienced energy manager to help these customers jumpstart project development. It was not successful. The Company's investigations turned up three simple truths:

1. These facilities want to pursue energy efficiency and comfort upgrades to their facilities.
2. Nearly every one of these facilities did not have the resources to even consider a cost share of investigating energy efficiency opportunities, let alone act on them.
3. The Company did not have a tool, beyond the limited resources of National Grid's OBR to help them deal with these issues.

However, there is now Commercial Property Assessed Clean Energy (C-PACE) as a tool. C-PACE further defined in "Affordability and Financing" section below, allows customers access to low cost private capital for terms that greatly exceed most conventional business loans. It also allows to the customer to capitalize all costs related to the project. This means that the Company now has a solution for the single biggest objection to moving forward with deeper and broader efficiency measures in this segment. These measures include, but are not limited to, HVAC improvements, envelope improvements, energy management systems, energy efficient laundry systems, and Combined Heat and Power (CHP).

Starting in 2018 National Grid, the Rhode Island Infrastructure Bank (RIIB) and various parts of the RI state government, including the treasurer's office, will be working together to advance this solution in this segment. This new financing tool and increased attention from various stakeholders will help dramatically increase the number and diversity of energy efficiency projects in this vertical.

Farm/Agriculture

A couple of years ago OER and National Grid began an effort to serve farm and agricultural customers in the state of Rhode Island. Under the informal agreement between OER and the Company an allocation of Regional Greenhouse Gas Initiative (RGGI) funds were used to perform the audits at the pilot farms, train auditors, develop a list of technically sound measures, and create a fund to pay for energy efficiency incentives for delivered fuels (oil, propane). National Grid agreed to cover electric and natural gas energy efficiency incentives in accordance with Company policies.

In 2016, audit reports and recommendations were delivered to all nine pilot farms. Several farms have commenced with installing measures and the rest are evaluating which measures are best for their specific situations. National Grid and OER also created co-branded marketing pieces for this initiative. In early 2017, National Grid's vendor for this program began calling a list of farm/agricultural facilities, provided by OER, to educate them about the program and encourage farms to complete an audit of their facilities. The Company will continue its efforts to engage with farms, jointly with OER, in 2018.

xi. Multifamily Sector

The Multifamily Initiative will continue to provide joint residential and commercial energy services to condominiums or apartment complexes for energy efficiency upgrades. The C&I program specifically offers incentives for master metered gas measures that typically include boiler reset controls, insulation and air sealing and the rest is addressed through residential incentives through a common point of contact. The Company anticipates a higher volume of projects in the multifamily new construction space, to come through the C&I programs in the next few years and is currently exploring ways in which to streamline the application process for the multifamily program.

xii. Approach to Other Market Sectors

Hospitals: The Company will continue to work with Rhode Island's five largest hospitals (all under one partnership) through the multiyear Strategic Energy Management Planning (SEMP) initiative (refer to the SEMP section for more details). The medium sized healthcare facilities will continue to be addressed through the channel sales group.

Colleges and Universities: These are currently served through either the Company's large commercial programs with a dedicated sales team or the Company's SEMP initiative. With a master-metered portfolio of buildings within the campus, most universities are

tied to sustainability goals and climate action plans to reduce their greenhouse gas emissions. The Company's SEMP initiative allows enrolled university customers to engage in multi-year campus energy planning and assists them in identifying comprehensive and long-term energy efficiency opportunities. The Company will continue to explore opportunities for further SEMP university customers. Besides SEMP, the Company continues to provide energy services to the other colleges in RI.

Commercial Real Estate and Offices: The Company's sales team continues to see many challenges and barriers in program participation of Commercial Real Estate (CRE) sector mainly due to the split incentive between owners and tenants. There are three ways the Company will promote EE services to this sector:

- **Sustainable Office Design:** The Company will continue to market the "Sustainable Office Design" (SOD) initiative to address Class A type office spaces. The Sustainable Office Design (SOD) initiative promotes high-performance office lighting and controls for quick turnaround tenant fit-outs. This is an easy to use, performance-based design approach that benefits owners or tenants with energy savings depending upon the lease arrangements. A fixed incentive per square foot along with a pre-set design criteria and lighting designer incentives will provide easy participation for the tenant fit-out projects. In 2018, the Company will look for ways to engage and inform tenants and leasing agencies of this opportunity so that there is participation in this initiative.
- **Commercial Real Estate (CRE):** The Company launched a Commercial Real Estate pilot in 2017. The commercial real estate market offers a great opportunity for energy savings in National Grid's Rhode Island service territory. While Commercial Real Estate (CRE) is defined broadly to include retail stores, industrial parks and multifamily properties, office buildings were the primary target of this initiative. Energy use is the single largest operating expense in commercial office buildings, representing one third of typical operating budgets. To encourage CRE customers to participate in National Grid's programs, the Pilot offers no-cost benchmarking services and technical support tailored to the CRE market. Benchmarking will be used as an introduction to energy efficiency for commercial building owners and managers who have not previously engaged with National Grid RI programs.

The pilot is designed to overcome the market barriers specific to this sector, which include:

- 1) Lack of budget for staff who focus on energy management

2) Lack of knowledge of how to incorporate energy efficiency improvements into capital planning

3) Lack of awareness of energy efficiency program offerings.

A total of 30 buildings are being targeted with this initiative.

xiii. Trade Ally Engagement (TRAEN)

Beginning in 2015, a Trade Ally Engagement (TRAEN) initiative was introduced to Rhode Island as part of an effort to reduce time in completing application forms for customers and contractors. This is a 48 hour pre-inspection service in which contractors call the vendor to schedule a pre-inspection of their commercial prescriptive electric lighting and variable speed drive (VSD) projects. The vendor handles the application process and hands off the project to National Grid after sending a pre-approval letter to the customer and contractor.

This initiative will continue to be used by the Channel Sales team as well as a few distributors during 2018.

c. Education and Training

National Grid is committed to promoting leadership in the community, the various market sectors, and trade organizations and associations by providing and sponsoring initiatives and outreach efforts for education and training.

The Company, as in previous program years, will continue to support opportunities to inform customers and trade allies/vendors/contractors that serve the various market sectors, about existing and new or emerging energy efficient technologies, building systems and design, building energy codes and standards, improved installation practices, and up-to-date operation and maintenance (O&M) procedures. By integrating local, regional and national educational and training initiatives throughout National Grid's various C&I programs, the Company hopes to build awareness about the benefits of energy efficient technologies, market National Grid's energy efficiency programs, as well providing expertise and experience on the need for integrated design, and improved construction and installation practices for an existing or new construction building project. This includes support of the high performance schools energy summit. Deeper energy savings, as well as other non-energy benefits, can be achieved for any given customer project when the customer, designer/engineer, or contractor/installer is

able to express or share knowledge about an energy efficient technology, the associated costs, and energy savings potential.

i. Building Operator Certification Training (BOC)

BOC Levels I & II include HVAC, lighting and building controls. Students gain knowledge of their own building by completing projects involving documentation of building equipment, systems and controls; benchmarking the building's performance using ENERGY STAR® Portfolio Manager™; updating occupancy profiles; reviewing HVAC systems and operation and mapping the facility's electrical distribution system. In addition, the course addresses maintenance of building systems, equipment troubleshooting, preventive maintenance, advanced electrical diagnostics, as well as HVAC optimization.

In 2018, the company plans to support Building Operator Certification (BOC) training by holding at least three Level I BOC classes in Rhode Island and Massachusetts. The classes are planned to be held in Providence and Worcester. Classes will be held in the spring and the fall. The audience consists of facility managers, operating engineers, building technicians, and maintenance mechanics. The course provides a core foundation across the various building systems and maintenance practices of a typical commercial building – class instructors encourage class participation. In addition to the knowledge gained by listening to the instructors and completing both in classroom as well as out of classroom projects, the participants benefit from networking and learning from each other's experiences with building maintenance and energy efficiency. At each new course, an overview of the Company's commercial energy efficiency programs is given. Student satisfaction with the BOC training is high in that they would recommend it to others and their companies are likely to engage utility energy efficiency incentives for energy projects.

a. Affordability and Financing

Over the past few years, the Company along with the State and Council, have made progress researching, planning and developing opportunities for finance mechanisms that will help customers overcome cost barriers and promote affordability for investments in energy efficiency. This section outlines ongoing efforts to study, plan, coordinate and offer financial products that meet customer needs and assist in delivering energy savings.

National Grid believes that financing plays a critical role in meeting efficiency and other goals; and that it is critical to think creatively about the future roles for incentives, the revolving loan fund (OBR), and other financing mechanisms; and the need to explore potential opportunities for leveraging public funds. Fortunately, as the focus on financing has increased, so has the number of market mechanisms available for funding efficiency projects. The Rhode Island Infrastructure Bank's Efficient Building Fund (EBF) and Commercial property Assessed Clean Energy (C-PACE) programs, third party products such as those offered by Ascentium, Pay as You Save (PAYs) programs, Metered Energy Efficiency Structure (MEETS), and others offer unique benefits and opportunities. Understanding these products, their ability to meet customers' financing needs, and how to harmonize them so that customers can understand and choose their best option is an important focus of the 2018-2020 Plan.

A firm foundation was laid in 2017. The Company engaged in multiple discussions with internal and external stakeholders including discussions with the Council, the EEMRC and a full day *technical session* with the PUC. External stakeholders include the OER, RIIB, the EEMRC consulting team and their financial consultants from Dunsky Energy Consulting (Dunsky) and Rhode Island Housing. The Company also carried out research projects related to the historic and potential uses for OBR, and created a model to estimate funding requirements under various market scenarios. These frank discussions and related research led to the identification of three informal objectives that seemed to resonate with internal and external stakeholders that need to be tested and validated. They are: 1) increase comprehensiveness, 2) reduce incentives, and 3) Increase participation by improving access to cost-effective financing for all customers. The extent to which these objectives are attainable for a variety of customers, to be based on what criteria, and in what time duration must now be explored. In 2018, the Company will continue on that path, first by analyzing the lessons learned to date, and then by developing and implementing informed pilots to test hypotheses.

Lessons Learned

The Company has and will continue to gain valuable experience by working with RIIB in support of the development, launch and resulting project implementation of the EBF. This program, available to the municipal sector, has provided an opportunity to assess the interplay between public financing, incentives and OBR. The emergence of C-PACE and third party products such as Ascentium are providing insights about bundling efficiency, structural, maintenance and/or renewable projects as well as some of the

transactional barriers customers face. Learning from recent experience is a critical exercise in creating the path forward.

- Customer Diversity – the Company knows that National Grid’s customer base is diverse and that one financing product will not fit all. What has become more clear is that there is also great diversity within any given market segment, i.e. one university or manufacturer may have very different financing needs than another university or manufacturer. In addition, the type of project plays a role in determining the right financing tool, e.g. multiple buildings vs quick turnaround. As a result, there needs to be greater flexibility in offering products since one customer may require different financing tools over time.
- Customer Engagement – Several years of offering OBR has crystallized the value of keeping financing transactions simple, off-balance sheet, quick, and flexible. These characteristics streamline what customers need to do for approval internally and improve success rates. Complex financing transactions, such as placing liens on properties, can make engagement more difficult and reduce success rates as has been seen with the slower than anticipated uptake on C-PACE. It seems worthwhile to try to incorporate features that are known to reduce transactional friction into evolving financing mechanisms to the extent possible.
- Comprehensive Projects – Comprehensive projects, those that involve multiple building systems and perhaps multiple buildings, require time, money and expertise to execute. For example, it can take months to bring customers to the point of saying yes to complex projects. Likewise, it may take months and supportive technical expertise to develop and bid appropriate scopes of work - information that is needed prior to moving forward with financing. And, by definition, comprehensive projects require larger amounts of capital. It is important to keep these challenges in mind as the Company seeks to optimize financing products that encourage comprehensive opportunities.
- Integrated Offerings – Financing products have different characteristics that make them more appropriate in some situations than others. Understanding these characteristics and how they fit together is a challenging yet important undertaking. It is equally important that messaging to the market remain consistent with that ideal, i.e. those who offer products are able to identify

where they fit and know how to present them so that customers are adequately informed and free to choose. Developing common messaging, common goals, common reporting metrics, and transparency between product offerors will become important considerations going forward.

2018 Planning

As described in the 2018-2020 Plan, the Company will pursue the vision of providing an array of cost-effective financing options so customers can choose that which is most advantageous in each situation. The Three-Year Plan discusses the limitations of relying too heavily on incentive based financing and identifies strategies to improve current financing tools, determine where gaps exist, and develop pilot efforts to test out these ideas. The task is a large one, and discussions and group engagement have already begun.

The Company recognizes the need to dive deeply into enhancing financing mechanisms for all sectors. Residential finance opportunities are discussed in Attachment 1.

On the C&I side, the focus in 2018 will be on large C&I, i.e. customers with demand greater than 200kW. Small business financing explorations will follow in subsequent years, benefiting from the learnings with larger customers. Specific activities will support action items defined in the Three-Year Plan and might likely include some of the following focus areas:

- Collaboration – National Grid agrees with a statement in Dunsky’s Three-Year Plan Review, *“National Grid’s work with the EERMC, the Collaborative, and other stakeholders continues to be key to the success of energy efficiency activities in the state.”* To that end, in 2018, National Grid will continue to engage with Dunsky on behalf of the EERMC, members of the EEMRC and the Collaborative, as well as other stakeholders. The intent is to socialize ideas and foster collaboration on appropriate activities. Initial meetings might be scheduled, where possible, before the end of the 2017. Initial topics for discussion may include common reporting frameworks and potential OBR enhancements and pilot efforts.
- Common reporting frameworks – Developing a set of common reporting metrics that provide transparency in the allocation of funds, consistency in reporting of customer transactions throughout the process, funding allocations and spend, etc. will provide valuable information for assessing and planning

future activities. In 2018, National Grid will pursue these goals with the State, the Council and RIIB. The objective is to create common sense guidelines that will enhance understanding and collaboration between organizations.

- Understanding Product Offerings - Looking across the array of products already available and those under development can be confusing. Each one operates under a different structure (where the funds come from, how they are dispersed, etc.), requires different things from the customer (MOUs, Municipal Council Approval, follow-up data tracking, energy management plans, etc.), operates on a different cycle (e.g. semi-annual bond offerings), sets different financial limits, is available to limited segments of the market, and other varying characteristics/features. Gathering all this information into one place would be very helpful in identifying the market segments, customer types, and/or project characteristics where each might be most successful.
- Engage Customers – As the Company comes to understand the various product offerings, it may be beneficial to hold one or more customer focus group meetings in one or more market segments. The purpose would be to learn directly about their financing needs, organizational constraints, reactions to available products, and perhaps to new ideas. This practice was very effective under the Rhode Island Public Energy Partnership (RIPEP) where focus groups were held for municipal, school, state, and wastewater personnel. The input underscored financing needs in the public sector and ultimately informed the EBF offering.
- Pilot Changes to OBR – Discussions in 2017 highlighted opportunities to enhance the OBR offering to meet the informal objectives mentioned above. To this end, National Grid is strategizing with the Sales teams to develop potential pilot efforts. Ideas discussed include but are not limited to the following:
 - Require comprehensiveness - develop requirements around number or types of measures and/or consider options for creating multi-year opportunities. Would require additional funds since comprehensive projects bring higher costs

- Multi-year agreements – Some customers may prefer to space projects out over time, or may not have the interest or capability to handle multiple projects at one time. Setting up some type of agreement for future years would require certainty about future budget allocations (otherwise current year funds must be held over, a practice that is counter to current input from external stakeholders).
- Reducing costs – Develop a pilot to test the assumption that reducing incentives while increasing financing will reduce systems charges. It is unclear whether this objective is in some measure offset by promoting comprehensiveness and/or broader participation since those activities likely require additional financing.
- Third-Party Funding —National Grid is developing third-party opportunities for large C&I customers to access finance, exploring how options can be seamlessly offered to customers and learning about barriers that third-party options can help overcome.
- Target customer segments – Explore saturation rates among customer with more than 500kW demand; opportunities with mid-size segments such as customers with demand between 200-500kW. This coupled with customer meetings and/or discussions with internal and external stakeholders might help determine where to target pilot efforts.

2018 will be a pivotal year for financing in Rhode Island. It will be critical to assess and develop finance options that push forward deeper dive efficiency improvements that will help meet ambitious energy savings targets in the future. Several of the options are described in more depth below.

i. On Bill Repayment (OBR)

For large C&I customers the Company will continue to offer finance to help pay for customer costs through OBR from revolving loan funds. National Grid finances the customer portion of electric or gas efficiency projects, on bill, for up to five years at 0% interest. OBR offers easy access to finance as well as creates reduced customer transactional friction by easing the repayment process by offering the repayment of the loans on the electric bill. All customers are eligible for OBR.

The Company is proposing that \$4 million in new electric energy efficiency program charge collections be transferred to the Large C&I revolving loan fund to support the sustained longevity of the loan fund. The 2016 evaluation of the Company's Large C&I revolving loan fund by The Cadmus Group, Inc. (Cadmus) concluded that the loan fund requires substantial future allocations to fulfill its potential for increased participation. Cadmus also recommended the establishment of a funding schedule that will support future participation projections.³ Stable fund injections will provide the C&I sales team to better leverage the dollars available in the fund and to market financing to more customers.

In 2017, the Company is projecting more participation than in previous years with approximately 150 customers and their branches using \$8.5 million to finance their projects. Participation increased in 2017 to meet significantly higher energy savings targets for this customer segment. – The Company is planning to inject \$4 million into the LC&I OBR fund in 2018. This will be to finance level participation in 2018 as 2017, pilot changes described above such as comprehensiveness and reducing costs. Additionally, the \$5 million is necessary as repayments are projected to be lower in 2018 due to longer lending terms decreasing annual repayments. The Company forecasts financing and/or committing \$11 million in 2018. The Company began committing finance for large commercial gas efficiency projects in 2015. These funds are in various stages of the finance process and a fraction of the funds are available to repurpose and commit to customers each year. The gas revolving loan fund has increased to approximately \$1.3 million and the Company plans to maintain this level in 2018.

For small business customers, the Company continues from past years' successful experiences to offer on bill repayment for the customer portion of the project over 12 or 24 months. Due to changing ways in which energy savings are delivered to small business customers, the Company has more customers opting for the 24-60 month option, thus diminishing repayments in future year. However, the Company projects the fund will be able to sufficiently finance the planned 2018 small business customer demand. National Grid's revolving loan fund projections for 2018 are illustrated in Attachment 5, Table E-10 and Attachment 6, Table G-10.

³ The Cadmus Group, Inc., Large Commercial and Industrial On-Bill Repayment Program Evaluation, September 20, 2016.

ii. Rhode Island Infrastructure Bank – Efficient Buildings Fund

Rhode Island Infrastructure Bank (RIIB), formerly known as the Rhode Island Clean Water Finance Agency, was established to administer certain federal and state programs relating to municipal or community waste water and drinking water financial assistance. June 2015, legislation renamed the Agency as the Rhode Island Infrastructure Bank and expanded the programs to be administered by the Bank, including commercial and residential Property Assessed Clean Energy (PACE) programs. National Grid representatives, along with other stakeholders, like OER, worked closely with RIIB before the launch of the program on topics such as process mapping, systems integration, technical support, tighter integration of EE and renewables, and focusing on how the Company can use the privately-financed C-PACE creatively to rely less on SBC charge. The National Grid Sales teams also worked closely with RIIB and offered technical assistance, audits and coordinated the savings and incentive information on behalf of customers.

EBF closed round 1 of project funding in July 2016, funding approximately \$18 million of projects. This project funding for 2016 was supported with approximately \$1.8 million in energy efficiency funds collected by National Grid.

In 2017, RIIB held a second and third round of finance funding for municipalities, committing to finance \$XX million at attractive interest rates for efficiency retrofits and renewable installations. In order to support energy efficiency in municipalities, National Grid transferred \$5 million for the loan fund, offered technical assistance, and incentivized the cost-effective retrofit projects. In the second and third round of funding, XX% was for renewables projects and XX% was for energy efficiency projects. The \$5 million from energy efficiency was only used to support finance for energy efficiency retrofits as under current regulations EE Program Charge funds may only be utilized to support energy efficiency projects. RIIB's renewable projects were supported by other sources of funds. From the second and third round, RIIB projects that XXX in annual MWh energy savings and XXX annual gas therms will be enabled through this round of finance.

In 2018, RIIB is requesting an additional \$5.0 million to offer an estimated \$XX million in municipal finance for energy efficiency projects in the fourth and fifth rounds. RIIB projects that these rounds of finance will spur XX municipalities to apply for funding and enable energy savings of XXX Annual MWh and XXX Annual therms. The \$5.0 million is included in the 2018 electric budget, identified as RIIB in Attachment 5, Table E-2.

Overall, this proposed funding of \$5.0 million will be dedicated to support energy efficiency projects. Additionally, to support RIIB's success, National Grid will fund approximately \$100,000 in technical assistance studies. National Grid will also incentivize the cost-effective efficiency projects for electric and gas retrofits.

The following assurances are included to ensure and document that customer EE funds used and held by RIIB are in the best interest of customers and ratepayers:

- If RIIB does not use all of the \$5 million as described above and, as a result, such unused funds accrue interest, then RIIB shall only use such interest for energy efficiency purposes.
- The \$5 million dollars, including any interest, provided to RIIB by National Grid are not fungible and RIIB shall not use such funds for any other purpose. RIIB shall be the sole, exclusive user of such funds.
- RIIB shall not permit any other entity to access or use such funds.
- In the event that RIIB discontinues its operations, funds will be transferred back to National Grid, including any interest and RIIB will shall not transfer, move, or grant such funds to another state or quasi-state agency without the express permission of National Grid.
- RIIB's use of the \$5 million dollars, including any interest, shall have a term of five years. At the end of the five-year term, RIIB has 90 days to return the funds to National Grid.

Additionally, National Grid and RIIB have partnered to deliver a common quarterly reporting framework for EBF. Information is communicated in National Grid's quarterly reports. National Grid, RIIB and OER will continue to have regular communication channels to monitor savings performance of the EBF energy efficiency projects, consistent with National Grid's commitments to transparency and reporting.

iii. Commercial Property Assessed Clean Energy (C- PACE)

C-PACE is an innovative way for customers to obtain long- term low-cost financing for energy efficiency, clean energy and other building improvements in their privately owned businesses or non-profits. Importantly, C-PACE offerings are financed through private capital and do not necessitate an allocation of ratepayer dollars. Voluntary assessments for repaying municipal bonds have been attached to property taxes since the early 1800s to fund projects for public good such as sidewalks, fire stations, and street lighting. The C-PACE financing repayment is facilitated through the same

municipal property tax assessment process. A voluntary assessment (similar to a sewer district assessment) is placed on the building owner's property tax bill. The assessment is repaid over the financing term (up to 25 years, project dependent) and the annual energy cost savings will, in most cases, exceed the annual assessment payment, thereby enabling capital intensive equipment upgrades.

National Grid has been working closely with RIIB and its program administrator Sustainable Real Estate Solutions (SRS) to launch a successful C-PACE program in Rhode Island. National Grid has participated in a series of meetings to educate RIIB and SRS in the basics of how its programs operate and to assist in writing initial program guidelines. The Company also led a day long charrette and series of meetings to talk about the how the C-PACE program could be integrated into the sales process of National Grid staff and its turnkey Project Expeditor (PEX) vendors.

Recently, the Company's work with SRS has included meetings to work through the process of making sure that –

1. National Grid sales staff knows the fundamentals of the C-PACE program and where it can be effectively used.
2. National Grid vendors know the fundamentals of the C-PACE program and where it can be effectively used.
3. Mapping out the steps of exactly how the program will work with the many ways that customers may start their interaction with National Grid.

The Company believes that C-PACE could fundamentally change the way National Grid interacts with some customers in the future. If properly wielded by the Company's sales staff and vendor partners, National Grid believes that customers will choose to complete projects that they might have not considered viable prior to this point in time.

iv. Third Party Products: Ascentium

National Grid is committed to providing financing solutions designed to accelerate sales and remove project cost barriers. Financing energy efficiency upgrades can provide business customers with positive cash-flow in part because the value of the savings can be quantified and is often more than the cost of financing. However, customers may need assistance finding the capital required to help them invest in energy efficiency. In addition, the approval process and conditions attached to traditional bank financing are such that many customers are deterred from borrowing.

In 2017 National Grid partnered with Ascentium Capital, a national equipment financing company, to introduce a solution for large C&I customers in Rhode Island. Instead of using the entire incentive from National Grid to buy down the capital cost of the project, this new offering enables customers to direct a portion of their incentive to buy down the interest on a loan that they receive from Ascentium Capital; the remainder is used to buy down the cost of the project and reduce the principal required. Ascentium provides a streamlined experience for customers, with quoting tools, applications, approvals, and documentation occurring online. Loans for commercial entities are available from \$10,000 up to \$1.5 million and in terms from one to five years; municipal financing is also available in higher values.

3. Commercial and Industrial Energy Efficiency Programs

The C&I Energy Efficiency programs are organized in the same way as the built environment – customers are making decisions around their investment in higher performing new construction and existing buildings. Depending on the needs and size of the customer within each of the segments, customers can participate in one of three energy efficiency programs:

- The Large Commercial and Industrial New Construction Program
- The Large Commercial Retrofit Program
- The Small Business Direct Install (SMB/DI) Program

Although there are three programs in the C&I sector, all C&I customers are eligible to participate in the Large Commercial and Industrial New Construction Program and the Large Commercial Retrofit Program. However, the Small Business Direct Install (SMB/DI) Program is restricted to customers with 200 kW or less average monthly peak demand. Larger and more complicated measures not offered by the SMB/DI vendor go through the New Construction or Retrofit Programs. The following sections describe the various offerings under these three programs. In addition, a logic model describing the C&I programs and how they relate to short and long-term outcomes is provided in Appendix 2 and 3.

4. Large Commercial and Industrial New Construction Program

a. Overview

The new construction program is divided into two main categories:

1. **New Buildings, major renovations and tenant fit-ups:** This is specifically for those projects that are ground up new construction or major renovations all of which traditionally involve some level of design and are governed by code. The section below describes this in detail.
2. **End of life replacements:** Typically no design component, but governed by codes and standards in some cases because it has reached the end of its life. The baseline energy is considered to be the energy code and savings are calculated from the baseline code. This works the same way as the “systems approach” described below, whether through prescriptive or custom pathways.

b. 2018 Goals

For the 2018 Annual Plan, Large Commercial and Industrial New Construction has the following goals:

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
5,873	14,528	144

Gas

Energy Savings (Annual MMBtu)	Customer Participation
42,764	105

c. New Buildings, Additions, Major Renovations and Tenant Fit-Ups

The services and incentives offered are designed to promote and support high performance building design, equipment selection, and building operation. This program offers both technical assistance and financial incentives based on projected energy

savings performance to incentivize building beyond the current energy code baselines. Technical assistance ranges from simple plan review and efficiency upgrade recommendations to complete technical reviews of energy models. The program offers two approaches for ground up new construction or major renovation projects:

- **Systems Approach:** The Systems Approach is designed for individual measures and for those projects applying later in the design process and which are generally focused on one or two energy systems to increase efficiency. The graph below describes the various paths available to the projects.
- **Whole Building Approach:** The Whole Building Approach takes into account a comprehensive analysis of all building measures together and requires collaboration between National Grid and the Design Team from the conceptual design phase through project completion. It encompasses consideration of all energy saving opportunities, including shell, fenestration, equipment and system interactions.

i. Systems Approach for New Construction

There are a few ways a customer can take advantage of the New Construction Program using the “Systems Approach.”

- 1.a. Prescriptive Path:** The prescriptive path is the quickest and simplest way to participate in the New Construction Program. This is used for equipment that is commonly replacing less efficient equipment and for which savings data is available due to the length of time the measure has been in the marketplace and the number of installations is large enough for there to be a representative sample. A fixed dollar amount is paid to the customer for replacement of a specific piece of equipment.
- 1.b. Custom Express Path:** The custom express path is used when a measure may be relatively new to market. It is a more streamlined approach than the custom path. A Custom Express tool is used to determine the project’s eligibility for an incentive on a case by case basis. This path can be used in conjunction with the New Construction Program but it is more commonly used for Retrofit applications. The amount of the incentive for a measure going through the custom express path can vary from project to project based on projected savings.
- 1.c. Custom Path:** For customers who wish to achieve deeper and broader savings compared to prescriptive offerings, a custom path is available. This involves a more complex engineering analysis and is frequently used by customers

considering complex HVAC equipment and systems. Custom incentives for new construction projects are designed to cover up to 75% of the incremental cost between standard and premium efficiency equipment.

The sales team has the flexibility in offering incentives that can be negotiated with customers. The Sales staff determines how to negotiate, based on the customer's financial needs. This approach helps the Company to maintain cost control with program budgets.

In 2018, the Company will continue offering custom gas and electric measure options. (Please refer to the appendix at the end of this attachment for a sample of custom measures.)

ii. Whole Building Approach for New Construction

Under the “**Whole Building Approach**”, there are two main pathways for customers who choose to do comprehensive and integrated designs for their projects.

2.a. Integrated Design Approach is most applicable for buildings that are greater than 100,000 square feet or buildings smaller than this size that are not a good fit for the Design Express path. Both owners and design teams are eligible for incentives on projects that perform 15% better than the energy code. Customer incentives are based on kWh and Therm savings. Incentives are capped at 75% of the incremental cost of the energy saving measures. A fixed incentive is also offered to design teams for attending a design charrette/workshop that will enable them to incorporate energy efficiency early within the project stages. Additionally, design team incentives are awarded for achieving a 15% better than energy code savings target.

2.b. Integrated Design Express: This pathway is for smaller buildings in the 20,000 S to 100,00 square feet range. Both owners and design teams are eligible for incentives on projects that perform 15% better than the energy code. Customer incentives are based on kWh and Therm savings. Incentives are capped at 75% of the incremental cost of the energy saving measures. In addition, design team incentives are awarded for achieving a 15% better than energy code target.

iii. Operational Verification

To ensure energy savings projects are installed and operated as designed, the Company will continue to provide operational verification service in 2018 as in previous program years. This service will continue to be served by independent third-party vendors for verification of complex building systems, including HVAC projects involving energy

management systems or other controls, ensuring proper installation and operation as designed. National Grid requires all projects which receive an incentive over \$100,000 to undergo operational verification. This service (also termed as ‘commissioning’ in building industry terms) is also promoted for any projects where the savings are dependent on control measures or operational improvements. Typically National Grid provides these services at no cost.

d. Initiatives specific to New Construction Program

Specific initiatives are listed below within the new construction portfolio that address unique needs of the new construction market sector:

i. Building Energy Code and Appliance Standards

Overview

National Grid is one of a few utilities that have been allowed to claim energy savings for supporting progress related to the building energy code. The Company launched its Code Compliance Enhancement Initiative in 2013 and has been claiming savings for building energy code compliance support activities since 2014.

The Company has also provided technical assistance in proposing new and improved appliance standards regulations for the state.

2018 Focus

Commercial Codes Savings*

Savings are included in 2018 listed for Large Commercial and New Industrial Program

Electric: Energy Savings (Annual MWh)	Gas: Energy Savings (Annual MMBtu)
250.5	308.9

In light of increased compliance with the state’s current building energy code, the deferred update to an updated code, and a shift away from claiming savings from existing buildings/retrofits, the Company will refocus its efforts toward remaining compliant with gaps and investigate the potential to claim savings for supporting advancing adoption of an updated base energy code as well as the increased use of the newly developed stretch code.

As for appliance standards, the Company proposes to revisit its support of promulgation of advanced state standards as well as investigating supporting (and claiming savings from) the development of federal appliance standards in partnership with national allies.

Codes: The Codes and Standards initiative (C&S) is an innovative efficiency offering that saves energy on behalf of customers by creating: 1) an environment that achieves greater compliance with the state building energy codes, and 2) strengthens and promotes energy efficient appliance standards and accompanying consumer purchasing incentives. Two components of the codes work are described below:

Code Compliance Enhancement Initiative (CCEI) is a focal point of the C&S initiative. The CCEI will be entering its fifth full year in 2018 and will continue to build upon the successes of previous years. CCEI includes in-person classroom and hands-on trainings, webinar presentations, project-specific technical assistance circuit riding, and dissemination of documentation/compliance tools like residential field guide, residential and commercial FAQs, technical bulletins, and case studies. There are, and will continue to be, associated energy savings attributable to the Company for its efforts in helping to improve Rhode Island's energy code compliance rates. CCEI focuses on ground-up new construction for residential and commercial buildings but also addresses additions, renovations, and retrofits. Since 2014 a total of 130 classrooms and on site trainings have been delivered through this initiative. A 2016 compliance evaluation study for commercial projects found that compliance rates increased from about 70% with the state's previous 2009 IECC-based energy code up to about 86% compliance with the current 2012 IECC-based version. An analogous 2017 study for residential projects showed similar results. Results of both studies have been leveraged to:

- (1) analyze the impact of CCEI trainings to improve compliance;
- (2) update the savings calculation method based on new compliance numbers; and
- (3) create new ideas or modify existing delivery approach to address compliance.

The Company will continue to deliver commercial and residential energy code trainings throughout 2018. While the content of trainings previously focused on transitioning

from 2009 to 2012 IECC, trainings in 2018 will focus on remaining code compliance gaps while supporting Rhode Island's anticipated transition to 2015/2018 IECC. The Company will offer a reduced number of the longer residential and commercial trainings it has employed in past years of the initiative, but starting in 2018 it will shift to shorter trainings focused on more specific content in order to directly address compliance gaps.

The Company will also offer several live webinars. These trainings will be geographically dispersed around the State and will be marketed to local code officials, design professionals, builders, contractors, energy specialists, etc.

The Company will conduct topic-specific training sessions in 2018, and these sessions will focus on the building envelope, HVAC, and electrical sections of the code. The Company will also deliver in-field/on-site demonstration trainings as a means to complement classroom trainings and will visually relate topics discussed directly to real-world situations. Webinars will be conducted on specific residential and commercial sub-topics covered in the classroom sessions.

Technical assistance pertaining to energy codes and related matters will be provided via energy code circuit riders. In 2015 and 2016 CCEI handled 50 residential and 14 commercial circuit rider calls, and 18 residential and one commercial circuit rider site visits. In 2018 again, circuit riders will be available to answer questions either by phone or in-person. Greater emphasis will be made to market and promote the service in hopes of increasing the number of in-field/on-site visits. The Company hopes that these types of visits will be useful in clarifying any confusion or misunderstandings that building design and construction professionals may have about energy codes, and to ultimately support their efforts to better understand and execute code compliant building designs. In addition, the circuit riders and the trainings will educate the attendees about the Company's incentive programs that go beyond the code, thereby cross promoting its programs.

The Company will continue to work with the RI Building Code Commission to accommodate third party energy code specialists as optional energy related building inspectors for applicable projects undergoing the permitting process. As in 2017, this initiative will continue to refine documentation/compliance tools created between 2013-2016, such as energy code checklists, technical bulletins, FAQ's and recently developed reference guides.

Stretch Code development:

The Governor’s December 2015 Executive Order “State Agencies to Lead by Example in Energy Efficiency and Clean Energy” required OER to coordinate with EERMC, National Grid, and the Green Building Advisory Council to establish a voluntary or “stretch building code” that is based on the International Green Construction Code or equivalent by 2017. In 2017, the Company assisted this group to finalize the stretch code for commercial buildings as well as providing support on the energy related aspects of an analogous residential stretch code currently under development. The use of this code will result in long term energy savings that will assist state agencies in meeting their energy reduction and sustainability targets. In general, the Company’s involvement in stretch code support will be as follows:

- Provide technical expertise on energy related requirements
- Conduct stretch code specific trainings along with the base code trainings (as detailed in section above)
- Align the Company’s new construction program with stretch code specifications as much as possible and within the framework of the Company’s policy around EE programs
- Advocate for increased use of the stretch code and work with the Company’s customers to achieve the stretch code requirements.
- Work with the internal evaluation team to develop a mechanism to claim savings for stretch code projects.

Appliance Standards:

Historically, the goal of this initiative has been to accelerate the development and adoption of selected new appliances as State level standards (better energy performance than federal standards), thereby increasing the efficiency of appliances sold and used in the State of Rhode Island. Over the past two years, the Company worked with associated stakeholders to identify a target list of potential appliances, but no progress was made in passing the required legislation to cement this effort since this was not a priority for state legislatures at this time. The Company will continue to advocate for proposed State appliance legislation in 2018 (informed by an updated package of appliance standards published by the Appliance Standards Awareness Project in 2017) and provide technical support regarding such parameters as market potential, energy savings, and life-cycle cost analysis. The Company will also work with associated stakeholders to develop a methodology to claim savings for this effort.

Starting in 2018, the Company proposes to directly pursue opportunities to partner with efficiency program administrators in California and beyond in advocating for federal appliance standards. The Company plans to coordinate with the appropriate stakeholders in order to develop a methodology to claim savings for this effort, likely following a similar model to the one currently being discussed for use in Massachusetts.

ii. Exterior Performance Lighting and Controls

The goal of this initiative was to extend the Company's existing performance lighting offering (currently offered to new and retrofit projects) to exterior lighting applications. Through this initiative, the Company plans to encourage:

- a) An understanding of exterior lighting codes
- b) Code based lighting controls for exterior projects
- c) Code based exterior lighting design that promotes best practices while saving energy.
- d) Lighting designers to understand exterior lighting codes, and to design to exceed code through innovative designs and technologies

In 2017 this initiative was incorporated into the Performance Lighting program. See section 5g.

iii. Energy Efficiency Integration with Solar

In 2018, the Company will continue to work to align its energy efficiency programs with the solar offerings in Rhode Island in order to help customers achieve zero-energy buildings. The Company will also work with the Office of Energy Resources' lead on the state's zero-energy initiatives pursuant to the Zero Energy Building Pathway to 2035 - Whitepaper Report of the Rhode Island Zero Energy Building Task Force (2016). (https://www.nationalgridus.com/media/pronet/ri-ee-task-force/cm6459-ri-zne-white-paper-12_16.pdf)

e. Demonstration/R&D Projects specific to New Construction

i. Zero Energy Demonstration Projects

Zero Energy Buildings (ZEBs) have the potential to strongly support Rhode Island's greenhouse gas emissions reduction goals. ZEBs minimize their overall energy consumption through innovative designs and energy efficiency measures. Renewable energy technologies are then used to generate the remaining annual energy needs of the building. ZEBs can be homes, businesses, or other facilities.

As the largest utility in Rhode Island, National Grid has an integral role to play in enabling and accelerating the adoption of ZEBs in the state. In 2015, National Grid developed a whitepaper with input from key stakeholders for achieving ZEB goals by 2035.⁴ Recommendations in the whitepaper included establishing policies and legislation that support ZEBs, launching a state-wide ZEB program across all building sectors, and enhancing utility energy efficiency programs to spur the ZEB market while addressing energy efficiency and renewable energy integration barriers. National Grid is committed to supporting the State and making progress on these recommendations.

National Grid has committed to developing ZEB demonstrations in 2018-2020 that will enable a go-to-market strategy for ZEBs. In 2017, National Grid will be working with Rhode Island Housing and Office of Energy Resources to develop a moderate income/income eligible zero energy home(s). This demonstration will provide important information to guide the development of a zero energy offering in 2018 or 2019. In addition, two more demonstrations are planned for 2018. One demonstration will be a market rate zero energy home that will demonstrate an all-electric smart home. Again, this process will inform the savings available from zero energy homes and will guide the development of a zero energy offering. In addition, two commercial demonstration projects have been planned for 2018-2019.

Support for ZEB growth in RI will require education and training for the building community, technical assistance, and improvements to codes and standards. Furthermore, benchmarking and building energy labeling will help building owners, sellers, renters, and buyers move the industry towards ZEBs by encouraging everyone to consider energy efficiency during building construction and transactions.

National Grid has committed resources to help automate benchmarking and labeling efforts for commercial facilities with Portfolio Manager (a free online tool from the EPA). Portfolio Manager allows owners and operators to track and compare energy usage in buildings or a portfolio of buildings over time. This data helps owners and operators identify under-performing buildings, set capital improvement priorities, verify efficiency improvements, and identify successful energy management practices.

⁴ *Zero Energy Building pathway to 2035*, Whitepaper Report of the Rhode Island Zero Energy Building Task Force, Prepared by National Grid, November 2016

To achieve the State's ZEB goals, solutions to drive both new construction and large-scale renovation markets towards ZEBs are needed. In both market segments, National Grid is supporting strategic electrification efforts with technologies like heat pumps. The Company will also identify geographical locations where ZEBs will have the most beneficial impact on the grid.

ii. Power over Ethernet (PoE) lighting system for new construction or major renovation

The Power over Ethernet (PoE) lighting system provides DC power and data to LED fixtures using Ethernet cable (Cat5) which is regulated by the IEEE 802.3 standard. Each PoE, LED lighting fixture has an individually addressable IP address, by adding addressable sensors to the network and creates a smart LED hub. Each PoE intelligent LED hub can collect information on ambient lighting, temperature, humidity, and anonymous room-occupancy data which it then communicates back to a controller. This PoE system provides enhanced controllability beyond code and can continuously optimize the performance of all the building systems to decrease building energy use. It also provides energy use monitoring and enabling of demand response events. Customers can add additional value by optimizing space reservations, and reducing cleaning and maintenance based on real time space usage. This will demonstrate an emerging infrastructure and controls technology with energy management potential as well as other non-energy related benefits. In coordination with DOE and other organizations, the Company hopes to gain a better understanding of how to match PoE Lighting solutions with the right market sectors such as data centers, but also see potential in schools, office spaces and specialty retail.

iii. Accelerate Performance: Performance Based Procurement

Accelerate performance is a commercial new construction program enhancement that encourages building owners and developers to specify energy performance targets and include them in the project request for proposals. The design and construction teams are selected based on their ability to meet energy performance targets. Performance-based procurement holds teams contractually accountable throughout design and into occupancy, resulting in actual performance and verifiable energy savings.

Accelerate Performance results in deep, fully realized energy savings beyond prescriptive code minimums. This increases value to the building owner and delivers

greater savings for in the new construction sector, where advancing energy codes and standards make energy savings goal achievement more challenging.

Value to Customers:

- Technical assistance to establish project energy requirements and evaluate team submittals
- Procurement language that integrates into existing RFP and contract documents.
- Easy-to-use processes from RFP through operations.
- Connection to financial incentives, OBR and C-PACE, including incentives based on post-construction measured energy performance.
- Training and resources that allow owners to replicate this approach across a portfolio of buildings.

iv. Indoor Agriculture

A new opportunity is emerging in Rhode Island around indoor agriculture or cannabis production. The common indoor warehouse production facilities can use 6x – 8x as much energy per square foot as an office building. This presents outstanding opportunities for energy efficiency, primarily focused on lighting and HVAC with potential for both electric and gas measures. National Grid will investigate the opportunities for energy efficiency and develop the engineering capability and professional resources necessary to serve this industry. The demand in Rhode Island is relatively small at this point but should Rhode Island legalize recreational use of cannabis in addition to current accommodations for medical use, construction of new facilities will explode almost immediately and the Company will be prepared to serve this expanded market.

5. Large Commercial Retrofit Program

a. Overview

The Large Commercial Retrofit Program serves the needs of existing buildings in their pursuit to lower energy consumption. This program includes three distinct components (similar to the New Construction program) each aimed to address specific market barriers and to advance efficiency: Prescriptive incentives are intended to support trade allies in advancing energy efficiency sales and to provide signals to customers who are making direct purchases that will encourage them to adopt the more efficient and more expensive option; custom which provides services to investigate opportunities to increase efficiency and supports the steps needed to implement the upgrades and upstream delivery that provides a more efficient way for customers to receive reduced pricing at the point of sale for energy efficient equipment purchased.

b. 2018 Goals

For the 2018 Annual Plan, Large Commercial Retrofit has the following goals:

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
12,316	78,669	2,213

Gas

Energy Savings (Annual MMBtu)	Customer Participation
186,780	158

c. Pathways to Meet Program Requirements

i. Prescriptive Path

Prescriptive incentives are available in this program for some of the more commonly installed pieces of energy efficient equipment that are replacing standard efficiency equipment. Manual application forms have been available on the Company's website for customers and contractors to use when applying for incentives. Beginning in January 2014, prescriptive gas incentives were offered online. In 2017 National Grid plans to roll out an electronic application for customers to apply for prescriptive electric incentives.

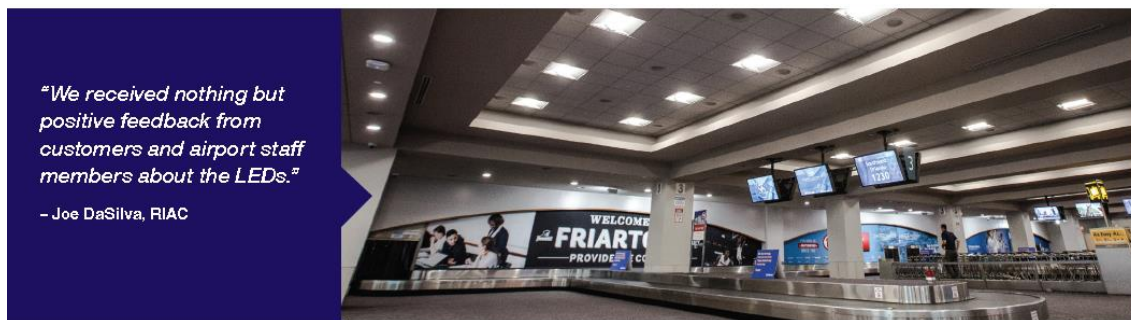
In 2017, the Company will continue to offer prescriptive gas and electric incentive options. Wi-Fi thermostats will be added to the program as a gas saving measure. For more details on measure descriptions refer to Attachment 2017 Technical Reference Manual.

Custom Express Path

Similar to the New Construction Program above, the Retrofit Program also offers a custom express path for select retrofit measures.

ii. Custom Path

A customized approach that assesses the operations of the building through a technical assessment report (TA study) is usually the first step a customer experiences before applying for a custom incentive. These incentives are designed to move customers to purchase and install premium efficiency measures. The incentives cover up to 50% of the total project cost including labor and equipment. The ability to negotiate custom incentive levels and TA costs for some of the largest customers will also be available for this program. See more details on this in the Large New Construction section above.



In 2017, the Company will continue to offer custom gas and electric incentives. Refer to the appendix at the end of this attachment for a sample of custom measures and new technologies. In addition, the following technologies will be tested through building projects:

d. Initiatives Specific to Commercial Retrofit Program: Gas Technologies

i. Heat Exchanger Cleaning

During 2016, a demonstration project on heat exchanger cleaning was completed in Boston. In 2017, there is a plan to roll this out to Rhode Island customers, as the expectation is that this will be a good measure in terms of natural gas savings. These are shell and tube steam to hot water converters that are used for heating and domestic hot water in hospitals, hotels and industry. The first demonstration project is predicting 19,000 Therms annual savings for 10 similarly sized heat exchangers. Savings will vary based on number of heat exchangers cleaned, size of system and hot water loads.

Results of the first demonstration project were excellent. Savings estimates were exceeded and project results passed the screening. The Company is currently performing a second demonstration project on a large University on 19 shell and tube steam to hot water heat exchangers. The Measurement & Verification Plan includes an in-line vortex style steam meter and water flow meter. The baseline metering is just getting underway at the time of this writing. A third demonstration project at a large university in Providence RI is getting started to provide upgrades and cleaning of steam to hot water heat exchangers for improved efficiency of steam systems.

ii. Xeros Polymer Laundry Solutions

There is a new technology on the market for commercial laundry operations which used 80% less water, 50% less energy (natural gas) and 50% less detergent than the more traditional equipment. The market sector for this equipment crosses over the Company's traditional market sectors – it includes commercial laundry facilities, laundromats, universities, and hotels. In addition to the obvious energy saving benefits, there are other benefits associated with this technology including requiring a lower temperature to operate, ability to get out stains other cleaning cannot do, ability to complete a cycle in less time, and ability to clean some materials that were previously unable to be cleaned. In 2018, National Grid plans to target the on-premise laundry customer segment in Rhode Island with this measure. This sector includes hotels, resorts, hospitals, commercial laundries and laundromats.

iii. On-Premise Laundry (OPL)

There are some on-premise laundry solutions to reduce natural gas energy usage including ozone, condensing equipment and a retrofit for dryers. National Grid has some experience in offering incentives to customers installing this equipment. During

2018, webinars will be provided to further encourage customers to embrace these technologies. The Company has successfully incentivized new commercial washers and dryers in hotels in Massachusetts and would like to gain more traction in Rhode Island. There is an Energy Star rating for commercial OPL Washers but none for dryers; however the custom path can be used to calculate savings. This typically screens as an end of useful life measure by comparing the incremental cost of the energy efficient machine to the machine being replaced. In 2018, the Company will focus marketing and sales efforts on these types of businesses to make them aware that there are retrofit and end of useful life incentives available on commercial laundry equipment.

iv. Steam Trap Smart Tags

In conjunction with doing a steam trap survey, smart tags can be added to each steam trap being reviewed. The steam trap vendor hangs the tag on each trap and provides National Grid and the customer with a spreadsheet providing information on the status of each steam trap including date of service. There will be a National Grid logo and an app that a new facilities manager can use to quickly get up-to-speed in learning about the condition of steam traps in his/her new building. Infrared images are also available. This will also provide the new facilities manager with instantaneous information about National Grid's energy efficiency programs. No incentive is available at this time but may be considered in the future. These tags have been provided to National Grid's steam trap vendors to use on work done in the Company's energy efficiency programs. As of this writing, Phase 1 of the implementation is ongoing. The steam trap smart tags are being placed on existing and newly replaced or repaired traps on surveys performed in 2017.

v. EcoThermal Grease Filters

This is an emerging technology that incorporates an air to water heat exchanger into grease filters which fit into commercial kitchen exhaust hoods. In addition to exceeding UL grease collection requirements by 3.5 times, they also serve to pre-heat hot water. This further saves natural gas. The system captures and reuses waste heat that would otherwise be wasted to the outside. In 2016, the manufacturer partnered with the Company's vendors to perform demonstration projects in Rhode Island, Massachusetts and New York. As a result of this demo project, customers can expect energy savings and reduced cleaning costs to exceed \$4,000 per year. The average restaurant can save 2,000-3,500 Therms per year in gas as a result of the pre-heating of hot water. This results in an average CO₂ reduction of 18.6 metric tons per site.

EcoThermal Filters™ mentions National Grid incentives are available for Rhode Island commercial customers on their website. Filters fit into standard commercial kitchen hoods, making installation easy. Regular maintenance can be done by the restaurant's team and a deeper cleaning requires filters to be disconnected. Some restaurants hire a hood cleaning company for this work.

Sales efforts of this product have stalled due to the manufacturer pulling sales back to its headquarters in Michigan. This measure can succeed again if a local installer and sales force can be found in Rhode Island. The Company is inquiring to the manufacturer about their plans for this. National Grid is developing a relationship with new players to this market in New England and will provide trainings and presentations to the RI Hospitality Association Members to highlight this measure as well as other viable gas measures.

vi. Removable Insulated Jackets for Big Steam Plants

For some of National Grid's largest customers, steam turbine insulation jackets improve both efficiency as well as safety in the plant. They are easily removed and replaced by any staff member. Both standard and custom sized jackets are available. One single turbine can save \$9,500 in energy in a year. A heat loss reduction of 135 BTUs per square foot per hour can result from using the jackets. Touch temperature can be reduced from 750⁰ F to 145⁰ F, improving safety. This product has a five year guarantee. This is a custom express gas measure and is saving customers tens of thousands of therms annually. This measure will be implemented by the Company's energy efficiency sales teams aggressively in RI to all medium to large C&I customers who use steam and high temperature hot water for processes and space heating. It can also be used on all valves, fittings, steam traps, condensate tanks and all uninsulated hot water tanks. It has excellent synergies with general mechanical insulation on piping systems, steam system assessments and steam trap surveys. National Grid is providing training for these measures with targeted webinars on gas measures and Steam System Assessments.

e. New Gas Measures Being Developed

i. Tub Spout Water Saving Trickle Device

Similar to the ShowerStart device. ShowerStart allows you to effortlessly save hot water and energy that's used while waiting for your shower to become warm. This will be approved for small business, multifamily and C&I programs. The Company is facilitating "Heat Watch" for Multifamily, small business and C&I programs. This service includes running boilers in conjunction with controlling and managing the whole boiler and heating systems for a facility. National Grid is currently working on a custom savings tool and new measure development approval processes. This service will save 5-8% of energy on steam systems by preventing overheating and improving temperature control of spaces especially during shoulder seasons of spring and fall.

f. Initiatives specific to Retrofit Program

Specific initiatives are listed below within the retrofit portfolio that address specific and unique needs of the existing buildings upgrades:

i. Retro-Commissioning

Retro-Commissioning (RCx) is defined as "the process of applying rigorous testing, verification and upgrade protocol to an existing building control system to identify and correct operational inefficiencies"⁵. RCx can be coupled with a monitoring system which uses metering and software to provide ongoing energy performance feedback directly to building operators and or the Company.

RCx targets both electric and gas saving measures and helps commercial and industrial customers improve performance and reduce energy consumption of their facilities through the systematic evaluation of existing building systems and may include continuous commissioning. RCx recommendations from a study are usually no-cost and low-cost HVAC measures that can be implemented in the course of normal maintenance or enhancements to building automation systems, eliminating energy waste. In addition to energy benefits, RCx results in increased comfort for occupants, building information for owners and operators that allow building operators to meet occupant needs for

⁵ *Retro-commissioning Best Practice Study*, Revised Draft for C&IMC Review, MA, May 22, 2014

specialized systems, safety, security, and improved long-term capital improvement plans.

National Grid launched a retro-commissioning initiative with four customers from the healthcare, hotel and education sectors in 2017. Certain screening criteria were used for selection of customers. Criteria included whether or not customers had an EMS; whether or not they had controls; and if they frequently received complaints from occupants about being too hot or too cold. The intent was to look for customers that had the greatest need for this service and for National Grid to be able to learn from the experience. The selection criteria used, proved to be successful, as four out of the five candidates selected continued to proceed with the initiative. The Company has learnt from the launch of this initiative, about engagement and that sustained savings from retro-commissioning takes patience, sustained interest and commitment from both customers and by implementers. As a result of the Company's experience with retro-commissioning to date, the Company will look to expand this initiative in 2018 and stream line the existing process for customers such that they benefit from this service in a manner that is both timely and less costly. In 2018 The Company will also investigate and determine ways to develop the vendor services market and test various TA vendors as well as turnkey RCx service providers in the Rhode Island market.

ii. Boiler Tune-Up Initiative

In 2015 a natural gas boiler tune-up demonstration project began in Rhode Island. In 2016, this project became an initiative and modifications were made to the qualifying criteria which broadened the reach to more customers. In 2016-2017 a strategy to engage with boiler service provider companies was deployed to pilot this program but was not successful. Many of the boiler tune-up service providers have existing contracts with customers and were not willing to modify their contracts to accommodate this initiative. In 2018 a new go-to market strategy will be tested where the Company will identify customers with gas boiler that meet the initiative criteria and the sales National Grid sales team will approach customers to enroll in this boiler tune-up initiative.

iii. Strategic Energy Management Planning (SEMP)

The Strategic Energy Management Planning (SEMP) Initiative is available to National Grid's largest C&I customers who have the potential to go deeper with energy efficiency, and who have a level of in-house sophistication to make organizational changes to plan for multi-year energy planning. A Memorandum of Understanding

(MOU) offers a way to document a commitment between the customer and the Company to work together to achieve mutually stated goals through specific actions that are tailored to the customer's facilities over a multi-year planning horizon. As such, an MOU (though non-binding in this case) can set the stage for achieving deeper and more comprehensive energy efficiency savings, and is more likely to succeed than a "one measure" or "one year" approach. Typically, MOUs include participation and a commitment by upper management, the establishment of specific, very aggressive energy efficiency saving targets, and measurement and verification strategies to document savings throughout the target facilities along with an incentive structure that meets the customer's financial criteria. This offering goes much beyond energy efficiency and into sustainability and branding support to the customer.

The Company currently has three SEMP MOUs which will continue into 2018. One is a large university campus and the second is a hospital group comprising of RI's five largest hospitals. In the second quarter of 2016 the Company added an additional SEMP focused on State facilities (detailed above under Municipal and State Sector). The Company will continue to work with these customers to help achieve their MOU goals.

In 2018 the Company will further develop the SEMP initiative to include three tiers of offerings to customers, including financial tiers and service offering tiers, such that customers receive products and services customized to meet their needs. The goal of these tiered offering is to engage in more SEMP's in the coming years that are tailored to fit customers' needs. Tier 1 will be basic services that establish a governance structure and help the customer coordinate gross annual energy savings. Tier 2 will include the basic service available in Tier 1 plus Technical Assistance (TA) services, Tier 3 will include Tier 2 services plus provide project management services to the customer. National Grid will also pilot Non-EE Solutions within its SEMP initiative, with individual customers who are interested in demonstrating and or adopting renewables, storage, Electric Vehicles FV, and distributed energy resources and technologies. National Grid will also explore service agreements and business models that will allow the Company to offer other energy solutions as part SEMP initiative. The Company will look to engage with SEMP initiatives with cities, K-12 schools and industrial customers in addition to the sectors it currently serves (colleges, universities, state facilities, and large hospitals).

iv. Lighting Designer Incentives (LDI)

Most lighting projects involve replacing old lighting fixtures with new more EE fixtures. This yields savings but leaves more savings untouched due to the lack of redesign. The LDI incentive goes directly to the lighting design team to fund their design and modeling efforts to achieve lighting energy savings while maintaining quality lighting design. The goal of this incentive is to have an early and deep impact on lighting projects, ensuring that energy efficiency is considered from the beginning and supported until the end of a project. The lighting designer becomes an EE champion, fighting for the best EE lighting for incentives. These lighting design solutions will have greater persistence because they are designed by professionals who have balanced the human needs of the project with the performance requirements of the lighting system, creating quality lighting designs that are “right-sized” for the project by being energy efficient. In 2017, the Company plans to streamline the Lighting Designer Incentive program requirements and will expand the qualifications for lighting designer to include architects and engineers who have 5 years of demonstrated lighting design projects.

Upstream Path: This is described in more details in section 5.f.ix. below.

v. Solid State Street Lighting

Based on the feedback it received from Rhode Island cities and towns, the Company estimates total savings to be approximately 35,000-37,000 annual MWh for solid state street lighting in Rhode Island. As of this filing, 16 towns in Rhode Island have completed the purchase of street lights, representing 42% of the total municipalities served by National Grid. Four of these towns have completed installation of LEDs, either with or without controls. Eleven additional towns are in the process of purchasing their street lights from National Grid.

Customer Owned Street Light Equipment

Prior to rolling out the customer-owned street lighting tariff in 2014 and the energy efficiency program to customers, the Company held numerous meetings with municipalities and OER to ensure that customers understood what was involved in the process of acquiring the assets and equipment going forward.

Beginning in 2016, the Company received the first requests for municipal customers in Rhode Island to purchase their own street lights from National Grid in anticipation of converting them to solid state street lighting and in some cases, attaching adjustable controls. In 2016, 6,698 annual MWhs were saved by the City of Providence, which was

only the first phase of their street light installation. As of this writing, in 2017, four communities have saved a total of 7,238 MWhs by purchasing their own street lights and converting them to LEDs. In 2018, the Company anticipates that interest will continue.

National Grid recommends that municipal customers purchase LED fixtures and controls that meet the criteria of the Design Lights Consortium or Energy Star to take advantage of the Company's energy efficiency incentives. Information regarding energy efficiency incentives is provided by National Grid and OER. Historically, National Grid has not provided lighting design for street lighting because this is a customer option based on safety and security needs as well as the aesthetic preference.

On May 25, 2017, the PUC approved the Company's request to revise Street and Area Lighting S-05 – Customer Owned Equipment S-05 tariff (Rate S-05) to expand eligibility to include any municipal city or town, any fire district, any municipal water utility board, Kent County Water Authority, Rhode Island Commerce Corporation, Quonset Development Corporation, Rhode Island Airport Corporation, Narragansett Bay Commission and the State of Rhode Island. This change went into effect on June 1, 2017. Rate S-05 had previously been restricted to only providing service to streetlights owned by municipalities after being purchased from National Grid, pursuant to R.I.G.L § 39-30-1. National Grid agreed to expand the availability of Rate S-05 to these other entities. The Company's request to revise Rate S-05 was supported by the Partnership for RI Streetlight Management (PRISM), the RI League of Cities and Towns and the Washington County Regional Planning Council.

Since the beginning of 2015, the Company has offered incentives to municipal customers of \$0.15 per kWh of first-year savings for qualifying LEDs and \$0.25 per kWh of first-year savings for qualifying controls associated with either the dimming or part-night run hours as set forth in the street lighting tariff. These incentive levels will continue in 2018. Since the tariff was amended, the incentive is now available for all of the entities listed in the tariff.

In addition to the funding provided by the systems benefit charge mentioned above, the OER continues to accept applications for street lighting grant funding from communities and will continue to evaluate the needs of communities for LED street lighting in 2018.

There is a \$300,000 cap on the funding to individual cities and towns from OER. RIIB funding will continue in 2018.

Beginning in 2016, Rhode Island communities began to benefit from the Rhode Island Infrastructure Bank's (RIIB) Efficient Buildings Fund. Interested cities and towns applied for this funding in spring 2016. This funding is expected to continue for calendar year 2018.

Company Owned Street Light Equipment

In January 2017, provisions in the Company's tariffs for company-owned street and area lighting making available an LED option for customers went into effect. When a customer leases its street lights from National Grid and requests the exchange of an existing luminaire for an LED fixture, the energy efficiency incentive paid to that customer will be the same amount (\$0.15 per kWh of first-year savings) as is offered for qualifying LEDs in the customer-owned option. This incentive offering was presented to and agreed upon by the Collaborative in March 2016. The current company-owned street lighting tariffs bill the energy consumption based on a dusk-to-dawn schedule. At this time, there is not an option for billing on other schedules such as part-night or dimming with the use of adjustable controls. Therefore, there is no energy efficiency incentive currently available for these adjustable controls. However, as the technology evolves and if it becomes a cost effective option for its customers, the Company would then consider the inclusion of adjustable controls or operating schedules in a future tariff filing and also include an incentive in a future energy efficiency program for company owned street lights.

Similar to a multifamily building or leased commercial space where the tenant pays the electric bill, as long as the landlord (in this case, National Grid) approves the replacement, the customer leasing the street light will receive the energy efficiency incentive directly.

The table below reflects some of the similarities and differences between the two ownership options available to customers for solid state street lighting.

Distinction	Customer-Owned	Company-Owned
LED Fixture	Customer owns the equipment and is responsible for the purchase, financing, and maintenance.	National Grid owns, installs and maintains the equipment. The customer requests the exchange of existing or installation of new lighting.
Energy Efficiency Incentive	Customer receives a one-time incentive payment for the installation of LED equipment (after satisfactory post-inspection by National Grid)	Customer receives a one-time incentive payment for the installation of LED equipment (after satisfactory post-inspection by National Grid.)
Purchase/Lease	Customer purchases the equipment	National Grid leases the equipment to the customer
Outreach	League of Cities and Towns, Annual Department of Public Works (DPW) meeting with Company, and various other meetings	League of Cities and Towns, Annual DPW meeting with Company, and various other meetings
Technical Support	Customer is responsible	Customer is responsible

vi. Strategic Energy Management (SEM)

Strategic Energy Management is relatively new approach to achieving energy savings. It remains more of a concept with some common core features than a definable set of universally-accepted program elements. No matter how delivered, when SEM programs are evaluated, the common quantifiable sources of energy savings are: (a) identifiable O&M measures and (b) conventional ECMs that were identified through the SEM process, then incentivized and installed though a conventional custom or proscriptive program path, but with their savings attributed to SEM.

The central concept of a SEM initiative is to identify and capture energy savings from non-capital measures – primarily definable Operations and Maintenance (“O&M”) and staff behavioral or operational changes. Ideally, SEM practices will be incorporated into the host company’s corporate culture. SEM is often presented as a market transformation initiative.

A SEM initiative appears to be the most effective with program administrators who wish to use it establish a continuing relationship with larger customers where they don’t already. National Grid already has in place with its large customers many of the services and savings components of that in other jurisdictions appear in a SEM program. These include, for example, customized Strategic Energy Management Plans and Memorandums of Agreement with large industrial and institutional customers that often contain multi-year energy commitments to planning, O&M initiatives, energy use tracking, and employee engagement. The Company also offers a Pay for Performance option to customers.

vii. SEM Strategy

• **Market Analysis**

It remains an open question as to what the potential for SEM is in Rhode Island, given ongoing SEMP relationships with many of the largest customers in the state. These SEMP agreements already contain some of the elements that would be included in a free-standing SEM initiative, and could easily be expanded to include others. However, other utilities are clearly gaining savings from SEM offerings, so the concept is worthy of further exploration.

Fortuitously, Massachusetts has agreed to test SEM in early 2107. Because launching an SEM initiative is labor intensive, National Grid proposes to actively monitor the Massachusetts test, and take full advantage of the process there in terms of RFP development, development of evaluation protocols, processes for identifying and measuring savings attributable to SEM, etc.

Given the size of the Rhode Island market, the customer potential for SEM is inevitably much smaller than that it is in Massachusetts. Thus, it is only prudent for National Grid to conduct a local market potential analysis, and discuss potential interest in SEM with customers who might qualify, given size and intensity of energy use. National Grid will

conduct this analysis in Q2, 2018, in parallel with the unfolding of the Massachusetts test.

- **Modify the existing Pay-for-Performance (P4P) offering to incorporate O&M Measures:**

The PAs in Massachusetts are developing appropriate incentives for O&M improvements within the context of the existing C&I program, via P4P, creating a pathway for participation across all customer sectors and sizes. In addition, PA staff in Massachusetts is examining a number of common measures with quantifiable savings with the aim of developing deemed savings and offering them prescriptively.

National Grid Rhode Island team will participate in both of these efforts and adopt the outcomes in Rhode Island.

This demonstration will attempt to identify other national best practices that can enhance them, complement them, or address opportunities unmet by them, where these are practical, cost-effective and locally applicable.

The Company will monitor and participate in the demonstration that the Massachusetts Program Administrators have commissioned, interspersing Rhode Island – specific questions or comments along the way.

viii. Peak Load Reduction Strategies

The Company plans to pursue electric and gas savings with its customers that will result in peak load reductions in addition to annual kWh/Therm energy savings. In addition to exploring peak demand strategies with its SEMP and industrial customers where there are large pockets of savings, the Company will continue to pursue the following strategies for summer and/or winter peak reductions:

- **Wireless temperature controls:** These controls provide the benefits of large commercial HVAC equipment, especially roof-top units for small businesses. The Company will continue to create messaging around the benefits of these controls for electric and gas and how it has a direct response to the expectation of higher energy costs in winter and summer. Selectable settings and the ability to send system information directly to a computer or mobile device enables users to remotely manage multiple rooms and properties thereby improving energy efficiency and occupant comfort.
- **Marketing campaign for best practice tips:** This campaign, which has been carried out since 2015 will continue in 2018 as well. This consists of a list of best practices for reduction in electric and gas usage during winter and

summer months, and could be distributed to all C&I customers during the winter of 2017 and summer of 2018.

- Pipe Insulation and steam trap surveys are already part of the Company's mix of measures that are offered to its customers. As part of the winter campaign both of these measures will be marketed through the Company's sales and marketing teams to reinforce the importance of these measures on the winter usage.
- Boiler Tune-Up: The boiler tune up initiative described above will further assist customers with winter peak reduction.
- Lighting and controls: Several initiatives and measures help reduce summer peak load through lighting specific measures.
- Demand controlled ventilation and energy recovery on HVAC units, both measures provided in the programs that save on peak reductions.
- Demand Response: The Company is pursuing a demonstration project to test DR capabilities (described in section below).

ix. Products Offered Through "Upstream"

When the Company refers to an "Upstream" initiative it is referring to the practice of offering an incentive directly to a manufacturer or distributor (mainly distributors in Company initiatives) of efficient equipment instead of offering an incentive to the customer through an application form after the sales transaction has been made. This allows them to sell the product for less and make it more appealing to a potential customer. It also allows the customer to acquire this more efficient equipment without the burden of paperwork and waiting for reimbursement.

Upstream Lighting

National Grid's first, and flagship, Upstream initiative is formally known as "Bright Opportunities Rhode Island". This initiative was launched in February of 2012 with four types of LED and four types of fluorescent lamps. Today, the program includes a wide variety of LED lamps, small LED luminaires, and various sizes (1'x4', 2'x2', 2'x4') of recessed ambient LED luminaires or "troffers." To date, it has achieved more than 10,000 net annual mWh in savings and will continue to play a major role in the Company's programs in 2018 and into the future due to the fact that:

- Moving products from downstream to Upstream removes customer-facing paperwork that the Company's customers have routinely indicated is a barrier to participation.

- Moving products from downstream to Upstream has shown major increases in volume and energy savings in the past. This volume and increased competition between many manufacturers and distributors drives the prices of luminaires down quickly and has given the Company opportunities to reduce incentives and make the initiative an even more cost efficient way to deliver lighting savings.
- Moving products from downstream to Upstream, especially in concert with Mass Save Program Administrators (PAs), tends to change the stocking pattern of distributors across the region which facilitates the transition from fluorescent or HID sources to more efficient and more easily controlled LEDs.

Although the Company is constantly striving to deliver savings “deeper” than lighting, a rapid expansion to savings in lighting will have a positive effect (decreasing kW demand) in both winter and summer peak times due to the fact that commercial lighting is generally on during these times.

In 2017, National Grid eliminated all fluorescent offerings in Upstream lighting. The entire initiative will be focused on LED lamps and luminaires.

In 2017, National Grid is seeing a lower volume of the type of LED lamps that were first introduced in the initiative come through the system. The Company believes that this is due to the fact that a substantial portion of this market has been converted to LED lamps and that it might be nearing a saturation point. Therefore, the Company will spend more time and incentive dollars focusing on how to increase the volume of 1x4, 2x2, 2x4 luminaires, especially those which offer built-in controls which will result in more savings.

National Grid will continue to offer incentives on linear LED replacements for T8 fluorescents, as there are places where this technology is appropriate. However, the Company feels that many customers would be better served by a new luminaire, especially those with built-in controls. The Company continues to investigate other high efficiency lighting equipment and controls to potentially add to the program in the months to come.

Upstream HVAC

The success of the Upstream Lighting initiative encouraged National Grid to explore other areas where the Upstream model could be used successfully. After some research, the Company decided to issue a joint RFP with the Massachusetts Program Administrators (under the “Mass Save” umbrella) for a company to run an initiative that will encourage distributors to change stocking patterns and advocate for energy efficient Upstream Unitary HVAC and Heat Pumps up to 25 tons.

This initiative has slowly increased savings delivered to the Programs since its inception. This initiative is less dynamic than the Upstream Lighting initiative, described above, as there are fewer manufacturers and less transparent pricing structures. As of Q3 of 2015, the Company and its partners EFI/CSG have enrolled all major manufacturers and have made inroads in understanding how this market works.

The contract with the previous vendor ended on December 31, 2016. A new vendor was selected and began January 1, 2017. There was a significant transition period for the first half of 2017 between the current and previous implementation vendors. More relevant program success data will be realized in the second half of 2017 and moving forward.

**It is important to note that savings from this particular set of products will be calculated from new construction not retrofit baselines.*

In addition, the Company introduced two new Upstream HVAC products which are Electronically Commutated Motor (ECM) circulator pumps under 3 horsepower (HP) and Variable Refrigerant Flow (VRF) systems in Q3 of 2017. These new equipment types will be added to the existing equipment offered through the Upstream HVAC initiative through the same implementation vendor.

Optimize relationships with HVAC vendors to enhance the HVAC upstream program.

In addition to the array of HVAC solutions the Company has supported for years, ranging from the air- and water-cooled air conditioning and heat pump equipment to boilers and furnaces and related controls and services, the Company will begin to augment these offerings in a variety of ways to increase savings from this important end use category.

For the upstream air conditioning and heat pump equipment offerings, the Company recently hired vendor, who not only has the requisite back office and program administration capabilities, but also has very strong technical and commercial expertise, should improve and expand relationships with equipment distributors and lead to increased savings. Additionally, more products will be added in 2018, to the upstream HVAC portfolio of offerings including Variable Refrigerant Flow (VRF) and Electronically Commutated Motor (ECM) pumps to better serve a broader array of customers' HVAC needs.

Through the Company's Channel Sales⁶ group, there are plans to work more closely and collaboratively with supply houses and wholesalers of HVAC equipment to enable them to more effectively both upsell and cross-sell energy efficient equipment. The objective is to convert more standard efficiency equipment purchases into high efficiency purchases and to increase sales of related or add-on equipment as well. Importantly, this approach will also remove the transaction costs burdens typically confronted by customers and or their contractors by having the distributors provide the information necessary to incentivize these projects. It is expected that this approach will increase savings with customers who have in the past decided, despite awareness of the available incentives and services, not to participate. This approach could also lead to savings from customers who have historically been unaware of the available offerings.

Upstream Gas Equipment

In Q4 2015 National Grid and the MA Program Administrators launched the first product in the new Gas Upstream Program. By partnering with local water heating distributors, the Company has collaboratively promoted the sale of high-efficiency water heating equipment. The Company leveraged the commercial water heater distribution network by upselling and stocking high efficiency equipment to influence as many qualifying commercial water heater sales as possible. As of August 2017, the initiative had 37 active distributors in both MA and RI representing 130 + branches. The success of this path has been quite remarkable. The initiative currently incents four different types of water heating equipment - Indirect, Storage, Tankless, and Volume.

⁶ The Company's Channel Sales Group manages relationships with external partners such as Project Expeditors (PEX), trade allies (contractors, installers, electricians, plumbers) as well as manufacturers and distributors of gas and electric products and services.

In 2017, the Company continued working closely with its partner Energy Solutions to increase unit throughput and distributor participation. Energy Solutions is responsible for signing up new distributors, training them on the initiative, providing return on investment sales training to sales staff, and overall promotion of the initiative out in the industry throughout the state. **It is important to note that savings from this particular product will be calculated from new construction not retrofit baselines.*

Upstream Kitchen Equipment (Electric and Gas)

During 2017, the Company and the MA Program Administrators will be launching a Point of Sale (POS) initiative for all electric and gas kitchen equipment. It will be similar to current upstream offerings in structure for natural gas only convection ovens and fryers. The customer will receive an instant rebate at the point of sale, which, for the first year, will be equal to the current prescriptive incentive, and the equipment wholesaler will receive a small spiff for their efforts in getting the customer to upgrade to a more efficient product. This differs from the way the Company has pursued Upstream paths in the past in that it will be leaving the current downstream path open so that the customer has maximum flexibility. This has proven successful in other jurisdictions. A protocol has already been established to prevent savings being counted and dollars being spent in two places. National Grid expects to see a considerable lift in efficient kitchen equipment flowing through the system in Q4 of 2017 once all kitchen equipment measures are made available Upstream.

x. Combined Heat and Power Initiative

A combined heat and power (CHP) facility is “equipment used to produce electric energy and forms of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes, through the sequential use of energy.”⁷

Since 2012, the CHP provisions of the Least Cost Procurement law in R.I.G.L. §39-1-27.7⁸ have required the Company to document the support for the installation and investment in clean and efficient CHP annually in its energy efficiency program plan by

⁷ CFR Title 18, Part 292, Sub-Part A, 292.101 – Definitions

⁸ 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).

including a plan for identifying and recruiting qualified CHP projects, incentive levels, contract terms and guidelines, and achievable megawatt targets.⁹

For 2018, the Company will continue to offer a Combined Heat and Power (CHP) incentive. In 2018, the Company's emphasis will be on increasing the support for qualifying efficient CHP projects through the energy efficiency programs, as intended by the legislation. Because of the high capital cost and technical requirements of installing CHP, there is a very long lead time for a successful installation. With small numbers of projects and wide ranges of possible project sizes, the Company anticipates substantial variability in MW realized in any given year. Noting this, for 2018, the Company is proposing a target of 1 MW of installed capacity that corresponds to 8,000 MWh of savings. For 2018, the Company has set a goal of three installations in Rhode Island and commitment to the initiation of at least two additional projects for future years.

To qualify for a CHP energy efficiency incentive, a proposed project must meet the following conditions:

- Host customers must be in the franchise service area of the Company.
- Proposed systems must either be (i) thermal leading and sized so the recoverable heat can be used to offset other facility thermal loads and generate electricity as a by-product, or (ii) using waste energy or waste heat to generate electricity.
- Both new construction and retrofit installations are eligible; in either case, the baseline system must be carefully documented.
- The overall minimum total system efficiency of the proposed CHP units must be 55% or greater¹⁰. System efficiency is calculated as Annual Useful Energy/Annual Natural Gas Input where
 - Annual useful energy = Net Annual kWh*3,413/100,000 + utilized thermal output (Therms)
 - Annual natural gas input = CHP gas input in Therms (HHV)

⁹ See R.I.G.L. § 39-1-27.7(c) (6) (iii).

¹⁰ The RI DEM's Air Quality Regulations (http://www.dem.ri.gov/pubs/regs/regs/air/air43_12.pdf; Page 11) set a minimum system design efficiency of 55% for CHP to be eligible to apply for Emission Credits. As noted in the incentive levels section below, a higher energy efficiency incentive is available for systems with efficiencies of 60% or greater.

- The equipment to generate electricity may be an internal combustion engine, gas turbine engine, steam turbine, back pressure turbine, or fuel cell and the facility will capture waste heat for use in the facility.

Wasted energy systems and back pressure or extraction turbines can qualify. For these facilities to qualify the following conditions must be met; because these systems are designed to take advantage of existing on site wasted energy or inefficient processes, there is no minimum total system efficiency requirement.

- Host customers must be in the franchise service area of the Company,
- All thermal and electric output of the CHP facility should be used on site,
- While it is expected that most of these applications will be retrofit, both new construction and retrofit installations are eligible; in either case, baseline system must be carefully documented,
- The project must pass cost effectiveness screening.

The Company will undertake the following steps to support qualified CHP projects.

Identification and Recruitment of Qualified CHP Projects

The Company currently works with vendors and customers to identify CHP opportunities at customer locations. The Company promotes CHP systems and outlines the process for qualification and implementation of CHP facilities through the Company's energy efficiency programs. The Company has sales and technical staff who are primary points of contact for customers and vendors with potential CHP projects. The Company will continue to communicate criteria for CHP assessment and will communicate to vendors so that their presentations to customers will be more consistent with Company technical assistance requirements.

Scoping Study/Qualification

The Company will offer technical assistance on CHP projects beginning with a preliminary scoping of a potential site. This scoping will be based on an evaluation of:

- Monthly (or hourly, where available) electric, gas, and other fuel usage
- All site-specific forms of thermal energy end uses
- Coincidence of electric and thermal loads
- Proposed project cost

This scoping will determine if further study of the site appears favorable, i.e., provides CHP operating hours and load factors that would be an appropriate application of CHP.

Technical Assistance Study

Assuming a favorable screening, National Grid will co-fund a TA study of CHP with the customer. The TA study will be performed by an independent, qualified engineering firm. This study is to measure thermal loads, appropriate CHP size, compile a budget cost estimate, and identify potential barriers to the technology, etc. National Grid will fund 50% of the cost of any TA study conducted by a preferred vendor selected by the Company, and up to 50% of the TA for other qualifying independent engineering firms. Any TA study by a CHP vendor or its representative which fulfills the CHP TA requirements may be accepted, though no co-funding will be provided. The TA study must be completed, submitted, and approved by the Company prior to implementation. The TA study must include an assessment of the likely on-peak kW reduction from the facility given its nameplate rating, the net facility output, projected availability based on anticipated site-specific operating characteristics, and performance data on other similar units. (On-peak kW reduction = Net Output x Availability x % Loaded.) This kW load reduction should be used in the benefit-cost screening.

All TA studies should include not just an analysis of the CHP system, but also an analysis of load optimization and thermal and electric energy efficiency opportunities. These opportunities themselves will be eligible for energy efficiency incentives and will help make sure that the CHP facility is correctly sized for the facility's needs and will avoid creating a disincentive for future load reduction at the site. As indicated below, a larger incentive is available for CHP projects that include the implementation of energy efficiency measures at the host facility.

Cost Effectiveness

The screening for cost effectiveness specific to CHP is included in the Total Resource Cost Test Description included as Attachment 4.

Incentive Levels

If a project has been shown to be cost effective, it will be eligible for an incentive. Incentives will be determined following cost effectiveness screening in consultation with National Grid personnel. The following rules will apply to all CHP projects (regardless of size) in the determination of the incentive. However, the amount of incentive the

Company is willing to offer and commit to the customer could depend upon the amount of funds that are budgeted or remaining in the budget of the energy efficiency program.

- For cost effective CHP projects, the target energy efficiency installation incentive (“installation incentive”) in 2018 is \$900 per net kW, where net is nameplate kW output minus CHP auxiliary kW. For CHP projects with efficiencies of 60% or greater, the target installation incentive in 2018 is \$1,000 per net kW. Wasted energy, back pressure turbines, and extraction turbines are eligible for incentives of \$900/kW.
- For cost effective CHP projects where the host customer also commits to implementing energy efficiency measures representing at least 5% of site energy use or the maximum load reduction identified by a TA Study, whichever is less,¹¹ the maximum installation incentive in 2018 is up to \$1,125 per net kW, and the CHP sizing must incorporate the load reduction. For CHP projects with efficiencies of 60% or greater and that have similar energy efficiency participation, the maximum installation incentive in 2018 is up to \$1,250 per net kW. A customer may be treated as having made this commitment to energy efficiency if it has made investments to achieve similar load reductions through energy efficiency within the previous five years.
- All CHP projects are also eligible to receive other incentives, such as the Advanced Gas Technology (AGT) incentive, subject to the incentive package cap described below.
- CHP facilities greater than 1 net MW may be offered an additional performance incentive, as further provided in the section entitled “Special Considerations for Large CHP Systems,” below.
- The CHP system costs must include: the cost of all system, auxiliary, and interconnection costs; and CHP maintenance. If the system is receiving a tax credit, it will be treated as a credit against the cost of the CHP project.
- The CHP incentive package cap from the Company will be 70% of the total project cost inclusive of the installation incentive, incentives related to gas

¹¹ If CHP facility sizing is determined by electric load (or not constrained by either electric or thermal load), the requirement will be 5% of electric usage; if the facility sizing is determined by thermal load, the requirement will be 5% of thermal energy usage. The energy efficiency measures will themselves be eligible for incentives, and are not part of the CHP incentive package cap described below.

service, present value of any performance incentive, system reliability procurement incentive, and any other incentives related to the transaction. For new construction installations, the incentive cap will be 70% of the incremental cost difference between the cost of what would have been done absent the CHP project and the cost of the CHP project.

- Retainage of 20% of the energy efficiency incentive payment will be held until commissioning is completed.

Other Contract Terms and Guidelines

In order to ensure proper operation of the CHP facility and persistence of energy savings, the following terms and guidelines will be required:

- Minimum requirements document. As part of the TA study, a minimum requirements document (“MRD”) will be developed. This MRD will contain engineering hardware and operational specifications that directly affect the savings estimates developed in the TA study. Compliance with the MRD will be necessary to receive rebate payments.
- All systems will require electric, thermal and gas metering for commissioning and monitoring of system efficiencies. Metering hardware and data collection services may be provided at little or no cost to the customer.
- The project must be commissioned. Commissioning is a process following installation whereby a third party verifies that the project is installed and operating as detailed in the TA study and MRD.
- The customer must sign and produce a contract for O&M services for a period of years through the first planned major overhaul of the CHP unit. On-going O&M contracts for a minimum of ten (10) years from project commissioning are recommended.
- The customer must apply for interconnection service as soon as practical and not operate the unit until they receive the authorization to interconnect from the Company. While there may be site-specific interconnection considerations for particular projects, please see the attached link for information on interconnection:
http://www.nationalgridus.com/narragansett/business/energyeff/4_interconnect.asp
http://www.nationalgridus.com/narragansett/business/energyeff/4_interconnect.asp
http://www.nationalgridus.com/narragansett/business/energyeff/4_interconnect.asp

- As noted in section 5.a.i. of EE Program Plan, kW-demand savings achieved via the electric energy efficiency programs, including CHP, will continue to be reported by the Company to ISO-NE as Other Demand Resources (“ODR”) and the revenue generated will be used to fund future energy efficiency projects through the Company’s programs.

Delivery Service Tariffs Applicable to CHP Installations

Customers receiving an incentive payment for installation of CHP will be billed for delivery service charges on the appropriate general service tariff. The Company’s general service tariffs, Rates G-02, G-32 and G-62, include a CHP Minimum Demand Provision for those CHP installations that receive an energy efficiency incentive pursuant to this Plan. For Customers subject to this CHP Minimum Demand Provision, the monthly Demand will be the greater of a) the Demand as normally defined under the tariff provisions; or b) the Minimum Demand, which shall be 50% of the greatest fifteen-minute reading from the Customer’s generation meter(s) as measured in kilowatts during the month. The Customer Charge, Transmission Demand Charge, all per kWh charges and any other applicable charges and credits will be in addition to the Minimum Demand Charge. This rate treatment is designed to mitigate the cross-subsidies from other customers in the same rate class. The Company believes it is very important to assure that a customer who is receiving incentives through the energy efficiency program continues to pay a fair share of the costs of the distribution system upon which the customer will continue to rely when the CHP unit is off-line.

Special Considerations for Large CHP Projects

A project that is greater than 1 MW of net nameplate capacity shall be defined as a “Large CHP Project” and may be eligible for special considerations that support the development of CHP, while accounting for its unique characteristics.

Qualification

The cost of the project will be reviewed by a design/build or general contractor experienced with CHP projects and revised as necessary.

Incentive and additional terms and conditions

If a Large CHP Project passes the benefit cost test described in Attachment 5, the appropriate incentive will be determined, based on the guidelines for all CHP projects set forth in the section entitled “Incentive Levels,” above.

An additional performance-based energy efficiency incentive, capped at \$20/kW-year (\$1.66/kW-month) for a period of up to ten years, will be offered as part of the incentive package for any project greater than 1 net MW. No payments will be made until the unit is in operation and provides demonstrated load reduction, and will be made semi-annually based on actual metered load reduction. Load reduction performance will be based on the net daily metered kW output of the system during ISO-New England's on-peak periods averaged over each six month period.

Performance incentives will be subject to budget limitations and, in all cases, will be subject to the 70% total project cost cap applicable to all CHP projects set forth in the section entitled "Incentive Levels," above. The total incentive package will include any incentives related to gas service, and the present value of the above-described performance incentive.

The customer will have to repay a portion of the incentive to the Company if the project is abandoned, removed from the premises, sold, or otherwise no longer utilized as the primary source of heat and electricity by the customer, within 10 years from the date of final incentive payment authorization. The repayment will be the energy efficiency installation incentive times the number of years remaining until the required ten years of service divided by ten. Other incentives, such as any Advanced Gas Technologies (AGT) incentives, may also have similar reclaim provisions.

Options for CHP proposal that fails cost effectiveness testing

If a CHP project does not pass the benefit-cost test, the Company will work with the customer to develop other solutions that may still support the CHP facility. Such other solutions may include one or all of the following:

- Re-analyzing the optimal size of the CHP unit, or the number of generators. A different sized CHP unit might provide better efficiencies and pass the benefit cost test.
- Identifying other load reduction opportunities at the facility. Benefits can be garnered from load reduction in lieu of achieving that load reduction through CHP.

Targeted Outreach and Support for Potential CHP Customers

The Company believes that significant savings can be generated with this technology in the coming years. The Company is focused on developing a pipeline of projects for

small, medium and large customers. In addition to having a specific sales point person for CHP projects, the Company has a CHP program manager who helps customers navigate the technical and procedural aspects of bringing a CHP unit online. The Company also works with a TA vendor that provides assistance in identifying and executing CHP projects. In addition, the Company works with CHP vendors to offer RI customers smaller CHP units where installation and operations are turn-key. Furthermore, in 2016, the Company introduced a CHP manual to assist customers who are deciding if CHP is an option for their facilities. Other strategies that will enhance CHP acceptance will also be considered, such as: preparing and distributing case studies, providing plant operator training, and providing easier customer access to CHP unit performance data.

Incremental Energy Efficiency for Customers who have Previously Installed CHP

The Company has outlined guidelines this year with regards to installing incremental energy efficiency for customers who have previously installed CHP on site or who are adding additional equipment that affects the performance of the CHP unit. The guidelines are structured to carefully categorize and protect the benefits attributed to CHP projects, but at the same time fostering any additional cost-effective EE measures.

The guidelines are specific for two types of project categories. The first category is “CHP Optimization” and involves measures which are installed with the purpose of increasing the output or operating efficiency of the existing CHP or other DG unit. An example might be the addition of precooling to air intake on the CHP unit. In order to maintain compliance with ISO-NE’s FCM rules, such projects will be tracked in the FCM, if applicable, as incremental output of the associated DG facilities.¹² The second category is “Incremental EE”, which includes “traditional” EE measures installed with the intent of reducing energy consumption in sites that have previously installed CHP. These measures may or may not affect CHP performance and output.

For locations where the CHP unit is large enough, the energy efficiency savings measures installed may result in lowering the output of the CHP system instead of

¹² ISO-NE’s FCM rules require that new CHP facilities, or energy efficiency measures that result in the increased output of an existing CHP facility, are tracked in the FCM as distributed generation resources.

reduction of load on the power grid itself. Therefore to accurately assess savings that can be claimed by energy efficiency programs, a power mapping is recommended such that the load reductions to the grid can be accurately assessed.

g. Retrofit Program Demonstration/R&D Projects

i. Demand Response

In 2017, the Company launched a demand response (DR) demonstration for residential, large commercial and industrial customers. The goal of the DR demonstration program is to reduce peak demand costs for all customers in the regions as well as reduce installed capacity tag¹³ for individual commercial and industrial customers through peak shaving and load shifting opportunities.

National Grid does not currently have specific distribution constraints on its system in Rhode Island that it is looking to address with this DR demonstration project. In early 2017, the Company enrolled over 5 MW of demand reduction for a summer demand response demonstration program with large C&I customers. The program offers customers monthly incentives for enrolled kW reduction as well as a performance incentive for DR event participation. National Grid will analyze data collected from the 2017 demonstration to assess the market potential, test delivery strategies, identify market barriers, and develop the cost effective screening framework for demand response (DR) programs.

DR Events are triggered based on the day-ahead system load forecast for National Grid's RI territory. The targeted number of event hours is 20, with each event having a 4-hour maximum duration. Events are on weekdays, excluding national holidays, in the months of June, July, August, and September. The electric transmission and distribution systems in Rhode Island have a higher peak in the summer than the winter. So the summer peak is driving the size of the systems and there are more benefits to a summer demand reduction program than a winter reduction program. However, there would also be benefits to having a winter demand reduction program in the future, if it proves cost effective.

¹³ Installed Capacity Tag is a capacity payment that is set for a customer by using their peak demand during the peak day/hour on the NEPOOL grid.

The Company currently offers an incentive, which is a combination of \$/kW and \$/kWh elements for the 2017/18 summer program season. This determined value represents a cost-effective level to attract participants and attain the goal of 10 MW of DR within its territory in 2018. Aggregators typically submit customer information to the Company on a first-come first-serve basis until the goal MW limit is reached. Aggregators must provide a realistic estimate of customer DR potential so as not to overinflate the values and fill the limit prematurely. Customers are required to have a utility interval meter in order to participate. ISO-NE FCM DR participants are eligible for this program. However, any DR asset receiving program incentives must be 'new' DR assets. Any DR asset currently bid into the FCM or any DR asset already under contract with an aggregator is not eligible.

Payments would be made after each summer season ends. Payments are based on average performance over all seasonal events and tests. No performance penalties are expected to be levied in the program. National Grid will utilize the ISO-NE Customer Baseline to measure performance based on interval meter data. ISO-NE Forward Capacity Market event/test days will be excluded from baseline calculations as reported by the aggregators to National Grid. Payments will be based on the aggregator's portfolio performance. Incentive funds will be given directly to the aggregator.

In 2018, the Company will also explore demand response program opportunities for small business customers with direct load control technologies. The Company will look incentivize energy efficient connected technologies through the energy efficiency programs and will explore opportunities to reduce peak load by providing incentives for automatic load reduction during demand response events. Technologies include Wi-Fi thermostats that control air conditioners, smart heat pump water heaters, smart electric water heaters and network lighting. In addition, National Grid will explore other demand response-enabled technologies as they become available in the market. The company will also explore opportunities in the connected space, with other non-energy Wi-Fi enabled technologies that maybe an entry point or an engagement opportunity for energy efficiency and demand response with customers.

ii. Energy Efficiency upgrades in pumping systems for water/wastewater plants

This demonstration project will be an extension of a similar project currently in progress in MA. The objective is to evaluate energy efficiency and non-energy benefits related to

pumping operations in water and wastewater plants in Rhode Island, otherwise also known as Pumping Systems Optimization. This Demo project will investigate and persuade plant operators to investigate restoration of pump efficiency to design levels as well investigate incremental energy savings attributable to application of wear resistant pump coatings to maintain persistence of energy savings over a longer period of time.

This demo project is intended to work with three prescreened sites to measure current operating efficiency on pumps systems equal or greater than 40 HP, compare to original design pump efficiency specifications, and to quantify energy efficiency improvement through rebuilding pumps to design specifications along with coating pump internal components with a wear resistance coating. The system assessment will include looking for additional energy efficiency opportunities such as pump/motor sizing based on measured values of pump flow, pressure and power, replacing throttle valves with VFD drives on pumps and any piping related issues. Pre and post system assessment to include measurement of power, flow and head will be completed to quantify and confirm gains in energy efficiency by restoring mechanical condition of pump to original specifications supplemented by performance coatings to extend and maintain persistence of energy savings over a longer period of time.

iii. Behavior change through education of small/medium plant personnel

The main objective here is to give smaller plants cost effective access to independent air systems specialist to facilitate comprehensive compressed air systems assessment. The Company will develop technology and training materials needed to facilitate this objective through web based training materials and tools combined with remote data collection process and support to interested customers. The intent of this effort is to drive customers to the Company's current compressed air offerings. Training is one component and the other is to install metering for flow, power and pressure and implement any efficiency improvements working with the customer.

Benefits: Comprehensive systems assessments by independent compressed air system specialists are not easily affordable for small to medium size plants where total annual compressed energy usage is \$150,000 or less. This pilot will aim to educate plant personnel in the knowledge and tools required to conduct self-assessments, provide training and access to needed instrumentation and facilitate remote data collection and support to identify and implement energy efficiency measures. Completion of both phases of this pilot is expected to result in development of a proven process to assist

small and medium size plants with energy efficiency improvements related to compressed air systems.

iv. Emerging Lighting Market Interventions

Secure Lighting Spec (SLS) is based upon a mutual agreement with Lighting Manufacturer Representatives (LMR) to engineer and deliver lighting & controls packages that exceed energy code by 15% or more. The goals of the Secure Lighting Spec are:

- a. Establish a special partnership between National Grid and Lighting Manufacturers Representatives (LMR) to participate in targeted code-based lighting incentive programs.
- b. Utilize the LMR applications engineers to implement best practice lighting design and photometric modeling for deep energy savings and qualitative lighting outcomes for the Company's customers and building occupants, while meeting IES standards.
- c. Achieve substantial energy savings by utilizing the lighting engineering capabilities of the LMR. Savings are based on projects achieving 15% or greater energy savings beyond what is required by the required energy code.
- d. Incorporate energy efficiency incentive estimates early in project quotes to clients & customers through the LMR pre-approved product portfolio.
- e. Reduce the lighting system initial costs through advanced lighting engineering, energy efficiency incentives and operating costs for customers and clients for projects that meet energy efficiency goals.

Lighting as a Service: Lighting as a Service (LaaS) is a new business model that delivers the best lighting equipment and ongoing commissioning for system optimization through a subscription based service. The goals of LaaS are: To create a leased equipment business model with zero capital expense that eliminates initial cost barriers for energy efficiency lighting projects. LaaS contracts will allow customers to reap all of the benefits of LED technology, without getting bogged down in the detail of owning and operating the lighting asset. Since LaaS offers a full turnkey solution, this type of service partner can supply the design, financing, installation, maintenance, monitoring and responsive performance adjustments (such as color tuning and dimming.) Benefits of LaaS are:

- a. It enables real-time energy monitoring for evaluation to confirm savings.

- b. It works with demand response by identifying lighting that can be reduced during DR events.
- c. It works best with sophisticated lighting technology that can be optimized and maintained through this service contract. It works with all code-based lighting incentive programs, and is compatible with PoE systems with a higher density of sensors and data.
- d. It is an integrated program approach, i.e., a program that offers energy audits and energy efficiency solutions for a specific building type with prearranged financing and retrofit lighting system options.
- e. It involves a detailed analysis of facilities including controls sequence of operations, building set-points, occupancy schedules and operation and maintenance protocols. Once the analysis is complete, recommended optimization measures and an ongoing plan for maintenance and operator training is implemented. This will increase energy savings persistence and customer satisfaction.

Managed by Energy Solutions, Kelly Sanders

One-Fit - Lighting Manufacturer Based Turn-Key lighting design

Utilize lighting manufacturers to design all of the lighting for a project based on lighting modeling/calculations and include controls. A lighting manufacturer's application engineers will design the lighting for existing spaces and work with a distributor who will fill in any missing fixtures with other lighting products. Projects must include fixtures, retrofit kits and controls. This is a turn-key solution for customer and installer. Qualified projects may also be eligible for OBR. The program will be based on Performance Lighting PLUS thus encouraging comprehensive lighting solutions with controls. Projects must be designed to meet the following criteria:

- a. Lighting to exceed code by at least 15%.
- b. Design must include controls that meet or exceed code
- c. Must meet IES recommendations for light level, distribution, spectrum, glare control, etc.
- d. LED lighting must be DLC QPL listed products, and lighting controls or equal
- e. Use Performance Lighting PLUS incentive program
- f. Lighting system commissioning is required after 6 months to ensure optimal system operation

OneFit would cover a range of project types with a cap on hours of operation at 2,500 hrs (for schools). Mfg will be partnered with energy contractors (PEXs) to purchase and install. This is a perfect fit for schools and municipal projects.

Lighting Re-Specification Incentive

Program Type: Retrofit & New Construction (Municipal Projects with Long Timelines)

Pilot Scope: Analysis, Research, Installation, Measurement & Verification

A pilot to allow a long-term municipal projects that have already been specified, packaged and budgeted to change its specification to embrace current energy saving lighting technologies. Older specifications are often locked in on long-term projects based on the funding. At the same time LED lighting technology is advancing at a rapid rate increasing system efficacies, and lighting controls are now embedded into many LED fixtures. This pilot would provide incentives for a do-over for the design team to pick newer lighting technologies that would achieve even greater energy savings than the previously specified lighting system. The pilot would use incentives to cover the additional costs of a new lighting system so that it matches the cost of the previously specified lighting system with greater energy savings. The anticipated costs of this program will not exceed \$0.25 per project kWh.

v. Emerging Lighting Technologies

Automated Window Shade Systems

Hypothesis: Will automated window shades provide increased electric energy savings in buildings with advanced lighting controls implementing daylight harvesting? Will automated window shades increase the thermal performance of the building envelop and provide gas savings in Therms?

For this pilot the Company is working with Ver-Tex a Boston based shade manufacturer representative, and SMMA to manage projects and establish the pilot parameters. Based on existing research, typical daylighting controls save 23% of the electric energy, with automated shades that could increase to about 43%, almost doubling the savings. Additional savings can be obtained using thermal insulating materials can contain the heat within a building while blocking the cold. This will result in approximately 5 kWh of energy savings per sq.ft.

vi. Advanced Workforce & Channel Development

Online Trade Ally Training on Advanced Lighting Systems

Online Trade Ally targeted training that consolidates the best-of-class subject-matter expertise into one common platform with an electronic learning training program built to track the progress of participants. This online, on-demand learning platform will complement face-to-face and webinar based education, and is a proven way to meet the time demands of all trade allies. This online learning platform will provide efficient and effective education on Advanced Lighting Systems including controls and design. A well trained trade ally network will increase customer satisfaction while also increasing energy savings.

Utility Benefits	Trade Ally Benefits
<ul style="list-style-type: none"> • Automates onboarding tasks • Deploys program changes faster • Pushes fresh content to engage allies • Provides metrics for ally tiering programs • Shares in industry-provided content • Uses portal customized with utility branding • Increased energy savings from knowledgeable trade allies 	<ul style="list-style-type: none"> • Offers training access organization-wide • Educates all staff to increase project sales • Affords on-demand training when needed • Offers accredited CEU and certifications • Aligns real-time trainings with program changes • Recognizes achievement with rewards • Reports real-time metrics to track progress

Web-Based Performance Lighting PLUS App

The pilot will include an online portal for National Grid’s commercial clients as well as an incentive portal for National Grid’s C&I Lighting program management staff targeting the Performance Lighting PLUS program for retrofit and new construction. The goal of this pilot is to increase participation in Performance Lighting PLUS by creating an easy webapp for project processing.

Client Portal

Client Portal will provide the following functions:

- a. Clients self-register where their utility account information is validated
- b. Enter building information based on pre-defined data requirements from the lighting program.
- c. Create project investment proposals that are validated with the product information in the DesignLights Consortium (DLC) Qualified Product List and allow users to add custom measures
- d. Calculate incentives automatically based on incentive rules and submitted applications
- e. Manage projects and facilitate communicate with between National Grid C&I program management staff

Incentive Portal

Incentive Portal will provide the following functions:

- a. Track and Manage incentive programs
- b. Oversee and report on pipeline projects (energy savings potential and proposed upgrades)
- c. Define incentive rules and data collection requirements
- d. Automate the validation of incentive applications
- e. Introduce real-time energy savings and incentive expenditure monitoring

6. Small Business Direct Install Program

a. Overview

The Small Business Direct Install Program (SMB/DI Program) provides turnkey services to commercial and industrial customers with an average monthly demand of less than or equal to 200kW. There is no upper limit of gas consumption that disqualifies a customer from receiving the gas measures offered by the SMB/DI program. The Company has delivered this program for more than two decades through a local vendor, who is known as the “Regional Program Administrator” or “RPA”. The RPA is responsible for program management, data entry, and quality control. The RPA is located in Rhode Island, employing local staff, local electricians and energy efficiency lighting materials procured through a competitive bid process. As of 2011, customers served by natural gas are also eligible for direct installation of natural gas energy efficiency measures.

Customers are provided turnkey services consisting of:

- An Energy Audit
- Direct Installation of Measures
- Company incentive contribution of up to 70% of total project cost
- On-bill repayment (OBR) for eligible customer’s project costs and up to 24 months at zero (0) percent interest or a lump sum payment with a 15% discount, resulting in most customers’ projects having a positive cash flow when they choose the OBR repayment option.

Since its inception when the SMB/DI Program focused primarily on lighting and refrigeration direct install measures, it has broadened its scope to include identifying:

- Cost-effective “custom” electric and gas measures, such as Energy Management Systems (EMS)

Time dependent opportunities such as boiler reset controls As noted previously, the Company is continuously working with its engineers and technical assistance experts to try and move as many measures from the custom category to prescriptive or “custom express” to streamline the process for customers as much as possible. This should encourage the vendor and the customer to install these measures more frequently and reduce the technical costs of the program.

In addition to cost-effective custom and time dependent measures mentioned above, the SMB/DI Program offers incentives on the following measures:

- LED lamps and luminaires
- Occupancy sensors and controls
- Energy Management Systems (EMS)
- Thermostats (including Wi-Fi)
- Insulation
- Hot water reset
- Low flow pre-rinse spray valves
- Refrigeration measures such as evaporator fan controls, efficient evaporator fan motors, automatic door closers and door heater control devices for walk-in coolers
- Pipe Insulation

b. 2018 Goals

For the 2018 Annual Plan, Small Business Direct Install has the following goals:

Electric

Demand Reduction (Annual kW)	Energy Savings (Annual MWh)	Customer Participation
12,316	78,669	2,213

Gas

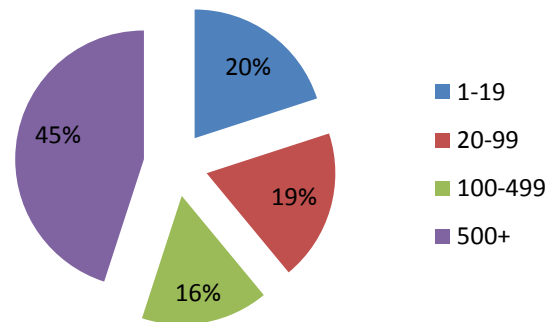
Energy Savings (Annual MMBtu)	Customer Participation
3,059	30

Offering Changes

As part of an effort to increase participation in the Direct Install Small Business Program, in 2018, for the first time, the Company will target businesses as well as residents as part of the Community Initiative. Many residents are also small business owners. By targeting residential customers to learn about the Small Business Direct Install Program, the Company has an opportunity to tap a segment of its customer base that may have been hard to reach in the past. Approximately 20% of Rhode Island employees work for

companies with less than 20 employees and close to 40% work for companies with less than 100 employees.¹⁴

Rhode Island Employment by Size of Firm, 2013



Source: SUSB Statistics of US Businesses

Overall, the Company has a strong foundation of experience delivering this program enabling it to meet program goals and to continue to develop and implement new products and services. As a result of the Company's increased move to vertical market sectors to serve customers better, the following segments are no longer included in the small business segment:

- K-12 Schools
- National Chain Retail Locations and Restaurants
- Small Grocery Stores (not including convenience)

The Company fully acknowledges that this will affect the ability of the SMB/DI vendor to reach goals on par with previous years and has adjusted their goals accordingly for 2018. The movement to vertical markets from the SMB/DI program will also impact the level of participation in 2018. The Company is planning to serve more SMB/DI customers in 2018 compared to 2017, particularly through the Upstream Lighting, Upstream Kitchen Equipment, and Upstream HVAC initiatives. These participants will be reflected in the

¹⁴ Statistics of US Businesses, US Census Bureau, www.census.gov/econ/susb.

other C&I programs. In addition, the refrigerator/freezer recycling program offered to residential customers where old working refrigerators and freezers are picked up for \$50 each, is now open to small business customers.

7. Business to Business Marketing

In 2017, the Company continued to build awareness of, and increase participation in, its energy saving offerings for Rhode Island's business customers. The Company did significant research to understand the mindset of its commercial and industrial customers including the completion of studies on its customers' familiarity with energy saving offers and their satisfaction. The Company leveraged the results of these studies along with media habits research and behavior data in the development of a strategic communications plan. Four key initiatives were identified as opportunity work streams that would help us achieve the goal of broadening customer engagement with energy efficiency:

- 1. Market Tiers:** Increasing commercial customers' familiarity with the Company's energy saving offerings is a key component of ensuring all Rhode Island businesses have the opportunity to participate in these programs. A strategy was identified to help the Company achieve this goal in the fall of 2016. It was determined that to increase overall EE Familiarity the marketplace of commercial customers must be tiered, enabling an increase in outreach to customer segments that are less likely to be aware of National Grid's programs and offers. The Company's marketing and customer insights teams collaborated to identify market tiers by analyzing over three years of monthly EE Familiarity survey data. This effort led to a creative problem solving workshop where it was determined that very small businesses (less than twenty employees) without access to a facilities manager were least likely to be aware of the Company's programs. Marketing outreach was then allocated into tiers and increased impression volumes and communications frequency to this audience.
- 2. Micro-Segments:** 2016 saw the successful launch of the Company's industry vertical targeting strategy which included hospitality, healthcare education, gas stations and auto dealers, and offices. A goal of 2017 was to build upon the success of that launch and micro-segments within the larger verticals. For example rather than reaching out to the healthcare vertical at large communications were developed to smaller segments including private practices, dentists, and nursing homes. Finer-tuned messaging and imagery was developed through use of imagery that reflected these micro-segments. Within the hospitality vertical geo-targeted placements were procured including a

restaurant advertorial in *Restaurant Business* and a Convenience store advertorial in *Convenience Store News*. Past participants were also identified as micro-segment to target to offer new measures or measures they had not previously taken advantage of specific to the small business program.

- 3. Digital Path-to-Participation:** Meeting customer expectations through a streamlined digital experience will support a more successful path-to-participation. Native advertising meaning advertising “in-feed” through video, infographics, and articles, as way to more positively impact the research phase of the commercial customer journey was expanded. The Company is also utilizing these assets across digital properties to encourage more dynamic customer engagements. The Company has also tested new digital channels such as cross-device digital banners where it is able to target banners based on the individual behavior across multiple devices (desktop, tablets, mobile), Zip-Based Dynamic Digital, where a town name is dynamically updated based on the location of the customer, and Search Intent Digital wherein a user is delivered messaging based on recent searches, such as properties for rent.

- 4. Activating Influencers:** Leveraging the power of customer voices and trade partnerships will provide third-party validation of the benefits of the Company’s programs and services. For Familiarity, Large business, Small Business and Multifamily programs developed a variety of Advertorials, Articles and sponsored content featured in places like Rhode Island Monthly.

The Company is tracking progress against these initiatives and based on performance will look to expand or pull back on them in 2018. The Company’s main focus in 2018 will be to increase scores related to EE Familiarity. To track familiarity with the Company’s energy saving offerings among business customer, the Company conducts ongoing research through its “Brand, Image and Relationship” (BIR) tracker. Commercial customers are surveyed via phone and are asked: How familiar are you with energy savings or rebate programs from National Grid to help you with ways to use less gas or electricity? The survey is continuously being conducted seven days per week, and the Company contacts 10 commercial customers per week. The results are reported on a quarterly basis and the Company has specified metrics and scores that it is measuring against. Despite five straight months above the target and stretch goals, a slow start to the year in the EE Familiarity scores has resulted in the Company not meeting its

calendar year to date goal. While the Company hopes that continued success in the remainder of 2017 will result in us reaching the target to developing new strategies in 2018 that will help us improve these numbers.

In addition, to these initiatives the Company's annual Customer & Partner Energy Efficiency Summit (EE Summit) has helped cement its relationships with its largest customers. The EE Summit has been held at Gillette Stadium in Foxboro, MA since 2014. The EE Summit exemplifies the Company's customer focused philosophy, providing solutions that break through its customers' pain points and roadblocks. The summit's goal is to make the energy solutions the Company offers more accessible and easier to implement for its customers. It's also an opportunity for the Company to build personal relationships with its customers, sales teams and vendors. The Summit includes vendor partners and acclaimed speakers on teamwork, problem solving, sustainability, and innovative energy approaches. The ongoing theme of *Appreciate, Collaborate & Innovate* has become a north star for the event, spurring ongoing improvements in the Company's customers' event experiences. The Company's 2017 EE Summit will be held on October 16, 2017. A date for the 2018 Summit has not yet been planned.

To enhance customer marketing, the Company's trade ally marketing aligns professionals who either influence or implement energy decisions for mutual customers who are potential participants in National Grid's energy savings programs and solutions. These professionals include distributors, architects, builders, construction managers, contractors (HVAC, mechanical, electrical) and installers (electricians, plumbers). Marketing for new construction targets design professionals such as architects, engineers, construction managers (i.e. design build firms) and real estate developers (i.e. REIT). For lighting professionals (i.e. designers, distributors, manufacturer representatives and installation contractors), the Company targets commercial office space rehab fit-outs (i.e. commercial leased space upgrades) to the design professional and lighting upgrades to the lighting supply chain (distributors and manufacturer representatives) and installation contractor audience. HVAC contractors and professionals are targeted for equipment replacement, upgrade and maintenance opportunity.

All of these trade and allied professionals have an advisory role to the ultimate customer depending on the scope and scale of the project. To best serve their specialized needs, the Company created the National Grid Professional Network. It is a

unifying umbrella affiliation that supports easy access to information, programs, and incentives that help these professionals incorporate energy efficiency into new construction or retrofit projects.

National Grid's goals are to increase trade awareness, engagement and satisfaction with Rhode Island energy efficiency opportunities and to promote innovation to capture untapped savings for commercial, industrial, institutional and residential market segments. The types of projects include new construction and retrofit; but the Company also looks for ways to develop opportunities for system level savings and integration. Ultimately, National Grid's trade ally program promotes cost and operating efficiency for its electric and gas customers throughout Rhode Island.

8. Appendices

a. Appendix 1 Sample list of custom measures in the energy efficiency program

Building envelope measures

- Fenestration
- Insulation

Laundry systems

- Polymer bead systems
- Ozone systems

Commercial kitchen measures

- Large dishwashing systems
- Heat recovery for water heating from
 - Cooking surface exhaust
 - Large refrigeration

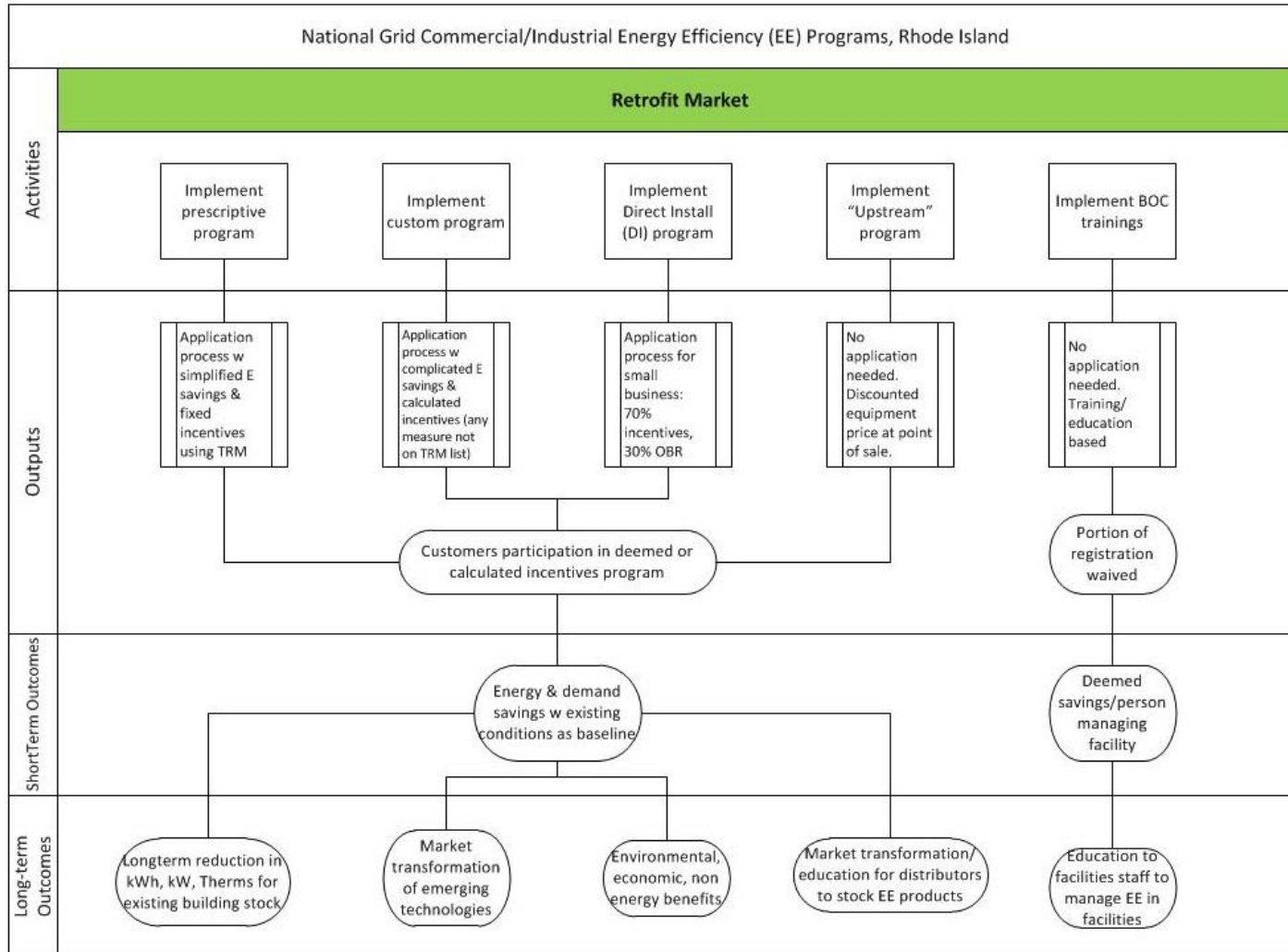
Manufacturing

- Process improvements
- Energy efficient production equipment
- Specialized lighting
- Compressed air

HVAC

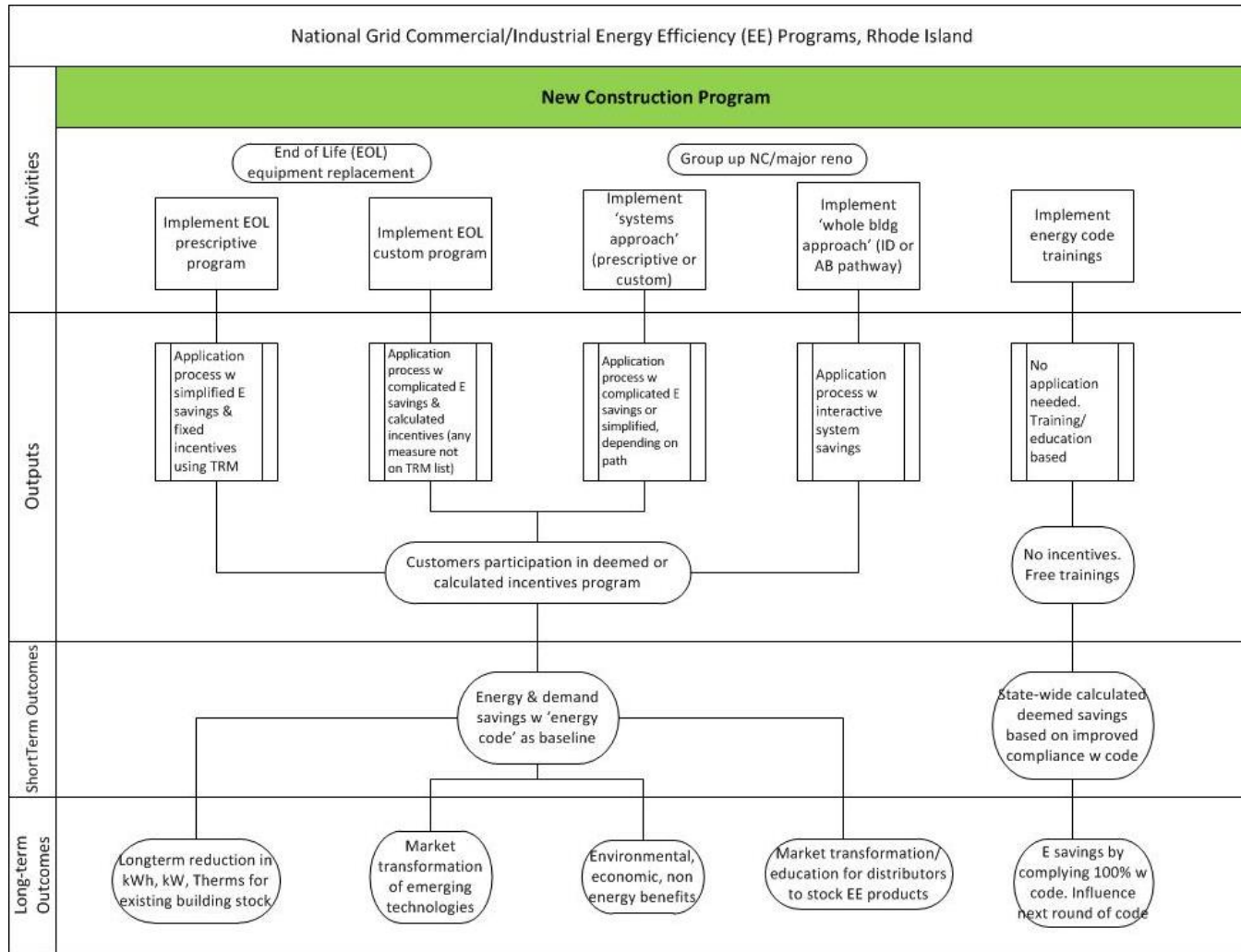
- Variable refrigerant flow systems
- Energy recovery ventilation (ERV)
- Air source and water source gas engine driven heat pumps
- Smart HVAC monitoring and control systems
- Dry Smart gas dryers

c. Appendix 2: Retrofit Logic Model



TRM = Technical Reference Manual OBR = On Bill Repayment BOC = Building Operation Certification

d. Appendix 3: New Construction Logic Model



TRM = Technical Reference Manual ID = Integrated Design path AB = Advanced Buildings path

e. Appendix 4: Subprogram and Measure Savings Goals and Incentives

Electric Subprogram Net Savings Goals and Incentive Descriptions

Electric Programs			
Program	Subprogram	Annual kWh Goal	Incentive
Large Commercial New Construction	CAIR	960,700	Typically up to 75% of Incremental Cost
	Upstream HVAC	4,267,725	
	Custom Lighting	7,339,520	
	VSD	1,223,341	
	C&I Codes	486,262	
Large Commercial Retrofit	Custom HVAC	28,375,358	Typically up to 50% of Project Cost
	Lighting	1,868,256	
	VSD	8,823,318	
	CHP	2,814,360	
	Upstream Lighting	6,399,200	
	Street Lighting	24,073,560	
Small Business Direct Install	SCI	9,940,477	70% of Project Cost 30% Financed

Gas Program Measure Group Description with Quantity and Rebate Levels

Gas Programs			
Program	Measure	MMBtus	Rebate Level
Large Commercial New Construction	Boiler95	873	\$ 1,500
	CODES AND STANDARDS	5,000	\$ 63,000
	COMBO COND BOIL/WTR HTR 90+	309	\$ 1,500
	COND UNIT HEATER 151-400 MBH	128	\$ 750
	Condensing boiler <= 300 mbh	250	\$ 1,500
	Condensing boiler 1000-1700 mbh	619	\$ 7,500
	Condensing boiler 1701+ mbh	1,084	\$ 10,000
	Condensing boiler 300-499 mbh	513	\$ 2,000
	Condensing boiler 500-999 mbh	943	\$ 4,000
	COOKING-COMBO OVEN 1	208	\$ 1,000
	COOKING-CONVECTION OVEN 1	577	\$ 1,000
	COOKING-CONVEYOR OVEN 1	53	\$ 1,000
	COOKING-FRYER-1000	1,104	\$ 1,000
	COOKING-STEAMER-1000	134	\$ 1,000
	Furnace95ECM	68	\$ 500
	Furnace97ECM	25	\$ 800
	INFRARED HEATER - LOW INT	188	\$ 750
	WATER HEATER TANK 0.67 EF	347	\$ 152
	Water Heating Boiler - 85% TE	28	\$ 152
	Water Heating Boiler - 92% TE	69	\$ 152
	COMBO COND BOIL/WTR HTR 95+	4,673	\$ 152
	COND WATER HEATER 90%MIN 75-800	3,387	\$ 152
	Custom	32,936	Up to 75% of Total Resource Cost
Large Commercial Retrofi	BOILER RESET MULTI-STAGE	67	\$ 225
	Builder Operator Certification	1,336	\$ 518
	LF_SHWR_HD_1.75_GPM_DI	490	\$ 200
	Pre Rinse Spray Valve	513	\$ 25
	STEAM TRAPS	28,611	\$ 50
	THERMOSTAT	30	\$ 25
	WiFi Thermostat - cooling and htg	653	\$ 100
	WiFi Tstat-heat only	653	\$ 100
	Custom Retrofit	155,585	Up to 50% of Total Resource Cost

Gas Programs			
Program	Measure	MMBtus	Rebate Level
Small Business Direct Install	BOILER RESET 1 STAGE	137	\$ 420
	FAUCET_AERATOR_0.5_DI	329	\$ 11
	INS_DUCT_SF	3	\$ 8
	INSUL_PIPE_DI_1.5IN_H2O	81	\$ 6
	INSUL_PIPE_DI_2IN_H2O	3	\$ 8
	LF_PRE_RINSE_SPRAY_NZL	937	\$ 100
	LF_SHWR_HD_1.75_GPM_DI	754	\$ 25
	SALON_NOZZLE	395	\$ 100
	THERMOSTAT	1,003	\$ 126
C&I Multifamily	Air Sealing_MF	2,513	Average Incentive based on measure mix
	CUST NON-LGT_MF	234	
	Faucet Aerator_MF	219	
	Insulation_MF	5	
	Low-Flow Showerhead_MF	55	
	Pipe Wrap (Water Heating)_MF	27	
	Programmable Thermostat_MF	1,111	
	TSV Showerhead_MF	271	

2018 Measurement and Verification Plan

Table of Contents

1. Introduction.....	1
2. New Studies Underway or Planned.....	1
3. Residential:	1
a. Impact Evaluation of Low Income Single Family Program (new)	1
b. Multifamily Program Follow-up Evaluation (new).....	1
c. Residential Electric Load Shape (on-going, leveraged study).....	2
d. Residential Lighting – Market Adoption Model (yearly update)	2
e. Residential Lighting Net-to-Gross (new).....	2
4. Commercial and Industrial (C&I):	2
a. Custom Electric & Gas – Impact Evaluations (ongoing and new).....	2
b. Method Development and Evaluation of Control Measures (new)	3
c. Upstream Water Heater Deemed Savings Impact Evaluation (new)	3
d. Upstream LED Net-to-Gross Analysis (new)	3
e. Impact Evaluation of Custom Gas Installations (new).....	3
f. Impact Evaluation of Custom Electric Installations (new).....	4
g. Baseline Transition Planning (new).....	4
h. LED Market Monitor (new)	4
5. Cross-Sector Studies:.....	4
a. Avoided Cost Study, Gas & Electric (new)	4
b. Customer Finance evaluations (new)	4
c. Rhode Island Energy Efficiency Program Customer Participation Study – Phase 2 (on-going).....	5
d. Technical Potential Study (new)	5
e. Job Impacts Analysis Study (yearly update).....	5

f.	System Reliability Procurement Study (ongoing)	5
g.	Demonstrations-Process and Impact Evaluations (ongoing).....	6
h.	REMI model and Benefit Study (new).....	6
i.	Summary Study of Program Evaluation Activity (new).....	6
j.	Assessment of pooling Massachusetts & Rhode Island Study Results (new).....	6
6.	Regional Studies	7
7.	Recently Completed Evaluation Studies.....	7
	2017	7
	2016	8
	2015	9
	2014	10
	2013	11
	2012	12
	2011	13
	2010	15
	2009	15
	2008	15
	2007	15
8.	Evaluation Study Findings.....	16

1. Introduction

In 2018, National Grid's Measurement and Verification Plan (M&V) will focus on evaluating Rhode Island-specific sites and markets while leveraging as many resources as possible from studies in additional National Grid territories in order to keep costs low. Evaluation budgets are included in Attachment 5, Table E-2 and Attachment 6, Table G-2. The planned studies briefly described below focus on areas of interest to the Rhode Island programs, and build on the deep history of evaluation studies performed by the Company over many years. In order to optimize the use of evaluation resources, where programs are considered to be generally homogeneous with those offered in Massachusetts, the studies will be done in conjunction with the Company's Massachusetts retail affiliate.

2. New Studies Underway or Planned

3. Residential

a. Impact Evaluation of Low Income Single Family Program (new)

This planned study is a Rhode Island specific impact evaluation of the income-eligible single family services program. This study will provide estimates of electric and gas savings resulting from participation in in-home retrofit of electric components and weatherization of electric, gas and fossil fuel heated homes.

b. Multifamily Program Follow-up Evaluation (new)

A billing analysis evaluation of the multifamily program was performed in 2015-2016, and found substantially lower savings than had historically been claimed. Even as the study results were being tallied, changes were being implemented to more appropriately estimate savings, for example: controls were put on air sealing estimates, baseline gas heating system efficiency was increased, and lighting hours of use were adjusted downward. This proposed study will mirror and/or leverage a similar Massachusetts study to verify program changes are leading to accurate savings estimates.

c. Residential Electric Load Shape (on-going, leveraged study)

Many residential programs rely on the load shape information to determine kW benefits. This study will leverage the Massachusetts residential baseline study. The study is collecting saturation, penetration, and usage behavior data for all major electric and gas appliances, mechanical equipment, and electronics in Massachusetts homes. Around 478 onsite end use metering sites will be used to derive load shapes. Rhode Island will review the outputs of the Massachusetts study to determine if results can be used directly. If not, a Rhode Island sample may be added to the study.

d. Residential Lighting – Market Adoption Model (yearly update)

Rhode Island will leverage the Massachusetts Market Adoption Model work for 2019 planning purposes, as has been done in recent history.

e. Residential Lighting Net-to-Gross (new)

This study will leverage the MA residential LED Freeridership / Spillover study and plans to include a Rhode Island survey sample, in an effort to assess Rhode Island residential lighting Net-to-Gross values for 2019 and beyond.

4. Commercial and Industrial (C&I)

a. Custom Electric & Gas – Impact Evaluations (ongoing and new)

Custom studies that are expected to continue into 2018 are shown below:

- The Comprehensive Design Assessment (CDA) measure study is leveraging a similar study in Massachusetts by pooling results for National Grid sites in Rhode Island and Massachusetts. Field monitoring occurred in 2017 for the study, and is expected to complete in early 2018. CDA savings for new construction or gut-rehab projects are typically estimated for both electric and gas measures based on modeling, where evaluation efforts are likely to also focus.
- The Upstream Lighting study is a Massachusetts leveraged study started in mid-2016 and may complete by the end of 2017. The study involves on-site metering of customer sites to assess savings estimates across the population of upstream lighting customers.
- The Small Business Services (SBS) will leverage a Massachusetts study that will update impact factors for the SBS custom program. The SBS custom program has

been growing due to the Customer Directed Option (CDO) which allows implementation vendors to customize projects to customer needs.

b. Method Development and Evaluation of Control Measures (new)

In 2016, the Massachusetts and Rhode Island program administrators implemented an initiative for corporate leadership of franchise owners, with a suite of measures (lighting, controls, HVAC) and incentives/financing. The goals of this study are to identify and develop best practices for monitoring and evaluating impacts from controls-based energy efficiency measures. Rhode Island will leverage the Massachusetts evaluation of this initiative with a Rhode Island sample, to assess evaluated savings.

c. Upstream Water Heater Deemed Savings Impact Evaluation (new)

In 2016, the Massachusetts and Rhode Island program administrators introduced a C&I gas upstream water heating program that estimated savings based on historic deemed savings values and engineering estimates for new measures. The Massachusetts program administrators are evaluating these estimates based on the unique delivery channel. The Massachusetts evaluation will begin determining M&V methods; Rhode Island will join once the methods have been established. The primary objective of this study will be to develop deemed gross natural gas savings values for the recently revamped C&I Upstream Water Heater program offering.

d. Upstream LED Net-to-Gross Analysis (new)

The upstream delivery approach changes the Net-to-Gross (NTG) dynamics, since not all customers are aware of incentives, and the customers don't know how large of an incentive was paid. Also, the LED marketplace is changing very rapidly, so subject matter experts can be a valuable source for assessing program influence. The primary objective of this study will be to develop NTG ratios for C&I LED products in Rhode Island in coordination with Massachusetts.

e. Impact Evaluation of Custom Gas Installations (new)

The objective of this impact evaluation is to provide verification of natural gas energy savings estimates for a sample of custom gas projects through site-specific inspection, monitoring, and analysis. The results of this study will be used to determine the realization rates for custom gas energy efficiency offerings based on installations from

2016. This will be the first of several 'rolling' evaluations in coordination with evaluation efforts in Massachusetts.

f. Impact Evaluation of Custom Electric Installations (new)

The objective of this impact evaluation is to provide verification of electric energy savings estimates for a sample of Custom electric projects through site-specific inspection, monitoring, and analysis. The results of this study will be used to determine the final realization rates for custom electric energy efficiency offerings based on installations from 2016. This will be the first of several 'rolling' evaluations in coordination with evaluation efforts in Massachusetts.

g. Baseline Transition Planning (new)

The primary objective of this study will be to develop specific protocols and timelines for implementing the principles set forth in the Massachusetts C&I Baseline Framework Document, which will also be applied in Rhode Island.

h. LED Market Monitor (new)

The primary objective of this study leveraged with Massachusetts will be to provide the EERMC consultants, on an ongoing basis, with information and data that can be used to update the characterization of the baseline for LED lamps and fixtures.

5. Cross-Sector Studies

a. Avoided Cost Study, Gas & Electric (new)

This study will provide updated avoided costs in support of determining least cost procurement decisions through the benefit-cost screening process. With the recent fluctuations in energy pricing, the study will re-affirm the long term energy cost estimates. The study will be conducted with regional program administrators.

b. Customer Finance evaluations (new)

A study or studies may be developed and fielded to support the ongoing assessment of financial products for residential and commercial customers. Specific study objectives and research questions will be developed in partnership with evaluation teams from the EERMC.

c. Rhode Island Energy Efficiency Program Customer Participation Study – Phase 2 (on-going)

Phase I of the study assessed the characteristics of residential and small business customers that participate in several direct install programs including: EnergyWise Single Family, Income Eligible Single Family, EnergyWise Multifamily, Income Eligible Multifamily, C&I Multifamily and Small Business Direct Install. The study estimated the number of remaining customers available for increasing participation in the energy efficiency programs and provided recommendations on targeting participants. Phase I will be completed by the end of 2017 and may identify additional research questions. Phase II may continue to research customer participation to support development of savings goals and go-to market strategies in the energy efficiency programs.

d. Technical Potential Study (new)

The Company will investigate options for a Technical Potential study for gas and electric cost effective energy savings. The last Technical Potential study was completed in 2009 by Kema, Inc. for the EERMC. This study will assess the technical, economic and achievable potential for cost effective energy savings in the near future and long term. The study may include data based on customer site visits or surveys, or from recent Massachusetts customer visits and surveys. It will incorporate recent evaluation results including NEIs, Free-Ridership and Spillover and market studies as well as assess these factors prospectively. It will use the RI Test to determine cost-effectiveness. The potential study will cover residential, low income, and C&I sectors. This study may be done in conjunction with the EERMC.

e. Job Impacts Analysis Study (yearly update)

The Rhode Island job impacts study will determine the business and jobs impact due to energy efficiency programs in 2017, similar to the prior study. The study will survey the Company, vendors, distributors, partners, and market players to quantify the number of jobs and associated business impacts.

f. System Reliability Procurement Study (ongoing)

After several years of implementation effort on the system reliability procurement (SRP) pilot, this study will assess the savings and benefits achieved by the pilot program. The

results from this study will be used to inform program design to further expand the program and benefits elsewhere in Rhode Island.

g. Demonstrations-Process and Impact Evaluations (ongoing)

Studies will continue to evaluate the process and impacts from residential pilots planned for the field, including residential water heater control, battery storage, and emerging lighting controls pilots. The studies involve a combination of billing analysis, on-site measurement, and customer surveys. The Company plans to begin evaluations as new products or pilots are launched. These studies will include both gas and electric impacts. Rhode Island may pool samples or leverage Massachusetts studies.

h. REMI model and Benefit Study (new)

This third party evaluation will assess the non-energy impact dollar benefits generated by the energy efficiency programs in the course of normal energy efficiency program operations. This study will potentially replace National Grid's current dollar benefits estimates.

i. Summary Study of Program Evaluation Activity (new)

If needed, this evaluation will assess and summarize the energy efficiency program evaluation activities. The study will be scoped and managed by OER, guided by a EERMC working group including representatives from various customer segments and National Grid. It is being shown amongst this list only for budget purposes.

j. Assessment of pooling Massachusetts & Rhode Island Study Results (new)

This study will assess the validity of the historic practice of pooling a Rhode Island sample with another sample (typically Massachusetts), and comment on key parameters for consideration or best practices. This study will also quantify the monetary value of leveraging and pooling for various monitoring and verification purposes such as program improvement or ISO-NE verification.

6. Regional Studies

Through the Company’s participation in the Northeast Energy Efficiency Partnerships (NEEP) Evaluation, Measurement and Verification activities, the Company expects to be participating in a number of regional evaluation studies. NEEP is currently developing its list of studies for 2018.

7. Recently Completed Evaluation Studies

Recently completed studies that have informed 2018 planning are identified in the chart below, along with a brief summary of the impact of those results in planning the Company’s 2018 programs. Prior year studies that have been superseded by studies completed since the filing of the 2017 EEPP have been deleted from the list. The results of these studies were incorporated into the benefit-cost modeling of the 2018 plan. Some of these studies may be regional, or may have included other National Grid jurisdictions. The 2018 EEPP is adopting the results of these studies because the Rhode Island programs are judged to be similar, either in the measures offered, or in terms of structure or program delivery. In these instances, the impact evaluations have been judged by the Company to be applicable to its Rhode Island energy efficiency programs.

2017	
Study	Impact Descriptions
ILLUME Advising, LLC, Rhode Island Home Energy Report Program Impact and Process Evaluation.	This study estimated realization rates for electric and gas savings for program years 2014 to 2016 using a billing analysis. The realization rates from this study were adjusted to remove potential double counted savings from HER and other energy efficiency programs.
Peregrine Energy Group, Analysis of Job Creation from 2016 Expenditures for Energy Efficiency in Rhode Island by National Grid, April 2017	Used draft results from RI study. To be updated in next draft
RNC - Code compliance/UDRH Placeholder (Res/C&I)	Used draft results from RI study. To be updated in next draft
Demand response kW and energy study, (WIFI Study)	Used draft results from RI study. To be updated in next draft
Upstream lighting	Used draft results from the MA study. To be updated in next draft
Custom HVAC Impact Evaluation	Used draft results from RI study. To be updated in next draft
Custom Process Impact Evaluation	Used draft results from RI study. To be updated in next draft

C&I Freeridership & Spillover Study	Used draft results from RI study. To be updated in next draft
Steam Trap study	Used results from the MA study. To be updated in next draft
Boiler Market Assessment Phase II	Used results from the MA study. To be updated in next draft
Prescr Gas Eval – Prog T-stats	Used results from the MA study. To be updated in next draft
2016	
Study	Impact Descriptions
DNV-GL, Impact Evaluation of 2014 Custom Gas Installations in Rhode Island Final Report, July 2016	This study is RI-specific and yielded an energy realization rate for Custom Gas projects.
DNV-GL, Impact Evaluation of 2014 RI Prescriptive Compressed Air Installations Final Report, July 2016	This study is RI-specific and yielded an energy realization rate for prescriptive compressed air compressors, dryers, and EE accessories.
DNV-GL, Impact Evaluation of 2012 National Grid-Rhode Island Prescriptive Chiller Program Final Report, July 2016	This study is RI-specific and yielded an energy realization rate for prescriptive chillers.
DNV-GL, Multifamily Impact Evaluation, National Grid Rhode Island, January 2016	This study estimated realization rates for electric and gas savings for 2013 participants using a billing analysis. The results include a low level of precision and thus the realization rates are not applicable. The Company is improving tracking, savings estimations and verification processes in line with the study’s recommendations.
Research Into Action, National Grid Rhode Island EnergyWise Single Family Process Evaluation, August 2016	This study surveyed customers, vendors, contractors, and lending agencies to order to assess customer experience, HEAT Loan lender perspectives on the program, performance of the lead vendor and sub-contractors and lessons learned from programs elsewhere in the country. The study will inform program design.
DNV-GL, Impact Evaluation of 2014 EnergyWise Single Family Program, National Grid Rhode Island, August 2016	This study estimated deemed savings values and realization rates for electric and gas 2014 participants using billing and engineering analysis. The Company adopted the deemed savings values in the 2017 program plan.
Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study. Prepared by the NMR Group and Three3, Inc. for the Massachusetts Program Administrators. August 5, 2016.	This study developed Non Energy Impacts for low income programs, based on USODE’s Weatherization Assistance Program tailored to MA context. Dollar benefits rose substantially over prior values primarily based on avoidance of deaths due to thermal stress.

<p>Cadmus Group; Large Commercial and Industrial On-Bill Repayment Program Evaluation, September, 2016</p>	<p>National Grid commissioned this study to evaluate the financing component of their large commercial and industrial (LCI) energy efficiency program. Cadmus evaluated the program design, performance, and sustainability; the overall market for the program; and the program's penetration of that market to date.</p>
<p>Ductless Mini-Split Heat Pump (DMSHP) Final Heating Season Results; Ductless Mini-Split Heat Pump (DMSHP) Cooling Season Results, COOL SMART Impact Evaluation Team, 2015 / 2016</p>	<p>Heating and cooling memos that describe the number of full load hours found with field installed systems in MA and RI; these hours were used with historic data on incentivized systems to come up with average savings per unit.</p>
2015	
Study	Impact Descriptions
<p>DNV-GL, Rhode Island Small Business Energy Efficiency Program Prescriptive Lighting Study: Final Report, July 2015</p>	<p>This study is RI-specific and yielded an energy realization rate prescriptive lighting measures. For coincidence factors, the Company will continue to use values from the NEEP Evaluation, Measurement and Verification Forum.</p>
<p>TetraTech, 2013-2014 Rhode Island C&I Natural Gas Free Ridership and Spillover Study (Memorandum), August 2015</p>	<p>Free ridership and spillover rates for the RI Gas Large Commercial New Construction; Large Commercial retrofit, and Small Business Direct Install Programs, combined with results from the study conducted in 2014.</p>
<p>Cadmus, Inc., High Efficiency Heating Equipment Impact Evaluation: Final Report, March 2015</p>	<p>The study determined revised deemed savings values for each furnace and boiler measure, including condensing boilers and early replacement of heating equipment. The study also reflected the increasing baseline for standard efficiency heating equipment.</p>
<p>DNV-GL, Retrofit Lighting Controls Measure Summary of Findings: Final Report (MA), October 2014</p>	<p>The study examined trends in lighting control savings and noted a decrease in savings over previous program years. It recommended updated coincidence factors as well as potential program and technology areas that may yield higher savings. Finally, the study recommended a change in the savings calculation algorithm for lighting controls.</p>
<p>Tabors Caramanis Rudkevich, Avoided Energy Supply Costs in New England: 2015 Report, April 2015</p>	<p>This study developed new estimates of avoided costs for application in 2016 through 2018 energy efficiency programs throughout the six New England states. Avoided costs were developed for natural gas, electric energy, electric capacity, demand reduction induced price effects (DRIPE), other fuels (oil, propane and wood), and carbon.</p>

<p>DNV-GL, Massachusetts 2013 Prescriptive Gas Impact Evaluation; Steam Trap Evaluation Phase 1, March 2015</p>	<p>The study concluded that there should continue to be both prescriptive and custom pathways for steam trap retrofit incentives, and further recommended that a group convene to review and revise the deemed savings estimate for steam traps. The study also recommended the use of a six year lifetime for steam traps.</p>
<p>Cadmus, Inc., LED Incremental Cost Study – Modeling LightTracker LED and Halogen Pricing Data, June 2015</p>	<p>This memo summarizes selected findings from the LightTracker LED, CFL, and halogen pricing data modeling effort and the resulting state-level price forecast through 2020 for LED, CFL, and halogen bulbs. These results are based on light bulb price data from 25 states that lacked LED programs from 2009 to 2014.</p>
<p>Cadmus, Inc, Cool Smart Incremental Cost Study: Final Report, July 2015</p>	<p>This incremental cost study estimates how manufacturing production costs (MPCs) and purchase prices of residential air conditioning (AC) and heat pump (HP) equipment change as equipment efficiency increases. The results support Cool Smart program enhancements and cost-effectiveness analysis, as well as potential upstream residential upstream heating, ventilation and air conditioning (HVAC) incentive programs.</p>
<p>Cadmus, Inc., Lighting Interactive Effects Study Preliminary Results – Draft, April 2015</p>	<p>This memo details the preliminary findings of the Lighting Interactive Effects study evaluated for the Massachusetts (MA) Program Administrators to better understand and report the true impact of energy efficient lighting retrofits. It recommended factors for electric and gas energy to be applied to residential program savings.</p>
2014	
Study	Impact Descriptions
<p>DNV GL, 2014 , Impact Evaluation of National Grid Rhode Island C&I Prescriptive Gas Pre-Rinse Spray Valve Measure</p>	<p>The evaluation examined the gas and water savings associated with the installation of reduced-flow pre-rinse spray valves. The results are based on site measurements from MA and RI facilities. The final gross gas and water savings are 11.4 MMBtu and 6.410 gallons per spray valve respectively.</p>
<p>DNV GL, 2014 Impact Evaluation of National Grid Rhode Island Custom Refrigerator, Motor and Other Installations</p>	<p>Three custom electric end-uses, Refrigerator, Motor, and Other, were evaluated to provide updated realization rates. The RI results were combined with MA results from a parallel study in order to increase the statistical significance of the final results. The final energy realization rate is 84.8%</p>

DNV GL, 2014 Impact Evaluation of Rhode Island Commercial and Industrial Upstream Lighting Program	This study examined the performance of lighting systems that were discounted at the distribution level. The evaluation included metering at Rhode Island project sites that was combined with the results of metering done in MA to yield more accurate impacts for lighting offered in this upstream initiative. The final energy realization rate is 80.3% for LEDs and 109.5% for fluorescents.
NMR Group, Inc., Northeast Residential Lighting Hours-of-Use Study	This multi-State study provided updated hours-of-use assumptions for residential lighting programs in various room types.
The Cadmus Group, Impact Evaluation: Rhode Island Income Eligible Services, Volume II The Cadmus Group, National Grid Income Eligible Services Process Evaluation	This RI-specific impact evaluation focused on the electric and gas savings resulting from the participation of these dwellings in in-home retrofit of electrical components and weatherization of electric, gas, and fossil fuel heated homes. It used billing analysis, engineering reviews, and interviews for the process components.
TetraTech. 2013 Commercial and Industrial Programs Free-ridership and Spillover Study	Free ridership and spillover rates for the RI Energy Initiative, Design2000plus, and Small Business Services Programs.
National Grid, Macroeconomic Impacts of Rhode Island Energy Efficiency Investments REMI Analysis of National Grid's Energy Efficiency Programs	This study quantifies the macroeconomic impacts of National Grid's 2014 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. This updates the multipliers from an economic impact study conducted by Environment Northeast (ENE) in 2009.
2013	
Study	Impact Descriptions
KEMA, Inc., Impact Evaluation of 2011 Rhode Island Prescriptive Lighting Installations KEMA, Inc., Impact Evaluation of 2011 Rhode Island Custom Lighting Installations	The Custom and Prescriptive Lighting studies involved the impact evaluation of components of the Large Commercial and Industrial electric efficiency programs. The studies included on-site engineering and end-use metering of a statistically drawn random sample of participants. The custom portion of the study was coupled with the results of the 2013 Massachusetts Custom Lighting study.
Energy Efficiency Messaging, Residential Energy Efficiency Program Communications Focus Groups	The study analyzed customers' perceptions of energy efficiency programs and messaging materials via focus group testing.

KEMA, Inc., Impact Evaluation of 2011 Prescriptive Gas Measures	On-site monitoring and verification of installation provided updated impacts for four major prescriptive gas measures. Programs and measures are similar between National Grid affiliates in MA and RI, and results are applied to RI. The overall realization rate for the four measures was approximately 102% and the relative precision was about ±15%.
KEMA, Inc, and DMI, Inc., Impact Evaluation of 2011-2012 Prescriptive VSDs	This evaluation provided a new estimate of the impacts of prescriptive variable speed drives, based on pre-post metering of measures installed in 2011 and 2012. Programs and measures are similar between National Grid affiliates in MA and RI, and results are applied to RI. Key findings include an annual kWh realization rate was 94% with a relative precision of +/- 23%, and identification of factors that influenced the realization rate.
The Cadmus Group, Inc., 2012 Residential Heating, Water Heating, and Cooling Equipment Evaluation: Net-to-Gross, Market Effects, and Equipment Replacement Timing	The results of this study yielded updated net-to-gross factors and estimates of the timing of equipment replacement for residential heating and cooling measures. Programs and measures are similar between National Grid affiliates in MA and RI, and results are applied to RI.
KEMA, Inc., Process Evaluation of the 2012 Bright Opportunities Program	This study provided net-to-gross ratios for the Commercial Upstream Lighting initiative offered in MA and RI, as well as a process assessment of this generally successful initiative.
KEMA, Inc., Impact Evaluation of 2010 Prescriptive Lighting Installations	The RI Prescriptive lighting study listed above did not examine case lighting separately from other lighting systems. To complement the RI-specific results, this MA study provided impact updates on case lighting.
Opinion Dynamics (2013). Massachusetts Cross-Cutting Behavioral Program Evaluation Integrated Report.	This study provided an updated realization rate for savings from gas customers who participate in the Opt-out channel of the Home Energy Reports program.
2012	
Study	Impact Descriptions
NMR Group, Inc., Rhode Island 2011 Baseline Study of Single-family Residential New Construction	Provides a baseline study of the characteristics of single-family homes recently completed in Rhode Island and permitted under the 2009 International Energy Conservation Code (IECC) that did not participate in the Rhode Island Residential New Construction Program (Program). These can be used to update User Defined Reference Home (UDRH) assumptions used in calculating Program savings.

<p>DNV-KEMA, ERS, and APPRISE, Rhode Island Energy Code Compliance Baseline Study</p>	<p>Provides a baseline estimate of statewide energy code compliance for commercial buildings, provides feedback on patterns of compliance and non-compliance, and identifies opportunities for RI in the quest to achieve greater compliance with state energy codes.</p>
<p>KEMA, Inc., Impact Evaluation of the 2010 Custom –Industrial Process and Compressed Air impact evaluation, September, 2012</p>	<p>Study produced realization rates for energy, seasonal demand, and percent energy on peak for both programs. The RI results were combined with MA results from a parallel study in order to increase the statistical significance of the final results. The final energy realization rate is 92.7%.</p>
<p>TetraTech, Final Report – Commercial and Industrial Non-Energy Impacts Study, (prepared for Massachusetts Program Administrators), June 29, 2012</p>	<p>This report provides a comprehensive set of statistically reliable Non-energy impact (NEI) estimates across the range of C&I prescriptive and custom retrofit programs offered by the MA electric and gas Program Administrators (Pas). The analytical methods used allow this report’s findings to be applicable to RI.</p>
2011	
Study	Impact Descriptions
<p>NMR Group, Inc., Massachusetts Program Administrators Massachusetts Special and Cross-Sector Studies Area, Residential and Low-Income Non-Energy Impacts (NEI) Evaluation, August, 15, 2011.</p>	<p>Identification and quantification of non-energy impacts for residential and low-income programs.</p>
<p>NMR Group, Inc., The Rhode Island Appliance Turn-In Program Process Evaluation, March 4, 2011.</p>	<p>Combined, these two studies assessed free-ridership rates and savings for the Rhode Island Refrigerator and Freezer Recycling program. In addition, the evaluation found that there were three distinct groups of refrigerators being recycled through the program – primary, secondary – replaced, and secondary – not replaced. The study produced updated free-ridership rates and savings for the three categories of refrigerators and freezers.</p>
<p>NMR Group, Inc., The Rhode Island Appliance Turn-In Program Impact Evaluation, October 2011.</p>	

<p>NMR Group, Inc., Results of the Multistate CFL Modeling Effort, April 15, 2011.</p>	<p>This study examined the 2010 Energy Star® Lighting program. The research effort included participation in a multistate modeling effort which resulted in a revised free-ridership estimate for screw-in CFLs.</p>
<p>The Cadmus Group, Impact Evaluation for Rhode Island Multifamily Gas Program EnergyWise Program, July 12, 2011</p>	<p>A billing analysis was conducted for 2010 Multifamily gas participants. Results showed a realization rate of 121% indicating ex post verified savings as 21% greater than the engineering savings estimate.</p>
<p>Opinion Dynamics Corporation, Evaluation of National Grid's Community Pilot Program Energy Action: Aquidneck and Jamestown, September, 2011.</p>	<p>The evaluation examined participation in all energy efficiency programs through the 2009-2010 Community Initiative, known as Energy Action: Aquidneck and Jamestown. The evaluation found that the initiative was cost-effective with a benefit-cost ratio of 2.25. The evaluation also examined processes and made recommendations for increasing participation in future initiatives.</p>
<p>KEMA, Inc., Impact Evaluation of the 2009 Custom HVAC and 2008-2009 Custom CDA Installations, September 1, 2011</p>	<p>Study produced realization rates for energy, seasonal demand, and percent energy on peak for both programs. The RI results were combined with MA results from a parallel study in order to increase the statistical significance of the final results. The final energy realization rate for Custom HVAC is higher than the PY 2011 realization rate by about 10% (increased from 100.5% to 110.4%). The final energy realization rate for Custom CDA is higher than the PY 2011 realization rate by about 20% (increased from 97.2% to 119.6%).</p>
<p>KEMA, Inc., C&I Lighting Loadshape Project, Prepared for the Regional Evaluation, Measurement, and Verification Forum, June 2011.</p>	<p>A compilation of lighting loadshape data from the Northeast. The study provided updated coincidence factors for the Energy Initiative and Small Business Lighting programs. The Small Business program summer coincidence factor went from 0.80 to 0.79, while the Energy Initiative summer coincidence went from 0.88 to 0.89</p>
<p>KEMA, Inc., C&I Unitary HVAC Loadshape Project Final Report, Prepared for the Regional Evaluation, Measurement, and Verification Forum, June 2011.</p>	<p>From end use metering, the study produced updated diversity and equivalent full load hours for unitary HVAC measures</p>

2010	
Study	Impact Descriptions
ADM Associates, Inc., Residential Central AC Regional Evaluation, Final Report, October 2009	KWh and kW savings figures for the installation of efficient residential CAC systems
2009	
Study	Impact Descriptions
Nexus Market Research, Residential Lighting Markdown Impact Evaluation, January 20, 2009	Energy and demand savings from the use of lighting markdown products
KEMA, Inc., Design 2000plus Lighting Hours of Use & Load shapes Measurement Study, July 2, 2009	Hours of use, hours of use realization rate, on-peak kWh percentage, load profile, connected demand adjustment factor, summer and winter peak combined coincidence and interactive factors for the prescriptive lighting measures installed by participants of the 2007 National Grid Design2000plus program
2008	
Study	Impact Descriptions
Nexus Market Research, Inc., RLW Analytics, Inc., Residential Lighting Measure Life Study, June 4, 2008	Estimation of measure life for lighting products distributed throughout New England
Michael Ozog, Summit Blue, Joint Small Business Services Program Billing Analysis, 2007	Realization rates for lighting measures installed through the Small Business Services program
2007	
Study	Impact Descriptions
RLW Analytics, Small Business Services Custom Measure Impact Evaluation, March 23, 2007	Verification of energy savings from custom lighting projects in the Small Business Services program.
RLW Analytics, Impact Evaluation Analysis of the 2005 Custom SBS Program, May 29, 2007	Realization rates for the Small Business Services program

8. Evaluation Study Findings

(This section will be updated with the 2017 studies in the next draft)

Study name: Analysis of Job Creation from 2015 Expenditures for Energy Efficiency in Rhode Island by National Grid

Type of Study: Economic Impact

Evaluation Conducted by: Peregrine Energy Group

Date Evaluation Conducted: 2016

Evaluation Objective and High Level Findings:

In order to quantify the number of direct workers involved, National Grid commissioned Peregrine Energy Group, Inc. (Peregrine) to conduct a study of the job impacts of National Grid's energy efficiency programs delivered to Rhode Island electricity and natural gas customers in 2015.

Peregrine determined that 695.8 full-time equivalent (FTE) employees had work in 2015 as a result of investments by National Grid in energy efficiency programs provided to its Rhode Island electricity and natural gas customers. Most of the jobs created as a result of energy efficiency investments were local because they were tied to installation of equipment and other materials. The study identified 1,009 companies and agencies involved in National Grid's 2015 energy efficiency programs, 79% of which were located in Rhode Island.

The study is designed to be conducted annually.

Programs to which the Results of the Study Apply: This is an overall indicator of economic impact, not applied to a specific program.

Evaluation Recommendations and Program Administrator Response: The evaluation study does not include recommendations.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:
N/A

Savings Impact: N/A

Study name: DNV-GL, Impact Evaluation of 2014 Custom Gas Installations in Rhode Island
Final Report, July 2016

Type of Study: Impact

Evaluation Conducted by: DNV-GL

Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

This study evaluated several RI installations incentivized through the custom gas program to come up with an updated realization rate (RR) for claimed gas savings. The RI study leveraged projects completed by the Company's MA affiliate in the recent MA custom gas study to reduce cost, while still meeting statistical reliability requirements. Formerly, the RI custom gas RR had been 75.5%, while the most recent study yielded a RR of 89%, showing a significant improvement in savings estimations.

Programs to which the Results of the Study Apply:

Large Commercial Gas Custom Retrofit

Large Commercial Gas Custom New Construction

Evaluation Recommendations included in the study:

DNV GL recommends National Grid to increase the duration of pre-metering from 1 or 2 days to at least 1 week (Monday thru Sunday) to capture the weekly operating profile. Including holidays/weekends in the metering period would give a better estimate of the weekly usage. When using a proxy machine to estimate savings, check if the proxy is actually representing the installed measure. For example: To calculate the amount of DHW used in a university dormitory/residence hall the TA study used a proxy residence hall that has different number of students which alters the savings estimate.

Project documentation should provide more details on the assumptions used for estimating savings. For one of the sampled sites, the R-values of building envelope components have been adjusted to account for infiltration; this assumption was not clearly mentioned in TA report but was learnt via reverse engineering the savings calculations.

National Grid should enhance the post installation visit/commissioning by recording measure related operating parameters like on-site temperature set-points, occupancies and other schedules. These parameters that are used in the savings calculations when updated affect the savings estimate significantly.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

National Grid will use the study results in program planning and reporting in 2016 for the natural gas programs.

Savings Impact: The study result will be used to adjust gross custom gas savings.

Study name: DNV-GL, Impact Evaluation of 2014 RI Prescriptive Compressed Air Installations
Final Report, July 2016

Type of Study: Impact
Evaluation Conducted by: DNV-GL
Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

This study evaluated several RI installations incentivized through the prescriptive compressed air (CAIR) program to come up with updated claimed savings values. The RI study leveraged projects completed by the Company's MA affiliate in the recent MA prescriptive CAIR study to reduce cost, while still meeting statistical reliability requirements.

Programs to which the Results of the Study Apply:

Large Commercial Electric New Construction, Prescriptive CAIR

Evaluation Recommendations included in the study:

Recommend compressed air vendors conduct simple short term metering. While this is a prescriptive program, which is intended to be streamlined, collecting very simple short-term data prior to specifying hours of operation on an application would help improve the accuracy of the annual hours of operation. This type of metering could be done by the vendor, and could be as simple as a week of motor runtime. Another option would be to investigate the incremental cost of adding monitoring at the time of compressor installation as part of the incentive package.

Consider a review of hours of operation prior to finalizing applications. In many cases the actual operating hours were observed to be significantly higher than entered on the application form, resulting in unclaimed savings. For applications with relatively low operating hours (<~4,000 hrs/yr), it may be worthwhile to perform a brief operational hours review to confirm actual plant operating hours.

Encourage vendors to look for additional compressed air savings opportunities. While the customer is engaged with upgrading their compressed air system, it may be worthwhile to investigate operation at a lower discharge pressure. Additional savings will result if the discharge pressure can be reduced. Likewise, consider performing an air leak survey to determine if additional savings can be realized from reducing air leaks.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

National Grid will use the study results in program planning and reporting in 2016 for the prescriptive CAIR program.

Savings Impact: The study result will be used to adjust CAIR deemed savings.

Study name: DNV-GL, Impact Evaluation of 2012 National Grid-Rhode Island Prescriptive Chiller Program
Final Report, July 2016

Type of Study: Impact
Evaluation Conducted by: DNV-GL
Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

This study evaluated several RI installations incentivized through the prescriptive chiller program to come up with updated deemed savings values. The RI study leveraged projects completed by the Company's MA affiliate in the recent MA prescriptive chiller study to reduce cost, while still meeting statistical reliability requirements.

Programs to which the Results of the Study Apply:

Large Commercial electric New Construction, prescriptive chiller

Evaluation Recommendations included in the study:

Consider more research around the key finding that many chillers operate at very low part loads. Consider looking into the implications for reliability, cost and energy savings with relation to chillers operating at very low part loads. Based on the feedback evaluators have received from some engineers, baseline chillers may operate at extremely low efficiencies at these conditions, which (if it can be quantified) could result in very large actual savings. National Grid may also consider an educational initiative to help vendors and customers understand the sizing requirements of their facility better.

Consider a closer review of project applications. Our evaluation found some sites with multiple chillers and also one installation with primarily a process load. Based on the TRM definition, only the lead chiller in a multiple chiller plant may be rebated. Likewise, the prescriptive program is designed for comfort cooling applications, which wouldn't include process loads.

Encourage vendors to look for additional chiller savings opportunities. In most cases the chillers were operating at the same conditions as prior to installation, according to facility personnel. When making changes to the chiller plants, it is worthwhile to consider different controls set points, such as lower condenser water temperature, higher chilled water temperature and resetting chilled water temperatures based on outdoor conditions.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

National Grid will use the study results in program planning and reporting in 2016 for the prescriptive chiller program.

Savings Impact: The study result will be used to adjust prescriptive chiller deemed savings

Study name: DNV-GL, Multifamily Impact Evaluation, National Grid Rhode Island, January 2016

Type of Study: Impact

Evaluation Conducted by: DNV-GL

Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

This study estimated realization rates for electric and gas savings for 2013 participants using a billing analysis. The results include a low level of precision and thus the realization rates are not applicable. The Company is improving tracking, savings estimations and verification processes in line with the study's recommendations.

Programs to which the Results of the Study Apply:

Residential Multifamily
Commercial Multifamily

Evaluation Recommendations included in the study:

The purpose of performing this billing analysis was to produce electric and gas realization rates for activity in the 2013 Multifamily Program. The following two conclusions provide these key results.

- Based on the electric billing analysis, we estimate the 2013 Multifamily Program electric realization rate to be 57% with a precision of $\pm 31\%$ at the 90% confidence interval. This result provides a final estimate of electric program savings of 2,503 MWh. Based on our examination of tracking savings, we believe this realization rate is being driven by a tracking savings calculation error and overestimated LED lighting hours of use.
- Based on the gas billing analysis, we estimate the 2013 overall Multifamily Program gas realization rate without commercial activity to be 53% with a precision of $\pm 25\%$ at the 90% confidence interval. It is more difficult to discern the possible drivers of the gas realization rate. However, based on our examination of tracking savings, we believe this realization rate is being driven by overestimated air sealing impacts. We further note that National Grid is considering a review of custom measure tracking system estimates as it is believed these savings may also be overinflated, although we did not examine this measure specifically as part of this study.
- The precision around the results in this study are high, but reasonable for a billing analysis. Using the electric realization rate and precision as an example, a result of $\pm 31\%$ means we are 90 % confident the results is within 31% above or below the point estimate. This is a much better level of precision than statistical significance; evidence that a result is different than zero.

The following recommendations rest upon the activities undertaken as part of this study. Some of these recommendations may already be planned and/or undertaken as part of National Grid's ongoing commitment to improving program operations and tracking of impacts.

- Based on our examination of the hours of use for LED bulbs, we recommend that National Grid re-assess inputs used to estimate the savings for this measure. While our

findings were not conclusive on this issue, we believe there is sufficient evidence to warrant a review of the hours estimated for tracking purposes. In 2013, LED bulbs were the largest contributor to program savings according to the tracking data and as the LED technology becomes more ubiquitous and displaces CFLs in program offerings, it is likely to become increasingly important to have a savings estimate based upon well founded hours of use assumptions.

- Based on our examination of the tracking savings for the top three gas saving measures and their relationship to pre normalized energy consumption, as well as the magnitude of program savings that would be needed to drive the realization rate, we recommend that National Grid re-examine the way in which air sealing savings are being calculated for the Multifamily Program. We also recommend that the custom measure category be examined as part of the process of understanding ex ante estimates and whether they might be overestimated. While this measure did not make the top three gas saving measures and did not received much scrutiny in our examination, we understand that National Grid has existing concerns about the tracking savings for gas custom measures and we believe it makes a great deal of sense to examine them in the wake of this study.
- Currently, National Grid uses an air sealing unit of measure installation of amount of time used to perform the treatment (per hour). We recommend that National Grid begin tracking the quantity of program installed units for air sealing activity by linear feet, CFM reduced or some other unit that can be normalized in a meaningful way. The current Rhode Island Technical Manual drives its air sealing savings off CFM reduction, so this unit of installation may already be available for use. Air sealing is one of the primary measures driving the savings in the Multifamily Program.
- We do not believe the realization rates observed in this study are due to quality of measure installation. However, as a next step in understanding program impacts, National Grid might consider a limited set of inspections at participating facilities to ensure this issue is not a contributor to the realization rates observed in this study. An alternative would be to review findings from quality control work performed by CMC on the program to be sure those observations are not signaling a possible issue that might be causing the realization rate.
- In this study we provide both fuel and program level realization rates. The program level results are provided to help understand whether performance in one program might be driving the overall realization rate. The realization rates among the various electric and gas programs are stable and without significant differences among them. These results do not indicate that there is a difference between the different program modes under each fuel type with respect to effectiveness of installed savings. This suggests that fuel level results are appropriate for application at the program level despite differences in the program level realization rates.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

The Company is improving tracking, savings estimations and verification processes in line with the study's recommendations.

Savings Impact: The study result will be used.

Study name: Research Into Action, National Grid Rhode Island EnergyWise Single Family Process Evaluation, August 2016

Type of Study: Process

Evaluation Conducted by: Research Into Action

Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

This study surveyed customers, vendors, contractors, and lending agencies to order to assess customer experience, HEAT Loan lender perspectives on the program, performance of the lead vendor and sub-contractors and lessons learned from programs elsewhere in the country. The study will inform program design.

Programs to which the Results of the Study Apply:

Residential Single family

Evaluation Recommendations included in the study:

Conclusion 1: Program processes work smoothly, both for participants and for those involved in program delivery

Recommendation 1: National Grid and RISE should record the participants that experience innovative program delivery strategies in order to assess the effectiveness of those strategies.

Recommendation 2: National Grid and RISE should use experimental designs to determine the effectiveness of innovative program delivery strategies.

Conclusion 2: Higher incentives and an interest rate buy-down to 0% both add value to the EnergyWise program.

- **Recommendation 3:** National Grid should consider conducting further research to more precisely quantify the impact of incentive levels and interest rates on weatherization uptake and project characteristics.

Conclusion 3: The potential exists for market saturation or other market conditions to slow weatherization project uptake.

- **Recommendation 4:** National Grid should continue to monitor audit-to-weatherization conversion rates and investigate causes of any long-term declines.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

The study will inform program design.

Savings Impact: Not directly.

Study name: DNV-GL, Impact Evaluation of 2014 EnergyWise Single Family Program, National Grid Rhode Island, August 2016

Type of Study: Impact

Evaluation Conducted by: DNV-GL

Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

This study estimated deemed savings values and realization rates for electric and gas 2014 participants using billing and engineering analysis. The Company adopted the deemed savings values in the 2017 program plan.

Programs to which the Results of the Study Apply:

EnergyWise Residential single family, gas & electric

Evaluation Recommendations included in the study:

- Adopt the deemed savings estimates produced by this evaluation.
- Update the approach used to estimate energy savings for natural gas weatherization in the tracking system. This can include updating the prescriptive savings formulas used to match results from this evaluation, or a change to a deemed savings estimate.
- Consider using the results from this effort as a starting point for developing savings for LED bulbs in 2017. The numbers reported here are representative of savings from the portion of the 2014 program year that is likely to be most similar to 2017. However, if the program design—especially with regard to the numbers of LED bulbs installed per home—varies significantly from the design used in late 2014, another number such as the Massachusetts Market Adoption Model may be appropriate to substitute. We also recommend that National Grid consider in 2017 whether and how to update the savings estimates for LEDs going forwards. This study did not look into the issue of how well the late-2014 results represent program activity in 2015 and 2016. The fact that most households even in late 2014 installed both LEDs and CFLs suggests that they are not a perfect representation of a future in which only LEDs are installed. Options for updating savings estimates could include a review of tracking data from 2015-16, a literature review of results from other states, or an update to the billing analysis using 2015 data.
- In the future, we recommend that billing analyses include all measures installed by participants who began their participation in the analysis year, including those whose participation spanned multiple years, to the extent possible. At least for natural gas, we found that multi-year participants install more measures overall than single-year participants.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

The Company adopted the deemed savings values in the 2017 program plan.

Savings Impact: The study results have been applied.

Study name: Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study. August 5, 2016.

Type of Study: Non-Energy Impact

Evaluation Conducted by: NMR & Three3

Date Evaluation Conducted: 2016

Evaluation Objective and High Level Findings:

- This study developed Non Energy Impacts for low income programs, based on USODE's Weatherization Assistance Program tailored to MA context. Dollar benefits rose substantially over prior values based on avoidance of deaths due to thermal stress, both cold and hot.

Programs to which the Results of the Study Apply:

Low Income Appliance Management Program, gas & electric

Evaluation Recommendations included in the study:

Following are NMR's recommendations for integrating the results of Three3's MA LI SF NEI study presented in this report into the NEI estimates currently used by the MA PAs (see Section 10.0):

- **Reduced Asthma**—Replace the currently used Health Related NEIs estimate of \$19 per year derived from the 2011 NMR study with the asthma NEI value of \$9.99 presented in this report (as well as the other health-related NEIs included in this report: reduced thermal stress and fewer missed days at work)
- **Reduced Thermal Stress (both Hot and Cold-Related)**—Replace the currently used Health Related NEI estimate of \$19 per year derived from the 2011 NMR study with the cold- and heat-related thermal stress NEI values of \$463.21 and \$145.93, respectively, presented in this report (as well as the other health-related NEIs included in this report: reduced asthma and fewer missed days at work).
- **Fewer Missed Days at Work**—Replace the currently used Health Related NEIs value estimate of \$19 per year derived from the 2011 NMR study with the missed days of work due to illness NEI value of \$149.45 presented in this report (as well as the other health related NEIs included in this report: reduced asthma and fewer missed days at work).
- **Reduced Use of Short-Term, High Interest Loans**—NMR does not recommend counting the NEI value produced by Three3 in this report as it is not likely a benefit in the current TRC context, though it could be considered if a different cost were used in the future. Additionally, the PAs could consider further examination of a potential multiplier effect to determine if the benefits accruing to low-income households from bill savings are larger than the corresponding cost in the form of lost PA revenues.
- **Increased Productivity At Home**—The WAP study theorized that the NEI of increased productivity at home is attributable to making the weatherized homes more comfortable and conducive to better sleep and therefore likely overlaps with the NEI of improved comfort currently claimed by the PAs.¹² Because of the potential overlap,

NMR recommends counting half the NEI value for increased productivity at home (to an adjusted value of \$18.88).

- **Reduced CO poisoning**—Replace the CO poisoning portion (\$6.38 per year) of the Improved Safety NEI derived from the 2011 NMR study with the reduced CO NEI value of \$183.30 (one-time PV given the shorter 5-year life of CO detectors) presented in this report.
- **Reduced Risk of Fire and Fire-Related Property Damage**—Replace the fire-safety related NEI of \$38.67 per year (for avoided fire deaths, injury, and property damage) currently claimed by the PAs with the fire-safety related NEI value of \$57.48 presented in this report

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

The Company adopted the NEI values in the 2017 program plan.

Savings Impact: None.

Study name: Cadmus Group; Large Commercial and Industrial On-Bill Repayment Program
Evaluation, September, 2016

Type of Study: Finance

Evaluation Conducted by: Cadmus Group

Date Evaluation Conducted: 2016

Evaluation Objective and High Level Findings:

- National Grid commissioned this study to evaluate the financing component of their large commercial and industrial (LCI) energy efficiency program. Cadmus evaluated the program design, performance, and sustainability; the overall market for the program; and the program's penetration of that market to date.

Programs to which the Results of the Study Apply:

Large Commercial & Industrial

Evaluation Recommendations included in the study:

- Conclusion: The OBR program design is appropriate to program goals, conforms to industry standards, and results in satisfied customers.
- Conclusion: The OBR program requires substantial future allocations to the fund to fulfill its potential for increased participation.
 - Recommendation: Consider setting formal targets for savings and participation in the fund, and establish a funding schedule that will support the projected participation and protect against defaults.
- Conclusion: National Grid may be able to charge interest legally on OBR financing, but the benefits are not worth the negative impacts.
 - Recommendation: Cadmus does not recommend the utility pursue an interest charge at this time, though the utility may want to revisit this issue in the future when the fund reaches a more stable level of participation.
- Conclusion: The OBR Program may benefit from more clearly defined objectives and annual performance targets.
 - Recommendation: Program managers and other National Grid stakeholders should evaluate whether financing's purpose is to encourage more cost-effective energy savings, drive deeper savings per project, drive increased participation, or some other goal or combination of goals.
- Conclusion: Based on survey responses, 78% of participants would not have proceeded with the same project at the same time had they not had access to the financing in addition to the rebates.
 - Recommendation: Eliminating either rebates or financing will likely reduce program participation; however, the absolute value of the incentive may not be as important as its general availability.
- Conclusion: There is significant opportunity for energy efficiency upgrades among LCI customers, as well as significant demand for financing.

- Recommendation: If funding is available, consider broadening promotion of OBR to a wider audience.
- Conclusion: Customers who own their own buildings and are aware of their energy costs may be more likely to participate in the OBR program.
 - Recommendation: Formalize the desirable characteristics of ideal participants and provide these to sales executives and other stakeholders who play key roles in identifying and offering OBR to customers.

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

The study will inform program design.

Savings Impact: Not directly.

Name of Memos: Ductless Mini-Split Heat Pump (DMSHP) Final Heating Season Results; Ductless Mini-Split Heat Pump (DMSHP) Cooling Season Results, COOL SMART Impact Evaluation Team, 2015 / 2016

Type of Study: Impact
Evaluation Conducted by: Cadmus Group
Date Evaluation Conducted: 2015-16

Evaluation Objective and High Level Findings:

Heating and cooling memos that describe the number of full load hours found with field installed systems in MA and RI; these hours were used with historic data on incentivized systems to come up with average savings per unit.

Programs to which the Results of the Study Apply:

Residential HVAC

Evaluation Recommendations included in the study:

As shown in the separate DMSHP baseline memo, the most common heating baseline for DMSHPs was a code-minimum DMSHP. Starting in 2016, all DMSHP units sold in the United States must meet a minimum heating season performance factor (HSPF) of 8.2, up from 7.7. The team calculated equivalent full load hours consistent with a HSPF-based savings calculation and savings against an 8.2 HSPF baseline, shown in Table 1 below.

Stated Purchase Intent	Full Load Hours²	Estimated Annual Savings – 8.2 HSPF Baseline (kWh)	Percent of Total
Purchased for Cooling	220	103	31%
Purchased for Heating	841	395	4%
Purchased for Heating and Cooling	531	250	65%
Total	447	210	100%

Explain Whether or Not National Grid Decided to Adopt Recommendations from the Study:

The memos will be used in savings calculations.

Savings Impact: The memo results will be used to calculate savings.

2018 Rhode Island Test Description

Table of Contents

Introduction	1
The Rhode Island Test Overview.....	3
Description of Program Benefits and Costs	4
1) Electric Energy Benefits	5
2) Electric Generation Capacity Benefits	6
3) Electric Transmission Capacity and Distribution Capacity Benefits.....	7
4) Natural Gas Benefits	8
5) Delivered Fuel Benefits	9
6) Water and Sewer Benefits	9
7) Non-Energy Impacts.....	10
8) Price Effects.....	10
9) CHP Benefits.....	11
10) Non-embedded Greenhouse Gas Reduction Benefits.....	14
11) Economic Development Benefits (Non-CHP Measures).....	15
12) Utility Costs	16
13) Customer Costs	18
Benefit/Cost Calculations.....	18

Introduction

This section has been prepared pursuant to Section 1.2(B) of the Least Cost Procurement Standards (Standards) for the procurement of energy efficiency resources, approved by the Rhode Island PUC in Docket 4684.

In previous Annual Plans, the Company assessed the cost-effectiveness of measures, programs, and portfolios according to the Total Resource Cost (TRC) Test. The revised Standards set forth new requirements for a cost-effectiveness test called the Rhode Island Benefit Cost Test (RI Test), which “more fully reflects the policy objectives of the State with regard to energy, its costs, benefits, and environmental and societal impacts.” The change to the RI Test is a positive development for energy efficiency. Accounting for all costs and benefits associated with energy efficiency provides for a more holistic view of its impacts to electric and gas customers, the environment, and the economy. The 2018 Annual Plan includes two new benefits for cost-effectiveness screening that were approved as part of the 2018-2020 Three-Year Plan in Docket 4684. These benefits include: non-embedded greenhouse gas reductions (i.e., the value of reducing greenhouse gas emissions that is not already included in the baseline avoided costs) and economic development impacts.

The source for many of the avoided cost value components is “Avoided Energy Supply Costs in New England: 2015 Report,” (2015 AESC Study) prepared by Tabors Caramanis and Rudkevich (TCR) for the Avoided Energy Supply Component Study Group, April 2015.¹ This report was sponsored by all the electric and gas efficiency program administrators in New England and is designed to be used for cost effectiveness screening in 2016 through 2018.

It is the intent of National Grid that the RI Test as described here will be in place until the next review of the Standards in advance of the 2020-2022 Least Cost Procurement Plan. However, additional benefits and costs may be added in future Annual Plans and the component values may be updated over the course of the three year period based on the availability of new study results. Future updates to inputs and values will be included in future Annual Plan filings.

As specified in the Standards,

¹ The report is available online at: <http://ma-eeac.org/wordpress/wp-content/uploads/2015-Regional-Avoided-Cost-Study-Report1.pdf>. This study forecasts avoided costs for three years, compared to prior studies which developed avoided costs applicable to a two-year period. In the fall of 2016, TCR prepared a limited update of Appendices B (Avoided Electricity Cost Results), C (Avoided Natural Gas Cost Results), and D (Avoided Electricity Cost Results) in the report for Maine, New Hampshire, Rhode Island, and Vermont based on new estimates for six categories of inputs starting in 2017 that the Company applied to the 2018-2020 Three-Year Plan and this 2018 Annual Plan.

- i. The distribution company shall assess the cost-effectiveness of measures, programs, and portfolios according to a benefit-cost test that builds on the Total Resource Cost Test approved by the Public Utilities Commission (PUC) in Docket 4443, but that more fully reflects the policy objectives of the State with regard to energy, its costs, benefits, and environmental and societal impacts. The distribution company shall, after consultation with the Council, propose the specific benefits and costs to be reported, and factors to be included, in the Rhode Island Benefit Cost Test (RI Test) and include them in Energy Efficiency Plans. These benefits should include resource impacts, non-energy impacts, distribution system impacts, economic development impacts, and the value of greenhouse gas reductions, as described below. The accrual of specific non-energy impacts to only certain programs or technologies, such as income-eligible programs or combined heat and power, may be considered.
- ii. The distribution company shall apply the following principles when developing the RI Test:
 - a. **Efficiency as a Resource.** EE is one of many resources that can be deployed to meet customers' needs. It should, therefore, be compared with both supply-side and demand-side alternative energy resources in a consistent and comprehensive manner.
 - b. **Energy Policy Goals.** Rhode Island's cost-effectiveness test should account for its applicable policy goals, as articulated in legislation, PUC orders, regulations, guidelines, and other policy directives.
 - c. **Hard-to-Quantify Impacts.** Efficiency assessment practices should account for all relevant, important impacts, even those that are difficult to quantify and monetize.
 - d. **Symmetry.** Efficiency assessment practices should be symmetrical, for example, by including both costs and benefits for each relevant type of impact.
 - e. **Forward Looking.** Analysis of the impacts of efficiency investments should be forward-looking, capturing the difference between costs and benefits that would occur over the life of efficiency measures with those that would occur absent the efficiency investments. Sunk costs and benefits are not relevant to a cost-effectiveness analysis.

- f. **Transparency.** Efficiency assessment practices should be completely transparent, and should fully document and reveal all relevant inputs, assumptions, methodologies, and results.
- iii. With respect to the value of greenhouse gas reductions, the RI Test shall include the costs of CO₂ mitigation as they are imposed and are projected to be imposed by the Regional Greenhouse Gas Initiative. The RI Test shall also include any other utility system costs associated with reasonably anticipated future greenhouse gas reduction requirements at the state, regional, or federal level for both electric and gas programs. A comparable benefit for greenhouse gas reduction resulting from natural gas or delivered fuel energy efficiency or displacement may be considered. The RI Test may include the value of greenhouse gas reduction not embedded in any of the above. The RI Test may also include the costs and benefits of other emissions and their generation or reduction through Least Cost Procurement.
- iv. Benefits and costs that are projected to occur over the term of the Energy Efficiency Plans shall be stated in present value terms in the RI Test calculation using a discount rate that appropriately reflects the risks of the investment of customer funds in energy efficiency; in other words, a discount rate that indicates that energy efficiency is a low-risk resource in terms of cost of capital risk, project risk, and portfolio risk. The discount rate shall be reviewed and updated in the Energy Efficiency Plans, as appropriate, to ensure that the applied discount rate is based on the most recent information available.
- v. The distribution company shall provide a discussion of the carbon impacts efficiency and reliability investment plans will create, whether captured as benefits or not.

The Rhode Island Test Overview

The RI Test compares the present value of a stream of **net benefits** associated with the **net savings** of an energy efficiency measure or program **over the life** of that measure or program to the total costs necessary to implement the measure or program. The RI Test may be applied to any energy efficiency program independent of the primary fuel or resource the effort focuses on.

The RI Test captures the value created by efficiency measures installed in a particular program year over the useful life of the measure. The measure life is based on the technical life of the measure modified to reflect expected measure persistence. Because the RI Test captures the value associated with a stream of benefits over a

period of time, the benefits from a measure are present valued so that costs and benefits may be compared.

The benefits calculated in the RI Test are the avoided resource supply and delivery costs, valued at marginal cost for the periods when there is a load reduction, as well as the monetized value of non-resource savings.

The program costs are those paid by both the utility and by participants plus the increase in supply costs for any period when load is increased. All equipment, installation, O&M, removal, evaluation and administration costs are included.

All savings included in the value calculations are net savings. The expected net savings are typically an engineering estimate of savings modified to reflect the actual realization of savings based on evaluation studies. The expected net savings also reflect market effects due to the program. The RI Test captures the combined effects of a program on both the participating customers and those not participating in a program. From a resource acquisition perspective, if the program induces participants or non-participants to acquire energy efficiency devices without program expenditures, these effects—known as spillover—should be attributed as program benefits in the RI Test. The costs incurred by customers to acquire equipment on their own are also counted as costs in the RI Test.

On the other hand, if a customer accepts program funds to implement an energy efficiency measure they would have done anyway, the savings associated with this practice is known as “free ridership.” From the perspective of resource acquisition through utility programs, it is important to distinguish whether the customer would have implemented the efficiency measure without the program. Therefore, savings associated with free-ridership are deducted from program savings.²

The benefits and costs considered in Rhode Island are detailed in the next section.

Description of Program Benefits and Costs

The following benefits and costs are included in the RI Test. They are listed here with details after.

- 1) Electric Energy Benefits
- 2) Electric Generation Capacity Benefits
- 3) Electric Transmission Capacity and Distribution Capacity Benefits

² Both free-ridership and spillover have been determined from surveys of program participants, non-participants, and other market actors

- 4) Natural Gas Benefits
- 5) Fuel Benefits (including the value of delivered fuel savings from programs that influence delivered fuel consumption)
- 6) Water and Sewer Benefits
- 7) Non-Energy impacts
- 8) Price Effects
- 9) Combined Heat and Power Benefits
- 10) Non-embedded Greenhouse Gas Reduction Benefits
- 11) Economic Development Benefits
- 12) Utility Costs
- 13) Participant Costs

All of the benefits are monetized benefits directly associated with the installation of electricity or natural gas efficiency projects.

1) Electric Energy Benefits

Avoided electric energy costs are appropriate benefits for inclusion in the RI Test. When consumers do not have to purchase electric energy because of their investment in energy efficiency, an avoided resource benefit is created.

Electric energy savings are valued using the avoided electric energy costs developed in the 2015 AESC Study Update, Appendix B.³ The values in the AESC Study represent wholesale electric energy commodity costs that are avoided when generators produce less electricity because of energy efficiency.⁴ They include pool transmission losses incurred from the generator to the point of delivery to the distribution companies, the costs of renewable energy credits borne by generators, and a wholesale risk premium that captures market risk factors typically recovered by generators in their pricing. The avoided energy costs also internalize the expected cost of complying with current or reasonably anticipated future regional or federal greenhouse gas reduction requirements which are borne by generators and passed through in wholesale costs.

The avoided energy costs in the 2015 AESC Study Update are provided in four different costing periods consistent with ISO-NE definitions. Net energy savings are split up into these periods in the value calculation. The time periods are defined as follows:

³ The values for Rhode Island have also been included as Table E-9 in Appendix 5

⁴ Avoided costs may be viewed as a proxy for market costs. However, avoided costs may be different from wholesale market spot costs because avoided costs are based on simulation of market conditions, as opposed to real-time conditions. They may be different from standard offer commodity costs because of time lags and differing opinions on certain key assumptions, such as short term fuel costs.

- Winter Peak: October – May, 7:00 a.m. – 11:00 p.m., weekdays excluding holidays.
- Winter Off-Peak: October – May; 11:00 p.m. – 7:00 a.m., weekdays. Also including all weekends and ISO defined holidays.
- Summer Peak: June – September, 7:00 a.m. – 11:00 p.m., weekdays excluding holidays.
- Summer Off-Peak: June – September; 11:00 p.m. – 7:00 a.m., weekdays. Also including all weekends and ISO defined holidays.

In the benefits calculation, energy savings are grossed up using factors that represent transmission and distribution losses because a reduction in energy use at the customer means that amount of energy does not have to be generated, plus the extra generation that is needed to cover the losses that occur in the delivery of that energy is not needed.

Net energy savings for a program (or measures aggregated within a program) are allocated to each one of these time periods and multiplied by the appropriate avoided energy value.⁵ The dollar benefits are then grossed up using the appropriate loss factors representing losses from the ISO delivery point to the end use customer.

- Summer Peak Energy Benefit (\$) = kWh * Energy%_{SummerPk} * SummerPk\$/kWh_(@Life) * (1 + %Losses_{SumPk-kWh})
- Summer OffPeak Energy Benefit (\$) = kWh * Energy%_{SummerOffPk} * SummerOffPk\$/kWh_(@Life) * (1 + %Losses_{SummerOffPk-kWh})
- Winter Peak Energy Benefit (\$) = kWh * Energy%_{WinterPk} * WinterPk\$/kWh_(@Life) * (1 + %Losses_{WinterPk-kWh})
- Winter OffPeak Energy Benefit (\$) = kWh * Energy%_{WinterOffPk} * WinterOffPk\$/kWh_(@Life) * (1 + %Losses_{WinterOffPk-kWh})

2) Electric Generation Capacity Benefits

Avoided electric generation capacity values are appropriate for inclusion in the RI Test. When generators do not have to build new generation facilities or when construction can be deferred because of consumers' investments in energy efficiency, an avoided resource benefit is created. In the New England capacity market, capacity benefits

⁵ The notation "@Life" in the equation for value for this and other value components is an indication that the avoided value component for each benefit (e.g., electric energy, capacity, natural gas, etc.) is the cumulative net present value (in 2018 dollars) of avoided costs for each year of the planning horizon from the base year over the life of the measure. For example, the avoided value component for a measure with an expected life of ten years for any given benefit component is the sum of the net present value of the annual avoided costs for that component in Year 1, Year 2, Year 3, etc., through Year 10.

accrue because demand reduction reduces ISO-NE's installed capacity requirement. The capacity requirement is based on load's contribution to the system peak, which, for ISO-NE, is the summer peak. Therefore, capacity benefits accrue only from summer peak demand reduction; there is currently no winter generation capacity benefit.

Demand savings created through program efforts are valued using the avoided capacity values from the 2015 AESC Study Update, Appendix B.⁶ The values contained in the study reflect the avoided cost of peaking capacity, and incorporate a reserve margin and losses incurred from the generator to the point of delivery to the distribution companies. ISO-New England reserve margins are incorporated into the capacity values, since energy efficiency avoids the back-up reserves for that generation as well as the generation itself. A loss factor representing losses from the ISO delivery point to the end-use customer is used as a multiplier, since those losses are not included in the avoided costs. Demand savings are calculated to be coincident with the ISO-NE definition of peak.

The dollar value of benefits are therefore calculated as:

- $\text{Generation Capacity Benefit}(\$) = \text{kW}_{\text{Summer}} * \text{GenerationCapValue}\$/\text{kW}_{(\text{@Life})} * (1 + \% \text{Losses}_{\text{SummerkW}})$

3) Electric Transmission Capacity and Distribution Capacity Benefits

Avoided transmission and distribution capacity values are appropriate for inclusion in the RI Test. When transmission and distribution facilities do not have to be built or can be deferred because of lower loads as a result of consumers' investments in energy efficiency, an avoided resource benefit is created.

Electric transmission capacity and distribution capacity benefits are valued in the RI Test using avoided transmission and distribution capacity values calculated in a spreadsheet tool that was developed in 2005 by ICF International, Inc., the consultant that performed the biennial avoided cost study for New England's energy efficiency program administrators in that year. The tool calculates an annualized value of statewide avoided transmission and distribution capacity values from company-specific inputs of historic and projected capital expenditures and loads, as well as a carrying charge calculated from applicable tax rates and Federal Energy Regulatory Commission (FERC) Form 1 accounting data.

⁶ The values for Rhode Island have also been included as Table E-9 in Appendix 5

Capacity loss factors are applied to the avoided T&D capacity costs to account for local transmission and distribution losses from the point of delivery to the distribution company's system to the ultimate customer's facility. Thus, losses will be accounted for from the generator to the end use customer.

T&D benefits could be allocated to summer and winter periods, depending on the relation between summer and winter peaks on the local system. However, the Company's system is summer peaking. Therefore, the T&D benefits will be exclusively associated with summer demand reduction and the dollar value will be calculated as follows:

- Transmission Benefit (\$) = $(kW_{\text{Summer}} * \text{Trans}\$/kW_{(\text{@Life})} * [1 + (\text{Losses}_{\text{SumkWTrans}})])$
- Distribution Benefit (\$) = $(kW_{\text{Summer}} * \text{Dist}\$/kW_{(\text{@Life})} * [1 + (\text{Losses}_{\text{SumkWDist}})])$

4) Natural Gas Benefits

Avoided natural gas consumption is appropriate for inclusion in the RI Test. When a project in which consumers have invested saves natural gas, an avoided resource benefit is created.

Natural gas benefits in the RI Test will be valued using avoided natural gas values from the 2015 AESC Study Update, Appendix C.⁷ These costs include commodity, transportation, and retail delivery charges that would be avoided by fuels not consumed by end users.

The AESC Study Report presents avoided natural gas value components into end-use categories to match with individual program characteristics. The natural gas categories are:

- Commercial and industrial, non-heating. This assumes savings are constant throughout the year and averages monthly natural gas values over 12 months.
- Commercial and industrial, heating. Averages the monthly values for the months of November through March.
- Residential heating. Averages the monthly values for the months of November through March. As these months have the highest natural gas values, by averaging over a fewer number of months, natural gas savings in this category typically have the highest value.
- Domestic hot water. This assumes savings are constant throughout the year and averages monthly natural gas values over 12 months.

⁷ The values for Rhode Island have also been included as Table G-9 in Appendix 5

Using each of these end-use value components, the dollar value of fuel benefits is calculated as:

- Natural Gas Benefits (\$) = MMBtu Gas Savings * (Gas\$/MMBTU_(EndUseCategory,@Life) + Greenhouse Gas \$/MMBTU_(@Life))

5) Delivered Fuel Benefits

Avoided delivered fuel costs (natural gas, propane, or fuel oil) are appropriate for inclusion in the RI Test. When a project in which consumers have invested saves fuel an avoided resource benefit is created.

Fuel benefits in the RI Test are valued using avoided fuel values from the 2015 AESC Study, Appendix D. The fuel oil categories are Residential #2, Commercial #2, Commercial #4, and Commercial and Industrial #6.

Using each of these end-use value components, the dollar value of fuel benefits is calculated as:

- Fuel Benefits (\$) = MMBTU_Fuel Savings * Fuel\$/MMBTU_(EndUseCategory,@Life)

6) Water and Sewer Benefits

Water savings created from program efforts should be valued and included in the RI Test. Water savings can be valued using avoided water and sewer values that are based on average water and sewer rates in Rhode Island. While there are no specific water efficiency measures, when a project in which consumers have invested to save electricity or fuel also affects water consumption—for example, a cooling tower project that reduces makeup water needed—a resource benefit is created. Depending on the project and metering configuration, changes in water consumption may also affect sewerage billings.

Water and sewerage rates were determined from an August 2014 internet survey of rates posted by the City of Providence⁸ and the Narragansett Bay Commission⁹.

Water and sewer benefits are counted for all projects, where appropriate, and calculated as follows:

⁸ Water Rates." Providence Water Supply Board. 2014.
<<http://www.provwater.com/depts/cs/billrates.htm>>

⁹ "Rates." Narragansett Bay Commission. 2014.
<<http://www.narrabay.com/en/Customer%20Service/Rates.aspx>>

- Water and Sewerage Benefits (\$) = Water and/or Sewerage Savings * Water and/or Sewer \$/Gal_(@Life)

7) Non-Energy Impacts

Other quantifiable non-resource or non-energy impacts may be created as a direct result of Least Cost Procurement efforts and, are therefore appropriate for inclusion in the RI Test. Non-energy impacts are typically associated with the number of measures installed, rather than the energy consumption of the equipment. They may be positive or negative. They may be one time benefits or recur annually. These effects will be included when they are a direct result of the measure and when they are quantifiable and avoidable.

The specific values of non-energy impacts used in the 2018 Annual Plan for prescriptive measures are documented in the 2018 RI Technical Reference Manual. Non-energy impacts may include – but are not limited to – labor, material, facility use, health and safety, materials handling, property values, and transportation. For income-eligible measures, non-energy impacts also include the impacts of having lower energy bills to pay, such as reduced arrearages or avoided utility shut off costs. Non-energy impacts for Commercial and Industrial custom measures are counted when supported by site specific engineering calculations or other analyses.

The dollar value of non-resource benefits will be calculated as follows

- One-time Non-energy impacts (\$) = Non-energy impact (\$)/unit * Number of units
- Annual Non-energy impacts (\$) = Non-energy impact (\$)/unit * Number of units * Present Worth Factor_(@Life)

8) Price Effects

The Demand-Reduction-Induced Price Effect (DRIPE) is the reduction in prices in energy and capacity markets resulting from the reduction in need for energy and/or capacity due to efficiency and/or demand response programs. Consumers' investments in energy efficiency avoid both marginal energy production and capital investments, but also lead to structural changes in the market due to lower demand. Over a period of time, the market adjusts to lower demand, but until that time the reduced demand leads to a reduction in the market price of electricity. This is the observed in the New England market when ISO-New England activates its price response programs. When this price effect is a result of consumers' investments in energy efficiency, it is appropriate to include it in the RI Test.

DRIPE effects are very small when expressed in terms of an impact on market prices, i.e., reductions of a fraction of a percent. However, the DRIPE impacts are significant when expressed in absolute dollar terms over all the kWh transacted in the market. Very small impacts on market prices, when applied to all energy and capacity being purchased in the market, translate into large absolute dollar amounts.

DRIPE values developed for energy efficiency installations in 2017 from the 2015 AESC Study Update are used in the RI Test. The price effects are expressed as \$/kWh for each of the four energy costing periods, \$/kW for capacity, and \$/MMBtu for natural gas. In addition, there are cross fuel effects that are counted for when natural gas energy efficiency affects the price of electricity. For example, homes and generators compete for natural gas in winter. Scarcity of natural gas for generation may drive up the cost of electricity. Therefore, reduction in natural gas consumption due to energy efficiency may cause a price effect for electricity. (Even though the price effect is in electricity, that DRIPE benefit is converted to \$/MMBtu so that it can be attributed to the gas savings that create the effect.) The DRIPE benefit is calculated as:

- Summer Peak Energy DRIPE Benefit (\$) = kWh * Energy%_{SumPk} * (SummerPkDRIPE\$/kWh_(@Life+ElectricGasDRIPE\$/kWh) * (1 + %Losses_{SummerPk-kWh}))
- Summer OffPeak Energy DRIPE Benefit (\$) = kWh * Energy%_{SumOffPk} * (SumOffPkDRIPE\$/kWh_(@Life+ElectricGasDRIPE\$/kWh) * (1 + %Losses_{SummerOffPk-kWh}))
- Winter Peak Energy DRIPE Benefit (\$) = kWh * Energy%_{WinterPk} * (WinterPkDRIPE\$/kWh_(@Life+ElectricGasDRIPE\$/kWh) * (1 + %Losses_{WinterPk-kWh}))
- Winter OffPeak Energy DRIPE Benefit (\$) = kWh * Energy%_{WinOffPk} * (WinterOffPkDRIPE\$/kWh_(@Life+ElectricGasDRIPE\$/kWh) * (1 + %Losses_{WinterOffPk-kWh}))
- Generation Capacity DRIPE Benefit(\$)= kW_{Summer} * CapDRIPEValue\$/kW_(@Life) * (1 + %Losses_{SummerkW})
- Natural Gas DRIPE Benefit (\$) = MMBTU_Fuel Savings * (GasDRIPEValue\$/MMBTU_(@Life) +GasElectricDRIPE\$/MMBtu)

9) CHP Benefits

R.I.Gen.Laws §39-1-27.7(c) (6) (iii) directs the Company to support the development of combined heat and power (CHP). 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.¹⁰ Of these, energy and cost savings and energy supply costs are captured in the energy benefits described above. The other three benefits – economic development, greenhouse gas, and system reliability benefits – are described here.

Economic Development

For all CHP projects, net economic development benefits will be counted as benefits. The rate of economic development benefit will be \$0.80 of lifetime gross state product increase per dollar of program investment, based on the report, “Macroeconomic Impacts of Rhode Island Energy Efficiency Investments: REMI Analysis of National Grid’s Energy Efficiency Programs, prepare by National Grid in August 2014, as an update to the 2009 study “Energy Efficiency in Rhode Island: Engine of Economic Growth,” prepared by Environment Northeast. The \$0.80 multiplier reflects the present value of lifetime state gross domestic product (GDP) effects of program and participant spending that creates jobs in construction and other industries as the project is planned, and equipment is purchased and installed. Therefore, the CHP Economic Development benefits will be calculated as:

- Program and participant spending(\$) x \$0.80

Greenhouse gas reduction benefits

For all CHP projects, greenhouse gas mitigation and air quality benefits will be counted as benefits to the extent they are not already captured in the BCR screening values and to the extent that usable emissions data is available. The emissions profile of the CHP site facility prior to the installation of the retrofit (most likely a combination of grid supplied generation for electricity and an on-site boiler for thermal needs) will be compared to the emissions post-retrofit (most likely the CHP unit alone). The change in emissions in tons will be multiplied by a value of \$/ton for each pollutant and the values will be summed over all pollutants and counted as a benefit in the benefit/cost calculation. This method is contingent on having emissions data for all pollutants. This information is often difficult to come by; for example, ISO-New England annually publishes emissions per kWh for only SO_x, NO_x, and CO₂. Similarly, the amount of emissions for all pollutants associated with a particular CHP unit is not always provided.

When the change in the amount of pollutants has been identified, the environmental/emissions related health costs and benefits will be estimated using methods that connects emissions to monetary damages and are accepted nationally, such as the Co-benefits Risk Assessment (COBRA) Screening Model presented by the

¹⁰ See R.I. Gen.Laws § 39-1-27.7(c) (6) (iii).

U.S. EPA or AP2¹¹. The following table, updated for this plan, illustrates the benefits on a per ton basis resulting from the mitigation of several pollutants in Rhode Island from an analysis¹² using a predecessor to the AP2 model, which is an integrated analysis through six modules: emissions, air quality modeling, concentrations, exposures, physical effects, and valuation.

Statewide Health Benefits from One Ton Reduction of Each Pollutant in Indicated

Pollutant	VOC	NH3	NOx	SO2	Fine PM	Coarse PM
\$Value/ ton	\$204	\$1,019	\$283	\$1,981	\$7,076	\$192

Value from mitigation of CO₂ both embedded and non-embedded is already embedded in avoided energy costs in benefit-cost analysis.

System Reliability

If a CHP project is proposed in a system reliability target area, the system reliability benefits from deferring a distribution system upgrade would be captured in the System Reliability Procurement report. In the context of CHP located elsewhere in the state, system reliability benefits are the local distribution benefits created by the introduction of the CHP unit in the local area. Notably, CHP projects do not produce the same level of deferred distribution investment savings described in Section (3) above as traditional energy efficiency.¹³ Accordingly, the distribution benefits are modified as follows:

- For CHP systems of less than 1 MW net capacity, the distribution deferral benefit value estimated by the Company based on system wide averages will be multiplied by 0.75 to incorporate an estimate of the reliability experience of

¹¹ Muller, N.Z. 2011. Linking Policy to Statistical Uncertainty in Air Pollution Damages. The B.E. Press Journal of Economic Analysis and Policy. Vol. 11(1), Contributions, Article 32.

¹² "Weighing the Value of a Ton of Pollution," Nicholas Z. Muller and Robert Mendelsohn, Cato Institute, <http://object.cato.org/sites/cato.org/files/serials/files/regulation/2010/6/regv33n2-5.pdf>, accessed 8/20/2015. This article presents national median values for the listed pollutants as a result of an analysis of 60,000 simulation runs. Graphical presentation allows for the identification of values for RI for fine particulate matter and SOx. For the other pollutants, the median value is used, although the value for Rhode Island is higher than the median for FPM and SOx.

¹³ With traditional energy efficiency projects, the installed measures permanently reduce load on the electric distribution system and, therefore, reduce the need to make distribution investments. CHP projects may not result in similar deferred distribution investment savings. A CHP unit may not be available at all peak times, and, absent any contractual or mechanical modification to ensure that the load does not reappear, the Company will still need to design and maintain the distribution system for when that unit goes off line during a peak hour on a peak day. This is particularly significant with larger CHP projects, in which a single host customer represents a significant percentage of the total load on a feeder. With multiple smaller units, some level of savings is possible, but these units are still not likely to produce distribution benefits in the same manner as traditional energy efficiency.

discrete deployment of CHP units compared with end-use reduction efficiency measures which are spread across the state;¹⁴

- For CHP systems equal to or greater than 1 MW net capacity, the distribution benefit will consider location-specific distribution benefits, as opposed to average system-wide benefits. The results of this analysis will replace the adjusted 0.75 of average system-wide distribution benefit described for CHP projects of less than 1 MW. This may entail a detailed engineering analysis performed by the Company, and additional costs. This consideration will have two parts: 1) identification of foreseeable investments that the CHP installation could potentially help defer, and their value; and 2) whether the unit will be sufficiently reliable, or firmed through the provision of physical assurance by the customer, to enable such savings to be realized;
- For CHP projects greater of 1 net MW or greater, gas system benefits not paid out as incentives to the Customer via the AGT incentive or gas service contract terms will be counted as benefits.¹⁵

10) Non-embedded Greenhouse Gas Reduction Benefits

In accordance with Section 1.2(B)(iii) of the Standards, the RI Test now includes the value of greenhouse gas (GHG) reductions not previously included in avoided energy costs. The value of these “non-embedded” GHG reductions was derived from the Avoided Energy Supply Costs in New England: 2015 Report (AESC Report).

The Resilient Rhode Island Act sets forth a carbon emission reduction goal of 80% below 1990 levels by 2050. The AESC Report determines that the marginal cost of stabilizing carbon dioxide (CO₂) emissions at 80% below 1990 levels by 2050 will be \$100 per short ton. The report finds this cost is a “reasonable estimate of the societal cost of carbon emissions, and hence as the long-term value of the cost of reductions in carbon emissions required to achieve those targets”.

¹⁴As explained in footnote 12, *supra*, while multiple small CHP units may produce some level of savings, these units are still not likely to produce distribution benefits in the same manner as traditional energy efficiency. Therefore, the 0.75 factor is adopted as a planning assumption to represent the contingency that, when a single CHP unit on a feeder fails to perform, the load reappears on the system. As more CHP units, particularly smaller units, are deployed in the state, the diversity of operation may allow the adjustment factor to be increased. The Company intends to review this planning assumption based on actual experience for future EE Program Plan filings.

¹⁵ For example, a 3 MW installation with an additional sales volume of approximately 150,000 Dth per year would generate approximately \$130,000 of marginal revenue per year under current rates. Assuming \$100,000 of capital costs, the project could qualify for up to \$573,000 in AGT funding, subject to budget limitations.

In previous Plans, the Company incorporated the costs of CO₂ mitigation imposed and projected to be imposed by the Regional Greenhouse Gas Initiative (RGGI) and the costs associated with reasonably anticipated future federal greenhouse gas regulations in the avoided costs used in cost-effectiveness screening. The costs of compliance with RGGI and reasonably anticipated future federal regulations are one component of the \$100 per short ton value. These costs are already included or “embedded” in the projected electric energy market prices. Therefore, the difference between the \$100 per short ton societal cost and the regulatory compliance costs already embedded in the projected energy market prices represents the value of carbon emissions not included in the avoided energy costs.

An example of this calculation for the year 2018 is shown below. The resulting \$91.53 non-embedded avoided cost is applied as a benefit in the RI Test in that year.

- Societal Cost (\$100) – Embedded Regulatory Compliance Cost (\$8.47) = Non-Embedded Cost (\$91.53)

The Company added the non-embedded CO₂ values from the following tables in the 2015 AESC report to the avoided costs used in the RI Test cost-effectiveness screening: Exhibit 4-5 for electric savings, Exhibit 4-14 for gas savings, and Exhibit 4-18 for oil savings.

The next revision to the AESC Report is due in 2018. The non-embedded value for New England’s CO₂ emissions will be updated as part of this study and will be incorporated in the 2019 Annual Plan.

11) Economic Development Benefits (Non-CHP Measures)

In accordance with Section 1.2(B)(i) of the Standards, the RI Test now includes the application of multipliers for economic development impacts to all energy efficiency measures. This section details the methodology for applying economic benefits to non-CHP measures. Section number 9 in this document refers to the application of economic benefits to CHP measures.

The macroeconomic multipliers for the economic growth and job creation benefits of investing in cost-effective energy efficiency are derived from a recent study “Macroeconomic Impacts of Rhode Island Energy Efficiency Investments: REMI Analysis of National Grid’s Energy Efficiency Programs”, National Grid Customer Department, November, 2014.

The multipliers from the REMI analysis take into account how the energy efficiency programs impact Rhode Island’s economy in three ways:

1. Program and participant spending represents a direct investment in Rhode Island energy efficiency infrastructure, creating jobs (construction impacts).
2. Bill savings to participants have positive economic impacts over the life of the energy efficiency measures, resulting in more spending on goods and services.
3. Rate increases and participant contributions to the cost of installing energy efficiency measures create short-term costs and reduce spending on goods and services.

It is likely that the benefit of bill savings to customers is already accounted for in cost-effectiveness screening since the value of all energy savings is included as a monetary benefit. In addition, the impact of customer costs is also already included as a negative dollar benefit. Therefore, to ensure no double counting of costs and benefits, only the multipliers associated with construction impacts should be included in the RI Test.

It is widely acknowledged that increased spending from installing energy efficiency measures creates jobs in the local economy. The Company, therefore, will apply the multipliers below to program and participant spending in its benefit-cost model. These multipliers are derived from Table 2 of the REMI analysis report.

GDP Multipliers for Construction Impacts		GDP/\$ Spending	
		Electric	Natural Gas
Residential	Program Spending	0.71	0.71
	Participant Spending	0.75	0.75
Commercial	Program Spending	0.56	0.56
	Participant Spending	0.58	0.58

The Company finds that this application is a suitable first step in incorporating economic development impacts to the RI Test. The Company plans to commission an updated economic impact study during the 2018 program year to refine these assumptions for its 2019 Annual Plan.

12) Utility Costs

Utility costs incurred to achieve implementation of energy efficiency measures and programs are appropriate for inclusion in the RI Test. These costs have been categorized as follows:

- Program Planning and Administration (PP&A): These costs are the administrative costs associated with the utility role in program delivery, including payroll, information technology, contract administration, and overhead expenses.
- Marketing: These are the costs of marketing and advertising to promote a program. The costs also include the payroll and expenses to manage marketing.
- Rebates and Other Customer Incentives: These are the incentives from the programs to customers to move them to install energy efficient equipment. Incentives include, but are not limited to, rebates to customers, copayments to vendors for direct installation of measures, payments to distributors to buy down the cost of their products for sale in retail stores, payments to vendors to create and deliver information, the cost of an education course, or payments to lenders to buy down the interest in a loan. Customer incentives typically cover a portion of the equipment and installation costs directly associated with the energy efficient equipment being installed.¹⁶ For a retrofit project, the customer incentives cover a portion of the full cost of the efficiency project, as it is assumed that the alternative to the project is no customer action. For a failed equipment replacement/renovation/new construction project, these customer incentives cover a portion of the incremental additional costs associated with moving to a higher efficiency item or practice compared to what the customer would have done otherwise.
- Sales, Technical Assistance, and Training (STAT): These costs include the training and education of the trade ally community regarding the company's current energy efficiency programs. Examples of trade allies include but are not limited to: equipment vendors, heating contractors, lead vendors, project expeditors, weatherization contractors, and equipment installers. These costs also include the tasks associated with internal and contractual delivery of programs. Tasks associated with this budget category include but are not limited to: lead intake, customer service, rebate application, quality assurance, technical assessments, engineering studies, plan reviews, payroll and expenses.
- Evaluation: These are the costs of evaluation or market research studies to support program direction and post-installation studies to study program effectiveness or verification of savings estimates. These costs also include the payroll and expenses to manage the research.
- Shareholder Incentive: This is the incentive received by the Company for meeting specified savings goals and/or performance targets; because the Company would not

¹⁶ The full cost of the efficiency project is not necessarily the same thing as the full cost of the project being undertaken by the customer. For example, a customer may be renovating an HVAC system including installation of a new chiller and chilled water distribution. While the new distribution system may be part of the construction project, if it does not contribute to energy savings, it will not be included in the efficiency project cost; only the incremental cost of the new efficient chiller will be considered.

implement energy efficiency programs to the extent it does without the incentive, the shareholder incentive is included in the cost of energy efficiency.

13) Customer Costs

The customer's costs include their contribution to the installation cost of the efficient measure. Typically, this is the portion of the equipment and installation cost not covered by the customer incentive. As noted above, it excludes the cost of equipment that might be part of the customer's construction project, but that is not related to the energy efficiency portion of the project.

Benefit/Cost Calculations

The cost effectiveness of a measure, program, or portfolio is simply the ratio of the net present value of the benefits to the net present value of the costs.

For the 2018 Annual Plan, all costs and benefits will be expressed in constant 2018 dollars. Where escalation of avoided costs or costs is needed to produce values in 2018 dollars, appropriate inflation rates are used.

The avoided value component for each benefit (e.g., electric energy, capacity, natural gas, etc.) is the cumulative net present value (in 2018 dollars) of lifetime avoided costs for each year of the planning horizon from the base year up to the measure life of the equipment. Since all of the future year values are in constant 2018 dollars, lifetime benefits thus calculated are discounted back to mid-2018 using a real discount rate equal to $[(1 + \text{Nominal Discount Rate}) / (1 + \text{Inflation})] - 1$.

As prescribed by the Standards, all values in the Plan and the benefit-cost model are stated in present value terms, "using a discount rate that appropriately reflects the risks of the investment of customer funds in energy efficiency; in other words, a low-risk discount rate which would indicate that energy efficiency is a low-risk resource in terms of cost of capital risk, project risk, and portfolio risk". Specifically for the 2018 Annual Plan, the Company used a real discount rate of 0.27% equal to the twelve-month average of the historic yields from a ten-year United States Treasury note, using the 2016 calendar year to determine the twelve-month average.

The total benefits will equal the sum of the NPV of each benefit component:

[Energy Benefits + Generation Capacity Benefits + Avoided T&D Benefits +
Natural Gas Benefits + Fuel Benefits + Water & Sewer Benefits + Non-Resource
Benefits + Price Effects Benefits]

The total costs will equal the sum of the NPV of each cost component:

[Program Planning and Administration + Sales, Training, Technical assistance + Marketing + Rebates and Other Customer Incentives + Evaluation + Shareholder incentive+ Customer Cost]

The RI Test benefit/cost will then equal:

Total NPV Benefits/Total NPV Costs

Per the Standards, on a program level, all benefit categories are included in the benefit/cost calculation. All cost categories, except the shareholder incentive, are included at the program level because they are tracked at that level.¹⁷

On a sector level, the cost of pilots and educational/outreach programs which are not focused on producing savings and the projected shareholder incentive, are included with the other costs in the determination of cost effectiveness. The shareholder incentive is included at this level because it is designed to achieve savings targets by sector. At a portfolio level, the allocations to the Office of Energy Resources and EERMC are also included in the cost effectiveness calculation.

Separate calculations of benefits and cost-effectiveness are provided for the electric energy efficiency programs and natural gas energy efficiency programs. Some electric energy efficiency programs are expected to produce natural gas savings in addition to electricity savings while some natural gas energy efficiency programs are expected to produce electricity savings in addition to natural gas savings. All of the resource benefits produced by a program are shown with that program. For example, an HVAC project that improves air distribution incented through the electric Large C&I Retrofit Program will produce natural gas savings when natural gas is used by the participant for heating.

¹⁷ Commitments, if any, of customer incentives made from one year to the next are excluded from the program costs used in the benefit/cost calculation. The costs are only counted in the year in which the incentive is paid and the savings are counted.

**Table E-1
National Grid
Electric DSM Funding Sources in 2018 by Sector
\$(000)**

	<u>Projections by Sector</u>			<u>Total</u>
	<u>Income Eligible Residential</u>	<u>Non-Income Eligible Residential</u>	<u>Commercial & Industrial</u>	
(1) Projected Budget (from E-2):	\$12,579.42	\$40,183.43	\$52,509.22	\$105,272.06
Sources of Other Funding:				
(2) Projected DSM Commitments at Year-End 2017:	\$0.00	\$0.00	\$0.00	\$0.00
(3) Projected Year-End 2017 Fund Balance and Interest:	\$0.00	(\$2,477.73)	\$11,373.53	\$8,895.80
(4) Projected FCM Payments from ISO-NE:	\$993.00	\$9,595.80	\$15,510.20	\$26,098.95
(5) Total Other Funding:	\$993.00	\$7,118.07	\$26,883.73	\$34,994.74
(6) Customer Funding Required:	\$11,586.42	\$33,065.36	\$25,625.49	\$70,277.32
(7) Payment to State Budget	\$0.0	\$0.0	\$0.0	\$12,500.0
(8) Total Funding Required:	\$11,586.4	\$33,065.4	\$25,625.5	\$82,777.3
(9) Forecasted kWh Sales:	283,762,539	2,742,188,831	4,432,343,228	7,458,294,598
(10) Energy Efficiency Program charge per kWh, excluding uncollectible recovery:				\$0.01109
(11) Proposed System Reliability Factor per kWh, excluding uncollectible recovery:				<u>\$0.00000</u>
(12) Total Proposed Energy Efficiency Charge per kWh, excluding uncollectible recovery:				\$0.01109
(13) Currently Effective Uncollectible Rate				1.25%
(14) Energy Efficiency Program charge per kWh, including uncollectible recovery:				\$0.01123
(15) Currently Effective EE Charge				<u>\$0.01124</u>
(16) Proposed Adjustment to Reflect Fully Reconciling Funding Mechanism				(\$0.00001)

Notes:

- (1) Projected Budget from E-2 includes OER and EERMC costs allocated to each sector based on forecasted sales and RIIB costs allocated to C&I sector.
- (2) DSM Commitments are projects that are under construction with anticipated completion in 2018.
- (3) Fund balance projections include projected revenue and spend through year end with Low Income sector set to \$0 through projected subsidization from other sectors, minus commitments which are illustrated separately on line (2).
- (4) The total projection of FCM revenue is allocated by kWh sales to each sector.
- (5) Line (1) + Line (2) + Line (3)
- (6) Line (1) - Line (5)
- (7) In accordance with Section 17 of 2017-H 5175 Substitute A as Ammended, the 2018 Energy Efficiency and Conservation Procurement Plan includes \$12,500,000 in its Budget Plan that will be transferred to the State Controller by June 30, 2018. Since this payment is not part of the implementation and oversight of energy efficiency programs it is not included in implementation budgets nor is it included in cost-effectiveness screening.
- (8) Line (6) + Line (7)
- (9) Per Company Forecast
- (10) Line (8) ÷ Line (9), truncated to 5 decimal places
- (11) Proposed System Reliability Factor is from the 2018 System Reliability Procurement Plan. Charge reflects projected year-end 2017 positive fund balance.
- (12) Line (10) + Line (11)
- (13) Per Energy Efficiency Program Provision, R.I.P.U.C. No 2172
- (14) Line (12) ÷ (1-Line (13), truncated to 5 decimal places
- (15) Currently Effective EE Charge includes System Reliability Factor and uncollectible recovery.
- (16) Line (14) - Line (15)

**Table E-2
National Grid
2018 Electric Energy Efficiency Program Budget (\$000)**

	Program Planning & Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance & Training	Evaluation & Market Research	Shareholder Incentive	Grand Total
Non-Income Eligible Residential							
Residential New Construction	\$63.5	\$2.5	\$407.0	\$238.0	\$61.8		\$772.7
ENERGY STAR® HVAC	\$68.6	\$108.5	\$1,494.9	\$512.3	\$30.9		\$2,215.2
EnergyWise	\$351.5	\$414.9	\$14,528.4	\$1,548.8	\$375.5		\$17,219.1
EnergyWise Multifamily	\$91.7	\$43.8	\$2,330.0	\$711.0	\$95.6		\$3,272.2
ENERGY STAR® Lighting	\$228.9	\$516.2	\$6,823.0	\$269.6	\$221.0		\$8,058.6
Residential Consumer Products	\$83.7	\$568.7	\$523.4	\$642.0	\$18.6		\$1,836.5
Home Energy Reports	\$82.2	\$10.9	\$2,466.2	\$10.2	\$81.3		\$2,650.8
Energy Efficiency Education Programs	\$0.0	\$40.0	\$0.0	\$0.0	\$0.0		\$40.0
Residential Demonstration and R&D	\$11.3	\$63.5	\$437.8	\$235.0	\$175.0		\$922.6
Community Based Initiatives - Residential	\$0.0	\$80.0	\$76.8	\$0.0	\$0.0		\$156.8
Comprehensive Marketing - Residential	\$5.7	\$550.8	\$0.0	\$0.0	\$0.1		\$556.7
Residential Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1,885.1	\$1,885.1
Subtotal - Non-Income Eligible Residential	\$987.2	\$2,399.9	\$29,087.5	\$4,166.9	\$1,059.8	\$1,885.1	\$39,586.3
Income Eligible Residential							
Single Family - Income Eligible Services	\$265.1	\$129.2	\$7,087.4	\$1,596.8	\$281.5		\$9,360.1
Income Eligible Multifamily	\$83.6	\$9.5	\$1,880.0	\$515.3	\$73.2		\$2,561.5
Income Eligible Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$596.1	\$596.1
Subtotal - Income Eligible Residential	\$348.7	\$138.7	\$8,967.4	\$2,112.1	\$354.7	\$596.1	\$12,517.6
Commercial & Industrial							
Large Commercial New Construction	\$253.4	\$367.7	\$4,438.4	\$1,185.0	\$157.8		\$6,402.3
Large Commercial Retrofit	\$656.6	\$276.2	\$20,687.0	\$3,247.8	\$601.8		\$25,469.4
Small Business Direct Install	\$282.3	\$336.9	\$5,625.4	\$464.2	\$235.4		\$6,944.1
Commercial Demonstration and R&D	\$19.4	\$77.0	\$777.0	\$277.1	\$84.0		\$1,234.5
Community Based Initiatives - C&I	\$0.0	\$20.0	\$19.2	\$0.0	\$0.0		\$39.2
Comprehensive Marketing - C&I	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0		\$0.0
Finance Costs	\$0.0	\$0.0	\$4,000.0	\$0.0	\$0.0		\$4,000.0
RI Infrastructure Bank	\$0.0	\$0.0	\$5,000.0	\$0.0	\$0.0		\$5,000.0
Commercial & Industrial Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$2,454.48	\$2,454.5
Subtotal - Commercial & Industrial	\$1,211.7	\$1,077.8	\$40,547.0	\$5,174.1	\$1,078.9	\$2,454.5	\$51,544.0
Regulatory							
OER	\$812.0	\$0.0	\$0.0	\$0.0	\$0.0		\$812.0
EERMC	\$812.0	\$0.0	\$0.0	\$0.0	\$0.0		\$812.0
Subtotal - Regulatory	\$1,624.1	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$1,624.1
Grand Total	\$4,171.7	\$3,616.4	\$78,601.9	\$11,453.1	\$2,493.4	\$4,935.6	\$105,272.1
Incremental System Reliability							\$352.5

Notes:

- (1) 2017 Commitments are anticipated to be \$0.
- (2) For more information on Finance Costs, please refer to the 2018 C&I Program Description, Attachment 2.
- (3) OER and EERMC total 2.0% of customers' EE Program Charge collected on Table E-1, minus 2%.
- (4) Incremental System Reliability funds are included for illustrative purposes. They are part of the 2018 System Reliability Procurement Report, filed as a separate docket.

Table E-3
National Grid
Derivation of the 2018 Spending and Implementation Budgets (\$000)

	Proposed 2018 Budget From E-2	Regulatory Costs	Shareholder Incentive	Eligible Sector Spending Budget for Shareholder Incentive on E-9	Implementation Expenses for Cost- Effectiveness on E-5
Non-Income Eligible Residential					
Residential New Construction	\$772.7				\$772.7
ENERGY STAR® HVAC	\$2,215.2				\$2,215.2
EnergyWise	\$17,219.1				\$17,219.1
EnergyWise Multifamily	\$3,272.2				\$3,272.2
ENERGY STAR® Lighting	\$8,058.6				\$8,058.6
Residential Consumer Products	\$1,836.5				\$1,836.5
Home Energy Reports	\$2,650.8				\$2,650.8
Energy Efficiency Education Programs	\$40.0				\$40.0
Residential Demonstration and R&D	\$922.6				\$922.6
Community Based Initiatives - Residential	\$156.8				\$156.8
Comprehensive Marketing - Residential	\$556.7				\$556.7
Residential Shareholder Incentive	\$1,885.1		\$1,885.1		\$0.0
Subtotal - Non-Income Eligible Residential	\$39,586.3	\$0.0	\$1,885.1	\$37,701.2	\$37,701.2
Income Eligible Residential					
Single Family - Income Eligible Services	\$9,360.1				\$9,360.1
Income Eligible Multifamily	\$2,561.5				\$2,561.5
Income Eligible Shareholder Incentive	\$596.1		\$596.1		\$0.0
Subtotal - Income Eligible Residential	\$12,517.6	\$0.0	\$596.1	\$11,921.5	\$11,921.5
Commercial & Industrial					
Large Commercial New Construction	\$6,402.3				\$6,402.3
Large Commercial Retrofit	\$25,469.4				\$25,469.4
Small Business Direct Install	\$6,944.1				\$6,944.1
Commercial Demonstration and R&D	\$1,234.5				\$1,234.5
Community Based Initiatives - C&I	\$39.2				\$39.2
Comprehensive Marketing - C&I	\$0.0				\$0.0
Finance Costs	\$4,000.0				\$4,000.0
RI Infrastructure Bank	\$5,000.0				\$5,000.0
Commercial & Industrial Shareholder Incentive	\$2,454.5		\$2,454.5		\$0.0
Subtotal - Commercial & Industrial	\$51,544.0	\$0.0	\$2,454.5	\$49,089.6	\$49,089.6
Regulatory					
OER	\$812.0	\$812.0			\$812.0
EERMC	\$812.0	\$812.0			\$812.0
Subtotal - Regulatory	\$1,624.1	\$1,624.1	\$0.0	\$0.0	\$1,624.1
Grand Total	\$105,272.1	\$1,624.1	\$4,935.6	\$98,712.4	\$100,336.4

Notes:

- (1) Spending budget = Total Budget from E-2 minus Regulatory costs, and shareholder incentive.
- (2) Implementation Expenses = Total Budget from E-2 minus shareholder incentive.

Table E-4
National Grid
Proposed 2018 Budget Compared to Approved 2017 Budget (\$000)

	Proposed Implementation Budget 2018	Approved Implementation Budget 2017	Difference
Non-Income Eligible Residential			
Residential New Construction	\$772.7	\$1,045.3	-\$272.6
ENERGY STAR® HVAC	\$2,215.2	\$1,669.5	\$545.7
EnergyWise	\$17,219.1	\$9,630.0	\$7,589.1
EnergyWise Multifamily	\$3,272.2	\$3,443.5	-\$171.2
ENERGY STAR® Lighting	\$8,058.6	\$9,412.4	-\$1,353.8
Residential Consumer Products	\$1,836.5	\$2,125.0	-\$288.6
Home Energy Reports	\$2,650.8	\$2,447.0	\$203.8
Energy Efficiency Education Programs	\$40.0	\$40.0	\$0.0
Residential Demonstration and R&D	\$922.6	\$1,179.5	-\$256.9
Community Based Initiatives - Residential	\$156.8	\$270.8	-\$114.0
Comprehensive Marketing - Residential	\$556.7	\$535.4	\$21.3
Subtotal - Non-Income Eligible Residential	\$37,701.2	\$31,798.4	\$5,902.8
Income Eligible Residential			
Single Family - Income Eligible Services	\$9,360.1	\$9,268.1	\$92.0
Income Eligible Multifamily	\$2,561.5	\$2,708.4	-\$147.0
Subtotal - Income Eligible Residential	\$11,921.5	\$11,976.5	-\$55.0
Commercial & Industrial			
Large Commercial New Construction	\$6,402.3	\$5,121.4	\$1,281.0
Large Commercial Retrofit	\$25,469.4	\$23,708.4	\$1,761.0
Small Business Direct Install	\$6,944.1	\$8,831.4	-\$1,887.3
Community Based Initiatives - C&I	\$39.2	\$0.0	\$39.2
Commercial Demonstration and R&D	\$1,234.5	\$874.4	\$360.1
Finance Costs	\$4,000.0	\$1,300.0	\$2,700.0
RI Infrastructure Bank	\$5,000.0	\$4,900.0	\$100.0
Subtotal Commercial & Industrial	\$49,089.6	\$44,735.6	\$4,354.0
Regulatory			
EERMC	\$812.0	\$816.3	-\$4.2
OER	\$812.0	\$816.3	-\$4.2
Subtotal Regulatory	\$1,624.1	\$1,632.5	-\$8.4
TOTAL IMPLEMENTATION BUDGET	\$100,336.4	\$90,143.1	\$10,193.4
OTHER EXPENSE ITEMS			
Commitments	\$0.0	\$0.0	\$0.0
Company Incentive	\$4,935.6	\$4,425.5	\$510.1
Subtotal - Other Expense Items	\$4,935.6	\$4,425.5	\$510.1
TOTAL BUDGET	\$105,272.1	\$94,568.6	\$10,703.5

Notes:

- (1) Program Implementation Budget excludes Commitments, Company Incentive; derived on Table E-3
- (2) Total Budget includes Implementation, Commitments; illustrated on Table E-3

Table E-5
National Grid
Calculation of 2018 Program Year Cost-Effectiveness
All Dollar Values in (\$000)

	RI Test Benefit/ Cost¹	Total Benefit	Program Implementation Expenses²	Customer Contribution	Shareholder Incentive	¢/Lifetime kWh
Non-Income Eligible Residential						
Residential New Construction	1.36	\$ 1,815.5	\$ 772.7	\$ 559.0		18.0
ENERGY STAR® HVAC	2.71	\$ 8,437.7	\$ 2,215.2	\$ 895.5		12.0
EnergyWise	2.12	\$ 40,721.4	\$ 17,219.1	\$ 2,007.4		48.6
EnergyWise Multifamily	2.68	\$ 10,113.1	\$ 3,272.2	\$ 495.0		12.2
Home Energy Reports	1.86	\$ 4,931.6	\$ 2,650.8	\$ -		10.6
ENERGY STAR® Lighting	3.14	\$ 27,790.5	\$ 8,058.6	\$ 779.7		4.2
Residential Consumer Products	1.72	\$ 3,906.0	\$ 1,836.5	\$ 429.6		10.3
Energy Efficiency Education Programs			\$ 40.0			
Residential Demonstration and R&D			\$ 922.6			
Community Based Initiatives - Residential			\$ 156.8			
Comprehensive Marketing - Residential			\$ 556.7			
n-Income Eligible Residential SUBTOTAL	2.18	\$ 97,715.8	\$ 37,701.2	\$ 5,166.1	\$ 1,885.1	11.9
Income Eligible Residential						
Single Family - Income Eligible Services	4.82	\$ 45,109.7	\$ 9,360.1	\$ -		26.2
Income Eligible Multifamily	3.24	\$ 8,307.9	\$ 2,561.5	\$ -		10.6
Income Eligible Residential SUBTOTAL	4.27	\$ 53,417.6	\$ 11,921.5	\$ -	\$ 596.1	19.9
Commercial & Industrial						
Large Commercial New Construction	7.25	\$ 49,287.5	\$ 6,402.3	\$ 398.8		3.1
Large Commercial Retrofit	3.90	\$ 164,528.4	\$ 25,469.4	\$ 16,710.1		4.1
Small Business Direct Install	2.41	\$ 22,010.2	\$ 6,944.1	\$ 2,177.8		7.6
Commercial Demonstration and R&D			\$ 1,234.5			
Community Based Initiatives - C&I			\$ 39.2			
Finance Costs			\$ 4,000.0			
RI Infrastructure Bank			\$ 5,000.0			
C&I SUBTOTAL	3.33	\$ 235,826.2	\$ 49,089.6	\$ 19,286.7	\$ 2,454.5	5.0
Regulatory						
OER			\$ 812.0			
EERMC			\$ 812.0			
Regulatory SUBTOTAL			\$ 1,624.1			
TOTAL	2.98	\$ 386,959.5	\$ 100,336.4	\$ 24,452.9	\$ 4,935.6	7.0

Notes:

(1) RI Test B/C Test = (Energy + Capacity + Resource Benefits+Economic Benefits + Carbon Benefits) / (Program Implementation + Customer Contribution + Shareholder Incentive)

Also includes effects of free-ridership and spillover.

(2) For Implementation Expenses derivation, see Table E-3.

(3) System Reliability may leverage some of the energy efficiency savings and benefits. Energy efficiency savings and benefits are attributed to the program in which they occur. The incremental costs and benefits of System Reliability appear below along with the resulting Total in order to illustrate that the existing Energy Efficiency programs are cost effective with the additional expenses. For more information please see the 2018 System Reliability Procurement Report for a full benefit cost analysis.

System Reliability Procurement			\$ 352.5		\$ -	
Total with System Reliability						

Table E-5A
National Grid
Calculation of 2018 Program Year Cost-Effectiveness with TRC Test
All Dollar Values in (\$000)

	TRC Benefit/ Cost ¹	Total Benefit	Program Implementation Expenses ²	Customer Contribution	Shareholder Incentive	¢/Lifetime kWh
Non-Income Eligible Residential						
Residential New Construction	0.76	\$1,009.3	\$ 772.7	\$ 559.0		\$ 18.0
ENERGY STAR® HVAC	1.59	\$4,945.4	\$ 2,215.2	\$ 895.5		\$ 12.0
EnergyWise	1.26	\$24,245.9	\$ 17,219.1	\$ 2,007.4		\$ 48.6
EnergyWise Multifamily	1.76	\$6,619.1	\$ 3,272.2	\$ 495.0		\$ 12.2
Home Energy Reports	0.78	\$2,064.0	\$ 2,650.8	\$ -		\$ 10.6
ENERGY STAR® Lighting	1.65	\$14,629.6	\$ 8,058.6	\$ 779.7		\$ 4.2
Residential Consumer Products	0.94	\$2,132.7	\$ 1,836.5	\$ 429.6		\$ 10.3
Energy Efficiency Education Programs			\$ 40.0			
Residential Demonstration and R&D			\$ 922.6			
Community Based Initiatives - Residential			\$ 156.8			
Comprehensive Marketing - Residential			\$ 556.7			
Non-Income Eligible Residential SUBTOTAL	1.24	\$ 55,645.9	\$ 37,701.2	\$ 5,166.1	\$ 1,885.1	\$ 11.9
Income Eligible Residential						
Single Family - Income Eligible Services	3.87	\$ 36,261.0	\$ 9,360.1	\$ -		\$ 26.2
Income Eligible Multifamily	2.26	\$ 5,798.8	\$ 2,561.5	\$ -		\$ 10.6
Income Eligible Residential SUBTOTAL	3.36	\$ 42,059.8	\$ 11,921.5	\$ -	\$ 596.1	\$ 19.9
Commercial & Industrial						
Large Commercial New Construction	5.36	\$ 36,498.5	\$ 6,402.3	\$ 398.8		\$ 3.1
Large Commercial Retrofit	2.35	\$ 99,054.0	\$ 25,469.4	\$ 16,710.1		\$ 4.1
Small Business Direct Install	1.38	\$ 12,604.6	\$ 6,944.1	\$ 2,177.8		\$ 7.6
Commercial Demonstration and R&D			\$ 1,234.5			
Comprehensive Marketing - C&I			\$ -			
Community Based Initiatives - C&I			\$ 39.2			
Finance Costs			\$ 4,000.0			
RI Infrastructure Bank			\$ 5,000.0			
C&I SUBTOTAL	2.16	\$ 148,157.1	\$ 49,089.6	\$ 19,286.7	\$ 2,454.5	\$ 5.0
Regulatory						
OER			\$ 812.0			
EERMC			\$ 812.0			
Regulatory SUBTOTAL			\$ 1,624.1			
TOTAL	1.93	\$ 245,862.8	\$ 100,336.4	\$ 24,452.9	\$ 4,935.6	\$ 7.0

Notes:

(1) TRC B/C Test = (Energy + Capacity + Resource Benefits) / (Program Implementation + Customer Contribution + Shareholder Incentive)

Also includes effects of free-ridership and spillover.

(2) For Implementation Expenses derivation, see Table E-3.

**Table E-7
National Grid
Comparison of 2018 and 2017 Goals**

	Proposed 2018			Approved 2017		Difference	
	Annual Demand Savings (kW)	Annual Energy Savings (MWh)	Planned Unique Participants	Annual Demand Savings (kW)	Annual Energy Savings (MWh)	Annual Demand Savings (kW)	Annual Energy Savings (MWh)
Non-Income Eligible Residential							
Residential New Construction	49	619	756	54	1,065	-5	-446
ENERGY STAR® HVAC	431	2,064	1,788	330	1,376	100	688
EnergyWise	286	6,174	10,000	376	6,545	-90	-371
EnergyWise Multifamily	329	4,207	6,000	288	3,519	41	689
Home Energy Reports	3,325	25,054	213,750	3,119	26,184	206	-1,130
ENERGY STAR® Lighting	4,413	38,891	231,817	5,466	46,856	-1,053	-7,965
Residential Consumer Products	429	2,849	9,682	705	4,708	-275	-1,860
Non-Income Eligible Residential SUBTOTAL	9,262	79,858	473,793	10,337	90,254	-1,075	-10,395
Income Eligible Residential							
Single Family - Income Eligible Services	696	4,185	2,750	652	4,350	44	-165
Income Eligible Multifamily	170	3,287	4,800	145	2,726	25	560
Income Eligible Residential SUBTOTAL	865	7,472	7,550	797	7,076	69	396
Commercial & Industrial							
Large Commercial New Construction	5,873	14,528	144	1,276	14,270	4,596	258
Large Commercial Retrofit	12,316	78,669	2,213	13,317	77,611	-1,001	1,058
Small Business Direct Install	2,306	9,940	565	2,815	12,136	-509	-2,196
C&I SUBTOTAL	20,495	103,138	2,921	17,409	104,017	3,086	-879
TOTAL	30,622	190,468	484,264	28,543	201,347	2,079	-10,879

Notes:

- (1) Planned 2017 participation takes into account net-to-gross and estimates unique participation by taking into account 2016 unique customer accounts to savings ratios. Therefore the number of planned measures may be more than the estimated participants shown. For measure counts please view the widget tables in Attachments 1 and 2. Table E-7 no longer includes a comparison to the previous year's participation. Due to the way unique participation is calculated it is not possible to compare year-over-year results.
- (2) There are additional Low Income participants in Residential New Construction.
- (3) A customer can participate in more than one program, for example, ENERGY STAR® Lighting and Home Energy Reports, therefore the population reached can be more than 100%.
- (4) Beginning in 2017, Home Energy Reports participation was counted as the number of customers receiving reports (i.e., the "treatment group") adjusted by the "Read Rate" of 75% from the most recent Customer Engagement Tracker Survey.

Table E-8
National Grid
Avoided Costs Used in 2018 Benefit-Cost Model

	Rhode Island					DRIPE for Installations in 2017				
	Winter Peak Energy	Winter Off-Peak Energy	Summer Peak Energy	Summer Off-Peak Energy	Annual Market Capacity Value	Winter Peak Energy	Winter Off-Peak Energy	Summer Peak Energy	Summer Off-Peak Energy	Annual Market Capacity Value
Units:	\$/kWh	\$/kWh	\$/kWh	\$/kWh	\$/kW-yr	\$/kWh	\$/kWh	\$/kWh	\$/kWh	\$/kW-yr
Period:										
2017	0.053	0.046	0.038	0.030	98.04	0.00	0.00	0.01	0.00	
2018	0.053	0.046	0.037	0.030	159.47	0.00	0.00	0.00	0.00	
2019	0.057	0.051	0.043	0.036	108.94					
2020	0.062	0.053	0.052	0.040	79.18					
2021	0.068	0.060	0.056	0.045	119.97					
2022	0.069	0.060	0.058	0.046	113.05					
2023	0.073	0.063	0.062	0.050	106.23					
2024	0.075	0.066	0.064	0.053	110.63					
2025	0.077	0.068	0.068	0.055	121.93					
2026	0.077	0.067	0.070	0.055	133.47					
2027	0.077	0.068	0.070	0.056	144.59					
2028	0.078	0.069	0.074	0.058	155.98					
2029	0.080	0.071	0.077	0.060	168.21					
2030	0.082	0.073	0.079	0.061	184.74					
2031	0.082	0.074	0.085	0.063	192.10					
2032	0.083	0.075	0.088	0.064	192.10					
2033	0.085	0.077	0.092	0.066	192.10					
2034	0.086	0.079	0.096	0.068	192.10					
2035	0.088	0.080	0.100	0.070	192.10					
2036	0.089	0.082	0.104	0.072	192.10					
2037	0.090	0.084	0.108	0.074	192.10					
2038	0.092	0.086	0.113	0.076	192.10					
2039	0.093	0.088	0.118	0.078	192.10					
2040	0.095	0.090	0.123	0.080	192.10					
2041	0.096	0.092	0.128	0.083	192.10					
2042	0.098	0.094	0.134	0.085	192.10					
2043	0.100	0.096	0.140	0.088	192.10					
2044	0.101	0.098	0.146	0.090	192.10					
2045	0.103	0.100	0.152	0.093	192.10					
2046	0.105	0.102	0.159	0.095	192.10					
2047	0.106	0.104	0.165	0.098	192.10					

Source:
AESC 2015 Study Update, Appendix B, in 2017 dollars

**Table E-9
National Grid
2018 Targeted Shareholder Incentive**

Energy Incentive Rate: 3.50%

	(1)	(2)	(3)	(4)	(5)
Sector	Spending Budget \$(000)	Target Incentive \$(000)	Annual kWh Savings Goal	Threshold kWh Savings	Target Incentive Per kWh
Income Eligible Residential	\$11,922	\$417	7,471,934	5,603,951	\$0.056
Non-Income Eligible Residential	\$37,701	\$1,320	79,858,394	59,893,796	\$0.017
Commercial & Industrial	\$49,090	\$1,718	103,137,576	77,353,182	\$0.017
Total	\$98,712	\$3,455	190,467,905	142,850,929	\$0.018

Demand Incentive Rate: 1.50%

	(6)	(7)	(8)	(9)	(10)
Sector	Spending Budget \$(000)	Target Incentive \$(000)	Annual kW Savings Goal	Threshold kW Savings	Target Incentive Per kW
Income Eligible Residential	\$11,922	\$179	865	649	\$206.7
Non-Income Eligible Residential	\$37,701	\$566	9,262	6,947	\$61.1
Commercial & Industrial	\$49,090	\$736	20,495	15,371	\$35.9
Total	\$98,712	\$1,481	30,622	22,967	\$48.4

Notes:

(1) and (6) Eligible Spending Budget excludes Regulatory Costs, and Shareholder Incentive. See Table E-3 for details.

(2) Equal to the incentive rate (3.5%) x Column (1).

(3) and (8) See Table E-7

(4) and (9) 75% of Column (3). No incentive is earned on annual kWh savings in the sector unless the Company achieves at least this threshold level of performance.

(5) Column (2)*1000/Column (3). This illustration is for achieved savings equal to the savings target. The incentive earned per kWh will vary with the percent of the savings target achieved

(7) Equal to the incentive rate (1.5%) x Column (1).

(10) Column (7)*1000/Column (8). This illustration is for achieved savings equal to the savings target. The incentive earned per kW will vary with the percent of the savings target achieved

The shareholder incentive for Energy and Demand incentives will be calculated as follows, where SB is the Spending Budget in the sector:

- From 75% of savings to 100% of savings: Shareholder Incentive = SB x (0.15 x % of savings achieved – 0.10)
- x 0.7 for electric energy savings
- x 0.3 for electric demand savings
- x 1.0 for natural gas savings
- From 100% of savings to 125% of savings: Shareholder Incentive = SB x (0.05 x % of savings achieved)

**Table E-10
National Grid
Revolving Loan Fund Projections**

Large C&I Revolving Loan Fund		Small Business Revolving Loan Fund	
(1) Total Loan Fund Deposits Through 2017	\$ 19,979,678	(1) Total Loan Fund Deposits Through 2017	\$ 4,658,971
(2) Current Loan Fund Balance	\$ 12,978,952	(2) Current Loan Fund Balance	\$ 2,636,314
(3) Projected Loans by Year End 2017	\$ 8,406,905	(3) Projected Loans by Year End 2017	\$ 2,530,367
(4) Projected Repayments by Year End 2017	\$ 1,637,356	(4) Projected Repayments by Year End 2017	\$ 1,103,693
(5) Projected Year End Loan Fund Balance 2017	\$ 6,209,403	(5) Projected Year End Loan Fund Balance 2017	\$ 1,209,640
(6) 2018 Fund Injection	\$ 4,000,000	(6) 2018 Fund Injection	\$ -
(7) Projected Loan Fund Balance, January 2018	\$ 10,209,403	(7) Projected Loan Fund Balance, January 2018	\$ 1,209,640
(8) Projected Repayments throughout 2018	\$ 3,929,654	(8) Projected Repayments throughout 2018	\$ 2,000,000
(9) Estimated Loans in 2018	\$ 11,000,000	(9) Estimated Loans in 2018	\$ 2,800,000
(10) Projected Year End Loan Fund Balance 2018	\$ 3,139,056	(10) Projected Year End Loan Fund Balance 2018	\$ 409,640
 Public Sector Revolving Loan Fund 			
(1) Total Loan Fund Deposits Through 2017	\$ 1,562,529		
(2) Current Loan Fund Balance	\$ 655,384		
(3) Projected Loans by Year End	\$ 18,003		
(4) Projected Repayments by Year End	\$ 100,500		
(5) Projected Year End Loan Fund Balance	\$ 737,882		
(6) 2018 Fund Injection	\$ -		
(7) Projected Loan Fund Balance, January 2018	\$ 737,882		
(8) Projected Repayments throughout 2018	\$ 305,000		
(9) Estimated Loans in 2018	\$ -		
(10) Projected Year End Loan Fund Balance 2018	\$ 1,042,882		

Notes

- 1 Funding injections since loan funds began.
- 2 Current Loan Fund Balance is through August 2017; it includes all loans made and repayments made by August 2017. Public Sector Revolving Loan Fund reduced by transfers to RI PEP Incentives.
- 3 Projected Loans by Year-End 2017 is estimated based on current commitments
- 4 Projected Repayments by Year-End 2017 is estimated based on the monthly average amount of repayments
- 5 Equal to (2) - (3) + (4)
- 6 Proposed 2018 Fund Injection detailed on Table E-2
- 7 Equal to (5) + (6)
- 8 Assumption based on monthly average repayments in 2017 over 12 month period; repayments accumulate over time and may vary widely.
- 9 Amount projected to be lent to customers in 2018
- 10 Equal to (7) + (8) - (9)

**Table G-1
National Grid
Gas DSM Funding Sources in 2018 by Sector
\$(000)**

	<u>Projections by Sector</u>			Total
	Income Eligible Residential	Non-Income Eligible Residential	Commercial & Industrial	
(1) Projected Budget (from G-2):	\$6,716.0	\$13,390.5	\$7,843.6	\$27,950.1
Sources of Other Funding:				
(2) Estimated Year-End 2017 Fund Balance and Interest:	\$1,051.06	(\$2,819.9)	(\$491.3)	(\$2,260.1)
(3) Low Income Weatherization in Base Rates:	<u>\$200.00</u>			<u>\$200.00</u>
(4) Total Other Funding:	\$1,251.1	(\$2,819.9)	(\$491.3)	(\$2,060.1)
(5) Customer Funding Required:	\$5,465.0	\$16,210.4	\$8,334.8	\$30,010.2
(6) Forecasted Firm Dth Sales	1,472,733	17,899,291	19,979,078	39,351,102
(7) Forecasted Non Firm Dth Sales			169,933	169,933
(8) Less: Exempt DG Customers			(1,371,214)	(1,371,214)
(9) Forecasted Dth Sales:	1,472,733	17,899,291	18,777,797	38,149,821
Average Energy Efficiency Program Charge per Dth				
(10) excluding Uncollectible Recovery:				\$0.786
Proposed Energy Efficiency Program Charge per Dth				
(11) excluding Uncollectible Recovery	\$0.870	\$0.870	\$0.699	
(12) Currently Effective Uncollectible Rate	<u>3.18%</u>	<u>3.18%</u>	<u>3.18%</u>	
Proposed Energy Efficiency Program Charge per Dth including Uncollectible Recovery:	\$0.898	\$0.898	\$0.721	
Currently Effective Energy Efficiency Program Charge				
(14) per Dth	\$0.888	\$0.888	\$0.726	
Adjustment to Reflect Fully Reconciling Funding				
(15) Mechanism	\$0.010	\$0.010	(\$0.005)	

Notes

(1) Projected Budget from G-2 includes OER and EERMC costs allocated to each sector based on forecasted sales, and RIIB costs allocated to C&I.

(2) Fund Balance projections include projected revenue and spend through year-end with Residential and C&I sector subsidies applied to Income Eligible as detailed in the 2017 EE Plan Table G-1.

(11) As agreed to by the settling parties, the proposed EE program charges allow for the use of collections from one sector to fund energy efficiency services in other sectors that would otherwise not be supported with the proposed collection rates. The C&I charge includes collection of \$4,807.1 of which \$4,182.65 will be allocated to the low income sector and \$626.5 to the residential sector.

**Table G-2
National Grid
2018 Gas Energy Efficiency Program Budget (\$000)**

	Program Planning and Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance and Training	Evaluation & Market Research	Shareholder Incentive	Grand Total
Non-Income Eligible Residential:							
ENERGY STAR [®] HVAC	\$51.7	\$119.7	\$1,309.3	\$243.7	\$2.5	\$0.0	\$1,727.0
EnergyWise	\$202.3	\$80.7	\$6,726.1	\$1,338.8	\$18.9	\$0.0	\$8,366.8
EnergyWise Multifamily	\$51.8	\$33.6	\$797.5	\$356.0	\$11.7	\$0.0	\$1,250.6
Home Energy Reports	\$18.9	\$1.0	\$397.9	\$5.1	\$4.7	\$0.0	\$427.5
Residential Demonstration and R&D	\$0.1	\$19.5	\$0.0	\$0.0	\$0.0	\$0.0	\$19.6
Residential New Construction	\$18.8	\$3.1	\$368.5	\$181.3	\$14.3	\$0.0	\$585.9
Comprehensive Marketing - Residential	\$0.5	\$73.2	\$0.0	\$0.0	\$0.0	\$0.0	\$73.7
Community Based Initiatives - Residential	\$0.0	\$20.0	\$19.2	\$0.0	\$0.0	\$0.0	\$39.2
Residential Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$624.5	\$624.5
Subtotal - Non-Income Eligible Residential	\$344.1	\$350.7	\$9,618.4	\$2,125.0	\$52.1	\$624.5	\$13,114.7
Income Eligible Residential:							
Single Family - Income Eligible Services	\$116.8	\$14.6	\$3,037.5	\$812.3	\$47.7	\$0.0	\$4,028.8
Income Eligible Multifamily	\$70.1	\$9.9	\$1,885.8	\$348.9	\$31.2	\$0.0	\$2,345.8
Income Eligible Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$318.7	\$318.7
Subtotal - Income Eligible Residential	\$186.8	\$24.4	\$4,923.3	\$1,161.2	\$78.9	\$318.7	\$6,693.3
Commercial & Industrial							
Large Commercial New Construction	\$79.2	\$194.7	\$1,601.4	\$659.4	\$118.0	\$0.0	\$2,652.8
Large Commercial Retrofit	\$140.6	\$291.8	\$1,644.2	\$1,453.4	\$103.2	\$0.0	\$3,633.2
Small Business Direct Install	\$5.1	\$26.9	\$57.0	\$40.0	\$3.4	\$0.0	\$132.3
Commercial & Industrial Multifamily	\$18.0	\$15.6	\$264.5	\$109.8	\$0.9	\$0.0	\$408.8
Commercial Demonstration and R&D	\$0.1	\$9.5	\$241.1	\$89.9	\$17.0	\$0.0	\$357.6
Finance Costs	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
RI Infrastructure Bank	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Community Based Initiatives - C&I	\$0.0	\$5.0	\$4.8	\$0.0	\$0.0	\$0.0	\$9.8
Commercial & Industrial Shareholder Incentive	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$359.7	\$359.7
Subtotal - Commercial & Industrial	\$243.0	\$543.6	\$3,813.0	\$2,352.6	\$242.4	\$359.73	\$7,554.3
Regulatory							
EERMC	\$293.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$293.9
OER	\$293.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$293.9
Subtotal - Regulatory	\$587.7	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$587.7
Grand Total	\$1,361.6	\$918.6	\$18,354.7	\$5,638.8	\$373.4	\$1,303.0	\$27,950.1

Notes:

(1) OER and EERMC is equal to 2% of total collections from customers' Energy Efficiency Program Charge, reduced by 2%.

Table G-3
National Grid
Derivation of the 2018 Spending & Implementation Budgets (\$000)

	Proposed 2018 Budget From G-2 (\$000)	Outside Finance and Stakeholder Oversight Costs (\$000)	Shareholder Incentive (\$000)	Eligible Sector Spending Budget for Shareholder Incentive on G-9 (\$000)¹	Implementation Expenses for Cost-Effectiveness on G-5 (\$000)²
Non-Income Eligible Residential					
ENERGY STAR® HVAC	\$ 1,727.0		\$ -		\$ 1,727.0
EnergyWise	\$ 8,366.8		\$ -		\$ 8,366.8
EnergyWise Multifamily	\$ 1,250.6		\$ -		\$ 1,250.6
Home Energy Reports	\$ 427.5		\$ -		\$ 427.5
Residential Demonstration and R&D	\$ 19.6		\$ -		\$ 19.6
Residential New Construction	\$ 585.9		\$ -		\$ 585.9
Comprehensive Marketing - Residential	\$ 73.7		\$ -		\$ 73.7
Community Based Initiatives - Residential	\$ 39.2		\$ -		\$ 39.2
Residential Shareholder Incentive	\$ 624.5		\$ 624.5		\$ -
Subtotal - Non-Income Eligible Residential	\$ 13,114.7	\$ -	\$ 624.5	\$ 12,490.2	\$ 12,490.2
Income Eligible Residential					
Single Family - Income Eligible Services	\$ 4,028.8		\$ -		\$ 4,028.8
Income Eligible Multifamily	\$ 2,345.8		\$ -		\$ 2,345.8
Income Eligible Shareholder Incentive	\$ 318.7		\$ 318.7		\$ -
Subtotal - Income Eligible Residential	\$ 6,693.3	\$ -	\$ 318.7	\$ 6,374.6	\$ 6,374.6
Commercial & Industrial					
Large Commercial New Construction	\$ 2,652.8		\$ -		\$ 2,652.8
Large Commercial Retrofit	\$ 3,633.2		\$ -		\$ 3,633.2
Small Business Direct Install	\$ 132.3		\$ -		\$ 132.3
Commercial & Industrial Multifamily	\$ 408.8		\$ -		\$ 408.8
Commercial Demonstration and R&D	\$ 357.6		\$ -		\$ 357.6
Finance Costs	\$ -	\$ -	\$ -		\$ -
Community Based Initiatives - C&I	\$ 9.8		\$ -		\$ 9.8
Commercial & Industrial Shareholder Incentive	\$ 359.7		\$ 359.7		\$ -
Subtotal - Commercial & Industrial	\$ 7,554.3	\$ -	\$ 359.7	\$ 7,194.6	\$ 7,194.6
Regulatory					
EERMC	\$ 293.9	\$ 293.9			\$ 293.9
OER	\$ 293.9	\$ 293.9			\$ 293.9
Subtotal - Regulatory	\$ 587.7	\$ 587.7	\$ -		\$ 587.7
Grand Total	\$ 27,950.1	\$ 587.7	\$ 1,303.0	\$ 26,059.4	\$ 26,647.1

Notes:

- (1) Eligible Sector Spending Budget = Budget from G-2 minus Regulatory Costs and Shareholder Incentive
- (2) Implementation Expenses = Budget from G-2 minus Shareholder Incentive

**Table G-4
National Grid
Proposed 2018 Budget Compared to Approved 2016 Budget (\$000)**

	Proposed Budget 2018 from G-2	2017 Approved Gas Budget	Difference
Non-Income Eligible Residential			
ENERGY STAR® HVAC	\$ 1,727.0	\$ 1,803.5	\$ (76.5)
EnergyWise	\$ 8,366.8	\$ 6,917.2	\$ 1,449.6
EnergyWise Multifamily	\$ 1,250.6	\$ 1,823.6	\$ (572.9)
Home Energy Reports	\$ 427.5	\$ 497.0	\$ (69.5)
Residential Demonstration and R&D	\$ 19.6	\$ 264.4	\$ (244.8)
Residential New Construction	\$ 585.9	\$ 840.7	\$ (254.8)
Comprehensive Marketing - Residential	\$ 73.7	\$ 69.8	\$ 3.8
Community Based Initiatives - Residential	\$ 39.2	\$ 79.6	\$ (40.4)
Residential Shareholder Incentive	\$ 624.5	\$ 614.8	\$ 9.7
Subtotal - Non-Income Eligible Residential	\$ 13,114.7	\$ 12,910.5	\$ 204.3
Income Eligible Residential			
Single Family - Income Eligible Services	\$ 4,028.8	\$ 3,640.6	\$ 388.2
Income Eligible Multifamily	\$ 2,345.8	\$ 2,216.6	\$ 129.3
Income Eligible Shareholder Incentive	\$ 318.7	\$ 292.9	\$ 25.9
Subtotal - Income Eligible Residential	\$ 6,693.3	\$ 6,150.0	\$ 543.3
Commercial & Industrial			
Large Commercial New Construction	\$ 2,652.8	\$ 2,086.3	\$ 566.5
Large Commercial Retrofit	\$ 3,633.2	\$ 5,830.5	\$ (2,197.3)
Small Business Direct Install	\$ 132.3	\$ 268.7	\$ (136.3)
Commercial & Industrial Multifamily	\$ 408.8	\$ 738.9	\$ (330.0)
Commercial Demonstration and R&D	\$ 357.6	\$ 73.8	\$ 283.8
Finance Costs	\$ -	\$ 500.0	\$ (500.0)
RI Infrastructure Bank	\$ -	\$ 100.0	\$ (100.0)
Community Based Initiatives - C&I	\$ 9.8	\$ -	\$ 9.8
Commercial & Industrial Shareholder Incentive	\$ 359.7	\$ 479.9	\$ (120.2)
Subtotal Commercial & Industrial	\$ 7,554.3	\$ 10,078.0	\$ (2,523.7)
Regulatory			
EERMC	\$ 293.9	\$ 304.3	\$ (10.4)
OER	\$ 293.9	\$ 304.3	\$ (10.4)
Subtotal Regulatory	\$ 587.7	\$ 608.5	\$ (20.8)
TOTAL BUDGET	\$ 27,950.1	\$ 29,747.1	\$ (1,797.0)

Notes:

(1) RIIB expense moved to electric sector for Program Year 2018.

Table G-5
National Grid
Calculation of 2018 Program Year Cost-Effectiveness
All Dollar Values in (\$000)

	Rhode Island Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive	\$/Lifetime MMBtu
Non-Income Eligible Residential						
Energy Star® HVAC	2.35	\$ 11,069.6	\$ 1,727.0	\$ 2,988.3		\$ 9.89
EnergyWise	1.92	\$ 20,460.7	\$ 8,366.8	\$ 2,301.5		\$ 16.37
EnergyWise MultiFamily	3.42	\$ 4,963.0	\$ 1,250.6	\$ 199.4		\$ 7.31
Home Energy Reports	3.08	\$ 1,318.1	\$ 427.5	\$ -		\$ 5.54
Residential New Construction	1.61	\$ 1,038.2	\$ 585.9	\$ 59.4		\$ 10.30
Comprehensive Marketing - Residential			\$ 73.7			
Community Based Initiatives - Residential			\$ 39.2			
Residential Demonstration and R&D			\$ 19.6			
Non-Income Eligible Residential Subtotal	2.08	\$ 38,849.6	\$ 12,490.2	\$ 5,548.6	\$ 624.5	\$ 12.30
Income Eligible Residential						
Single Family - Income Eligible Services	3.23	\$ 13,030.0	\$ 4,028.8	\$ -		\$ 15.96
Income Eligible Multifamily	3.34	\$ 7,838.1	\$ 2,345.8	\$ -		\$ 8.18
Income Eligible Residential Subtotal	3.27	\$ 20,868.1	\$ 6,374.6	\$ -	\$ 318.7	\$ 11.83
Large Commercial & Industrial						
Large Commercial New Construction	2.67	\$ 12,451.1	\$ 2,652.8	\$ 2,015.1		\$ 5.85
Large Commercial Retrofit	5.43	\$ 25,463.3	\$ 3,633.2	\$ 1,054.6		\$ 2.56
Small Business Direct Install	3.73	\$ 537.7	\$ 132.3	\$ 11.9		\$ 4.85
Commercial & Industrial Multifamily	7.58	\$ 3,321.7	\$ 408.8	\$ 29.4		\$ 4.70
Commercial Demonstration and R&D			\$ 357.6			
Community Based Initiatives - C&I			\$ 9.8			
Finance Costs			\$ -			
Commercial & Industrial Subtotal	3.92	\$ 41,773.8	\$ 7,194.6	\$ 3,111.0	\$ 359.7	\$ 3.75
Regulatory						
EERMC			\$ 293.9			
OER			\$ 293.9			
Regulatory Subtotal			\$ 587.7			
Grand Total	2.77	\$ 101,491.4	\$ 26,647.1	\$ 8,659.6	\$ 1,303.0	\$ 7.42

Table G-5A
National Grid
Calculation of 2018 Program Year Cost-Effectiveness with TRC Test
All Dollar Values in (\$000)

	TRC Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Shareholder Incentive	\$/Lifetime MMBtu
Non-Income Eligible Residential						
Energy Star® HVAC	1.25	\$ 5,899.2	\$ 1,727.0	\$ 2,988.3		\$ 9.89
EnergyWise	1.09	\$ 11,590.0	\$ 8,366.8	\$ 2,301.5		\$ 16.37
EnergyWise MultiFamily	2.36	\$ 3,422.0	\$ 1,250.6	\$ 199.4		\$ 7.31
Home Energy Reports	1.27	\$ 541.1	\$ 427.5	\$ -		\$ 5.54
Residential New Construction	0.97	\$ 624.2	\$ 585.9	\$ 59.4		\$ 10.30
Comprehensive Marketing - Residential			\$ 73.7			
Community Based Initiatives - Residential			\$ 39.2			
Residential Demonstration and R&D			\$ 19.6			
Non-Income Eligible Residential Subtotal	1.18	\$ 22,076.6	\$ 12,490.2	\$ 5,548.6	\$ 624.5	\$ 12.30
Income Eligible Residential						
Single Family - Income Eligible Services	2.40	\$ 9,671.7	\$ 4,028.8	\$ -		\$ 15.96
Income Eligible Multifamily	2.27	\$ 5,322.7	\$ 2,345.8	\$ -		\$ 8.18
Income Eligible Residential Subtotal	2.35	\$ 14,994.4	\$ 6,374.6	\$ -	\$ 318.7	\$ 11.83
Large Commercial & Industrial						
Large Commercial New Construction	1.55	\$ 7,248.2	\$ 2,652.8	\$ 2,015.1		\$ 5.85
Large Commercial Retrofit	3.22	\$ 15,080.9	\$ 3,633.2	\$ 1,054.6		\$ 2.56
Small Business Direct Install	2.55	\$ 368.0	\$ 132.3	\$ 11.9		\$ 4.85
Commercial & Industrial Multifamily	6.27	\$ 2,746.1	\$ 408.8	\$ 29.4		\$ 4.70
Commercial Demonstration and R&D			\$ 357.6			
Community Based Initiatives - C&I			\$ 9.8			
Finance Costs			\$ -			
Commercial & Industrial Subtotal	2.39	\$ 25,443.3	\$ 7,194.6	\$ 3,111.0	\$ 359.7	\$ 3.75
Regulatory						
EERMC			\$ 293.9			
OER			\$ 293.9			
Regulatory Subtotal			\$ 587.7			
Grand Total	1.71	\$ 62,514.3	\$ 26,647.1	\$ 8,659.6	\$ 1,303.0	\$ 7.42

**Table G-6
National Grid
Summary of 2018 Benefits and Savings by Program**

	Benefits (\$000)			MMBTU Gas Saved	
	Total	Natural Gas	Non-Gas Benefit	Annual	Lifetime
Non-Income Eligible Residential					
EnergyWise	\$20,460.7	\$9,052.9	\$11,407.8	26,787	651,844
Energy Star® HVAC	\$11,069.6	\$6,555.2	\$4,514.4	27,513	476,963
EnergyWise Multifamily	\$4,963.0	\$2,847.9	\$2,115.1	12,069	198,403
Home Energy Reports	\$1,318.1	\$966.6	\$351.5	77,220	77,220
Residential New Construction	\$1,038.2	\$866.9	\$171.4	3,117	62,649
Non-Income Eligible Residential SUBTOTAL	\$38,849.6	\$20,289.5	\$18,560.1	146,706	1,467,079
Income Eligible Residential					
Single Family - Income Eligible Services	\$13,030.0	\$3,492.8	\$9,537.2	12,620	252,400
Income Eligible Multifamily	\$7,838.1	\$4,153.9	\$3,684.2	16,222	286,654
Income Eligible Residential SUBTOTAL	\$20,868.1	\$7,646.7	\$13,221.4	28,842	539,054
Commercial & Industrial					
Large Commercial New Construction	\$12,451.1	\$10,464.8	\$1,986.2	42,764	798,090
Large Commercial Retrofit	\$25,463.3	\$23,922.8	\$1,540.4	186,780	1,828,898
Small Business Direct Install	\$537.7	\$508.4	\$29.3	3,059	29,753
Commercial & Industrial Multifamily	\$3,321.7	\$1,278.6	\$2,043.1	6,643	93,179
Commercial & Industrial SUBTOTAL	\$41,773.8	\$36,174.7	\$5,599.0	239,246	2,749,920
TOTAL	\$101,491.4	\$64,110.9	\$37,380.5	414,795	4,756,052

**Table G-7
National Grid
Comparison of 2018 and 2017 Goals**

	Proposed 2018		Approved 2017	Difference
	Annual Energy Savings (MMBTU Natural Gas)	Planned Unique Participants	Annual Energy Savings (MMBTU Natural Gas)	Annual Energy Savings (MMBTU Natural Gas)
Non-Income Eligible Residential				
EnergyWise	26,787	2,275	28,587	-1,800
Energy Star® HVAC	27,513	1,573	27,393	121
EnergyWise Multifamily	12,069	2,500	11,518	550
Home Energy Reports	77,220	104,250	59,164	18,056
Residential New Construction	3,117	510	11,575	-8,458
Non-Income Eligible Residential SUBTOTAL	146,706	111,108	138,237	8,469
Income Eligible Residential				
Single Family - Income Eligible Services	12,620	675	11,032	1,588
Income Eligible Multifamily	16,222	3,500	15,810	412
Income Eligible Residential SUBTOTAL	28,842	4,175	26,842	2,000
Commercial & Industrial				
Large Commercial New Construction	42,764	105	53,516	-10,752
Large Commercial Retrofit	186,780	158	187,938	-1,158
Small Business Direct Install	3,059	30	3,639	-580
Commercial & Industrial Multifamily	6,643	1,698	4,434	2,209
Commercial & Industrial SUBTOTAL	239,246	1,992	249,527	-10,281
TOTAL	414,795	117,275	414,606	189

Notes:

- (1) Participants can participate in more than one program, for example Home Energy Reports and EnergyWise.
- (2) Planned 2018 participation takes into account net-to-gross and estimates unique participation by taking into account 2015 unique customer accounts to savings ratios. Therefore the number of planned measures may be more than the planned participants. For measure counts please view the widgets tables at the end of the Residential and C&I text sections. Table G-7 no longer includes a comparison to the previous year's participation. Due to the way unique participation is calculated it is not possible to compare year-over-year results.
- (3) Beginning in 2017, Home Energy Reports participation will be counted as the number of customers receiving reports (i.e., the "treatment group") adjusted by the "Read Rate" of 75% from the most recent Customer Engagement Tracker Survey.

**Table G-8
National Grid
Avoided Costs Used in 2018 Benefit-Cost Model**

Year	RESIDENTIAL				COMMERCIAL & INDUSTRIAL			ALL RETAIL END USES
	Non Heating	Hot Water	Heating	All	Non Heating	Heating	All	
2018	4.53	5.92	6.38	6.16	4.76	5.70	5.36	5.77
2019	5.21	6.48	6.90	6.72	5.40	6.27	5.96	6.35
2020	5.67	6.92	7.33	7.15	5.85	6.70	6.40	6.78
2021	6.07	7.33	7.75	7.56	6.25	7.11	6.80	7.19
2022	6.00	7.25	7.67	7.50	6.19	7.04	6.73	7.13
2023	6.35	7.61	8.02	7.84	6.54	7.39	7.09	7.47
2024	6.64	7.91	8.33	8.14	6.82	7.68	7.37	7.76
2025	6.76	8.02	8.43	8.25	6.95	7.80	7.50	7.88
2026	6.59	7.85	8.27	8.08	6.77	7.63	7.32	7.71
2027	6.49	7.76	8.18	7.99	6.68	7.54	7.23	7.62
2028	6.55	7.80	8.22	8.04	6.73	7.58	7.28	7.67
2029	6.60	7.85	8.27	8.10	6.78	7.63	7.33	7.73
2030	6.60	7.85	8.27	8.10	6.79	7.64	7.34	7.73
2031	6.55	7.81	8.22	8.05	6.74	7.59	7.29	7.68
2032	6.61	7.86	8.28	8.11	6.80	7.65	7.35	7.74
2033	6.67	7.92	8.34	8.17	6.86	7.71	7.40	7.80
2034	6.73	7.98	8.40	8.23	6.92	7.76	7.46	7.86
2035	6.79	8.04	8.46	8.28	6.98	7.82	7.52	7.92
2036	6.85	8.10	8.52	8.34	7.04	7.88	7.58	7.97
2037	6.91	8.16	8.58	8.40	7.10	7.94	7.64	8.03
2038	6.97	8.22	8.64	8.46	7.16	8.00	7.70	8.10
2039	7.03	8.28	8.70	8.52	7.22	8.06	7.76	8.16
2040	7.10	8.34	8.76	8.59	7.28	8.13	7.83	8.22
2041	7.16	8.40	8.82	8.65	7.34	8.19	7.89	8.28
2042	7.22	8.47	8.88	8.71	7.41	8.25	7.95	8.34
2043	7.29	8.53	8.94	8.77	7.47	8.31	8.01	8.40
2044	7.35	8.59	9.01	8.83	7.54	8.38	8.08	8.47
2045	7.42	8.66	9.07	8.90	7.60	8.44	8.14	8.53
2046	7.48	8.72	9.13	8.96	7.67	8.50	8.21	8.60

From 2015 Avoided Cost Study Update
Appendix C for Southern New England

**Table G-9
National Grid
2018 Targeted Shareholder Incentive**

Incentive Rate: 5.00%

	(1)	(2)	(3)	(4)	(5)
Sector	Eligible Spending Budget \$(000)	Target Incentive \$(000)	Target Savings Goal (MMBTU)	Threshold Savings (MMBTU)	Target Incentive Per Annual MMBTU
Income Eligible Residential	\$6,375	\$318.7	28,842	21,632	\$11.05
Non-Income Eligible Residential	\$12,490	\$624.5	146,706	110,030	\$4.26
Commercial & Industrial	\$7,195	\$359.7	239,246	179,435	\$1.50
Total	\$26,059	\$1,303.0	414,795	311,096	\$3.14

Notes:

- (1) Eligible Spending Budget excludes EERMC, OER, and Shareholder Incentive. See Table G-3 for details.
- (2) Equal to the incentive rate (5.0%) x Column (1).
- (3) See Table G-7
- (4) 75% of Column (3). No incentive is earned on annual MMBTU savings in the sector unless the Company achieves at least this threshold level of performance.
- (5) Column (2)*1000/Column (3). This illustration is for achieved savings equal to the savings target. The incentive earned per MMBtu will vary with the percent of the savings target achieved

The shareholder incentive will be calculated as follow, where SB is the Spending Budget in the sector:

- From 75% of savings to 100% of savings: Shareholder Incentive = SB x (0.15 x % of savings achieved – 0.10)
- From 100% of savings to 125% of savings: Shareholder Incentive = SB x (0.05 x % of savings achieved)

**Table G-10
National Grid
Revolving Loan Fund Projections**

Large C&I Revolving Loan Fund

(1)	Total Loan Fund Deposits Through 2017	\$	1,291,679
(2)	Current Loan Fund Balance	\$	1,967,496
(3)	Projected Loans by Year End 2017	\$	487,871
(4)	Projected Repayments by Year End 2017	\$	200,000
(5)	Projected Year End Loan Fund Balance 2017	\$	1,679,625
(6)	2018 Fund Injection	\$	-
(7)	Projected Loan Fund Balance, January 2018	\$	1,679,625
(8)	Projected Repayments throughout 2018	\$	600,000
(9)	Estimated Loans in 2018	\$	1,000,000
(10)	Projected Year End Loan Fund Balance 2018	\$	1,279,625

Notes

- 2 Current Loan Fund Balance is through July 2017
- 3 Projected Loans by Year End 2017 is estimated based on current commitments
- 4 Projected Repayments by Year End 2017 is estimated based on projected loans by year end and repayment schedules
- 5 Equal to (2) - (3) + (4)
- 6 Fund Injection, as budgeted on E-2
- 7 Equal to (5) + (6)
- 8 Assumption based on average repayments over 12 months; repayments accumulate over time and may vary widely.

SYSTEM RELIABILITY PROCUREMENT
2018 REPORT

Contents

Introduction.....	4
Summary of the Company’s Proposal	5
Consideration of NWAs in System Planning.....	6
Heat Maps	7
Customer Engagement with NWAs.....	7
Customer Engagement Funding Plan.....	8
Tiverton NWA Pilot.....	8
Forecasted Load Growth in the Tiverton Area	8
Implementation	9
2016 Summary	9
2017 Summary to Date	11
Evaluation	14
2018 Pilot Proposal.....	16
Pilot Funding.....	17
Pilot Benefit Cost Analysis.....	18
Coordination with SRP Solar DG Pilot	19
Little Compton Battery Storage Project.....	19
Project Proposal	19
Project Funding Plan.....	20
Evaluation	20
Benefit Cost Analysis	20
SRP Incentive Mechanism Proposal.....	21
Miscellaneous Provisions.....	22
Appendices.....	30

2018 SYSTEM RELIABILITY PROCUREMENT REPORT

Introduction

The Narragansett Electric Company's d/b/a National Grid (National Grid or Company) is pleased to submit this annual System Reliability Procurement Report (SRP Report) for 2018 to the Rhode Island Public Utilities Commission (PUC). The SRP Report has been developed by National Grid in collaboration with the Energy Efficiency Collaborative (the Collaborative).¹

This SRP Report is submitted in accordance with the Least Cost Procurement law, R.I. Gen. Laws § 39-1-27.7, the basis for which is the Comprehensive Energy Conservation, Efficiency, and Affordability Act of 2006 (as amended in May 2010),² and the PUC's revised "System Reliability Procurement Standards," approved by the PUC in Docket No. 4443 (SRP Standards).³ This Plan is being jointly submitted as a Stipulation and Settlement (Settlement) between the Rhode Island Division of Public Utilities and Carriers (Division), the Energy Efficiency and Resource Management Council (EERMC), Acadia Center, People's Power & Light, the Rhode Island Office of Energy Resources (OER), TEC-RI, and National Grid (together, the Parties), and addresses all issues raised by members of the Collaborative concerning the Company's SRP Report for calendar year 2018.

Section 2.1(D) of the SRP Standards requires that the Company identify transmission or distribution (T&D) projects that meet certain screening criteria for potential non-wires

¹ Members of the Collaborative presently include the Company, the Division, TEC-RI, People's Power & Light, and Acadia Center, along with participation from the OER Office, several EERMC members, and representatives from the EERMC's Consulting Team.

² The Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006 (the 2006 Act) provides the statutory framework for least cost procurement, including system reliability in the State of Rhode Island. The 2006 Act provided a unique opportunity for Rhode Island to identify and procure cost-effective customer-side and distributed resources with a focus on alternative solutions to the traditional supply and infrastructure options. Overtime, these alternative solutions may deliver savings to customers by deferring or avoiding distribution system investment, and improving overall system reliability.

³ The Least Cost Procurement law, R.I. Gen. Laws § 39-1-27.7, requires standards and guidelines for "system reliability" that include the "procurement of energy supply from diverse sources," including, but not limited to, renewable energy resources, distributed generation, including but not limited to, renewable resources and cost-effective combined heat and power systems, and demand response designed to, among other things, provide local system reliability benefits through load control or using on-site generating capability. On June 10, 2014, in Docket 4443, the PUC unanimously approved revised standards for system reliability, finding that the standards were consistent with the policies and provisions of R.I. Gen. Laws 39-1-27.7.1(e)(4),(f) and R.I. Gen. Laws § 39-1-27.7.3.

alternative (NWA) solutions that reduce, avoid, or defer traditional T&D wires solutions. NWAs are targeted actions by customers or the utility that promote the deferral of a specific Company investment in transmission or distribution infrastructure. Section 2.1 (I) of the SRP Standards further require the Company to submit, by November 1 of each year, an SRP Report that includes, among other information, a summary of where NWAs were considered, identification of projects where NWAs were selected as a preferred solution, an implementation and funding plan for selected NWA projects, recommendations for demonstrating distribution or transmission projects for which the Company will use selected NWA reliability and capacity strategies, and the status of any previously approved NWA projects.

National Grid seeks approval of this 2018 SRP Report in accordance with the guidelines set forth in Section 2.1 of the SRP Standards.

Summary of the Company's Proposal

The 2018 SRP Report is comprised of a review of the infrastructure projects studied for NWA potential, a discussion of the work the Company is doing on providing heat maps (maps showing areas with above-average loading on components of the electric distribution system) in the future, updates on the load curtailment pilot (Pilot) in Tiverton and Little Compton, as well as any other project proposals and their associated funding requests, evaluations and benefit cost analyses, and an incentive proposal.

As part of this 2018 SRP Report, the Company is proposing to discontinue the Pilot, which the company proposed in the 2012 System Reliability Procurement Report – Supplement (2012 SRP Report) and which was approved by the PUC in Docket 4296.

The Company is proposing a new NWA project called the Little Compton Battery Storage Project (Project), which consists of a battery storage system to be installed in Little Compton, RI that is capable of providing 1 MWh of energy storage at a level of 250 kW of continuous peak load relief in the areas of Tiverton and Little Compton between the hours of 3:30pm and 7:30pm during the months of June through September. While the Project is located in the same footprint as the Pilot and is intended to further defer the \$2.9 Million substation upgrade detailed in the Pilot proposal in docket 4296, it is proposed as a separate effort from the Pilot. More information about this nuance is described in later in this Report.

As part of the effort of developing heat map resources, the Company is also proposing a parallel customer engagement effort to promote the existence of the heat maps available to potential distributed energy resource (DER) solution providers. This effort would aim to increase industry knowledge of the heat maps as well as incentives available through

existing Company and state programs for conservation, peak load relief and renewable energy projects in highly-utilized areas.

The Company estimates that approximately \$352,500 in incremental costs will be required in 2018 to implement the projects and initiatives detailed in this Report. The Company is requesting recovery for these funds as well as a two-year commitment to the Project funding, subject to an additional budget funding request to be made in the 2019 SRP Report.

Consideration of NWAs in System Planning

All transmission and distribution needs continue to be screened for NWA feasibility when the projects are initiated. A project is initiated when a future need is identified. The timing of that future need can vary greatly from just a few years to upwards of twenty years. After a future need is identified, it is analyzed in detail so that potential solutions (both wires and non-wires) can be conceptualized and compared. If an NWA solution is determined to be feasible, it is fully developed and then proposed through the next SRP Report. If a wires solution is the best option, that project is then fully developed and incorporated into the Company's Electric Infrastructure, Safety and Reliability Plan (ISR Plan)⁴.

To determine whether an NWA is feasible, the Company first screens transmission and distribution projects against the criteria listed in Section 2.1(D) of the SRP Standards, which are aligned with the Company's internal planning document. There were 35 distribution projects initiated between April 1, 2016 and March 31, 2017 and all were determined to be ineligible for NWA consideration. A table detailing the projects reviewed and the reasons for their NWA ineligibility is provided in Appendix 4.

The Company has included volt-VAR optimization and conservation voltage reduction (VVO/CVR) projects in the upcoming Infrastructure Safety and Reliability (ISR) Plan. While the main component of the VVO/CVR projects are capacitors, they are controlled in a non-traditional way that emulates an NWA effort. These projects deliver energy at a

⁴ Notably, newly initiated projects comprise only part of the budgets and assets that are included in the Company's Electric ISRPlan, which includes all projects that will be part of the Company's capital investment portfolio in a given year, which typically includes multi-year projects that may already be in progress. Also, projects that ultimately do not pass NWA screening in a given year may not always be included in the ISR budget for that year due to a variety of constraints. Instead, these projects will be proposed as the ISR budgets allow in future years. Therefore, it is possible that there may be projects and budgets related to load growth in the ISR that are not included in the screening conducted for this Report. Once a solution is chosen for either a transmission or distribution project, it is not screened for NWA feasibility again.

voltage level which results in peak efficiency for the customers, saving them an estimated 3% on their energy charges. This technology also manages reactive power flows which reduce system loss inefficiencies and in turn, peak power flows. Finally, this technology provides the Company with more granular information on distribution asset performance and operations that may improve future system efficiency without the need for a specific NWA project.

The Company is also continuing to progress its NWA consideration in its distribution area studies, including the the Central Rhode Island East (CRIE) Area Study, in February 2017 and the Providence Area Study - Implementation Plan, in May 2017. No NWA opportunities were identified in the CRIE study. The Providence study found contingency issues that will undergo further NWA review at a future date. Due to the sequencing of the Providence study’s recommendations, it is reasonable for the Company to defer the contingency infrastructure projects until technologies such as energy storage mature or perhaps decrease in unit pricing. At that time, another NWA review can be performed to defer or potentially eliminate the traditional wires projects.

Table ??: Providence Study – Preliminary Energy Storage Analysis

Station/ Circuit	Contingency Load Relief	Contingency Duration	Traditional Wires Option	Traditional Wires Option	Energy Storage	Energy Storage Cost
Clarkson Street 13F5	3.9 MVA	12 Hours	Geneva New Feeder	\$2.0M	6MW/36MWh	\$16.2M
Clarkson Street 13F4	2.3 MVA	12 Hours	See above	See above	3MW/15MWh	\$9.0M
Total				\$2.0M		\$25.2M

The Company plans to continue analyzing its current NWA screening and development processes to determine how NWAs might be best considered as complete and partial solutions.

Heat Map Resources

[The Company intends to propose work and funding for a portion of the heat map resources through SRP in this section. This work will be discussed with the Collaborative and included in the 2nd draft of the SRP Report.]

Market Engagement with NWAs

The Parties agree that there may be additional opportunities for installations of technologies that reduce peak load outside of the Company’s consideration and proposal of cost-effective NWA projects. To nurture these inherent opportunities with the work the

Company is doing on heat maps, and to encourage strategic deployment of these solutions to benefit constrained areas, the Company proposes to develop a marketing and engagement plan in 2018 to socialize both the heat map resources as they become available and incentives already available through existing Company and state programs (e.g. net metering, Re-growth, and the ConnectedSolutions DR program).

This marketing and engagement plan would be developed in the first quarter of 2018 with the intention of going live with available programs by May. New promotions would be added to the campaign as the heat map resources are developed and as new incentives become available. The Company would work with the Parties to develop tracking mechanisms for participants in the Company and state programs promoted through this effort in order to understand who participated in response to this marketing campaign and what types of DER was installed along with how the corresponding peak load relief was installed.

Customer Engagement Funding Plan

The Company proposes a budget of \$175,000 to develop and implement this initiative in 2018. \$100,000 would be to support creation and dissemination of actual marketing materials and tracking mechanisms. This amount is based on the observed annual costs of marketing the Pilot between 2012 and 2017. \$75,000 would be administrative costs associated with managing the development of the materials within the Company and with vendors, as well as developing tracking and evaluation processes to determine the initiative's effectiveness.

Tiverton NWA Pilot

As noted in the Summary of the Company's Proposal section of this Report, the Company is proposing to discontinue the Pilot at the end of 2017. The following sections include the most updated information about the Pilot since the 2017 SRP Report was filed in docket 4655. This information is included here both in keeping with the reporting seen in past SRP Reports and to help clarify the reasons the Company is not proposing to extend the Pilot beyond 2017.

Forecasted Load Growth in the Tiverton Area

The Company's distribution system serves close to 500,000 electric customers in 38 cities and towns in Rhode Island. The residential class accounts for approximately 41% of the Company's total Rhode Island load, the commercial class accounts for approximately 49%, and the industrial class accounts for approximately 10%. The Tiverton and Little Compton annual weather-adjusted summer peaks are expected to increase at average annual growth rates of 0.5% and 0.6% respectively for the next 10 years, which are both greater rates than the statewide average annual growth of 0.3%. The forecasted load growth rates for cities and towns in Rhode Island are shown in Appendix 1.

The data captured for 2016 shows a 33F4 circuit peak of 102% of the normal rating of the equipment. The extreme summer forecast for this circuit in 2016 was 97%. While the summer of 2016 is not considered extreme from a state perspective, it appears that the Tiverton area did experience extreme summer weather. This data indicates that weather variability will be a complex factor in future non-wires alternative analysis. In this particular case, the cool 2014 and 2015 summers may have masked underlying load growth.

The distributed energy resources and the cool summers successfully deferred the wires alternative for a number of years. Now a new effort is required for more load reduction. The Little Compton Battery Storage Project, described in greater detail below, will be installed to provide an estimated two years of deferment for the wires project. National grid intends to start engineering and design on the wires solution in calendar year 2019 (ISR Plan fiscal year 2020) with construction in calendar year 2020 (ISR Plan fiscal year 2021).

Implementation

The following sections provide details on the implementation of the Pilot's most recently completed year of activities and a progress report on the current year's activities to date. For more information regarding the implementation activities in previous years, please review past SRP Reports.

2016 Summary

The Pilot's focus in 2016 was on varying the marketing tactics from those used in the past in order to refresh the message and engage new participants. The principle change in the plan from prior years was the deployment of additional outreach in both Pilot communities as part of the Rhode Island Energy Challenge campaign, which was added to the comprehensive campaign conducted for the Pilot. With the discontinuation of plug device incentives, the Company also allocated additional funds to the marketing campaign in order to extend it and increase participation toward the end of 2016.

In 2016, the Company launched a marketing campaign that ran from mid-March through December. The campaign continued with its aggressive nature and messaging of previous years, while also introducing the company's new "Life On The Grid" branding theme. The 2016 campaign included a series of direct mail and email newsletters that contained information designed to educate customers about the reasons for the Pilot, attempts to reduce electricity consumption, and the benefits of the Pilot to the entire community. The newsletters were created to deliver different messages to both Pilot Participants (those previously engaged in any level of Pilot energy-saving activity) and Non-Participants. The separation of customer types was also carried out in the direct mail communications. The direct mail newsletter, post cards, and emails included articles that highlighted the numbers of neighbors who had implemented one or more Pilot efficiency

actions, as well as the economic savings enjoyed by Rhode Island customers from energy efficiency.

Once again, the Company hired RAM Marketing to complete outbound telemarketing calls to Non-Participant customers using a Company-created script of DemandLink Pilot information. The outbound calling included two separate attempts to contact each working phone number of Non-Participants. This effort was designed to give customers the opportunity to ask questions in real-time of a representative who was knowledgeable about the Pilot. RAM representatives were also informed of the new offers within the pilot, including the enhanced rebates for Heat Pump Water Heaters and frequently asked questions were also added to the script.

Rhode Island Energy Challenge was also leveraged again to establish a personalized community focus. They focused primarily on promoting free home energy audits along with the additional program benefits (i.e. Wi-Fi thermostats and Smart Plugs, Window AC Rebates).

As was the case in previous years, all marketing components in 2016 have directed customers to make contact via the online email form, centralized toll-free phone number or email to learn more about the program and sign up. RAM Marketing received these calls and emails, and then pre-qualified interested customers and sent the resulting leads to RISE Engineering for scheduling. Pre-qualification consists of verifying the customer's address and account on the Pilot area list, ascertaining the existence of broadband internet/Wi-Fi and either central or window AC units, and determining customer interest in each rebate.

PENETRATION OF INTERESTED PILOT LEADS		
Pilot Year (through month)	Leads Generated	Customer Penetration*
2012 (December)	209	4.2%
2013 (December)	1061	21.3%
2014 (December)	655	13.2%
2015 (December)	730	14.7%
2016 (December)	428	8.6%
Total through August 12, 2015	3,083	62.0%

* Based on total of 4970 available Pilot customer phone numbers

In 2016, nearly 40% fewer customers accepted Pilot program offerings. As previously noted, the campaign's preliminary results reflect that a comparable number of leads were generated by August 2016, which is similar to the number of leads in August of 2015. Therefore, the Company's efforts to reach customers in the Pilot area continue to be effective. However, the number of qualified leads for measures other than the EnergyWise home energy assessments was much lower than in 2015 during the same

time period. The Company believes that this is due in part to the fact that the Pilot reaches a saturation point with customers who respond to telemarketing.

The Company triggered eighteen demand response (DR) events between July and early-September. The 2016 Annual Evaluation Report delivered by Opinion Dynamics Corporation (ODC) provided an analysis of the DR impacts of the 2016 events. A summary of this analysis is included in the Evaluation section of this Report⁵.

The Company estimates that by the end of 2016, it achieved approximately 87kW of incremental load relief toward the 1MW goal. This represents 51% of the 2016 summer demand savings target of 170kW set in the 2016 SRP Report and reflects all savings impact updates made in this SRP Report. The Company also estimates that through 2016 the Pilot cumulatively achieved 77% of the 1MW target. Please see Table S-7, Appendix 3 for more information regarding the Pilot's progress toward its kW targets for each year.

Although this information is used to gauge the progress of the Pilot and to plan future activities, these numbers represent estimates only. The success of the Pilot in recruiting enough sustained load relief to defer the wires project will be determined through the final evaluation report from Opinion Dynamics Corporation in 2018.

2017 Summary to Date

In 2017, the Company proposed a plan to create the remaining peak savings in order to achieve its 1MW goal. The plan entailed decreasing the focus on the targeted EE and DR efforts and increasing focus on a market-based solution procured through an RFP process. However, the incentives offered in 2016 continued to be marketed and made available for customers.

The 2017 campaign included a kickoff newsletter and series of direct mail that contained information designed to increase customer understanding of how demand response events work and fully comprehending the benefits of the Pilot's EE and DR measures to the entire community. As in previous years, the communications were crafted to deliver different messages to both Pilot Participants (those previously engaged in any level of Pilot energy-saving activity) and Non-Participants.

Once again, the Company hired RAM Marketing to complete outbound telemarketing calls to Non-Participant customers using a Company-created script of DemandLink Pilot information. The outbound calling will include two separate attempts to contact each working phone number of Non-Participants. This effort was designed to give customers

⁵ The 2016 Annual Evaluation Report is included in this Report as Appendix 4.

the opportunity to ask questions in real-time of a representative who was knowledgeable about the Pilot.

Additionally, in August 2017, the Company explored native ads on Facebook that targeted customers in Little Compton and Tiverton directly. These ads featured the DemandLink messaging and were designed to create more awareness to support direct mail outreach.

As was the case in previous years, all marketing components in 2017 have directed customers to make contact via the online email form, centralized toll-free phone number or email to learn more about the program and sign up. RAM Marketing received these calls and emails, and then pre-qualified interested customers and sent the resulting leads to RISE Engineering for scheduling. Pre-qualification consists of verifying the customer's address and account on the Pilot area list, ascertaining the existence of broadband internet/Wi-Fi and either central or window AC units, and determining customer interest in each rebate.

To date, outreach to Pilot customers in 2017 has produced 179 pre-qualified leads for the enhanced DemandLink incentives compared with 215 leads for the same period in 2016, and 435 leads in 2015.

PENETRATION OF INTERESTED PILOT LEADS		
Pilot Year (through month)	Leads Generated	Customer Penetration*
2012 (December)	209	4.2%
2013 (December)	1061	21.3%
2014 (December)	655	13.2%
2015 (December)	730	14.7%
2016 (December)	428	8.6%
2017 (August)	179	3.6%
Total through August 17, 2017	3257	65.6%

* Based on total of 4970 available Pilot customer phone numbers

The Company expects the trend to continue of most leads being generated by August 2017, based on the number of leads in August of 2016 and 2015. The number of qualified leads for measures other than the EnergyWise home energy assessments was much lower than in previous years during the same time period. The Company believes that this is due in part to the fact that the Pilot reaches a saturation point with customers who respond to telemarketing.

To close out the remainder of this year, the company will make another aggressive push to create as much participation as possible. This push will include a second telemarketing pass, direct mail, social media, and email marketing.

Nineteen DR events were initiated from July through September 2017⁶. Approximately half of these events were triggered by a forecasted need on the feeder, while the rest were triggered based on weather conditions. Preliminary event data from the Pilot’s demand response management system (DRMS) provider, Whisker Labs, indicates that approximately 60-65% of thermostats are fully participating in the event. Six to eight percent (8-10%) of thermostats opt out while the event is in progress, and approximately 27% are opting out either prior to the event set points going live or were not in cooling mode when the event was triggered.

In late 2016, the Company began a solicitation process to procure a peak-shaving solution from the market. The Request for Proposals (RFP) was released in November and the process concluded in January with a successful bid for a battery storage project. The Company worked diligently with the chosen vendor throughout 2016 to position the battery for service by the end of the year. However, due to some delays in equipment and the interconnection process, the project’s timeline has been pushed out into 2018. In recognition of the timeline associated with the Pilot, as well as the value of implementing this energy storage project, the Company is proposing to split this effort out of the Pilot as its own NWA project proposal. Details of this new proposal are given in later sections of this Report.

Based on year-to-date participation and the changes to the market-procured solution noted above, the Company projects that by the end of 2017, it will have achieved approximately 21% of its planned incremental summer kW target of 330kW including all updates to savings impacts and program changes. 250kW of that 330kW is associated with the market-based solution. The Company projects to achieve approximately 86% of its non-market-based solution planning target. The chart below, which is broken down by source, illustrates the Company’s projections for 2017 kW savings⁷.

	2017 Planning Assumption	Current 2017 Projection	% of Planning Assumption
DR Potential kW	9	1	11%
EE Installed kW	83	68	82%
Market Solution kW	250	0	0%
Total	170	96	56%

⁶ There were no events triggered in June 2017 due to mild weather conditions.

⁷ It should be noted that the savings projected for 2016 include adjustments to the demand response and smart plug energy efficiency to reflect evaluation results of smart plug usage as well as reduced demand response impacts of the Wi-Fi thermostats, further reducing the projected savings down from what was planned. Without these adjustments, DR projections would be at 31%, EE at 71% and total Pilot at 62%.

Evaluation

The Company continues to work with Opinion Dynamics Corporation (ODC) on the evaluation of the Pilot. The major evaluation objectives for 2017 were (1) a participation analysis, (2) an EnergyWise impact analysis to assess the incremental energy efficiency impact of 2012-2016, (2) an impact analysis of demand response events during the summer of 2016, (3) a demand response event follow-up survey, (4) a marketing effectiveness survey, and (5) developing an evaluation plan for 2018.

The participation analysis found that 155 customers in the pilot area completed home energy assessments through EnergyWise in 2016. While this represents a 42% decrease from 2015, it is still higher than pre-pilot participation levels. The main barrier to participation in this program continues to be finding the time to be home for the audit. Participation was also lower for the DemandLink Thermostat Program offering. In 2016, 12 new participants enrolled, bringing the total for the pilot-to-date to 269 participants. The analysis found that the most common barriers to participation in the DemandLink program were the perception by customers that they do not use air conditioning enough to benefit from the program and being uncomfortable with someone else controlling their thermostat. Participation in the Window AC Rebate and Recycling Program and the Heat Pump Water Heater (HPWH) Program increased over previous years, with customers receiving 27 window AC rebates, recycling 37 units, and receiving 17 HPWH rebates.

The EnergyWise impact analysis estimated the extent to which the Pilot created incremental energy efficiency savings in the pilot area that would not have otherwise been achieved. The results used the existing “take rate⁸” from 2012-2015 and applied it to gross load impacts from the installation of EnergyWise Program measures. The results show that to date, the Pilot has achieved incremental summer peak load savings totaling 128.5 kW, in a range of 118.7 to 138.2 kW, from EnergyWise energy efficiency measures.

The demand response impact analysis calculated the peak demand savings resulting from the 18 demand response events called between July 6 and September 9, 2016. The results, which are detailed in the chart below, were derived from a mixture of day matching, modeling, thermostat logs and weather data.

	Thermostat Impact		Program Impact	
	Runtime Reduction	kW	# of Participating Thermostats	kW

⁸ For definition and details, please see Appendix 3.

Central AC	10.9%	0.40	115	46
Window AC	N/A	0.045	.04	0.018

There were fewer central AC thermostats included in the 2016 analysis than 2015 due to the fact that log files were unavailable for 31% of thermostats during July and for 17% of thermostats during August and September. The analysis found that on average, 13 log files per event showed only zero values, meaning the AC was not running and there was no load to drop. In addition, 11 thermostats per event on average experienced event failure, meaning they did not receive a signal, and an average of 15 thermostats opted out per event.

Similar to prior years, the program also experienced difficulty with the functionality and connectivity of window AC thermostats and plug devices. This was exacerbated by the fact that none of the 78 log files received for the July events (events 1 through 9) contained any data and the demand response savings were therefore assumed to be zero. For all August and September events, 68% of all window AC thermostats contained no data. In total, only one of the 158 window AC thermostats (0.6%) showed plug usage data for all events, yet opted out of each one. Therefore the number of participating thermostats is less than one. The Company ceased enrollment of participants with window AC in the DemandLink program during 2016 due to continued connectivity issues.

The demand response event follow-up analysis provided helpful insight into customer awareness with the DemandLink Program. ODC conducted an event follow-up survey between August 30th and September 1st, following the SRP demand response event called on August 29th. The analysis found that participants with central AC are highly aware of the various elements of the DemandLink Program while awareness of window AC participants is much lower. Window AC participants that were aware of events were more likely to use at least one plug device with their window AC unit. The analysis also found that 65% of participants recalled the Company calling at least one event over the summer and only 8% of participants thought that National Grid had called too many events. Almost all participants (95%) plan to participate in future events.

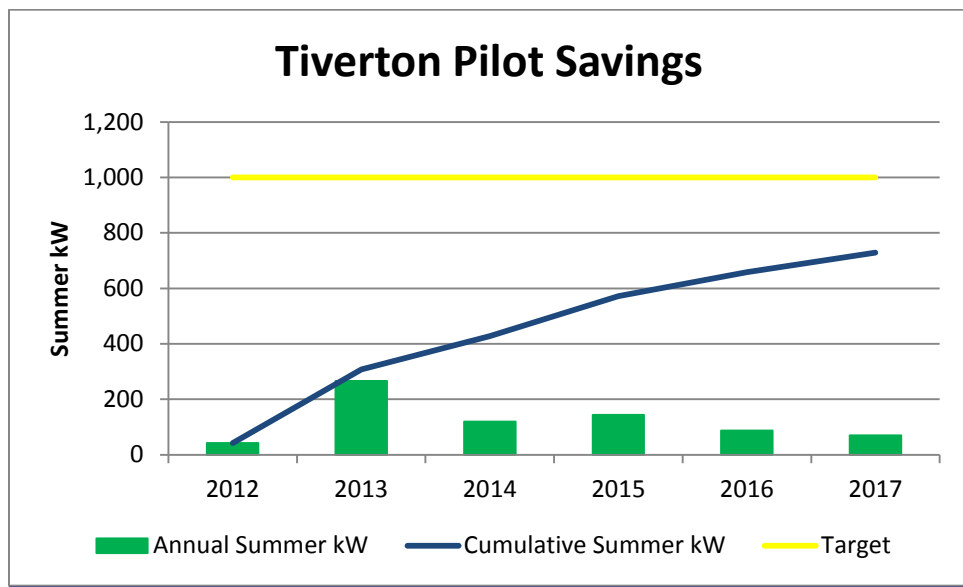
The marketing effectiveness survey found that 88% of EnergyWise participants and 93% of DemandLink participants remembered receiving program information in 2016. For non-participants, 53% remembered receiving information about it 2016. For both participants and non-participants, marketing materials received by mail had the most impact.

An evaluation plan and associated budget estimate for 2018 was created in September of 2017. The main evaluation task for 2018 is to determine the overall impact and

effectiveness of the pilot from 2012-2017 in meeting the 1 MW reduction goal. The final evaluation report is anticipated by June 2018.

2018 Pilot Proposal

The Company proposes to discontinue the pilot at the end of 2017. A number of factors contribute to this recommendation. First, while the Pilot has been successful in creating peak load relief each year, the amount of peak load relief achieved has consistently decreased. This is illustrated in the Figure below.



While EE and DR are believed to be some of the least expensive methods for creating load relief, encouraging such deep customer participation in the same area year after year has yielded fewer incremental participants in each year. This means that the amount of savings achieved for each marketing dollar spent decreases as traditional methods are exhausted and more invasive and expensive methods are needed. The Company has employed a number of efforts to encourage customers in the Pilot area to participate in its EE and DR offerings over the last five years as illustrated in the table below.

Year	Marketing Tactics Employed
2012	<ul style="list-style-type: none"> • Emails and mail to targeted lists of high-energy-users • “Save Money Save Energy” theme
2013	<ul style="list-style-type: none"> • Emails, mail, newsletters to all pilot customers • Outbound calling to all pilot customers • Social media ads • “Save Money Save Energy” theme
2014	<ul style="list-style-type: none"> • Emails, mail, newsletters to all pilot customers

	<ul style="list-style-type: none"> • Outbound calling to all pilot customers • Social media ads • “Save Money Save Energy” and “Help the Community” Themes • Different messaging to prior participants vs non-participants • Door-to-door outreach for small business customers
2015	<ul style="list-style-type: none"> • Emails, mail, newsletters to all pilot customers • Outbound calling to all pilot customers • Social media ads • “Save Money Save Energy” and “Help the Community” Themes • Different messaging to prior participants vs non-participants • Co-marketing with the SRP Solar DG Pilot (OER)
2016	<ul style="list-style-type: none"> • Emails, mail, newsletters to all pilot customers • Outbound calling to all pilot customers • Social media ads • “Save Money Save Energy” and “Help the Community” Themes • Different messaging to prior participants vs non-participants • Coordination with RI Energy Challenge outreach • Home Energy Report Ads
2017	<ul style="list-style-type: none"> • Emails, mail, newsletters to all pilot customers • Outbound calling to all pilot customers • Social media ads • “Save Money Save Energy” and “Help the Community” Themes • Different messaging to prior participants vs non-participants

The Company has also made an effort to incorporate cost effective technologies beyond EE and DR through its market solicitation approved in the 2017 SRP Report. While the Company still proposes to include this technology in the pilot footprint, one of the lessons learned through this effort is that more time needs to be built into such installations. This was also demonstrated by the OER’s SRP Solar DG Pilot which took more than one summer to fully implement. Since the original intent of the Pilot was to test EE and DR, the Company believes the best course of action is to discontinue the Pilot as planned, and test new opportunities as new projects, whether they will be in the Pilot area or in other NWA areas.

Pilot Funding

For 2018, the Company is proposing only to fund the final evaluation activities associated with the 2017 implementation period, estimated to be \$90,000. This includes the analysis of EE and DR impacts for the 2017 year, as well as costs associated with the final evaluation report.

Pilot Benefit Cost Analysis

The benefit cost calculations for this pilot have been completed using the Total Resource Cost test.⁹ Figures for pilot years 2012 through 2017 have been updated to reflect actual results, year-end projections and data from the EE impact evaluation, where applicable.

	2012	2013	2014	2015	2016	2017	Overall
Benefits	\$358.0	\$1,325.4	\$1,033.3	\$1,281.1	\$687.7	\$696.5	\$5,382.0
Focused Energy Efficiency Benefits ¹	\$248.0	\$1,015.1	\$716.7	\$1,024.8	\$435.0	\$512.4	\$3,951.9
SRP Energy Efficiency Benefits ²	\$110.1	\$310.4	\$136.8	\$78.0	\$88.1	\$24.5	\$747.8
Demand Reduction Benefits ³	\$0.0	\$0.0	\$5.6	\$6.8	\$5.3	\$11.4	\$29.0
Deferral Benefits ⁴	\$0.0	\$0.0	\$174.2	\$171.5	\$159.4	\$148.2	\$653.3
Costs	\$133.4	\$672.4	\$569.3	\$1,029.4	\$611.1	\$1,130.5	\$4,146.2
Focused Energy Efficiency Costs ⁵	\$46.6	\$331.1	\$195.8	\$529.3	\$280.1	\$811.8	\$2,194.7
System Reliability Procurement Costs ^{6,7}	\$86.8	\$341.3	\$373.5	\$500.2	\$331.0	\$318.6	\$1,951.5
Benefit/Cost Ratio	2.68	1.97	1.81	1.24	1.13	0.62	1.30

Notes:

- (1) Focused EE benefits in each year include the NPV (over the life of those measures) of all TRC benefits associated with EE measures installed in that year that are being focused to the Tiverton/Little Compton area.
- (2) SRP EE benefits include all TRC benefits associated with EE measures installed in each year that would not have been installed as part of the statewide EE programs.
- (3) DR benefits represent the energy and capacity benefits associated with the demand reduction events projected to occur in each year.
- (4) Deferral benefits are the net present value benefits associated with deferring the wires project (substation upgrade) for a given year in \$2014.
- (5) EE costs include PP&A, Marketing, STAT, Incentives, Evaluation and Participant Costs associated with statewide levels of EE that have been focused to the Tiverton/Little Compton area. For the purposes of this analysis, they are derived from the planned ¢/Lifetime kWh in Attachment 5, Table E-5 of each year's EEPP in the SF EnergyWise and Small Business Direct Install programs. These are the programs through which measures in this SRP pilot will be offered.
- (6) SRP costs represent the SRPP budget which is separate from the statewide EEPP budget, as well as SRP participant costs. The SRP budget includes PP&A, Marketing, Incentives, STAT and Evaluation.
- (7) All costs and benefits are in \$current year except for deferral benefits.
- (8) 2012-2016 numbers have been updated to reflect year end data. 2017 numbers reflect year end projections.

The Pilot remains cost effective over its life, with a benefit/cost ratio of 1.30 as shown in Table S-2 above. Each year is also cost effective on its own except for 2017. The biggest impact on the 2017 BC ratio is in the RFP solution not coming to fruition.

All costs and benefits in this analysis are in current year dollars, meaning that the avoided costs are inflated for each year. The savings associated with this Pilot are categorized in the same way as the benefits. These savings are shown in Table S-4 of Appendix 3. As projected, this Pilot has created over \$5 million in benefits in the Tiverton/Little Compton area over its six-year lifetime. For each \$1 invested, this Pilot created \$1.30 of economic benefits over the lifetime of the six-year investment.

⁹For a detailed description of the cost and benefits associated with the cost-effectiveness framework, see 2012 SRP Report - Supplement, February 1, 2012, Docket 4296.

Coordination with SRP Solar DG Pilot

In 2016, the Company supported the impact evaluation of the OER's SRP Solar DG pilot as well as the impact that the Pilot's marketing had on participation in the solar initiatives. An estimated 64 customers from the Pilot area participated in the Solarize portion of the Solar DG pilot. Additionally, as a requirement of the Solarize program, all of the participating customers completed a no-cost home energy assessment. The results of the OER's comprehensive evaluation of its SRP Solar DG pilot are expected to help inform the Company's consideration of solar and possibly other renewables, as an NWA tool.

In its memo, "System Reliability Procurement Distributed Generation Pilot Study Interim Update" provided on July 25th, 2017, Cadmus reported that the metered PV systems' generation capacity was highest during the middle of the day and tapered off quickly in the afternoon. Even the western-facing systems, which received increased incentive levels to offset the lower, average, annual energy generation in favor of increased generation later in the day, provided almost no generation after 7pm. With the Pilot's highest demand occurring in the 4-8pm period of time, the Company concludes that solar would not provide significant load relief for the Pilot.

Little Compton Battery Storage Project

Project Proposal

For 2018, the Company proposes the Little Compton Battery Storage Project (Project), which shall consist of a battery storage system to be installed in Little Compton, RI to provide peak load relief. The storage system will be capable of providing 250 kW of continuous peak load relief in the areas of Tiverton and Little Compton between the hours of 3:30pm and 7:30pm during the months of June through September.

The Project would provide load relief in the same geographical footprint as the Pilot. The request for proposals (RFP) which ultimately resulted in the proposal for this Project was previously approved within the 2017 SRP Report in docket 4655 as part of the Pilot. The Company completed the RFP in early 2017, resulting in a battery storage project as the winning bid. However, in the process of implementation, the project was delayed and could not be installed by the summer of 2017 as planned. As a result of this delay and for the reasons described in the 2018 Pilot Proposal section of this report, the Company is proposing the Project as an independent effort in 2018.

The battery vendor proposes to engineer, procure, construct, and install a 1 MWh advanced battery storage solution (the "Battery") designed to deliver 250 kW of peak load relief for 4 hours that would be located at the Little Compton Town Transfer Station, at the intersection of Colebrook Road and Amy Hart Path in Little Compton, RI. The

Town of Little Compton has provided a letter of support to the vendor for this project proposal.

The vendor's proposal is to site, own and operate the energy storage asset, and enter into a services contract to provide the required load reduction benefit to National Grid during the summers of 2018 and 2019. The Company proposes that the Project timeline span these two years, and requests commitment for this Project for that timeframe. This should enable a cost effective agreement with the vendor for peak load relief services.

Project Funding Plan

The Company estimates that it will require \$87,500 to implement the Project in 2018. The funds approved for this initiative in the 2017 SRP Report that were collected but unspent, as with other unspent funds, will be rolled into the SRP fund balance to appropriately determine the customer funding request for 2018. Therefore, the Company anticipates that the incremental funding request will be much smaller than the budget estimated here.

The Company also proposes for additional funding in 2019 if the project timeline is allowed to span two years, from 2018 to 2019 and will make that funding request in the 2019 SRP Report.

Evaluation

The Company is proposing to evaluate the energy savings that the Project provides by use of a metering and control system, and the data made available through it and by the vendor. The Company proposes that the calculation of 'energy savings' (batteries have inherent losses, but the anticipation is that the battery will charge during lower wholesale price periods and discharge at higher wholesale priced hours, with the 'savings' being the difference in these prices) shall be measured by the amount of power output provided during peak period windows over time by the battery storage system per calendar year.

Benefit Cost Analysis

The Company proposes to cost-justify the Project through a net present value comparison of the cost of the Project against avoided costs achieved through the deferral of the substation upgrade. Based on the most recent load forecast for the Tiverton area substation, the Company expects that the implementation of the Project will further defer the need for the substation upgrade by two years.

A two-year deferral is estimated to have approximately \$269,676 of benefits in \$2014¹⁰. When adjusted to \$2014, the Project's budget of \$87,500 in both 2018 and 2019 yields a net present value of approximately \$107,452, using a discount rate of 9.293%, which is consistent with the weighted average cost of capital used in the organizational structure approved in docket 4065. Based on this comparison, the Project as proposed will yield savings for customers in the net present value amount of \$162,223.

SRP Incentive Mechanism Proposal

[The Parties are in the process of collaborating on an incentive proposal for this Report. The results of these discussions will be included in the 2nd draft.]

2018 System Reliability Procurement Funding Request

The Company proposes to fund the projects and initiatives included in this SRP Report through the energy efficiency charge on customers' bills, as has been done in the past. The table below illustrates the proposed customer charge associated with SRP for 2018.

¹⁰The substation upgrade was originally planned for 2014, so all benefits for this project are given in \$2014.

Table S-1 National Grid System Reliability Procurement Funding Sources \$(000)	
	2018
(1) 2018 SRP Budget	\$352.5
(2) Projected Year-End Fund Balance and Interest:	\$322.3
(3) Customer Funding Required:	\$30.2
(4) Forecasted kWh Sales:	7,458,294,598
(5) Additional SRP Funding Needed per kWh:	\$0.00000
(6) Proposed Energy Efficiency Program charge in EEPP	\$0.01109
(7) Proposed Total Energy Efficiency Program charge in EEPP	\$0.01109
(8) Proposed Total Energy Efficiency Program charge w/ Uncollectible Recovery	\$0.01123

Notes

- (1) Projected Budget includes only additional funds for SRP. It does not include costs associated with focused energy efficiency.
- (2) Proposed Total Energy Efficiency Program charge is the sum of the "Additional SRP Funding Needed per kWh" and "Proposed Energy Efficiency Program charge in EEPP" lines.
- (3) All dollar amounts shown are in \$current year.

Miscellaneous Provisions

- A.** Other than as expressly stated herein, this Settlement establishes no principles and shall not be deemed to foreclose any party from making any contention in any future proceeding or investigation before the PUC.
- B.** This Settlement is the product of settlement negotiations. The content of those negotiations is privileged and all offers of settlement shall be without prejudice to the position of any party.
- C.** Other than as expressly stated herein, the approval of this Settlement by the PUC shall not in any way constitute a determination as to the merits of any issue in any other PUC proceeding.

The Parties respectfully request the PUC approve this Stipulation and Settlement as a final resolution of all issues in this proceeding.

Respectfully submitted,

THE NARRAGANSETT ELECTRIC COMPANY D/B/A
NATIONAL GRID

By its Attorney,
Raquel J. Webster

Date

RHODE ISLAND DIVISION OF PUBLIC UTILITIES AND
CARRIERS

By its Attorney, _____ Date
Jon Hagopian, Senior Legal Counsel

ACADIA CENTER

By its Attorney,
Mark LeBel, Staff Attorney Date

THE RHODE ISLAND ENERGY EFFICIENCY AND
RESOURCES MANAGEMENT COUNCIL

By its Attorney, _____ Date
Marissa Desautel

PEOPLE'S POWER & LIGHT

By its Executive Director, Date
Larry Chretien

TEC-RI

By its Executive Director	Date
Douglas W. Gablinske	

Appendices

Appendix 1

Load Growth Forecasts

Appendix 2

Detailed Multi-year Budgets

Appendix 3

Benefit Cost Tables

Appendix 4

Evaluation Deliverables

Appendix 5

2017 Marketing Calendar

Appendix 1 – Load Growth Forecasts

RHODE ISLAND PROJECTED GROWTH RATES (Percents)																
State	County	Town	Annual Growth Rates (percents)										5-yr avg	10-yr avg		
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	'17 to '21	'17 to '26	
RI			0.6	-0.6	-0.2	0.0	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.3
RI	Bristol		0.1	-1.1	-0.7	-0.4	-0.1	0.1	0.1	0.2	0.2	0.2	0.3	-0.4	-0.1	
RI	Kent		0.2	-1.0	-0.6	-0.3	0.0	0.1	0.2	0.2	0.2	0.3	0.3	-0.3	0.0	
RI	Newport		0.3	-0.9	-0.5	-0.3	0.0	0.2	0.3	0.3	0.3	0.3	0.4	-0.3	0.0	
RI	Providence		0.7	-0.5	-0.1	0.1	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.3	
RI	Washington		1.7	0.4	0.6	0.8	1.0	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.9	
RI	Newport	Tiverton	1.0	-0.2	0.1	0.3	0.5	0.6	0.7	0.6	0.6	0.6	0.6	0.3	0.5	
RI	Newport	Little Compton	1.3	0.0	0.3	0.4	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.6	
vintage: fall 2016																

Appendix 2 – Tiverton NWA Pilot Benefit Cost Analysis Tables

The Narragansett Electric Company
d/b/a National Grid
2017 System Reliability Procurement Report
Docket No. 4655

	2012	2013	2014	2015	2016	2017	Overall
Benefits	\$358.0	\$1,325.4	\$1,033.3	\$1,281.1	\$831.2	\$1,412.4	\$6,241.4
Focused Energy Efficiency Benefits ¹	\$248.0	\$1,015.1	\$716.7	\$1,024.8	\$591.0	\$595.9	\$4,191.4
SRP Energy Efficiency Benefits ²	\$110.1	\$310.4	\$136.8	\$78.0	\$75.6	\$656.0	\$1,366.7
Demand Reduction Benefits ³	\$0.0	\$0.0	\$5.6	\$6.8	\$5.3	\$12.3	\$30.0
Deferral Benefits ⁴	\$0.0	\$0.0	\$174.2	\$171.5	\$159.4	\$148.2	\$653.3
Costs	\$133.4	\$672.4	\$569.3	\$1,029.4	\$989.7	\$1,349.4	\$4,743.8
Focused Energy Efficiency Costs ⁵	\$46.6	\$331.1	\$195.8	\$529.3	\$579.1	\$949.1	\$2,631.0
System Reliability Procurement Costs ^{6,7}	\$86.8	\$341.3	\$373.5	\$500.2	\$410.7	\$400.3	\$2,112.8
Benefit/Cost Ratio	2.68	1.97	1.81	1.24	0.84	1.05	1.32

Notes:

- (1) Focused EE benefits in each year include the NPV (over the life of those measures) of all TRC benefits associated with EE measures installed in that year that are being focused to the Tiverton/Little Compton area.
- (2) SRP EE benefits include all TRC benefits associated with EE measures installed in each year that would not have been installed as part of the statewide EE programs.
- (3) DR benefits represent the energy and capacity benefits associated with the demand reduction events projected to occur in each year.
- (4) Deferral benefits are the net present value benefits associated with deferring the wires project (substation upgrade) for a given year in \$2014.
- (5) EE costs include PP&A, Marketing, STAT, Incentives, Evaluation and Participant Costs associated with statewide levels of EE that have been focused to the Tiverton/Little Compton area. For the purposes of this analysis, they are derived from the planned ¢/Lifetime kWh in Attachment 5, Table E-5 of each year's EEPP in the SF EnergyWise and Small Business Direct Install programs. These are the programs through which measures in this SRP pilot will be offered.
- (6) SRP costs represent the SRPP budget which is separate from the statewide EEPP budget, as well as SRP participant costs. The SRP budget includes PP&A, Marketing, Incentives, STAT and Evaluation.
- (7) All costs and benefits are in \$current year except for deferral benefits.
- (8) 2012-2015 numbers have been updated to reflect year end data. 2016 numbers reflect year end projections.

The Narragansett Electric Company
d/b/a National Grid
2017 System Reliability Procurement Report
Docket No. 4655

Table S-3						
National Grid						
System Reliability Procurement - Tiverton/Little Compton						
Annual Budgets and Actual Costs						
\$(000)						
	Program Planning & Administration	Marketing	Rebates and Other Customer Incentives	Sales, Technical Assistance & Training	Evaluation & Market Research	Total
2012	\$2.6	\$24.7	\$32.5	\$2.0	\$25.1	\$86.8
2013	\$67.9	\$77.1	\$102.0	\$1.4	\$90.7	\$339.0
2014	\$74.9	\$78.1	\$87.0	\$6.0	\$125.4	\$371.5
2015	\$90.6	\$85.1	\$67.6	\$97.6	\$157.2	\$498.1
2016	\$50.0	\$120.0	\$15.7	\$94.2	\$130.0	\$409.9
2017	\$50.0	\$80.0	\$31.2	\$118.1	\$120.0	\$399.3
Total	\$336.0	\$465.0	\$335.9	\$319.3	\$648.3	\$2,104.6

Notes:

- (1) The annual totals in this table represent only the forecasted funds necessary to run the Tiverton/Little Compton pilot. They do not include costs associated with focused energy efficiency or with SRP participant costs.
- (2) All amounts shown are in \$current year.
- (3) 2012-2015 numbers have been updated to reflect year end data. 2016 numbers have been updated to reflect year end projections

The Narragansett Electric Company
d/b/a National Grid
2017 System Reliability Procurement Report
Docket No. 4655

Table S-4							
System Reliability Procurement - Tiverton/Little Compton							
Summary of kW, and kWh New Installs Per Year							
			Capacity (kW)			Energy (MWh)	
			Summer	Winter	Lifetime	Maximum Annual	Lifetime
2012	EE	Residential	17	20	102	121	642
		Commercial	4	2	44	7	85
		SRP	8	8	121	4	55
	Non-EE	Demand Response	13	0	13		
	Total			42	30	280	132
2013	EE	Residential	77	86	527	505	2,953
		Commercial	55	32	653	205	2,440
		SRP	78	33	1,362	80	883
	Non-EE	Demand Response	56	0	56		
	Total			266	152	2,598	790
2014	EE	Residential	50	59	419	334	2,737
		Commercial	12	9	128	69	758
		SRP	40	9	746	51	535
	Non-EE	Demand Response	17	0	17		
	Total			120	78	1,310	455
2015	EE	Residential	93	109	850	619	5,454
		Commercial	17	15	207	41	489
		SRP	23	7	396	26	271
	Non-EE	Demand Response	11	0	11		
	Total			144	131	1,465	685
2016	EE	Residential	58	75	696	483	5,785
		Commercial	15	13	172	54	633
		SRP	17	5	187	14	136
	Non-EE	Demand Response	6	0	6		
	Total			96	93	1,061	550
2017	EE	Residential	59	71	846	473	5,691
		Commercial	15	13	172	54	633
		SRP	19	17	333	11	92
	Non-EE	Demand Response	9	0	9		
	Non-EE	RFP	250	145	3,000	180	2,157
Total			352	246	4,361	718	8,573
Grand Total			1,020	729	11,076	3,330	32,428

Notes:

- (1) The "EE" savings include both Focused Energy Efficiency savings and SRP Energy Efficiency Savings.
- (2) Measures unique to SRP and not offered in the same way through the statewide EE programs are listed as a separate line item (SRP) under the EE heading. Measures part of the focused EE are listed in the EnergyWise and Small Business program lines.
- (3) Savings in this table are not cumulative. Each year shows savings from measures that will have been installed within that year.
- (4) 2012-2015 numbers have been updated to reflect year end data and 2016 numbers have been updated to reflect year end projections
- (5) Demand Response estimated kWh savings are shown on table S-6.

The Narragansett Electric Company
d/b/a National Grid
2017 System Reliability Procurement Report
Docket No. 4655

Table S-5
System Reliability Procurement - Tiverton/Little Compton
Summary of Incremental Benefits By Year

			Capacity (\$)						Energy (\$)					Non-Electric (\$)	
			Total Benefits	Summer Generation	Winter Generation	Transmission	MDC/Deferral(3)	DRIPE	Winter Peak	Winter Off-Peak	Summer Peak	Summer Off-Peak	DRIPE	Resource	Non-Resource
2012	EE	Residential	68,954	2,735	0	2,314	9,724	473	17,057	8,696	10,374	4,444	5,586	0	7,552
		Commercial	21,251	1,709	0	984	4,135	474	2,831	688	1,698	338	627	0	7,765
		SRP	88,810	6,590	0	2,638	11,082	1,224	35	117	2,257	1,193	292	63,381	0
	Non-EE	Demand Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0
		Deferral	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			179,015	11,035	0	5,936	24,941	2,171	19,924	9,500	14,329	5,975	6,505	63,381	15,317
2013	EE	Residential	715,520	19,112	0	12,066	50,700	3,990	79,472	43,584	49,862	22,710	25,456	362,998	45,569
		Commercial	299,547	31,822	0	14,689	61,719	8,065	84,675	20,430	50,364	10,075	17,708	0	0
		SRP	310,370	67,287	0	30,582	128,499	14,693	261	967	45,399	16,336	6,346	0	0
	Non-EE	Demand Reduction	0	0	0	0	0	0	0	0	0	0	0	0	0
		Deferral	0	0	0	0	0	0	0	0	0	0	0	0	0
Total			1,325,438	118,221	0	57,338	240,918	26,749	164,407	64,981	145,625	49,122	49,510	362,998	45,569
2014	EE	Residential	641,519	29,866	0	17,044	0	3,214	68,295	46,885	41,650	17,727	35,790	350,408	30,639
		Commercial	75,220	11,229	0	5,201	0	963	26,032	6,580	12,466	2,916	9,835	0	0
		SRP	136,801	63,099	0	30,271	0	5,344	118	479	22,591	8,861	6,038	0	0
	Non-EE	Demand Reduction	5,563	1,989	0	3,521	0	0	0	54	0	0	0	0	0
		Deferral	174,188	0	0	0	174,188	0	0	0	0	0	0	0	0
Total			1,033,291	106,183	0	56,037	174,188	9,521	94,445	53,944	76,760	29,504	51,662	350,408	30,639
2015	EE	Residential	953,990	74,891	0	34,529	0	7,247	153,698	83,936	75,394	38,919	72,456	366,076	46,844
		Commercial	70,792	21,238	0	8,337	0	1,422	18,325	4,693	9,039	2,126	5,611	0	0
		SRP	77,987	38,200	0	15,987	0	2,917	73	292	12,461	5,051	3,006	0	0
	Non-EE	Demand Reduction	6,802	2,411	0	4,074	0	0	0	317	0	0	0	0	0
		Deferral	171,482	0	0	0	171,482	0	0	0	0	0	0	0	0
Total			1,281,053	136,739	0	62,929	171,482	11,587	172,095	88,920	97,211	46,096	81,074	366,076	46,844
2016	EE	Residential	517,993	104,576	0	8,078	0	0	182,859	98,740	81,402	39,196	2,384	0	757
		Commercial	72,964	25,760	0	1,999	0	0	24,708	6,399	11,250	2,538	309	0	0
		SRP	75,564	26,679	0	2,173	0	0	573	965	4,790	2,292	117	37,976	0
	Non-EE	Demand Reduction	5,295	3,628	0	1,232	0	0	0	0	435	0	0	0	0
		Deferral	159,412	0	0	0	159,412	0	0	0	0	0	0	0	0
Total			831,228	160,643	0	13,482	159,412	0	208,141	106,104	97,877	44,026	2,811	37,976	757
2017	EE	Residential	522,462	107,110	0	7,536	0	0	183,130	97,510	84,448	40,681	1,293	0	754
		Commercial	73,436	25,509	0	1,805	0	0	25,058	6,489	11,724	2,681	169	0	0
		SRP	655,950	468,502	0	33,140	0	0	36,471	21,026	61,860	34,269	682	0	0
	Non-EE	Demand Reduction	12,343	10,797	0	1,212	0	0	0	0	334	0	0	0	0
		Deferral	148,191	0	0	0	148,191	0	0	0	0	0	0	0	0
Total			1,412,383	611,918	0	43,692	148,191	0	244,659	125,026	158,367	77,631	2,145	0	754
Grand Total			6,062,407	1,144,739	0	239,413	919,132	50,028	903,671	448,475	590,169	252,355	193,706	1,180,839	139,881

Notes:
(1) The "EE" benefits include both Focused Energy Efficiency benefits and SRP Energy Efficiency benefits.
(2) Measures unique to SRP are listed as a separate line item under the EE heading. Measures part of the focused EE are listed in the EnergyWise and Small Business program lines.
(3) The MDC/Deferral column represents: 2012-2013: the system-average distribution benefit and 2014-2017: the calculated deferral benefit as defined in the notes section of Table S-2
(4) All benefits are in \$current year except deferral benefits which are in \$2014.
(5) 2012-2015 amounts have been updated to reflect year end data. 2016 amounts have been updated to reflect year end projections.
(6) Benefits due to EE reflect new installations within the year. Benefits due to Non-EE reflect cumulative installations

The Narragansett Electric Company
d/b/a National Grid
2017 System Reliability Procurement Report
Docket No. 4655

Table S-6						
System Reliability Procurement - Tiverton/Little Compton						
Demand Reduction						
	Tstats					Smart Plug
Per- Event Capacity Savings per Residential Participant (kW)	0.49					0.04
Per- Event Capacity Savings per C&I Participant (kW)	0.98					n/a
	2012	2013	2014	2015	2016	2017
Number of Event Hours						
Thermostats			12	60	72	48
Plug Load Devices			6	30	36	24
Units						
Thermostats - Residential	35	167	205	232	249	274
Thermostats - C&I	0	4	4	4	4	4
Plug Load Devices	0	145	249	298	306	306
Forecasted Annual Capacity Savings (kW)	13	69	86	97	104	113
Thermostats - Residential	13	61	75	85	92	101
Thermostats - C&I	0	3	3	3	3	3
Smart Plugs	0	4	7	9	9	9
Forecasted Annual Energy Savings (kWh)	0	0	984	5,560	7,131	5,195
Thermostats - Residential	0	0	904	5,116	6,589	4,833
Thermostats - C&I	0	0	35	176	212	141
Smart Plugs	0	0	45	268	330	220
Cumulative Annual Demand Reduction Benefits (\$)			5,563	6,802	5,295	12,343
Annual Energy Benefits (\$)			54	317	435	334
Annual Capacity Benefits (\$)			5,510	6,485	4,860	12,008

Notes:

- (1) Forecasted event hours are based on an assumed three days of four-hour events, four times per year. In each event, it is assumed that the demand reduction will be staggered in two groups and cycled on and off.
- (2) Savings above represent 75% of max to account for non-participation.
- (2) All dollar amounts are in \$current year.
- (3) 2012-2015 amounts have been updated to reflect year end data and 2016 amounts have been updated to reflect year end projections.

Table S-7
System Reliability Procurement - Tiverton/Little Compton
Potential for Wires Project Deferral at Year Begin

	2012	2013	2014	2015	2016	2017	2018
Cumulative Annual kW from Energy Efficiency			239	342	475	556	624
Focused Energy Efficiency			153	215	325	381	431
SRP Energy Efficiency			86	127	149	175	192
Cumulative Annual kW from Demand Reduction			82	86	97	103	104
Thermostats - Residential			74	75	85	91	92
Thermostats - C&I			3	3	3	3	3
Smart Plugs			4	7	9	9	9
Cumulative Annual kW from RFP							-
Total Cumulative kW Reduction From DemandLink			321	427	572	659	728
Total Cumulative kW Reduction Needed to Defer Wires Project			150	390	630	860	1,000
% Deferral Targets Achieved by DemandLink			214%	110%	91%	77%	73%

Notes:

- (1) All kW amounts are Summer kW and are cumulative.
- (2) This table shows the number of kW have been either installed through EE or have become available to reduce through demand reduction by the end of the previous year to therefore contribute to the deferral of the wires investment in the current year.
- (3) kW in Reserve acts as insurance against customers overriding the demand reduction themselves, so that the required reduction is still met.
- (4) 2012 -2016 amounts have been updated to reflect year end data. 2017 amounts have been updated to reflect year end projections.

Appendix 3 –Tiverton Pilot Evaluation Deliverables from Opinion Dynamics Corporation

Appendix 4 – Projects Screened for NWA

Project ID	Project Description	NWA Comment	Capex Spending Rational	Budget Classification	Program Code	Date Initiated
C072807	RI UG Cable Replacement Program - Fdr 1102	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project, < \$1M in cost	Asset Condition	Asset Replacement	UG Cable Replacements	4/12/2016
C072826	RI UG Cable Replacement Program - Fdr 1104	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project, < \$1M in cost	Asset Condition	Asset Replacement	UG Cable Replacements	4/12/2016
C072847	RI UG Cable Replacement Program - Fdr 1106	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project, < \$1M in cost	Asset Condition	Asset Replacement	UG Cable Replacements	4/12/2016
C074307	RI UG 79F1 Duct Replacement Charles & Orms Sts	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project, < \$1M in cost	Asset Condition	Asset Replacement		6/23/2016
C074426	EMS Expansion - Franklin Sq #11	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074427	EMS Expansion - Phillippsdale 20	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Relay/RTU	EMS Expansion	6/28/2016
C074428	EMS Expansion - Wampanoag 48	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Relay/RTU	EMS Expansion	6/28/2016
C074429	EMS Expansion - Warren #5	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Relay/RTU	EMS Expansion	6/28/2016
C074430	EMS Expansion - Wood River 85	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074431	EMS Expansion - Bonnet 42	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Relay/RTU	EMS Expansion	6/28/2016
C074433	Bristol 51 - EMS Expansion	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074435	EMS Expansion - Centredale 50	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074436	EMS Expansion - Hope 15	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074437	Manton 69 - EMS Expansion	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074438	EMS Expansion - Merton 51	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Substation	EMS Expansion	6/28/2016
C074439	EMS Expansion - Tiverton 2 #33	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074440	EMS Expansion - Warwick Mall 28	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074441	EMS Expansion - West Greenville 45	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability	EMS Expansion	6/28/2016
C074803	37K21/22 Removal, Memorial Drive Newport	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement		7/22/2016
C074804	Apponaug 23kV Retirements (Distribution Substation)	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement	Substation Asset Replacement	7/22/2016
C074807	Apponaug 23kV Retirements (Distribution Line)	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement	Substation Asset Replacement	7/22/2016
C075328	Dyer St Indoor Sub Retirement	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement		8/23/2016
C075403	Elmwood Indoor Equipment Removal	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement	Substation Asset Replacement	8/26/2016
C075445	RI Royal Disconnect Replacement Program	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Program	Asset Condition	Asset Replacement		8/30/2016
C075545	Admiral 9 Sub - EMS Expansion	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - EMS Expansion Program	System Capacity & Performance	Reliability		9/7/2016
C075571	RI VVO Langworthy Corner 86, Distribution Line	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Volt-Var Optimization Project	System Capacity & Performance	Reliability		9/8/2016
C075573	RI VVO Langworthy Corner 86, Distribution Substation	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Volt-Var Optimization Project	System Capacity & Performance	Reliability		9/8/2016
C075860	Geneva Sub Equipment Replacement	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement		9/23/2016
C076202	Dressler S-UG Street Light Replacement	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Outdoor Lighting - Capital		10/7/2016
C076289	IRURD Pequaw Honk URD RI- Little Compton	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Asset Condition Driven Project	Asset Condition	Asset Replacement		10/13/2016
C076365	RI VVO/CVR Tiogue Ave 100, Distribution Substation	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Volt-Var Optimization Project	System Capacity & Performance	Reliability		10/18/2016
C076367	RI VVO/CVR Lincoln Ave 72, Distribution Substation	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Volt-Var Optimization Project	System Capacity & Performance	Reliability		10/18/2016
C077200	RI VVO/CVR Tiogue Ave 100, Distribution Line	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Volt-Var Optimization Project	System Capacity & Performance	Reliability		1/6/2017
C077201	RI VVO/CVR Lincoln Ave 72, Distribution Line	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - Volt-Var Optimization Project	System Capacity & Performance	Reliability		1/6/2017
C077365	ProvStudy Clarkson St 13F10 Hawkins	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - See Providence Area Study - Implementation Plan, May 2017	Asset Condition	Asset Replacement		2/2/2017
C077368	ProvStudy Retire Olneyville Fdr 6J5	DOES NOT MEET NG NWA SCREENING REQUIREMENTS - See Providence Area Study - Implementation Plan, May 2017	Asset Condition	Asset Replacement		2/2/2017



STATE OF RHODE ISLAND
**ENERGY EFFICIENCY &
 RESOURCE MANAGEMENT COUNCIL**

PUBLIC COMMENT SIGN-UP: September 21, 2017

Please note that all public comments shall be limited to two (2) minutes per person/affiliation

NAME		AFFILIATION	Please indicate your comment category with a X	
			2018 Annual Plan/SRP Comments	Other Comments
1	Deirdre	Hardy Law	✓	
2	Kat Burnham	RP&L	✓	
3	Erika Niedowski	Acadia Center	X	
4				
5				
6				
7				
8				
9				
10				
11				
12				

Mr. Chris Powell
Chair, RI EERMC
c/o Becca Trietch
Rhode Island Office of Energy
One Capital Hill
Providence, RI 02908

September 21, 2017

Dear Chair Powell:

I write to provide comment on the proposed Annual Plan as scheduled for public comment in this afternoon's Council meeting.

First, the Plan is not available or accessible to the public as of the preparation of these comments at 12:30 pm on the day that the Plan is to be presented for public comment. It would be helpful for the public to have the proposed plan well in advance of the opportunity for comment. I do not seek to delay time sensitive approval of an important plan for efficiency but it is unreasonable to expect the public to comment on a plan based only on National Grid's oral presentation of the plan immediately before the opportunity for comment. Perhaps you could extend the deadline on written public comment for consideration sufficiently in advance of the vote on the Plan at the next meeting. However, in order not to miss the opportunity for public comment I provide these written comments.

The tenor and substance of the August 17 Council meeting made it clear that the EERMC does not view distributed generation as its purview or as a tool to drive down future electric costs for Rhode Island. One committee member acknowledged in his comments to you as Chair that he understood that EERMC does not see renewables as part of its charge. In responding to that member's comments you indicated that the only way for customers to respond to rapidly escalating supply rates is through efficiency.

The EERMC funds an able consultant to identify new ways to economize through efficiency but appears to have left it to National Grid to report to the Council that their system reliability procurement plan continues to find non-wires alternatives to be uneconomical given the test they are asked to apply. As you may be aware, that is the same utility that proposed to assess a fee for renewable energy projects to access the distribution system based on a wholly unsubstantiated assertion that distributed generation puts costs on the system with no analysis of its potential to provide for long-term savings. They ultimately withdrew that proposal and then that Docket (4568) led to Docket 4600 where the commission ordered a complete group of RI energy stakeholders, including EERMC's consultants, to evaluate how best to achieve least cost procurement across all energy decisions and programs. The result, which was supported unanimously by all stakeholders including the EERMC's representatives, was to recast the pursuit of "least cost procurement" as the drive for best long-term value in our energy policies and decisions. In that analysis, Rhode Island does not only consider short term cost but also vigorously studies and aggressively seeks out the best ratio of ultimate benefits to costs. The stakeholders uniformly agreed on a cost benefit analysis that includes twenty indicators of value to our distribution system, before even counting direct impacts on customers and consequential effects on

society. How many of those indicators are weighed in the utility's evaluation of cost effective non-wires alternatives? As noted in the Division of Public Utilities and Carriers "Initial Considerations on Utility Compensation," issued on August 15, 2017, as part of the Power Sector Transformation process intended to be incorporated in EERMC's planning (see http://www.ripuc.org/utilityinfo/electric/UBM_8_16_2.pdf), "today's utility compensation framework creates a bias for one-way, capital-intensive solutions to fix identified constraints in the distribution system." Given that bias, is the utility fit to be administering system reliability procurement and evaluating the cost effectiveness of non-wires alternatives? I came away from last weeks meeting deeply concerned that we continue to miss opportunities to find the kind of value sought out in Docket 4600.

For our utility to discard the economic viability of distributed generation through outdated cost analyses is deeply detrimental to Rhode Island. It perpetuates a wires based future that our energy plan, Systems Integration RI process and PUC dockets direct us to overcome in order to reduce costs, increase energy security and provide environmental benefit. In the Power Sector Transformation session last week on utility business model and distribution system planning, the Division initiated the discussion by presenting a diagram showing the planned evolution from a centralized to a distributed energy system (see http://www.ripuc.org/utilityinfo/electric/UBM_8_16_1.pdf). That calls for the introduction of much more local renewables, not only to protect and sustain our environment but also to make our energy more secure and reduce its cost.

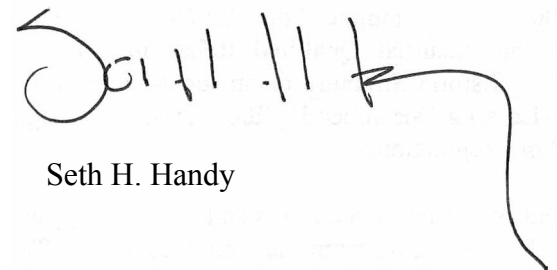
One challenge regarding the implementation of this promising energy future is that we have limited, existing legislative and administrative structure within which to see it done. As the SIRI report notes, the System Reliability Plan and the Infrastructure Safety and Reliability process are two important vehicles that need to be administered properly to realize the opportunity in that evolution. As the 3 year plan report notes, the Comprehensive Energy Conservation, Efficiency and Affordability Act of 2006 provides the statutory basis for Least Cost Procurement in the State of Rhode Island with purposes (1) to provide Rhode Island residents, institutions, and businesses the benefit of stability through diversification of energy resources, energy conservation, efficiency, demand management, and prudent procurement; (2) to facilitate the development of renewable energy resources; (3) to make the cost of energy more affordable by mitigating demand and rates charged to low-income households; and (4) to strengthen energy planning, program administration, management, and oversight in a manner that is publicly accountable and responsive. The Act specifies that the plan should include "measurable goals and target percentages for each energy resource, pursuant to standards established by the Commission, including efficiency, distributed generation, demand response, combined heat and power, and renewables." Recognizing the potential economic benefits of cost-effective non-wires alternatives, R.I.G.L. § 39-1-27.7(a)(1) calls for standards for "system reliability" resources to include, but not be limited to: distributed renewable energy resources; cost-effective combined heat and power systems; and demand response designed to provide local system reliability benefits through load control or using on-site generating capacity. I don't see these goals adequately reflected in the three-year plan as it relates to distributed generation. I see two paragraphs in the report containing vague statements about continued pursuit of pilots with added incentives and reduced benchmarks for the utility. Attachment 3, the system reliability plan, refers to the goals and benefits of pursuing non-wires alternatives and the intention to consider it, but does not indicate any real progress or benchmarks for future progress on implementation.

On page 66, the plan refers to constrained circuit 38F1 in northwest Rhode Island and a need/opportunity for 2600 kilowatts of non-wires alternatives – where is the request for proposal for realization of that opportunity? Where is the broader analysis of how non-wires alternatives can mitigate costs if implemented at scale, system wide? The road to an overly expensive energy system is paved with good intentions. As long as there is discord between our vision and the mechanics of administering our programs for the value we seek, we will continue to be set back in our pursuit of a cost effective and secure energy system.

Is the EERMC ready and willing to acknowledge and embrace the important role of distributed generation in energy security and value? If not, should Rhode Island consider putting jurisdiction over that element of planning under a body that has a broader charge than just to seek value in energy efficiency? Does National Grid have the neutrality, credentials and track record to properly and effectively oversee implementation of system reliability planning, especially in the absence of consultant drive and oversight? How do we make the “least cost procurement” analysis of system reliability consistent with the value analysis stakeholders uniformly put forward in Docket 4600? What can be done to ensure we are conducting the proper value analysis and aggressively acting on every opportunity to manage costs and pursue long-term benefits through every tool in our toolbox?

I greatly appreciate all your leadership and the EERMC’s track record on efficiency. I look forward to the day we can better integrate comprehensive thinking on attacking the excessive cost of our energy system.

Sincerely,

A handwritten signature in black ink, appearing to read "Seth H. Handy". The signature is stylized with a large initial "S" and a long, sweeping underline that extends to the right.

Seth H. Handy

cc. Erika Niedowski, Acadia Center
Kat Burnham, Peoples Power & Light

Second Quarter 2017 Results

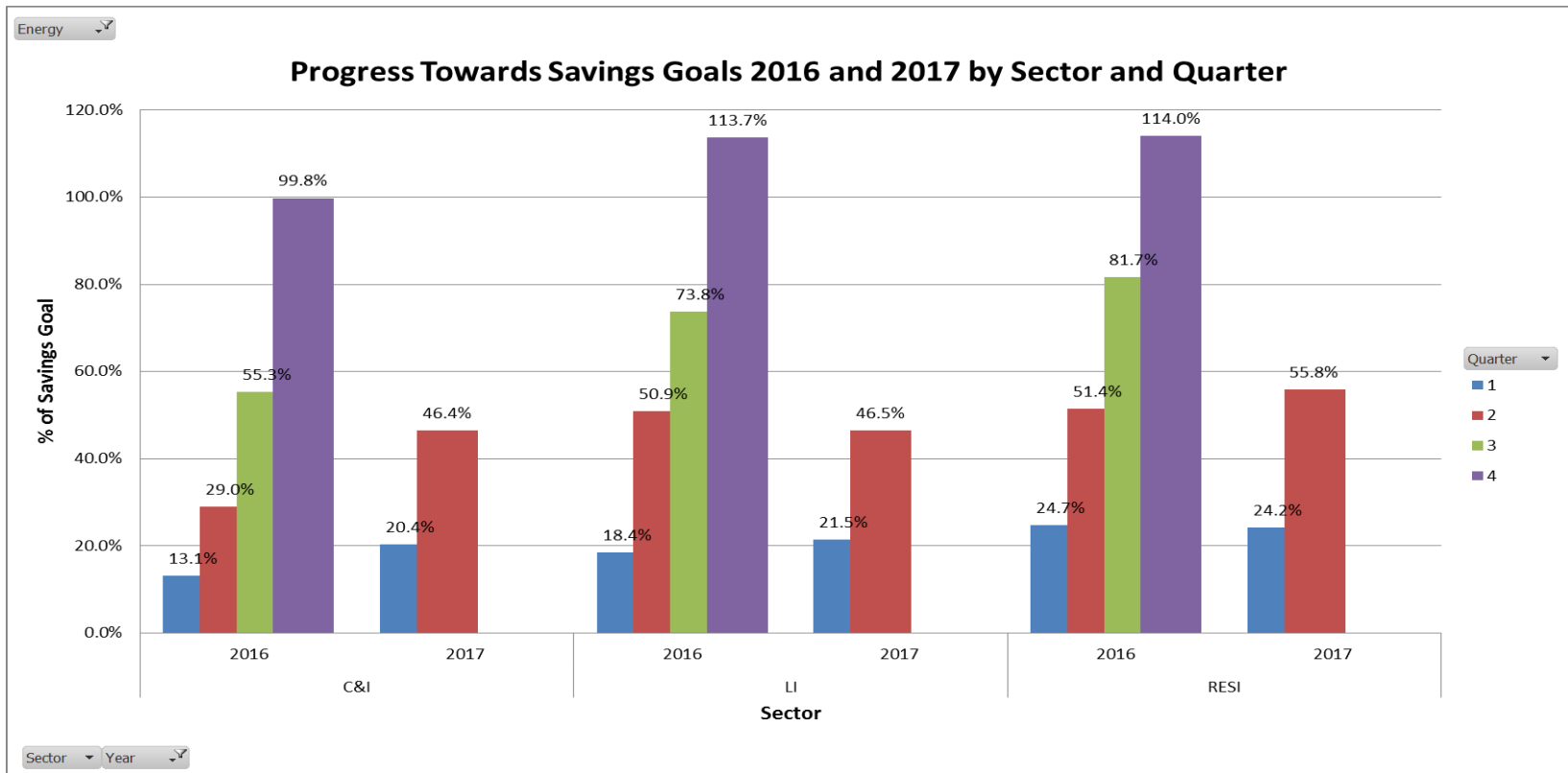
nationalgrid



RI EERMC

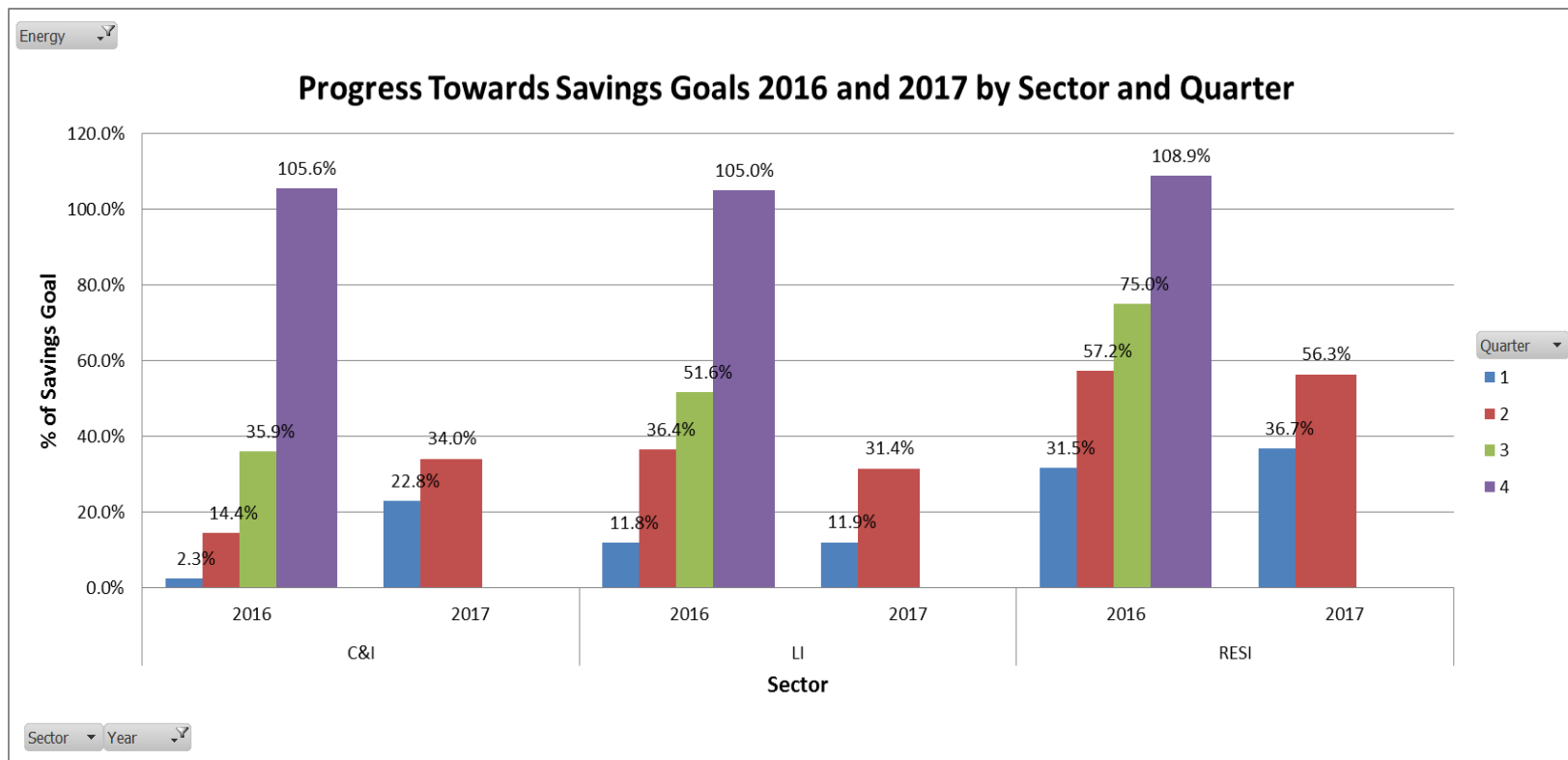
September 21, 2017





Progress Towards Filed 2017 Goal

	kW	KWh	Participation	Expenses
C&I	37.7%	46.4%	53.1%	31.3%
IE	49.0%	46.5%	70.2%	37.8%
Resi	57.2%	55.8%	101.0%	41.2%
Total	45.1%	50.6%	100.4%	35.9%



Progress Towards Filed 2017 Goal

	MMBtu	Participation	Expenses
C&I	34.5%	36.2%	25.5%
IE	31.4%	51.8%	31.5%
Resi	56.3%	120.7%	45.6%
Total	41.6%	117.8%	35.7%

- **EnergyWise** - 345 HEAT loans were completed through the second quarter for a total of \$1.9 million in loans
- **Rhode Island Energy Challenge** – The towns of North Kingstown, Smithfield, and Cumberland have officially joined the RIEC. A commitment was made to surpass their goals.
- **Future of Energy Efficiency** –
 - 250 Ecobee Lytes were installed in the second quarter
 - NEST thermostats are being added to the selection of WiFi thermostats that are eligible to participate in Rhode Island's Connected Solutions pilot program

RNC Enrollment Highlights

- 1892 Historic Meader Street School
- 2015 – West Broad Neighborhood Association received tax credits worth \$250,000
- School is being transformed into 10 residential rental units with 4 units designated for affordable housing.



2017 Energy Education Proposals
Recommendation for Proposal Selection

Date: September 14, 2017

To: Chris Powell, Chair of the EERMC & all EERMC Council members

From: Energy Education Proposal Evaluation Team

Subject: EERMC-2017-01 – Public Education in Energy Issues Including Efficiency, Conservation, and Resource Diversification and Management

The Evaluation Team (ET), comprised of Betsy Stubblefield Loucks, Karen Verrengia, and Becca Trietch, two voting members of the Energy Efficiency and Resources Management Council (EERMC) and a state employee with the Office of Energy Resources respectively, reviewed the three (3) proposals received by the Energy Efficiency and Resource Management Council (EERMC) on August 28, 2017 for the subject EERMC-2017-01 – Public Education in Energy Issues Including Efficiency, Conservation, and Resource Diversification and Management. The valuation was based on the following criteria: 1. Overview and Work Plan (35 points), 2. Qualifications and Experience (25 Points), 3. Project Management and Organization (10 points), 4. ISBE proposal (6 points), and 5. Cost proposal (30 points).

Based on the review of the proposals submitted, the ET believes that the NEED proposal offers all the components that this requisition specifies with the least cost to the Council.

NEED’s proposal presents a clear, proven method for educating students and teachers in grades K-12 about a wide array of energy topics. For more notes from the proposal review process please see the attached notes and scoresheets.

The ET proposes that the contract with NEED be limited to one (1) year from the contract start date. The ET also encourages the Council to issue another RFP specifically for a needs assessment so that more information can be included in next year’s education RFP regarding target audiences.

Offeror	Total Points
NEED	97.00
Evergreen Economics	93.80
RI Housing	90.11

Thank you,

Betsy Stubblefield Loucks

Karen Verrengia

Becca Trietch

Proposal Scores

VENDOR	Total Points: Betsy	Total Points: Karen	Total Points: Becca	TOTAL AVERAGE
Rhode Island Housing	89.78	88.78	91.78	90.11
NEED	95.00	100.00	96.00	97.00
Evergreen Economics	91.80	94.80	94.80	93.80

Betsy's Scores							
VENDOR	Overview & Work Plan - 35 Points	Quals & Experience - 25 points	Project Mngmt & Organization - 10 Points	Total Technical Points - 70 Points	ISBE - 6 Points	Cost - 30 Points	Total - 106 Points
Rhode Island Housing	31	21	8	60	0.00	29.78	89.78
NEED	32	23	10	65	0.00	30.00	95.00
Evergreen Economics	31	23	8	62	0.00	29.80	91.80

Karen's Scores							
VENDOR	Overview & Work Plan - 35 Points	Quals & Experience - 25 points	Project Mngmt & Organization - 10 Points	Total Technical Points - 70 Points	ISBE - 6 Points	Cost - 30 Points	Total - 106 Points
Rhode Island Housing	30	20	9	59	0.00	29.78	88.78
NEED	35	25	10	70	0.00	30.00	100.00
Evergreen Economics	30	25	10	69	0.00	29.80	94.80

Becca's Scores							
VENDOR	Overview & Work Plan - 35 Points	Quals & Experience - 25 points	Project Mngmt & Organization - 10 Points	Total Technical Points - 70 Points	ISBE - 6 Points	Cost - 30 Points	Total - 106 Points
Rhode Island Housing	31	22	9	62	0.00	29.78	91.78
NEED	33	24	9	66	0.00	30.00	96.00
Evergreen Economics	32	24	9	65	0.00	29.80	94.80

Notes/Comments:

1. *RI Housing Proposal*: This proposal identified a key audience that is in need of energy education (master metered affordable multifamily housing residents). The proposal did a good job justifying the selected target audience. However, the ET would have like to see more energy expertise in the proposed project management staff. The proposal would also have been stronger if RI Housing had partnered with another organization with clearer energy curriculum development expertise. A more robust method for tracking energy knowledge levels before and after education interventions would also have been appreciated by the ET.
2. *NEED Proposal*: Strong proposal with respect to the outlined workplan and project team expertise. The methods for delivering the proposed energy education to K-12 students and teachers has been implemented previously in Rhode Island and have a proven track record of success. The proposal did increase the scope of what has been implemented in Rhode Island previously (increasing the number of workshops and energy fairs while also using a URI Energy Fellow), but the ET would have liked to see more program innovation and/or a willingness to try new methods to reach the target audiences. The proposal indicates that knowledge surveys will be used to track energy knowledge levels. A more robust knowledge tracking methodology would have strengthened the proposal further.
3. *Evergreen Economics Proposal*: This proposal offered to conduct a needs assessment and then implement two education campaigns based on the results of the needs assessment. The ET greatly appreciated the project team's experience and expertise with respect to energy, data analysis and public education. However, because a target audience had not yet been identified, there was no specific energy education plan presented. Therefore, the ET felt there was too much risk involved in this proposal. However, the value of conducting a needs assessment was well articulated by Evergreen Economics, and the ET would like to encourage the Council to go out to RFP specifically for an energy education needs assessment.

RFP Cover Sheet

Offeror's Name:	National Energy Education Development
-----------------	---------------------------------------

RFP Information	
Title of RFP:	Public Education in Energy Issues
RFP Number:	EERMC 2017-01

Offeror Information	
Legal Name of Offeror:	National Energy Education Development (NEED)
Type of Entity (i.e. corporation, partnership, sole proprietorship):	501c3 not for profit organization
Mailing Address of Primary Place of Business:	8408 Kao Circle, Manassas, VA 20110
Phone Number:	800-875-5029
Website:	www.need.org

Contact Person for the Offeror	
Name:	Mary E. Spruill
Title:	Executive Director
Mailing Address:	The NEED Project 8408 Kao Circle Manassas, VA 20110
Phone Number:	800-875-5029
Email Address:	mspruill@need.org



Signature of Authorized Person

8/24/17

Date

Mary E. Spruill, Executive Director

Printed Name, Title

**II. Technical Proposal: The NEED Project
Response to RFP Title: Public Education in Energy Issues Including Efficiency,
Conservation, and Resources Diversification and Management /EERMC 2017-01**

**National Energy Education Development (NEED) Project
Proposal to the Rhode Island Office of Energy Resources
Rhode Island Energy Efficiency and Resource Management Council (EERMC)**

A. Background and Overview

The National Energy Education Development (NEED) Project welcomes the opportunity to bring over thirty-seven years of energy curriculum development, training, and state programming expertise to the Rhode Island Office of Energy Resources – Energy Efficiency and Resource Management Council in support of EERMC’s public energy education goals. NEED, like EERMC, has worked to “promote public understanding of energy issues and of ways in which energy efficiency, energy conservation and energy resource diversification and management.” As a nonprofit organization providing curriculum and training to Rhode Island teachers and students for over 30 years, NEED understands the importance of developing a thorough understanding of the science of energy, energy resources, energy consumption and energy conservation and efficiency. NEED’s vast portfolio of energy resources includes the science of energy, sources of energy, electricity, transportation, and energy efficiency and conservation with varying levels of depth across the Kindergarten through Twelfth Grade spectrum.

This proposal to EERMC leverages NEED’s history of work in partnership with the Office of Energy Resources and National Grid. In addition, this proposal leverages NEED’s professional work with existing Rhode Island education standards aligned energy curriculum, teacher training, student leadership development, and evaluation. This proposal seeks to grow a robust teacher and student energy training program, high quality curriculum delivery, increased opportunities for student engagement in energy learning, and increased communication of the program’s success. There is no debate that resources provided in a classroom or afterschool setting can engage teachers, students and families in learning more about energy in order to be a voice for energy education in the local community.

NEED curriculum materials and training are designed and delivered objectively, with a focus on balance in message and delivery. Across the K-12 spectrum, NEED materials are used as the foundation for energy content and for developing the processes necessary to consider energy challenges and opportunities in an objective, rational way. NEED believes in a strong understanding of the Science of Energy upon which knowledge of energy sources, the uses of energy (electricity and transportation), and energy efficiency is based.

NEED’s energy programs develop leaders - and not just future ones – NEED kids are leaders even in their classrooms. They will be the problem solvers of tomorrow and will know what challenges and choices lie ahead. NEED kids are preparing for the energy workforce, learning about the importance of technological advancement and simply learning how to interact with their peers and adults. NEED kids are any kids – not always straight ‘A’ students. NEED programs are successful because they meet students at their level and encourage them to grow and expand their knowledge of science and energy. NEED kids are special and many remain involved long after they are no longer “kids.” This attention to student leadership sets NEED apart and will bring exactly the right energy to this program.

B. Work Plan and Scope of Work:

To support EERMC's education and outreach objectives NEED proposes several activities designed to increase teacher capabilities around energy in the classroom, engage students in learning about energy in a more authentic and comprehensive way, and provide for opportunities to engage the public with local school hosted community energy fairs. Providing training, curriculum, and energy leadership development will allow for EERMC's objectives to be met with long-term success.

Identify and Justify the Target Audience:

- NEED seeks to target Rhode Island K-12 teachers and students for the work in this proposal. In both anecdotal and evaluation data gathered over time, NEED understands that energy education is often overlooked, poorly explained in the classroom and not effectively taught in many cases. NEED's pre-post teacher workshop data notes that teachers often have a limited understanding of energy and energy concepts, especially at the elementary level. Energy is not a strong theme in science or social studies standards, but the increase in interest in STEM education has allowed for more energy to be taught in the classroom. As always, energy is an excellent topic for afterschool or extracurricular programming.
- In addition, the school-based audience allows for energy content and awareness to be shared at home. Schools are an exceptional venue for meeting education standards while providing students and teachers the energy content necessary to understand energy fundamentals. Taking this knowledge and sending it home is simple – engaging more of the community in the energy discussion.
- NEED recruits teachers and students to participate in training workshops via school networks, STEM teacher associations, and databases from the State of Rhode Island. Much of NEED's success with workshops has come from word of mouth – with educators, families and students sharing about their participation in NEED programs. Teachers are an exceptional network. They share, they encourage, they recruit. This proposal also offers NEED the opportunity to bring an Energy Fellow from the University of Rhode Island Cooperative Extension into the program to assist in sharing about programming available and in sharing about program success. NEED will work with EERMC's communications team to share about the program offerings as well.
- It is estimated, with the resources requested, that this education effort will reach over 150 teachers, 12,000 students, and 30,000 family and community members.

Identify and Justify the Energy Topic:

- Over time, NEED has provided workshops of various content areas to teachers and students in Rhode Island. For the purposes of this proposal, NEED seeks to host a workshop series that includes a training effort on the Science of Energy, Renewables in Rhode Island, Energy Efficiency and Conservation – including an advanced session on Building Science for Career and Technical Education teachers and students. These trainings will include hands-on kits and tools the students and teachers will utilize in class and/or in extracurricular settings. In the local community Rhode Island Energy Fairs will be hosted by local schools to educate students, teachers and community members about energy and energy efficiency. Participants will answer some simple energy questions, be entered into contests to win energy efficiency tools and will have the opportunity to see what incredible energy experts the students have become.

- NEED's evaluation of teacher pre/post knowledge shows that increasing content knowledge in these energy subject areas is important due to lack of knowledge. Most educators did not receive energy content in their pre-service education programs. Some received it compressed among all the other sciences as it continues to be NEED's opinion Schools of Education aren't able to understand energy's place in the sciences. Energy is science, it's also math and technology while in most cases in the general public it is social science. NEED seeks to help teachers and students develop a clear understanding of the science of energy – to understand wind, solar and hydro it is important to understand the fundamentals of mechanical energy, electrical energy and radiant energy. As we develop this knowledge base among teachers and students, we'll see energy literacy increase and that knowledge put into action in school and residential energy efficiency as well. Rhode Island offers a unique opportunity to showcase renewable energy capabilities as the State continues to be a leader among renewable energy generation, diversifying the fuels mix, and raising the awareness of the impact of energy efficiency and conservation. If education on these topics wasn't needed we would see evidence of such in the plethora of smart energy policy and informed energy discussions around every corner and in every state house.
- This education effort will engage, teach, and inspire young minds to consider energy and all the ways it touches daily life. Teachers will benefit from an increased background in the energy content – feeling more comfortable teaching energy the classroom. Students will benefit from increased knowledge in a major area of science and social science while also exploring the technologies and energy concepts of the future. Igniting a student's interest in energy today may give us a Rhode Island energy expert in the future. The State wins whenever the public better understands energy, whenever proactive legislation isn't met with uninformed arguments or when policy is informed with accurate, well informed energy information.

Describe and Justify the Education Plan

- The workshops will teach the energy topics in a hands-on format. Teachers teach better and with less anxiety about energy when given the opportunity to work with activities and content in a way that mimics how they will use the curriculum and equipment with their students. Online and distance learning are less effective in a hands-on STEM focused world. Hands on science is really hard to do via video conference. Likewise, students learn by doing and using NEED's Kids Teaching Kids approach, NEED student leaders will mentor students new to the EERMC program.
- NEED will utilize a pre and post assessment for training that can be customized should EERMC have questions or concepts that the Council would like assessed. The responses are completed in a scanned format and reports of detail and summary provided to EERMC. The baseline to knowledge increase in some of NEED's recent training has been at least a 38% knowledge increase. In addition, the usability of curriculum and usage of curriculum will be assessed both at the workshop and 3 months post-workshop. These results will allow EERMC to see the impact of it's investment.
- It is the above evaluation plan that will be important to verify knowledge retention. Should EERMC wish, NEED can complete a knowledge retention and usage survey at the close of the year's programming. Teachers will also offer up anecdotal data that will assist in measuring success of the training and curriculum. Students and Teachers will

complete energy projects that showcase their knowledge and can be shared with others to build momentum for increased energy education in Rhode Island.

Identify Barriers to Success

- It is NEED's experience that there are few, but impactful, barriers to success in both available financial resources and in a proactive timeline for programming. This RFP allows for an effective timeline (school year) and the budget proposed will allow for needed financial resources. Additional resources allow for increased numbers of participants and resources delivered to teachers and students. The barrier question is really just one of limited resources for this project.

Identify External Funds that Will be Leveraged

- As NEED has attempted to do in much of its programming around the country, these resources will be leveraged with any additional resources available to NEED. In this case, we expect to be able to host a limited number of workshops with National Grid support (1-2) to focus on complementary topics – expanding the reach of the program without duplicating effort and representing about \$20,000 toward the effort. In addition, the Office of Energy Resources has allowed for Barbara Cesaro to assist in supporting the effort for an average of about five hours per week at an in-kind cost of \$98.38 per hour. This represents almost a \$25,000 contribution to this effort. NEED leverages its own budget by covering for the annual update of the curriculum portfolio and using the locally based energy trainers we have invested in heavily in recent years, an investment of over \$8,000.
- These leveraged funds will allow the program scope to focus on the training and curriculum delivery proposed. There are no resources required for curriculum development, for training development or for start up costs. The program will be ready to go on the date of award.
- NEED also seeks to leverage the significant capabilities of the EERMC communications team to assist in outreach, media and promotion of the available program.

Scope of Work

Delivery of Curriculum Materials and Kits

All NEED materials are updated on an annual basis with data from the Energy Information Administration and the U.S. Department of Energy. Currently, the NEED portfolio encompasses the K-12 market, with some use in community colleges and universities. All total, NEED's curriculum portfolio consists of over 100 teacher modules ranging from the science of energy to solar, from hydrogen to ethanol and biodiesel, and from electricity generation to home and school energy efficiency.

NEED curriculum materials are reviewed annually by energy advisors and teachers alike. NEED's Teacher Advisory Board and state NEED Teacher Advisory Boards review the materials for objectivity, applicability, and content. All curriculum materials are aligned to the Rhode Island state standards.

NEED materials are currently divided into four levels:

Primary K-2, Elementary 3-5, Intermediate 6-8, and Secondary 9-12. All materials are updated for data each year – always providing educators the most recently available data collected by the Energy Information Administration. In addition to the K-12 sector, NEED has found that community colleges and technical schools find value in the curriculum as well. The training for EERMC stakeholders would not be exclusive to K-12 but could include education entities and community organizations beyond the K-12 sector.

In addition to the curriculum guides available, NEED believes in hands-on learning and inquiry science for all students – not just in the science classroom. Over 30 hands-on kits are provided to teachers in various programs. The foundation kit for the program is the Science of Energy Kit – teaching energy transformations. Other kits include electricity and magnetism, solar, wind, hydrogen, and energy efficiency. All kits are created at multiple grade levels to best serve students.

The kits provided to teachers will be based on the workshop content. Renewables workshops will include renewables kits, hybrid workshops will include choices of kits, etc. All kit distribution will be done with an effort to provide the most resources to the most program participants.

Teacher and Student Training

For the best energy education experience, with the greatest reach, local workshops provide a local perspective on energy and allow the greatest number of teachers to experience training and receive curriculum materials. All training programs include certification of professional development hours for teachers to use for professional development requirements. It should be noted that each of the training programs include extensive evaluation. Opportunities will be marketed through school district networks, state departments of education and state boards of education, state science teacher networks, affiliated educator networks, and existing outreach networks will be included.

Teacher Workshops

This proposal offers up to 4 workshops in school year 2017-2018 to include the following topics (open for discussion with EERMC):

- Science of Energy and Rhode Island's Energy Resources (2)
- Energy Resources and Energy Efficiency and Conservation
- Energy Efficiency and Conservation

The workshops will cover curriculum materials and resources available from the program, including the science of energy, energy sources, uses of energy, and energy efficiency. In order to encourage teacher participation and school district support of the training, substitute pay is reimbursed to school districts and continental breakfast and lunch are included in the workshop. NEED's evaluation of energy workshops has netted the data that teachers recall the workshops as a time they were treated as professionals and valued for their time and interest in energy.

Student Energy Team Training

In the 2017-2018 school year two student energy team trainings will be hosted. 10 schools will have the opportunity to have teams of students trained in the science of energy, energy resources, and efficiency and conservation. These schools will apply for the program and will receive both a cash grant and an Rhode Island Energy Fair in a Box to host a local community energy fair. Schools selected will be expected to host an Energy Fair in the local community. Participating schools will receive substitute reimbursement for up to 2 teachers and bus reimbursement for one bus.

URI Energy Fellow Mentorship

NEED is fortunate to have the opportunity to have a University of Rhode Island Energy Fellow as part of the teacher and student program. This fellow will work with the program's participating teachers and students. The fellow will network with the teachers and students, share opportunities and expertise with the program participants, and work to increase his/her own knowledge about energy and the education sector.

Measuring Project Benefits and Performance

Metrics – NEED will collect a number of data points including:

- Number of Teachers
- Number of Students
- Grade levels of participants
- School Districts reached
- Schools Reached
- Families engaged
- Community Members reached via Energy Fairs
- Pre/Post teacher knowledge
- Pre/Post student knowledge
- Pre/Post Energy Fair participant knowledge
- Other data as requested

Program Evaluation

NEED will evaluate both the teacher and student workshops using a standard evaluation tool that can be customized for this program should EERMC have items it would like evaluated as part of the workshop evaluation, the pre/post assessment, the 3 month-post workshop evaluation or other topics.

Youth Energy Conference and Awards

Participating schools will be encouraged to design and execute an energy project (focused on outreach) throughout the year. These projects will be submitted to the Office of Energy Resources and NEED for review in April. Schools will be recognized for their work at the Rhode Island Youth Energy Awards and at the NEED Youth Energy Conference and Awards in June.

Reporting and Project Management

NEED can provide the EERMC with signature program support – providing turn-key project development; project management; web support; conference/workshop planning and implementation; curriculum distribution; teacher support and follow-up; network building; special events and celebrations; and staff support will be provided as warranted for this project. In addition, NEED will coordinate with the EERMC communication teams for outreach, media advocacy, and branding for the program. Reports will be provided quarterly and NEED will be prepared to make mid-point and final presentations to the EERMC.

Timeline

September 2017

Award of Contract

Workshops scheduled and recruitment drafted for EERMC review/branding

Training opportunities announced to schools

EERMC/NEED discussion (if needed) about selected curriculum resources to provide participants

Program offerings announced to schools

URI Energy Fellow selected

Evaluation Drafted, Reviewed, Approved

October 2017

Workshops Begin

Evaluation and Data Collection begins

Recruitment continues

Media opportunities utilized

November 2017 – December 2017

Workshops continue

Evaluation and Data Collection continues

Recruitment Continues

Media engagement, stakeholder engagement, etc.

Recruitment for student workshops begin

January 2018

Mid-Point Check In

Student workshops begin

Evaluation continues

February 2018

Student Workshops hosted

Energy Fairs Scheduled

Media engagement with EERMC's communications team

Evaluation continues

March 2018 – April 2018

Energy Fairs Hosted

School projects completed and submitted

Outreach opportunities focused around Earth Day, etc

May 2018

Final school efforts completed

Evaluation collection wrapping up for school year program

EERMC discussion on options for summer programming if resources allow

June 2018

Recognition of School Energy Programs in Rhode Island

Recognition of School Energy Programs at the NEED Youth Energy Conference and Awards

Evaluation Report Completed

C The NEED Project – Company Profile

The mission of the National Energy Education Development (NEED) Project is to promote an energy conscious and educated society by creating effective networks of students, educators, business, government and community leaders to design and deliver objective, multi-sided energy education programs. The NEED Project is dedicated to developing innovative energy education materials and training programs for teachers and students. Launched by Congressional Resolution in 1980, the NEED Program is now a dynamic force in more than 85,000 classrooms nationwide. NEED is a 501(c)(3) nonprofit education association funded by federal and state government grants, corporate contributions, and private sponsors.

The NEED Project's multi-sided training and instructional programs on all aspects of energy, including production, consumption, and economic and environmental issues, give students an understanding of the interrelationship between energy and the environment. More important, NEED's student-directed activities empower students to take active roles in educating their peers, families, and communities about energy issues and in identifying and solving the problems unique to their communities. NEED has developed a six-nine week energy education unit currently in use in many school districts across the country. NEED programs embrace a "Kids Teaching Kids" philosophy and all programs are designed to practice student peer to peer teaching and cooperative learning.

NEED programs focus on developing a clear understanding of the science of energy, and then building knowledge of the sources of energy, uses of energy, and the conservation and efficiency of energy. NEED programs can be used in the classroom as a curriculum unit, in extracurricular clubs as supplemental activities, or by energy managers to help reduce energy consumption and costs to the school.

NEED has a Teachers Advisory Board that assists in the development of curriculum and critiques and develops NEED curriculum, programs, and training. Many of these teachers, in addition to their colleagues in the field, serve as NEED Facilitators providing training and teacher support in their local areas.

NEED's staff has a long history in energy and education - specifically in science teaching in the classroom. NEED is honored to count among its staff several students who came through NEED programs during their time in K-12 education. NEED's history in Rhode Island has allowed investment in several NEED facilitators capable of providing training to local teachers and students. Shannon Donovan, NEED's lead facilitator in the state, has a lengthy and laudable history in education as an instructor at Scituate High School but also a Rhode Island Teacher of the Year. This team, along with members of the Rhode Island NEED Teacher Advisory Board representing no fewer than 10 school districts will make this program successful. The support of the Office of Energy Resources and Barbara Cesaro's engagement make for a team that will deliver expected success to EERMC.

An issue for NEED in this response to RFP however is the ISBE requirement. As NEED is a 501c3 nonprofit organization we are excluded from being able to identify as an ISBE company. Should the opportunity to ever register as an ISBE organization arise, NEED would gladly do so, but after much review at the state and national level, we are excluded from identification in either category.

D. Relevant Experience

For over 37 years, NEED has been delivering the type and scale of programs that the RFP requests. NEED has developed the skill set, largely through evaluation and pilot programs, to

deliver a state program like this and to secure great success – with metrics, anecdotal success and evaluation. NEED listens to its participants and its partners and working with EERMC and Rhode Island teachers and students, as well as our partners at URI, this program will be highly successful. Each year, NEED hosts over 300 teacher workshops across the country on various topics and with the support of a diverse sponsor base. NEED’s student workshops are equally a success, with great engagement from students, igniting the genius among participating students. NEED’s evaluation efforts will provide EERMC with the data needed to assess performance.

NEED has a long history of working in partnership with entities similar to EERMC. We know that this effort will be a success together.

E. Examples of Prior Work

NEED has quite a few examples of previous or ongoing projects similar in nature to the EERMC effort including our history with the Office of Energy Resources and National Grid. These programs offered teacher training, student workshops, classroom curriculum, student leadership development and evaluation. NEED served as a turn-key provided in both of these programs.

Outside of Rhode Island, NEED has worked extensively with a five-party program in the State of Illinois that provides teacher workshops, classroom grants, hands-on kits, curriculum, and local Energy Fairs. The Energizing Student Potential program is the joint effort of Exelon, ComEd, Peoples and North Shore Gas, Nicor Gas and BP with a goal to increasing energy within the STEM classroom and development an understanding of energy and energy conservation/efficiency among Illinois teacher and students. This program is a three year program, now in year three reaching 250 teachers and 21000 students. The program has replicated to include Maryland and the District of Columbia.

In Virginia, working with the Virginia Department of Education and Dominion Energy, NEED designed and developed curriculum for Virginia’s 6th grade classrooms to meet the energy requirements in Virginia’s SOLs (standards of learning). This unit focused on the science of energy and Virginia’s energy resources, provided hands-on kits, teacher training, student engagement, and evaluation.

In Kentucky, working with the Kentucky Department of Energy Development and Independence and Louisville Gas & Electric, NEED hosts 20 workshops a year focused on developing an understanding of energy efficiency. These workshops provide teachers and students with knowledge of energy efficiency and conservation, resource diversification, and the science of energy.

The list goes on. The scope of work requested in this RFP really is what NEED does well – we were chartered to do it and as an organization of energy nerds and educators – we enjoy every opportunity to bring more energy nerds to the family.

F. Reference Information

- Barbara Cesaro – Office of Energy Resources – Barbara.Cesaro@energy.ri.gov – 401-574-9105
- Steve Solomon – Exelon – steve.solomon@exeloncorp.com – 312-394-4361
- Christina Kerrigan – PECO - 215-841-4051

G/H/I. Identification of Staff and Subcontractors

NEED has a team of education and energy professionals in its Virginia headquarters that will provide support for a portion of this program including workshop logistics, accounting, recruitment, outreach, curriculum distribution, kit distribution. Those individuals include:

Mary Spruill, Executive Director

Overall management of program, outreach support, training support

Sandra Harben, Accountant

Budgeting and financial management

Wendi Moss, Training Coordinator

Workshop logistics, recruitment

Kim Swan, Evaluation Coordinator

Design and collection of evaluation data

In addition, NEED will have the support of:

Barbara Cesaro, Office of Energy Resources

Program support, recruitment, outreach

Shannon Donovan, NEED Facilitator and Educator, Scituate High School

Workshop design and delivery, outreach

Joanne Spaziano, NEED Facilitator and Educator, Park View Middle School

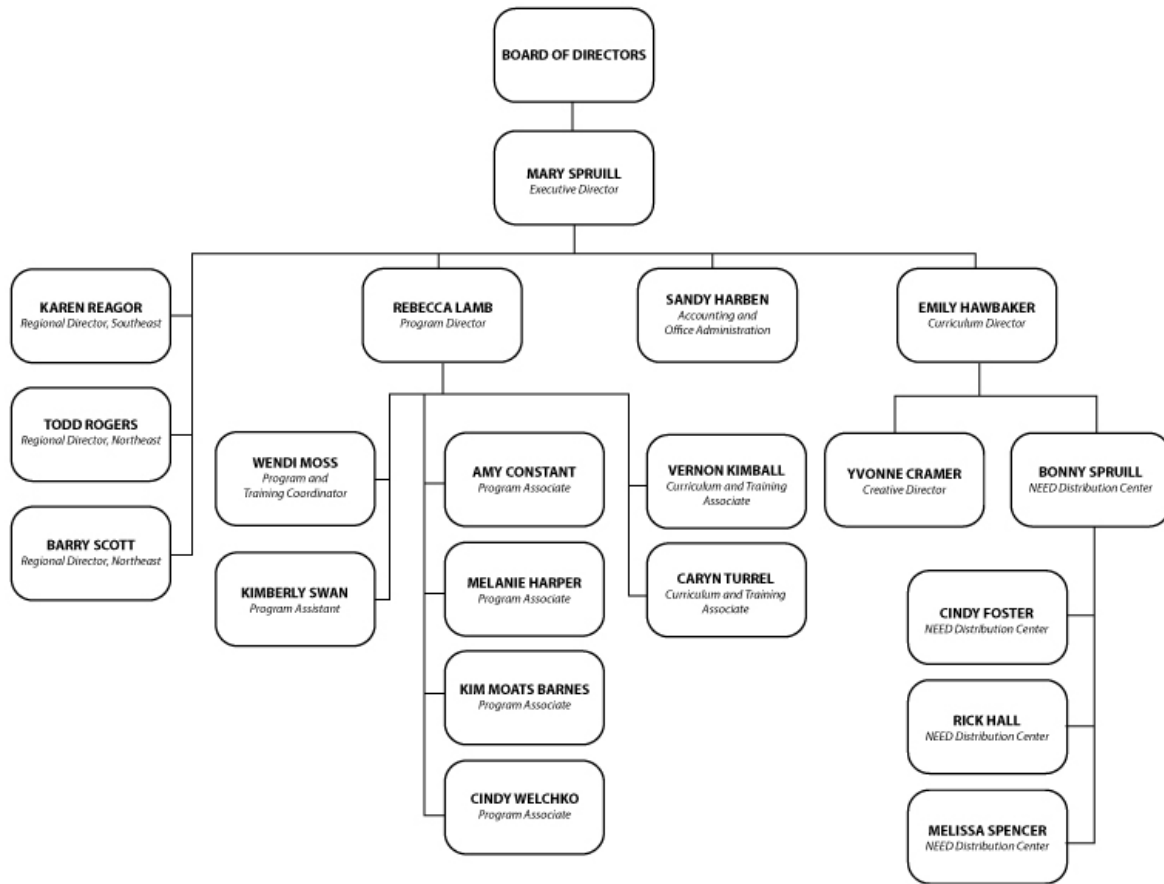
Workshop design and delivery, outreach

Stephanie Racine, NEED Facilitator and Educator, Gaudet Middle School

Workshop design and delivery, outreach

Kate Venturini, University of Rhode Island Cooperative Extension

Selection and Supervision of Energy Fellow



Cost Proposal - Task Sheets

Offeror's Name:	
------------------------	--

Task Sheets. Please add or delete rows for team members and add or delete task tables as needed.

Task 1:			
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Additional expenses that are not included in hourly rate			
Description of Expense		Price	
Total Task Price:		\$ _____	

Cost Proposal - Task Sheets

Offeror's Name:	
------------------------	--

Task Sheets. Please add or delete rows for team members and add or delete task tables as needed.

Task 1:			
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Additional expenses that are not included in hourly rate			
Description of Expense		Price	
Total Task Price:		\$ _____	

Cost Proposal - Task Sheets

Offeror's Name:	
------------------------	--

Task Sheets. Please add or delete rows for team members and add or delete task tables as needed.

Task 1:			
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Additional expenses that are not included in hourly rate			
Description of Expense		Price	
Total Task Price:		\$ _____	

Cost Proposal - Task Sheets

Offeror's Name:	
------------------------	--

Task Sheets. Please add or delete rows for team members and add or delete task tables as needed.

Task 1:			
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Additional expenses that are not included in hourly rate			
Description of Expense		Price	
Total Task Price:		\$ _____	

Cost Proposal - Task Sheets

Offeror's Name:	
------------------------	--

Task Sheets. Please add or delete rows for team members and add or delete task tables as needed.

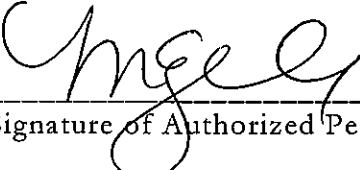
Task 1:			
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Additional expenses that are not included in hourly rate			
Description of Expense		Price	
Total Task Price:		\$ _____	

Cost Proposal - All-Inclusive Price and Signature Page

Offeror's Name:	National Energy Education Development (NEED)
-----------------	--

One All-Inclusive Price. This number represents the sum of all total task prices and any other costs and expenses charged to EERMC.

All-Inclusive Price:	<u>\$74454.29</u>
-----------------------------	-------------------



Signature of Authorized Person

8/24/17

Date

Mary E. Spruill, Executive Director

Printed Name, Title

ISBE Proposal – Participation Rate and Signature Page

Offeror's Name:	
-----------------	--

A. Total amount of dollars representing work that will be done by the ISBEs:	\$ _____
B. All-Inclusive Price Listed in the Cost Proposal:	\$ _____
ISBE Participation Rate (=A/B):	_____ %



Signature of Authorized Person

Date

Printed Name, Title

ISBE Proposal – List of ISBEs Page

Offeror's Name:	
------------------------	--

Please see Sections 1.5, 1.6, 1.7, 3.6, 3.7, and 3.8 of the RFP for additional information.

Is the offeror a State certified ISBE (MBE, WBE or Disability Business Enterprise):	YES <input type="radio"/>	NO <input type="radio"/>
	If YES, provide the total dollar amount representing work that will be done by the offeror: <div style="text-align: right; margin-top: 10px;">\$ _____</div>	

Identification of ISBE Subcontractors (Please add rows as necessary)		
ISBE Subcontractor's Name	ISBE Mailing Address, Email Address, and Phone Number	The total dollar amount representing work that will be done by the ISBE Subcontractor
		\$ _____
		\$ _____
		\$ _____



Public Education in Energy Issues Including Efficiency, Conservation, and Resource Diversification and Management

RFP #EERMC-2017-01

A Proposal to The Rhode Island Energy
Efficiency and Resource Management
Council (EERMC)

Submitted by Evergreen Economics

August 28, 2017

TECHNICAL PROPOSAL



TAMI RASMUSSEN
VICE PRESIDENT

Office: 510.899.5556
Cell: 415.722.7678

1648 Martin Luther King Jr. Way
Berkeley, CA 94709
rasmussen@evergreenecon.com
www.evergreenecon.com

August 28, 2017

Ms. Becca Trietch
Rhode Island Office of Energy Resources
One Capitol Hill, 4th floor
Providence, RI 02908

Dear Ms. Trietch,

Evergreen Economics, together with Cool Choices and Michaels Energy, is pleased to present our proposal to develop and implement public energy education in Rhode Island for 2018.

We wish to highlight the following specifics of our team and features of our proposal:

- *An exceptional team* involving three organizations with unparalleled qualifications and a history of strong delivery individually and in collaboration with each other;
- *A focus on empirically-guided and theory-based public energy education* that is based on program logic models to guide the efforts;
- *A customized approach* that is based on a needs assessment and custom-developed solutions rather than an off-the-shelf energy education product;
- Implementation that includes both *proven tools and innovative ideas*;
- *An eye toward the future* with educational strategies that spur immediate awareness and behavior as well as set the stage for future consideration of resource-efficient use of energy; and
- *A robust public education framework* that will provide EERMC with the information needed to determine future public education initiatives.

Should you have any questions about our proposal, please do not hesitate to contact me.

Sincerely,

Tami Rasmussen
Vice President

Table of Contents

I. COVER SHEET	1
II. TECHNICAL PROPOSAL.....	2
A. OVERVIEW	2
B. WORK PLAN.....	3
1. Needs Assessment.....	3
2. Public Education Campaigns.....	4
3. Real-Time Assessment and Adaptation	6
4. Reporting	6
5. Project Management.....	7
C. COMPANY PROFILE.....	7
D. RELEVANT EXPERIENCE	8
E. EXAMPLES OF PRIOR WORK	8
F. REFERENCE INFORMATION	10
G. IDENTIFICATION OF STAFF AND SUBCONTRACTORS.....	10
H. STAFF RESPONSIBILITIES.....	11
I. STAFF EXPERIENCE	11
III. COST PROPOSAL.....	12
IV. ISBE PROPOSAL	12
ATTACHMENT A: STAFF EXPERIENCE (ORGANIZATIONAL CHART, RESUMES).....	13
EVERGREEN ECONOMICS RESUMES	14
MICHAELS ENERGY RESUMES	20
COOL CHOICES RESUMES	24

I. Cover Sheet

RFP Cover Sheet

Offeror's Name:	Evergreen Economics
------------------------	---------------------

RFP Information	
Title of RFP:	Public Education in Energy Issues Including Efficiency, Conservation, and Resource Diversification and Management
RFP Number:	EERMC-2017-01

Offeror Information	
Legal Name of Offeror:	Evergreen Economics, Inc.
Type of Entity (i.e. corporation, partnership, sole proprietorship):	S-Corporation
Mailing Address of Primary Place of Business:	333 SW Taylor Street, Suite 200 Portland, OR 97204
Phone Number:	(503) 894-8676
Website:	www.evergreenecon.com

Contact Person for the Offeror	
Name:	Ingo Bensch
Title:	Principal Consultant
Mailing Address:	459 Presidential Lane Madison, WI 53711
Phone Number:	(510) 463-3171
Email Address:	bensch@evergreenecon.com



Signature of Authorized Person

8/25/17

Date

Tami Rasmussen, Vice President

Printed Name, Title

II. Technical Proposal

Evergreen Economics, together with Cool Choices and Michaels Energy, is pleased to present our proposal to develop and implement public energy education in Rhode Island for 2018. A cost proposal is included under separate cover. We would be pleased to discuss our approach or modify it, if desired, in consultation with the Rhode Island Energy Efficiency and Resource Management Council.

The Evergreen team has a unique combination of experienced educators, evaluators, marketers, and program implementers. We have the expertise to identify trends quickly and the agility to pivot implementation plans to leverage those findings.

A. Overview

The Evergreen team proposes to develop and conduct a *practical, empirically guided* public energy education effort in Rhode Island.

We have structured our proposal to offer a *comprehensive approach* to deliver public information and outreach on energy issues. Rather than offer an off-the-shelf package, we propose a customized public education effort that maximizes the value from Rhode Island's available budget with an eye toward long-term results in a way that complements existing energy efficiency programs and provides scalability into future years.

We have built into our proposal a mix of established platforms and proven public information-based approaches developed by seasoned energy efficiency professionals. We also offer local implementation to be enhanced by Rhode Island students who will provide a local perspective, youthful enthusiasm, and additional innovative ideas.

Key features of our proposal include:

- An initial needs assessment to identify the highest priority target audiences and information needs to be addressed by the public education effort;
- Theory-driven approaches to public education that are guided by program logic models;
- Development of a targeted public education campaign for two high priority target audiences that seeks to facilitate personal and organizational action toward the sound use of energy resources in Rhode Island;
- Pragmatic approaches to public education that incorporate existing platforms and highly experienced energy professionals, supplemented by innovative home-grown ideas from a team of Rhode Island graduate students in a communications field; and
- Real-time measurement of campaign outcomes to allow for adaptive implementation of the campaign and to guide future public education efforts.

To accomplish these tasks, we have assembled an outstanding team of firms with professionals who understand the energy efficiency opportunities present in homes and businesses, energy-related choices by their respective decision-makers, educational and informational campaigns, and behavior change.

B. Work Plan

We propose an empirically-based public energy education effort that comprises:

- **A needs assessment** to guide the one-year effort and inform any future public energy education Rhode Island may choose to conduct;
- Theory-driven **public energy education campaigns** that target two high priority audiences; and
- **Real-time measurement** of the energy education to allow for adaptive management and adjustments.

Table 1: Task Overview

Task	Timeline	Lead / Contributors	Purpose
Needs Assessment	Months 1-2	Evergreen and Michaels with input from Cool Choices	Provide empirical basis for target audience and message selection
Public Energy Education	Months 3-12	Cool Choices with assistance from Evergreen, Michaels, Rhode Island student group	Design and deliver program logic-based energy education for target audiences
Measurement	Months 3-12	Evergreen and Michaels with assistance from Cool Choices	Logic model-guided measurement of campaign results and impacts
Reporting	Months 1-12	Evergreen, Michaels, Cool Choices	Interim and final reporting of plans, activities, and results to EERMC
Project Management	Months 1-12	Evergreen	Ensure project remains on course, on time, and on budget

I. Needs Assessment

The Evergreen team will conduct a needs assessment to initiate the project. The objective of the needs assessment is to facilitate *theory-based design* of public energy education and *empirically informed prioritization* among the potential target audiences. Incorporating this step into the project will ensure that EERMC's fixed budget for public energy education is well spent. As a side benefit, the needs assessment would also provide direction for planning future public energy education if EERMC decides to conduct subsequent campaigns.

The needs assessment will culminate in a presentation to EERMC. The presentation will highlight the sectors and target audiences that would most benefit from public energy education, the nature of the information gaps that need to be filled, and the theoretical basis and potential practical impacts of filling those gaps.

The needs assessment will entail three steps: information gathering, mapping, and prioritization. In the information gathering phase, we will assess existing outreach and

dissemination of relevant energy information by National Grid and by the mass media serving Rhode Island. (We focus on these sources in particular because our past research has shown media and local utilities to be most people's primary information sources about energy efficiency.) Our examination of information disseminated by National Grid will focus on both general energy-related tips included in bill stuffers as a public service and more targeted outreach and information as part of National Grid's energy efficiency programs. We will also collect high-level, descriptive information about National Grid's individual energy efficiency programs including target audiences, program theories, and program manager insights about information gaps. Evergreen Economics will conduct the data collection for the residential sector, while Michaels Energy will lead a parallel effort for the commercial and industrial sectors. Our review of media coverage will entail a snapshot of messages revealed by a search of current and recent archives of Rhode Island media content and features related to saving energy that have been posted on the outlets' websites.

During the mapping component of the needs assessment, our full team will lay out the information gathered in a structured, visual way. We will chart the sectors and audiences already served by general energy education or by targeted energy efficiency programs, any unmet needs for energy information that existing programs identify, and our team's understanding of further opportunities for driving behavior as a supplement to utility programs. This mapping exercise will result in identification of a set of public information gaps that serve as educational opportunities for EERMC. We expect the list of opportunities to be larger than can be addressed as part of this one-year project.

As a final step, our team will screen and prioritize the opportunities we identify. This prioritization exercise will rate each opportunity based on its promise to facilitate (or directly spur) sustainable energy choices by Rhode Islanders within or outside of existing efficiency programs, its feasibility as a stand-alone public education campaign, its fit within EERMC's project time frame and budget, and its benefits relative to the public, the state and the target audience(s). In considering these factors for each opportunity, our team will be documenting the program logic behind the various solutions to fill the gaps we will have identified.

2. Public Education Campaigns

The Evergreen team will, through the needs assessment phase and based on feedback received from EERMC, identify two target audiences and the desired outcomes from public education aimed at these targets. Cool Choices will lead the development and implementation of the public education campaigns, leveraging both its strong facilitation skills and its deep expertise engaging individuals and businesses around energy information.

While it is difficult to predict the specifics of the public education campaigns until the needs assessment is complete, it seems likely that the team will prioritize one target associated with the residential market and one target associated with the business or broader non-residential market. By addressing both residential and business targets from the onset, the program can maximize insights that could be used in subsequent years if the focus turns to other targets in these sectors. Within the residential and business markets, it is likely we would target markets that are underserved by traditional energy efficiency programs, such as renters or small retail businesses. To illustrate the strategies we might integrate into the education plans, we will use

these two examples here, but the reader should keep in mind that specific targets will be identified via the needs assessment.

Using the logic models developed as part of the needs assessment, the Evergreen team will refine and subsequently implement public education campaigns to achieve the objectives identified for the target audiences through the needs assessment. In addition to being aligned with the logic models, these campaigns will include data collection that can serve as immediate feedback loops that enable the team to adjust its strategies as necessary to increase effectiveness.

The needs assessment will lay out the information gaps associated with each target audience. We might determine, for example, that small businesses lack understanding of resource diversity as well as demand charges and that these gaps lead to poor decision making. Where one approach might be to respond by creating flyers to send to these business owners, our approach is more thoughtful. We understand that engaging individuals around energy is difficult, that busy people have hundreds of other priorities for their time and attention. As experts in behavior change theory and practice, we will instead identify captivating engagement opportunities and develop a plan that leverages those opportunities.

An effective strategy for business, for example, might be to showcase one local business leader who is making smart choices around resource diversity or demand charges – empowering that local leader to share their successes with peers in a compelling way. We might do this via social media or local business events, always aiming to create buzz that catches the attention of our target audience rather than simply providing information that small business owners will ignore. Similarly, we might engage individuals through relevant local channels like faith-based groups, school groups, or neighborhood associations, as well as via social media. Cool Choices has broad and deep expertise in engagement, working with multi-family tenants as well as local chambers of commerce and other business groups to facilitate education and action on energy issues.

As we refine our public education plans, we will also integrate on-the-ground student-led efforts into the mix. We have already talked with communications faculty at the University of Rhode Island, and we are confident we can collaborate with them, or another local educational program, on a student project whereby students provide both innovative thinking and enthusiastic assistance in delivering campaigns on the ground. Again, the specific role will be determined once we know targets and likely overall strategies, but the student efforts might involve capturing success stories via video that can be shared across the target group, for example.

Ultimately, we aim to create public education campaigns that support self-generated content – campaigns where hundreds of individuals and businesses share their successes in ways that motivate thousands of other individuals and businesses to learn more. It is enormously difficult to motivate people to learn about energy for its own sake; much more effective is to inspire people to learn about energy because their peers are talking about how an increased understanding of energy issues has made their lives better, whether at the personal level or the business level.

The Evergreen team will use the expertise of Michaels Energy to develop campaigns employing marketing and communications strategies that are best suited to the target audience and the message.

3. Real-Time Assessment and Adaptation

The Evergreen team will design real-time measurement to accompany the public education campaigns. The objective of the measurement will be three-fold: (1) to understand the effectiveness of the public education campaigns, (2) to allow for midcourse adjustments and adaptive approaches to our campaigns, and (3) to report back to EERMC what the campaigns did and did not accomplish for the Council's future planning.

Evergreen Economics and Michaels Energy will lead the data collection in close consultation with Cool Choices. While the details will be customized to each campaign, the core principles will be the same. For each campaign, we will:

- Seek to measure whether the outcomes anticipated by the campaign's program logic model are coming to fruition; if so, how, and if not, why not;
- Incorporate data collection as part of the campaign delivery;
- Analyze incoming data on an ongoing basis and use it for campaign adaptations, as warranted.

Randomized control trials are a possibility, but these are unlikely for most public energy education campaigns we would conduct due to the requirements they impose on controlling information flow to and among targeted audiences. Instead, we will focus on quasi-experimental design (if pre-existing awareness, attitudinal, or behavior data exist for comparison purposes) and on pre-post measurement. For each campaign we present to EERMC, we will also describe the measurement plan.

4. Reporting

The project will close with the delivery of a written report and a presentation. The written report will summarize the public energy education efforts and results at a high level for management-level decision-makers, while including sufficiently detailed information in appendices or separate files that would be useful for future planning and implementation of additional public energy education campaigns in Rhode Island.

We will work with the designated EERMC contact person on the structure and format of the report. In addition, we propose at least three check-ins with EERMC or its designated contact: after the completion of the needs assessment to present results and campaign plans, after the first stage of the campaign as a check-in and to discuss any adjustments warranted by our real time measurements, and at the conclusion of the project as part of our final reporting.

We propose remote presentations if EERMC is amenable to a webinar presentation with live video feed to maximize the use of project resources on tasks directly related to educating Rhode Island energy users. However, if the Council prefers, we can travel to Providence for an in-person presentation or a hybrid in-person/remote presentation.

5. Project Management

Evergreen Economics principal consultant Ingo Bensch will serve as a single point of contact for EERMC and report progress on a monthly basis to ensure the Council is aware of our activities and next steps. Internally, Evergreen Economics will lead the project to ensure it remains on target in substance, timeline, and budget.

C. Company Profile

Evergreen Economics is an economics research firm whose researchers employ robust and innovative analysis techniques to explore and understand energy markets, energy-related decision-making by households and businesses, and the role that information plays in the decision-making process. Our work encompasses actionable research that energy-related programs can use to design, implement, and modify their efforts to promote sustainable use of energy. Moreover, we are experts at measuring results and impacts from those programs.

Evergreen researchers have the desire, commitment and ability to seek out answers to complex questions, and to communicate those answers and findings in a clear and effective manner to stakeholders. Ingo Bensch has managed several Evergreen evaluation projects and has become an expert on assessing how customer behavior informs program design. He is passionate about providing actionable, empirical insights for use in program design, planning, and implementation. Martha Wudka also represents Evergreen on this team; she has years of experience in data collection and analysis, including on the recent California Low Income Needs Assessment.

Evergreen was founded in 2011 as an S-Corporation based in Portland, Oregon. Evergreen currently employs 15 staff members and has offices in Berkeley and Madison.

Cool Choices is a Wisconsin nonprofit that aims to inspire individuals, businesses and whole communities to adopt sustainable practices that save energy and reduce greenhouse gas emissions. With unparalleled expertise in both energy and behavior change, Cool Choices excels at making topics like energy efficiency relevant and actionable.

Established in 2009, we have been implementing behavior change programs since 2011 using an online engagement platform that both measures and accelerates action. Our clients include local units of government, utilities, and private companies seeking increased employee engagement around corporate sustainability goals. We have also implemented programs in multi-family buildings, generating substantial increases in engagement.

As part of our program efforts, Cool Choices has demonstrated success facilitating increased participation in traditional energy efficiency programs. In 2014, we conducted a research project for Wisconsin's Focus on Energy program that identified high energy users and successfully nudged those residential customers to Focus on Energy programs.

Led by Executive Director Kathy Kuntz, our team of 10 has deep expertise implementing award-winning energy efficiency programs, a strong background in behavior change theory, and outstanding marketing and communications skills. We implement engagement programs around the country from our office in Madison, Wisconsin.

Michaels Energy has made it our mission to help others maximize cost effective energy savings for programs, facilities, and processes – no matter what hurdles stand in the way. We are obsessed with saving energy, advancing innovation, and sharing our wealth of knowledge. Teri Lutz, the Director of Program Evaluation, leads many of our training and education projects. She has extensive experience creating and delivering educational workshops for utility staff and their customers. Teri also develops and conducts evaluation and market research for utility clients.

Michaels’ award-winning marketing and brand has caught the attention of our clients. Our marketing team, led by Kristin Laursen, provides marketing services to utilities and program administrators. This service helps our clients reach selected markets with targeted messaging for increased program enrollment. Teri and Kristin will use their expertise and creative spirits to develop engaging educational content and measurable marketing campaigns.

Michaels’ clients include many of the largest utilities in the U.S. We design and implement niche programs such as commercial and industrial new construction, retro-commissioning, and strategic energy management programs. We also have extensive experience conducting marketing research and evaluating all types of commercial, industrial, and institutional programs. We know these types of customers very well, as we visit hundreds of them every year to hear about their energy savings objectives, to discuss their energy projects, and to learn about why they do (or do not) participate in utility programs.

Michaels Energy was founded in 1984 in the State of Wisconsin. Michaels is a privately held S-Corporation with 48 employees. Michaels is headquartered in La Crosse, Wisconsin and has offices in Madison, Green Bay, Minneapolis, Cedar Rapids, and Denver.

D. Relevant Experience

The Evergreen team brings a wealth of experience in each of the components to the public energy education project we propose. Cool Choices designs and implements effective sustainability engagement efforts that change behavior. Evergreen Economics provides empirically-based input for program design and evaluation expertise with a rich history of work in the residential sector. Michaels Energy does similar work with a greater focus on the commercial and industrial sector, as well as program design and delivery. We provide just a few examples of our work in Section E and can provide additional project examples if desired.

E. Examples of Prior Work

As noted, our team has a history of working together on numerous projects. We offer the following examples of prior work to showcase our abilities. Some of these projects are collaborative efforts.

Eco-Concierge Pilot

Illinois Science and Energy Innovation Foundation (ISEIF), 2016-2017

Team members involved: Evergreen Economics and Cool Choices

Cool Choices and Evergreen Economics jointly assisted Seventhwave in piloting an eco-concierge approach to engage interested tenants in a multifamily building in Chicago around sustainable actions they can take. These activities emphasize opportunities to save energy and

make use of smart grid data and services available to them from their utility company. Cool Choices ran a sustainability game at the building, and Evergreen has been providing real-time measurement of program effectiveness and determining how the activities are working.

DSM Program Manager Workshop: Building a Program from Concept to Evaluation
Association of Energy Services Professionals (2017)

Team members involved: Michaels Energy and Evergreen Economics

Michaels Energy and Evergreen Economics designed a 1.5 day-long workshop targeted at new program managers. This workshop takes the learners on a journey from identifying the need for a program, designing and implementing a program to fill that need, and evaluating and reporting on the program's effectiveness. This team now delivers the workshop across the U.S. and in Canada. Teri Lutz and Ingo Bensch lead the evaluation and research contents of the workshop, showcasing both their expertise in these areas as well as their understanding of utility programs and effective communications to diverse audiences.

Sustainable Practices Engagement Programs

Waukesha County (2017), Madison (2015)

Team member involved: Cool Choices

Cool Choices is currently implementing a county-wide engagement program encouraging environmentally sustainable practices in one of the most politically conservative counties in Wisconsin. In partnership with four local chambers of commerce and the county workforce development board, the program illustrates our ability to build strategic alliances and facilitate action across the political spectrum.

As part of politically progressive Madison, Wisconsin's efforts to reduce residential energy consumption, Cool Choices implemented a community-wide engagement program, encouraging more than 800 households to adopt sustainable practices. As part of the effort, Cool Choices facilitated partnerships with the sewerage district, the local electric and gas utility, the chamber of commerce and more than 40 local businesses.

Low Income Needs Assessment

California Public Utilities Commission (CPUC), 2015-2016

Team member involved: Evergreen Economics

For the CPUC, Evergreen Economics conducted an assessment of the state's low-income population energy-related needs. The study included a phone survey with 900 low-income residents, focus groups and in-depth interviews to determine drivers of and barriers to participation in the state's low-income energy assistance programs. A targeted look at high burden customers identified educational opportunities to help households reduce their energy usage and costs without impacting their comfort.

Strategic Energy Management Program

Alliant Energy (2017)

Team member involved: Michaels Energy

Michaels Energy designed a Strategic Energy Management program that is currently being piloted by Alliant Energy. This program offers six educational sessions to teach customers how to make energy management part of their everyday practice and to create a culture for maintaining this within their organizations. In addition to the program's educational

component, Michaels is also leading the customer recruitment effort and developed tools to help Alliant account managers engage customers and drive enrollment. This project highlights Michaels’ deep understanding of the energy choices in the commercial/ industrial sector.

F. Reference Information

Table 2 provides three client references for our project team – additional information on any of these projects is available upon request. EERMC has our express permission to contact all clients we have identified, and may request information on the performance of our firm.

Table 2: Relevant Client References Including Project Description

Reference Contact	Email and Phone	Projects
Amy Webb, Project Manager, Market Research & Evaluation Northwest Energy Efficiency Alliance	AWebb@neea.org (503) 688-5448	Evergreen Economics (led by Ingo Bensch) conducted a comprehensive market characterization of residential heat pump clothes dryers. The study included consumer research to understand customer information needs and incentive structures needed to prompt consideration of new dryer technologies.
Claire Cowan, Director of Program Design and Delivery Seventhwave	ccowan@seventhwave.org (608) 210-7138	Both Evergreen Economics and Cool Choices assisted Seventhwave with the design, delivery, and assessment of an Ecoconciierge sustainability pilot in a Chicago multifamily building. Cool Choices administered a sustainability game, and Evergreen Economics provided measurement assistance and a concurrent evaluation of the pilot.
Suzanne Jones, Chief Operating Officer Association of Energy Services Professionals	suzanne@aesp.org (480) 704-5900	Michaels Energy staff members have held prominent roles in the Association of Energy Services Professionals (AESP). Furthermore, Michaels' Teri Lutz and Evergreen's Ingo Bensch are currently providing a 1.5 day-long workshop for AESP to new demand side management professionals.

G. Identification of Staff and Subcontractors

To achieve our aims, we have assembled a carefully selected team of energy and program professionals with expertise in needs assessments, information-based program design and delivery, and energy education evaluation. Table 3 lists our team members and the expertise each firm brings to the project. We highlight individuals assigned to this project in Section H.

Core members of the team are Evergreen Economics (Ingo Bensch and Martha Wudka), Michaels Energy (Teri Lutz and Kristin Laursen), and Cool Choices (Kathy Kuntz and Sara Peck). In addition, we wish to highlight our intent to involve a Rhode Island-based student

group studying communications or business to supplement our implementation design and delivery. Details of those arrangements will be determined upon initiation of the project.

Table 3: Team Members and Respective Areas of Expertise

	Evergreen Economics	Michaels Energy	Cool Choices
Formative research and needs assessments	X	X	
Behavior change	X	X	X
Energy program delivery		X	X
Public energy education			X
Established communications platforms			X
Innovative and creative communications approaches			X
Energy education evaluation	X		
Branding and marketing		X	

H. Staff Responsibilities

Below, we describe individual roles of the team for this project.

Evergreen Economics:

Ingo Bensch will manage the overall project and reporting. He will lead the needs assessment and measurement for the residential education component and bring leadership and vision to the selection of public education targets and priorities. *Martha Wudka* will assist with data collection and analysis for the needs assessment, as well as development of data collection systems and analysis of data to assess the effectiveness of the team’s public energy education.

Cool Choices:

Kathy Kuntz will facilitate the development of public education plans and supervise adjustments to the plans. She will facilitate set up of the student team. *Sara Peck*, director of communications, will lead campaign implementation – creating materials, social media, etc. – in addition to providing day-to-day oversight of student team efforts.

Michaels Energy:

Teri Lutz will lead the needs assessment for the non-residential education component. *Kristin Laursen* will work with Cool Choices to establish a Rhode Island Energy Public Education brand and assist with marketing campaigns and their measurement.

I. Staff Experience

Resumes for key staff members and an organizational chart are attached in Appendix A. Sections G and H above present our intended roles and responsibilities.

III. Cost Proposal

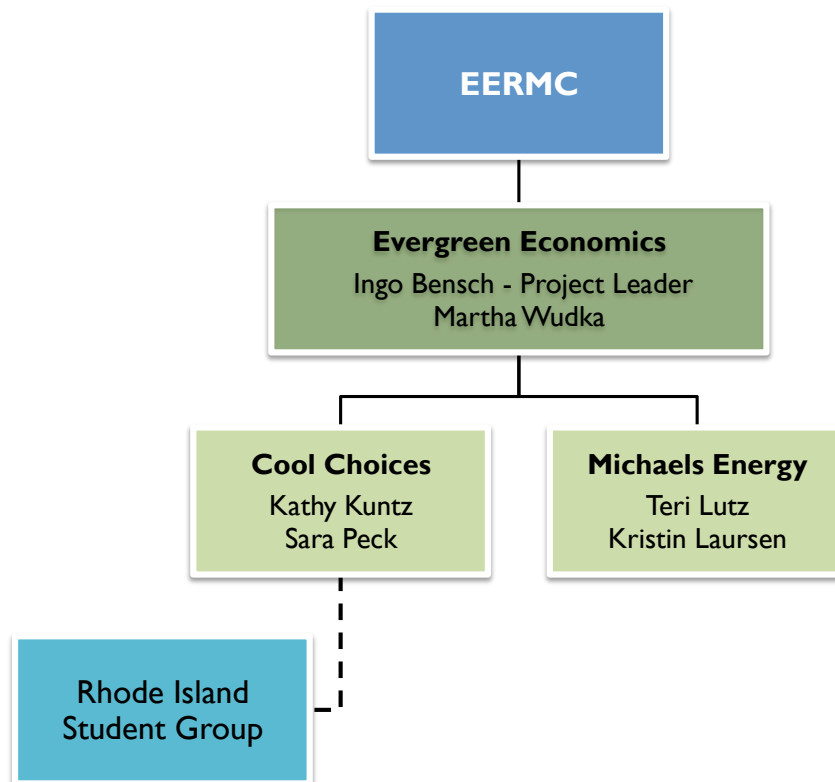
We have submitted Evergreen's cost proposal in a separate sealed envelope as required by the RFP.

IV. ISBE Proposal

Our team is not eligible for ISBE preferential scoring.

Attachment A: Staff Experience (Organizational Chart, Resumes)

Our proposed project team structure is presented below. As mentioned in the technical proposal, we have assembled a carefully selected team of energy and program professionals with expertise in needs assessments, information-based program design and delivery, and energy education evaluation.



Evergreen Economics Resumes



INGO BENSCH

Principal Consultant

Email: bensch@evergreenecon.com



PROFILE

Ingo Bensch conducts market, behavioral and evaluation research to inform energy-related programs and policy. His work combines sound research principles with pragmatic approaches to provide useful empirical insights for professionals and policymakers seeking to promote energy-efficient choices. Mr. Bensch's expertise includes behavioral research and survey-based data collection, and the evaluation of residential and behavioral programs. In addition to his process and impact evaluation and needs assessment work, he has developed and led a multi-year tracking study of attitudes and practices related to energy efficiency, and has also advised utilities on customer satisfaction and needs in the small and medium-sized business sector. Mr. Bensch has a Master of Public Affairs in Environmental and Natural Resources Management from Indiana University and a Bachelor of Arts and Sciences in Economics and Science-Technology Studies from Stanford University.

INDUSTRY EXPERIENCE

Some of the work highlighted below was done while Mr. Bensch was Principal Researcher at the Energy Center of Wisconsin (now Seventhwave) from 1998 to 2015. Mr. Bensch joined Evergreen Economics in March 2015, lending his considerable expertise in market, behavioral and evaluation research.

- **Illinois Science and Energy Innovation Fund Multifamily Eco-concierge Pilot** – Providing real-time process evaluation and outcomes measurement of an innovative behavioral pilot program that is introducing an eco-concierge to support sustainable behavioral practices and energy efficiency in a multifamily building in Chicago. The pilot is also testing whether energy education through an eco-concierge can engage utility customers to make use of smart grid data and services.
- **AESP DSM Program Manager Workshop (2017-present)** – Training utility staff on building demand side management programs as part of a 12-hour in-person workshop by the Association of Energy Services Professionals. Developed the training content related to the use of research to inform program design. Part of the three-person team delivering the workshop to AESP members and clients throughout North America.
- **California Investor-Owned Utilities and the California Public Utilities Commission Low Income Needs Assessment (2015-2016)** – Research director for an assessment of the California low-income population's energy-related needs to inform utility program design, delivery, and state policy. The study included a phone survey with 900 households, focus groups and in-depth interviews. To build on past studies, this needs assessment explored how low-income households address basic energy and non-energy needs, the degree to which different population segments face resource-related hardships, and their engagement with utility low-income programs.

- **California Investor-Owned Utilities Multifamily Program Process Evaluation** – Led a process evaluation of the investor-owned utilities’ multifamily program including participant surveys, market characterization and property owner/manager interviews; the evaluation was intended to be formative and provide actionable input that will allow greater integration of disparate services to the multifamily sector, easier and more efficient access to program offerings, and greater participation.
- **Northwest Energy Efficiency Alliance Super-Efficient Dryer Characterization Study** – Designed and led a characterization of the supply chain and consumer demand for highly efficient heat pump electric and natural gas dryers. The study explored market size and trends and investigated consumer awareness, potential interest, and willingness to try (and pay for) super-efficient dryers. The study relied on market data, in-depth interviews, focus groups, and a web survey with a structured stated choice analysis to inform the Northwest Energy Efficiency Alliance’s design of a dryer-related program initiative.
- **We Energies Business Customer Research** – Managed research services for We Energies, leading teams and conducting research to help the utility better meet business customers’ needs efficiently and effectively. Projects included a customer usability study of a newly developed online energy management tool, research-based strategy development for self-help services, testing of a redesigned interactive voice response system, and internal consulting to inform account management services to business customers.
- **Chicago Area Energy Efficiency Potential Study** – As part of a comprehensive study of achievable program-based energy savings for two Chicago natural gas utilities, led the development and fielding of complicated telephone surveys for residential, commercial and industrial customers to understand the end-uses served and the characteristics of gas-using equipment, households and businesses.
- **Cool Choices Evaluation** – Led independent evaluations and research support for Cool Choices' game-based sustainability efforts in workplaces and communities, including developing the appropriate research and analytical approaches and overseeing a team of analysts conducting the work. Worked closely with program staff to understand drivers behind participation in the game and assess the impact of players’ actions on their energy consumption.
- **Midwest Energy Survey** – Developed and led the implementation of a multi-year, multi-client tracking study of Midwestern households' perceptions, attitudes and practices on energy efficiency and related topics.
- **Minnesota Study of Residential Plug Load Savings Opportunities** – As co-principal investigator for a groundbreaking study, employed in-depth metering of numerous plugged-in devices to identify the theoretical savings opportunities for residential electric customers, and conducted interviews to understand consumer motivation, interest and acceptance of potential program approaches.
- **New Construction Market Assessment** – Managed research into market actor awareness, attitudes, practices and training needs related to high performance building design.

Designed a research strategy and approach to provide actionable information to Wisconsin's Focus on Energy program and a curriculum design project for the U.S. Department of Energy.

- **Evaluation of Education Programs** – For over a decade, oversaw the in-house evaluation process for the Energy Center of Wisconsin's education programs, which train thousands of professionals annually through conferences, technical training series, lunch and learns, and online training.
- **Daylighting Program Evaluation** – Conducted an internal evaluation of the Energy Center of Wisconsin's training-intensive Daylighting Collaborative program. Interviewed program stakeholders and participants, surveyed program participants and analyzed results of daylighting training evaluations.
- **Weatherization On-the-Job Training Program Feasibility Study** – Conducted a feasibility study for an on-the-job training pilot program to expand the current workforce of weatherization installers and auditors.

SELECTED PUBLICATIONS AND PRESENTATIONS

Bensch, I., & Keene, A., 2015, "Energy Impact from Gamification-Induced Behavior Change", *International Energy Program Evaluation Conference*, Long Beach, CA.

Kuntz, K., Shukla, B., & Bensch, I., "How Many Points for That? A Game-Based Approach to Environmental Sustainability", *American Council for an Energy-Efficient Economy – 2012 Summer Study on Energy Efficiency in Buildings*, Pacific Grove, CA.

Bensch, I., 2008, "Is Climate Change a Good Thing? Opportunities and Barriers to Using Climate Change to Motivate Efficiency", *American Council for an Energy-Efficient Economy – 2008 Summer Study on Energy Efficiency in Buildings*, Pacific Grove, CA.

Bensch, I., Pigg, S., & Anderson, M., 2006, "How Much Is that Training Program Worth? Quantifying the Value of Training and Other 'Fuzzy' Education Events", *American Council for an Energy-Efficient Economy – 2006 Summer Study on Energy Efficiency in Buildings*, Pacific Grove, CA.

Bensch, I., 2005, "Measuring Training Impacts . . . in Cyberspace: Online Surveys as a Cost Effective Evaluation Tool", *International Energy Program Evaluation Conference*, New York, NY.

Bensch, I., 2003, "An Education and Training Evaluation that Changed a Program", *International Energy Program Evaluation Conference*, Seattle, WA.

PROFESSIONAL AFFILIATIONS AND HONORARY ROLES

- International Energy Program Evaluation Conference (planning committee member since 2014)
- American Evaluation Association (current member)
- Mad-City BECCsters (co-organizer of a Madison-area behavior change professional group)



MARTHA WUDKA

Consultant

Email: wudka@evergreenecon.com



PROFILE

Martha (Thompson) Wudka has experience conducting energy efficiency program evaluations and market assessments for a variety of clients across the country and is well versed in reporting, analysis, in-depth interviews, and survey development. Ms. Wudka has managed the implementation of several surveys including phone interviews, on-site visits, and online interviews across the residential and commercial sectors. She has presented research findings at trade conferences including the International Energy Program Evaluation Conference and the Behavior, Energy and Climate Change Conference, and conducted various workshops and focus groups. Ms. Wudka has a B.A. in Economics with a concentration in Public Affairs from the University of California, Los Angeles.

INDUSTRY EXPERIENCE

- **Pacific Gas and Electric Company Home Energy Use Study** – Assisting with a field study including on-site surveys and metering of equipment to update saturation estimates and load shapes. The study covers the residential sector, encompassing all electricity and natural gas-using equipment, as well as building shell characteristics and the presence of distributed generation (i.e., solar photovoltaic).
- **California Investor-Owned Utilities and the California Public Utilities Commission Low Income Needs Assessment (2015-2016)** – Performed in-person outreach with Community Based Organizations as part of an effort to understand and improve outreach to hard to reach low income customers. Assisted with focus groups for customers with a high energy burden in Riverside and Fresno.
- **California Investor-Owned Utilities Local Government Partnership Program Process Evaluations** – Leading comprehensive process evaluations of the IOUs' LGP programs to document current activities and operations, program delivery successes and challenges, and offer recommendations for program improvement.
- **California Investor-Owned Utilities Multifamily Program Process Evaluation** – Managed and performed in-depth interviews with laundry leasing companies and property management firms as part of a laundry study focusing on common area laundry in multifamily buildings. This research was part of a statewide process evaluation of California utilities' multifamily energy efficiency programs.
- **San Diego Gas & Electric Cannabis Agriculture Energy Demand Study** – Managed Cannabis Study for SDG&E. The study included in-depth interviews with trade organizations and utilities that currently operate in states where cannabis production has been legalized for recreational use, and an industry review, to collectively provide information on the industry in the case of legalization in California.
- **Northwest Energy Efficiency Alliance Heat Pump Water Heater Initiative Market Progress Evaluation Report #1** – Assisted with an evaluation of a heat pump water heater

market transformation initiative involving surveys of homeowners and water heater installers, and interviews with market actors and Northwest utility partners.

- **Hawaii Energy Comprehensive Evaluation** – Conducted analysis and reporting for a comprehensive market assessment, impact and process evaluation of the state’s residential and non-residential energy efficiency programs.

SELECTED FOCUS GROUPS, WORKSHOPS AND PRESENTATIONS

- Reported and prepared a presentation for Southern California Edison on Whole House Retrofits and their current market presence.
- For the Northwest Energy Efficiency Alliance (NEEA), assisted with focus groups in Boise and Seattle with residential customers to better understand how heat pump dryers are perceived and what laundry habits exist.
- Co-hosted a Plug Load and Appliances workshop for the California investor-owned utilities (IOUs). As a co-moderator, Ms. Wudka was responsible for MC-ing, organizing the slide decks, keeping presenters on time, assisting with Q&A, and documenting discussions and Q&A for a summary memorandum.
- In May of 2017, arranged and presented a workshop of commercial cannabis growers for San Diego Gas & Electric as part of Phase 2 of the Cannabis Agriculture Energy Demand Study.
- Assisted Mr. Bensch with a Multifamily Contractors workshop and another workshop of Multifamily program staff in 2015, for Southern California Edison, San Diego Gas & Electric and Southern California Gas Company.
- At the International Energy Program Evaluation Conference (IEPEC) in August 2017, presented a paper titled "Exploring the Characteristics of Low-Income Households with the Highest Energy Burdens: One Size Does Not Fit All."
- At the upcoming Energy Efficiency in Domestic Appliances and Lighting (EEDAL) Conference in September of 2017, will present a paper on low income needs assessment research related to community-based organizations.

In addition, Ms. Wudka has conducted the following presentations:

Thompson, M., 2015, “Whetting Customer Appetite for Energy Savings in California’s Fourth Year of Drought”, Behavior Energy and Climate Conference, Sacramento, CA

Thompson, M., 2015, “Introducing...Emerging Technologies! Evaluation of Vendor Partner Solicitation Efforts”, International Energy Program Evaluation Conference. Long Beach, CA.

Cornwell, J., Thompson, M., Fischlein, M., Yin, C., 2015. “Filling the Measure Pipeline: An Examination of Six Utilities’ Emerging Technology Measure Development Processes”. International Energy Program Evaluation Conference (IEPEC), Long Beach, CA.

Michaels Energy Resumes



ABOUT TERI

Teri Lutz, MBA, is the Director of Program Evaluation for Michaels Energy. She has 25 years of experience in the energy industry. Ms. Lutz's main area of expertise is in directing energy efficiency efforts for utility companies, and evaluating energy efficiency, demand response, and renewable energy programs.

CONTACT

608.785.1900

trlutz@michaelsenergy.com

400 Main Street, Suite 200
La Crosse, WI 54601



PROFESSIONAL EXPERTISE

Education – Teri has been providing energy-related education for more than 30 years. When she worked for a utility while in college, and after, she was responsible for delivering education to all customer sectors. She presented the “Be Aware Be Safe” electric safety training program to schools, she met with groups supporting low income households to provide energy conservation and bill payment support services education, and she presented utility program offerings to commercial and industrial customers. These days, Teri delivers program design, implementation, and evaluation training workshops to utilities across the U. S. and in Canada and presents new and insightful information at industry conferences. This is what she loves most about her work.

Project Management – Teri manages evaluation and research projects' scope and timelines to ensure budgetary efficiency and quality deliverables. She works directly with utility and program staff, evaluators, regulators, and other stakeholders. Teri is an experienced stakeholder group facilitator.

Evaluation – Teri directs and conducts portfolio and program evaluation and research. This includes all aspects of evaluation - design, planning, and execution. She is experienced in reporting portfolio and program results to utilities and state regulatory commissions, including delivering regulatory testimony. Her clients include state commissions, federal and state governments, and utilities.

SELECTED EXPERIENCE

Association of Energy Services Professionals (Phoenix, AZ)

- ✓ Teri **co-led the development of a day and an half workshop titled 'Building a Program - Concept to Evaluation'**. This is an exclusive utilities-only workshop offering by Association of Energy Services Professionals (AESP) that takes participants from gathering data and information for program design to developing and implementing a program offering to evaluation and reporting. Teri assisted with content development and serves as a trainer for this workshop.

Michaels Energy (La Crosse, WI)

- ✓ **The “Energy Current”**. Teri co-developed and co-presents the Evaluation 101 course as a part of the Michaels' monthly in-house training program, the “Energy Current”.

Allegheny Power – now FirstEnergy (Greensburg, PA)

- ✓ **Executive Strategic Planning and Balanced Scorecard Workshops**. Teri was responsible for the development and delivery of the first ever executive-level strategic planning and balanced scorecard workshops. These day-long workshops were attended by the company President, Vice Presidents, and Directors. The workshops stepped the executives through brainstorming, what-if scenarios, and



EMPLOYMENT HISTORY

25 years' experience

Michaels Energy, La Crosse, WI

- ✓ Director of Program Evaluation

Tetra Tech, Madison, WI

- ✓ Director
- ✓ Senior Utilities Manager

Allegheny Power (now FirstEnergy), Greensburg PA

- ✓ General Manager, DSM Compliance
- ✓ General Manager, Customer Programs Support
- ✓ Manager, Performance Management – Strategic Planning

EDUCATION

Master of Science, Business Administration

Seton Hill University, Greensburg, PA

Bachelor of Science, Electrical Engineering

University of Pittsburgh, Pittsburgh, PA

REGISTRATIONS & AFFILIATIONS

- ✓ **Fuld and Company**
Academy of Competitive Intelligence
Professional Certification
Boston, MA

voice-of-the-customer exercises. The objectives were to identify opportunities to better serve customers, improve operations, and ensure employee engagement. The outcomes included new products and programs (including energy efficiency), enhanced regulatory strategies, and corporate-level strategic goals.

- ✓ **Strategic Planning Performance Management.** Teri was responsible for development of the Allegheny Power annual strategic assessment and business plan. She developed the marketing campaigns to promote the business plan objectives and goals to all employees throughout the company. Teri facilitated department-level supporting business plan development.
- ✓ **Evaluation and Compliance Reporting.** Teri created, trained, and managed a group that supported energy efficiency and demand reduction portfolio requirements for two states. Teri developed intra-company processes for evaluation, measurement, and verification (EM&V) coordination and results dissemination and education to ensure the engagement of management, design, implementation, and evaluation staff.
- ✓ **Customer Satisfaction Analytics Center of Excellence.** Teri created, trained, and managed a group to improve customer satisfaction scores based on Six Sigma DMAIC principles. She established programs and processes to move the company from a second quartile performer to a top-ten provider of key account customer service. Teri oversaw the development of Key Account Customer Service Plans and Account Management Analytics Scorecards. These tools established satisfaction improvement tactics, tracked actions, and predicted future customer satisfaction survey results.

Northeast Energy Efficiency Partnerships (Lexington, MA)

- ✓ **"Gross Savings and Net Savings: Principles and Guidance".** Teri is a co-author on the "Gross Savings and Net Savings: Principles and Guidance" paper. This publication provides regulators with a structured framework and decision template to assist with developing and documenting policy for the measurement and application of net savings.

SELECT PRESENTATIONS AND WORKSHOPS

- ✓ **2017 AESP DSM Program Manager Workshop** (Cedar Rapids, Iowa) (Scheduled: Toronto, Ontario – 2 sessions)
- ✓ **2016 Behavior, Energy, and Climate Conference** (Baltimore, MD): You did what? Does evaluation tell us what we think it does?, Lightning Panel Moderator
- ✓ **2016 Northeast Energy Efficiency Partnerships Webinar:** Guidance on Gross and Net Savings in an Integrated Policy Framework
- ✓ **2015 AESP National Conference** (Orlando, FL): Estimating Net Savings - Decades Later...and Passions Still Run High



ABOUT KRISTIN

Kristin Laursen is the Director of Marketing and Business Development at Michaels Energy. Ms. Laursen has 13 years of experience in marketing, 12 of which are in the energy efficiency industry. Ms. Laursen manages the marketing and business development staff, and plays an integral role in the overall growth strategy of Michaels Energy.

CONTACT

608.785.1900

kml@michaelsenergy.com

400 Main Street, Suite 200
La Crosse, WI 54601



PROFESSIONAL EXPERTISE

Marketing Management – Kristin is responsible for the development and execution of marketing plans, campaigns, and strategies including leveraging social media platforms to maximize outreach for Michaels Energy and for utility clients. Kristin identifies marketing segmentations for targeted messaging, and oversees message testing to ensure the 'right people' receive the 'right message'. She is skilled in creative graphic design and copy, and web development. Kristin develops and analyzes key marketing metrics to assess campaign effectiveness and uses this data and information to inform future marketing efforts. Education is a large component of Kristin's marketing campaigns as promoting programs requires that, first, potential participants understand why program offerings are beneficial.

Industry Leadership – Kristin is actively involved in the Association of Energy Services Professionals. She was recently recognized for her contributions as the 2016 B.H. Prasad Award Winner. She is the Chair of Marketing Topic Committee and the New Professional Advisory Panel. She is a member of the Mentor Program Committee, the 2016, 2017, and 2018 National Program Planning Committees, and the 2017 Spring Program Planning Committee.

Strategic Planning – Kristin facilitates annual strategic planning efforts for Michaels Energy. She contributes to decisions regarding product development and growth strategies, organizational change, and leadership changes. She develops and monitors processes for continuous improvement.

SELECTED EXPERIENCE

Association of Energy Services Professionals (Phoenix, AZ)

- ✓ Ms. Laursen assisted in **the development of a day and an half workshop titled 'Building a Program - Concept to Evaluation'**. This is an exclusive utilities-only workshop offering by Association of Energy Services Professionals (AESP) that takes participants from gathering data and information for program design to developing and implementing a program offering to evaluation and reporting.
- ✓ Kristin also led the branding and development of all supporting materials for the workshop – resource pack, PowerPoint presentation, bibliography, agenda, pre and post surveys, etc.. She also developed a co-marketing support effort to promote the workshops to potential clients of AESP.

Michaels Energy (La Crosse, WI)

- ✓ **Marketing Strategy, Tactical Plans, and Corporate Brand.** Kristin is responsible for developing the overall marketing strategy and brand for Michaels. She develops and executes public relations, marketing events, and advertising campaigns to increase market share and build brand



EMPLOYMENT HISTORY

13 years' experience

Michaels Energy

- ✓ Director – Marketing & Business Development
- ✓ Strategic Marketing & Brand Manager
- ✓ Marketing Manager

Metallics, Onalaska, Wisconsin

- ✓ Marketing Coordinator

EDUCATION

Bachelor of Science, Marketing University of Wisconsin – La Crosse

AWARDS

- ✓ **Association of Energy Services Professionals – B.H. Prasad Award**

awareness. She oversees press releases and events, exhibiting opportunities, and speaking engagements.

- ✓ **Marketing Campaigns.** Kristin manages all marketing activities including direct mail campaigns, e-marketing, and social networking. She leads new market research and advertising plan development. Kristin provides idea concept, copywriting, and creative (graphic design) for all marketing collateral. She plans strategy to promote and exhibit at trade shows, seminars, conferences, and continuing education events.
- ✓ **Marketing Metrics.** Kristin develops Search Engine Optimization (SEO) strategy and metrics to monitor the success of campaigns. She develops and executes customer feedback programs and awareness surveys.
- ✓ **Business Development.** Kristin directs business development efforts. She works with Michaels staff to identify business opportunities and to establish business development plans.

Cedar Falls Utilities (Cedar Falls, IA)

- ✓ **Marketing & Communications Plan for Commercial & Industrial Outreach.** Kristin develops strategy and creative briefs as the first step in an integrated marketing and outreach campaign. These briefs help raise awareness and facilitate understanding of the programs offered.
- ✓ **Segmentation and Customer-Facing Marketing Pieces.** Kristin promotes the Total Energy Optimization and Assessment Cost Share programs. She works with Cedar Falls Utilities staff to target based on segmentation, messaging, and strategy.

Alliant Energy (Madison, WI)

- ✓ **Retro-Commissioning Opportunity Piece.** Kristin designed retro-commissioning program collateral to help key account managers and Michaels staff recruit program participants. She also created marketing campaign concepts to support a general customer recruitment initiative.
- ✓ **Training Workshops for Key Account Managers.** Kristin developed the program marketing concept and provided support for full-day key account management training workshops. These workshops are akin to the "train the trainer" concept with the objective to teach account managers how to talk to their customer about energy conservation and the utility's programs.
- ✓ **Strategic Energy Management Engagement Tools.** Kristin designed key account manager handbooks and customer-facing program booklets to help inform and engage potential participants.

PRESENTATIONS

- ✓ **2015 AESP National Conference** (Lake Buena Vista, FL): Living in a Millennial World and I am a Millennial Girl

Cool Choices Resumes

KATHY KUNTZ

Cool Choices Executive Director

EXPERIENCE

Cool Choices
2010 to Present
Madison, Wisconsin

Executive Director: Leads an innovative nonprofit that empowers individuals, communities and businesses to adopt environmentally sustainable practices that reduce their greenhouse gas emissions.

- Provide expert advice and training to businesses and local governments that are seeking to increase individual and institutional engagement around sustainability.
 - Oversee the development of fun, social and easy sustainability initiatives that deliver measurable and persistent reductions in greenhouse gas emissions with participation rates as high as 80 percent.
 - Facilitate strong collaborative relationships with key stakeholders in Wisconsin's academic, business development, regulatory and energy efficiency communities.
 - Direct all aspects of Cool Choices operations including a committee structure with the Board of Directors, office, accounting and human resource protocols.
-

Wisconsin Energy Conservation Corporation (WECC)
2001 to 2010
Madison, Wisconsin

Director, Energy Programs: Directed WECC's energy efficiency and renewable energy programs in Wisconsin as well as WECC's multi-state Energy Finance Solutions.

- Led an integration of the three separate Focus administrative teams into one collaborative team, accountable for shared goals and objectives across both energy efficiency and renewable energy, beginning in 2006.
 - Enabled that merged team to exceed its energy savings goals year after year amid rapid growth.
 - Oversaw the planning and execution of multiple program innovations and pilot projects in collaboration with Wisconsin Public Service, an investor-owned utility.
 - Served as the primary liaison between Focus on Energy and various state and federal initiatives under the American Recovery and Reinvestment Act.
 - Facilitated a strategic re-alignment of the Energy Finance Solutions program that leveraged shifts in U.S. credit markets and related consumer demands for financing.
-

Energy Center of Wisconsin
1996 to 2001
Madison, Wisconsin

Project Manager: Managed the Center's K-12 energy education efforts and multiple residential research and demonstration projects.

- Responsibilities included consensus building, developing scopes and managing projects to completion.
 - In 2000 and 2001 directly accountable to Board of Directors for special project to re-tool the Center's financial policies and procedures.
 - Led a multi-disciplinary team to re-design the Center's website.
 - Supervised multiple staff including information services, creative services and all interns.
-

Wisconsin Demand-Side Demonstrations, Inc.
1993 to 1995
Madison, Wisconsin

Project Manager: Coordinated the marketing of two statewide industrial efficiency initiatives and managed an organizational assessment.

KATHY KUNTZ

SELECT PUBLICATIONS / PRESENTATIONS

- *Engaging Employees to Maximize Savings: A Cool Approach*, World Energy Engineering Congress. September 2017. Atlanta, GA.
- *People Powered! Leveraging Employee Engagement to Accelerate Sustainability Efforts*, Environmental Defense Fund Climate Corps Webinar Series. July 2017.
- *The Power of Fun, Social and Easy Games*, Emerging Technologies Summit. April 2017. Ontario, CA.
- *Just Do That! Targeting Behaviors that Represent the Best Savings Opportunities*, Behavior, Energy and Climate Change Conference. October 2016. Washington, DC.
- *Want Change? Make It a Game!*, Behavior, Energy and Climate Change Conference Post-Conference Workshop. October 2015. Sacramento, CA.
- *Employee Engagement*, Illinois Energy Efficiency Expo. September 2015. Chicago, IL.
- *Engaging Public Sector Employees Around Sustainability*, Environmental Defense Fund Climate Corps presentation for City of Boston Sustainability Leaders. June 2015. Boston, MA.
- *Engineering Behavior to Reduce Energy Consumption, with Christina Vernon (Carolinas Healthcare System) and Walt Vernon (Mazzetti)*, American Society for Healthcare Engineering of the American Hospital Association PDC Summit. March 2015. San Antonio, TX.
- *But What Did She Do? Unpacking Behaviors to Estimate Persistence*, Midwest Energy Efficiency Alliance 2015 Midwest Energy Solutions Conference. January 2015. Chicago, IL.
- *It's Complicated: Unpacking Behaviors to Estimate Persistence*, Behavior, Energy and Climate Change Conference. December 2014. Washington, DC.
- *New Approaches to Behavior Programs: Social Media and Gamification*, Panel Member, ACEEE National Symposium on Market Transformation. April 2014. Baltimore, MD.
- *From Eco-Driving to Thermostats: Behaviors Real People Will Adopt*, Behavior, Energy and Climate Change Conference. November 2013. Sacramento, CA.
- *It's Iterative: Using Evaluations to Create Stronger Games*. Behavior, Energy and Climate Change Conference. November 2012. Sacramento, CA.
- *How Many Points for That? A Game-Based Approach to Environmental Sustainability*. American Council for an Energy Efficient Economy Summer Study. August 2012. Monterey, CA.
- *Behavior Change: Making it Happen*. RE-AMP Annual Meeting. June 2012. Chicago, IL.
- *The Power of Games*. Garrison Institute Climate, Mind and Behavior Symposium. February 2012. Garrison, NY.
- *Recovery in the Heartland: Focus and ARRA in Wisconsin*. Keynote panel presentation. Consortium for Energy Efficiency Program Meeting. June 2009. Boston, MA.

KATHY KUNTZ

LEADERSHIP / COMMUNITY SERVICE

Tools of Change 2017 to present Ottawa, Ontario Canada	Landmark Case Study Selection Panel: Review submissions to the annual Tools of Change case study competition, helping to build a library of case studies of exemplary work leveraging behavior to achieve energy and environmental savings.
Wisconsin Environmental Education Foundation 2012 to Present Stevens Point, Wisconsin	President, Board Member: Actively assists WEEF efforts to be a catalyst for effective environmental education in Wisconsin.
Behavior, Energy and Climate Change Conference 2011 to 2016 Berkeley, California	Conference Planning Committee: Reviewed conference session proposals and provided advice to conference staff.
University of Wisconsin, Extension 2009 to 2012 Madison, Wisconsin	Member, Bachelor of Science in Sustainable Management Advisory Board: Provided feedback to the academics planning this online degree program.
Consortium for Energy Efficiency 2009 to 2010 Boston, Massachusetts	Member, Program Advisory Committee: Provided input to CEE's priorities based on Focus on Energy's interests.

EDUCATION

University of Wisconsin–Madison 1992 - 1995 Madison, Wisconsin	MA, US History: Area of Focus was History of Education / Social Welfare with MA thesis on the Head Start Program
<ul style="list-style-type: none"> · Master's thesis published in a book in <i>Critical Perspectives on Project Head Start: Revisioning the Hope and Challenge</i>, edited by Jeanne Ellsworth and Lynda J. Ames. 	
University of Minnesota–Morris 1983 - 1988 Morris, Minnesota	B.A.s in History and Mathematics with a minor in Philosophy: Maintained a 3.96 GPA while actively engaged in various campus leadership activities.
<ul style="list-style-type: none"> · Received Chancellor's Award and Outstanding Student Leader Award. · Served as Student Body President, edited campus weekly newspaper. · Coordinated new student orientation and registration. · Teaching assistant in History and Political Science and tutor in mathematics and logic. 	

SARA PECK

Director of Communications

EXPERIENCE

Cool Choices

2017 to Present

Madison, Wisconsin

Director of Communications: Leads the development and delivery of all communications at Cool Choices, shaping stories in ways that inspire additional energy-saving actions.

- Oversee the development and implementation of engaging communication strategies that inspire individuals, businesses, and other key stakeholder groups to action.
- Monitor the effectiveness of all electronic, print and in-person communication campaigns, adjusting efforts as necessary to maximize impacts.
- Ensure all communications leverage behavioral theory and industry best practices.

Acumium

2014 to 2017

Madison, Wisconsin

Social Media and Content Marketing Specialist:

Developed and managed social media, advertising and content marketing for a variety of clients.

- Led e-commerce and B2B efforts, creating omni-channel communications strategies based on competitor research, personas and value propositions.
- Provided creative direction, graphic design and photography on specific projects.
- Measured and reported on Key Performance Indicators using a variety of analytical tools.

Madison Magazine

2010 to 2016

Madison, Wisconsin

Freelance Photographer and Writer: Developed a monthly feature column, Madison Makers, which featured artisan efforts in the community.

- Created Madison Makers, a monthly feature column for print and online publication.
- Researched and reported on artisans within the greater Madison area, providing original photography and as well as all associated copy.

Goodwill Industries of South Central

Wisconsin

2012 to 2014

Madison, Wisconsin

Social Media Marketing Specialist: Led social media and brand awareness efforts across multiple locations.

- Created and implemented social media channel strategies to promote nine regional brick-and-mortar stores and one e-commerce store.
 - Facilitated brand awareness and corporate mission across traditional, digital, print, and merchandising channels.
 - Assisted with fundraising, community partnership development, rebranding strategies and the implementation of a loyalty program.
-

SARA PECK

SELECT PUBLICATIONS / PRESENTATIONS

- **Smart Cities: Connecting Sustainability, Technology**, <https://coolchoices.com/blog/smart-cities-connect-sustainability-technology/>, July 2017.
- **Live Social Media Audit**, Social Media Breakfast presentation <http://smbmad.org/june2017/>, June 2017.
- **A Week's Worth of Sustainability Living Ideas**, <https://coolchoices.com/blog/weeks-worth-sustainable-living-ideas/#more-9308>, April 2017.
- **How Content Marketing Fuels Social Media**, Ad 2 Madison presentation, November 2016.
- **How Content Fuels Social: Part 1 – Content Ideation**, <http://blog.acumium.com/how-content-fuels-social-part-1-content-ideation/>, June 2016.
- **Top 7 Social Media Challenges Businesses Face In 2016**, <http://blog.acumium.com/top-7-social-media-challenges-businesses-face-in-2016/>, February 2016.
- **Why Creating a Social Media Campaign is Totally Worth Your Time**, <http://blog.acumium.com/2015/01/21/creating-social-media-campaign-totally-worth-time/>, January 2015.
- **Writing for SEO: The Ying and Yang of Balancing Engaging Content and Keywords**, <http://blog.acumium.com/2014/06/25/writing-seo-ying-yang-balancing-engaging-content-keywords/>, June 2014.
- **Madison Makers**, regular feature in Madison Magazine and online at Channel 3000, <http://www.channel3000.com/madison-magazine/arts-and-culture/madison-makers-milkhaus-design/162920053>, 2013-2016.
- **Engaging Customers on Facebook with Dark Posts**, University of Wisconsin E-Business Consortium presentation, November 2014.

EDUCATION

University of Wisconsin-Oshkosh
2006-2010
Oshkosh, Wisconsin

B.A.s in Journalism and Fine Arts Photography



**Public Education in Energy
Issues Including Efficiency,
Conservation, and Resource
Diversification and Management
RFP #EERMC-2017-01**

A Proposal to The Rhode Island Energy
Efficiency and Resource Management
Council (EERMC)

Submitted by Evergreen Economics

August 28, 2017

COST PROPOSAL

Cost Proposal – Task Sheets

Offeror's Name:	Evergreen Economics		
Task 1:	Needs Assessment		
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Ingo Bensch	\$190	16	\$3,040.00
Martha Wudka	\$165	24	\$3,960.00
Kathy Kuntz	\$150	10	\$1,500.00
Teri Lutz	\$238	28	\$6,664.00
Kristin Laursen	\$225	2	\$ 450.00
Additional expenses that are not included in hourly rate			
Description of Expense			Price
Total Task Price:			<u>\$15,614.00</u>

Cost Proposal – Task Sheets

Offeror's Name:	Evergreen Economics		
Task 2:	Public Education Campaigns		
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Ingo Bensch	\$190	12	\$ 2,280.00
Martha Wudka	\$165	6	\$ 990.00
Kathy Kuntz	\$150	20	\$ 3,000.00
Sara Peck	\$110	220	\$24,200.00
Teri Lutz	\$238	12	\$ 2,856.00
Kristin Laursen	\$225	10	\$ 2,250.00
Additional expenses that are not included in hourly rate			
Description of Expense	Price		
Social media campaign and printing	\$ 2,050.00		
Expenses for student groups	\$ 750.00		
Total Task Price:			<u>\$38,376.00</u>

Cost Proposal – Task Sheets

Offeror's Name:	Evergreen Economics		
Task 3:	Real-Time Assessment & Adaption		
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Ingo Bensch	\$190	6	\$1,140.00
Martha Wudka	\$165	24	\$3,960.00
Kathy Kuntz	\$150	5	\$ 750.00
Sara Peck	\$110	10	\$1,100.00
Teri Lutz	\$238	16	\$3,808.00
Kristin Laursen	\$225	2	\$ 450.00
Additional expenses that are not included in hourly rate			
Description of Expense	Price		
Total Task Price:			<u>\$11,208.00</u>

Cost Proposal – Task Sheets

Offeror's Name:	Evergreen Economics		
Task 4:	Reporting		
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Ingo Bensch	\$190	16	\$3,040.00
Martha Wudka	\$165	4	\$ 660.00
Kathy Kuntz	\$150	2	\$ 300.00
Sara Peck	\$110	6	\$ 660.00
Teri Lutz	\$238	8	\$1,904.00
Kristin Laursen	\$225	4	\$ 900.00
Additional expenses that are not included in hourly rate			
Description of Expense	Price		
Total Task Price:			<u>\$7,464.00</u>

Cost Proposal – Task Sheets

Offeror's Name:	Evergreen Economics		
Task 5:	Project Management		
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Ingo Bensch	\$190	12	\$2,280.00
Additional expenses that are not included in hourly rate			
Description of Expense	Price		
Total Task Price:			<u>\$2,280.00</u>

Cost Proposal - All-Inclusive Price and Signature Page

Offeror's Name:	Evergreen Economics
-----------------	---------------------

One All-Inclusive Price. This number represents the sum of all total task prices and any other costs and expenses charged to EERMC.

All-Inclusive Price:	\$ <u>74,942</u>
-----------------------------	------------------



Signature of Authorized Person

8/25/17

Date

Tami Rasmussen, Vice President

Printed Name, Title

RFP Cover Sheet

Offeror's Name:	Rhode Island Housing
------------------------	----------------------

RFP Information	
Title of RFP:	Rhode Island Housing Tenant Energy Engagement & Education Program
RFP Number:	

Offeror Information	
Legal Name of Offeror:	Rhode Island Housing and Mortgage Finance Corp.
Type of Entity (i.e. corporation, partnership, sole proprietorship):	Non-profit Corporation
Mailing Address of Primary Place of Business:	44 Washington Street, Providence, RI 02903
Phone Number:	401-457-1234
Website:	www.rhodeislandhousing.org

Contact Person for the Offeror	
Name:	Brigid Ryan
Title:	Energy Specialist & Liaison
Mailing Address:	same as above
Phone Number:	401-429-1435
Email Address:	bryan@rihousing.com



 Signature of Authorized Person

8/28/17

 Date

Eric Shorter - Director of Development

 Printed Name, Title

Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017

I. Cover Sheet (Please see attached)

II. Technical Proposal

A. Overview:

Rhode Island Housing is proposing to develop and implement an energy education program that will inform multi-family, master metered building owners, property managers and tenants on the importance of reducing energy use, available options for non-fossil fuel electric generation, structure of New England’s grid (need for conservation), and the case for energy diversification and security.

Rhode Island Housing supports the State’s efforts and policies aiming to procure all cost-effective energy efficiency before making additional investments in traditional electrical generation and expansion of additional grid infrastructure. Rhode Island Housing is aware of the success that the EERMC has had in designing leading national programs and supports efforts to reduce the amount of carbon emission and environmental pollution that disproportionately affects low-income and minority communities. Additionally, with the utility cost burden for low-income households three times that of other utility customers; it is important that Rhode Island Housing does what it can to maximize the cost-effective energy efficiency measures implemented by our development partners and their residents.

B. Work Plan:

Date	Task
September 2017	<ul style="list-style-type: none"> • EERMC Awards Grant, Agreement Signed
October 2017	<ul style="list-style-type: none"> • Develop Program Strategies & Curriculum • Begin work with design consultant • Conduct outreach to building owners & property managers • identify potential pilot buildings • initiate benchmarking
November 2017	<ul style="list-style-type: none"> • Finalize pilot building selection • Create data collection matrix • Train Housing Stabilization Specialists • Outreach to building owners, project managers and tenants • Advertise classes, recruit tenants
December 2017	<ul style="list-style-type: none"> • Conduct initial pilot trainings • Conduct follow up focus groups, gain feedback on effectiveness of subject matter • Adjust work plan and curriculum accordingly
January 2018	<ul style="list-style-type: none"> • Finalize program strategies, curriculum and collateral • Schedule property owner & project manager trainings • Schedule tenant trainings • Collect baseline energy use data
January – August 2018	<ul style="list-style-type: none"> • Conduct tenant trainings twice weekly for a total of 68 sessions • Collect energy data from all target buildings
September 2018	<ul style="list-style-type: none"> • Compile data, compare beginning baseline to actual use • Draft reports, present findings to EERMC and others as necessary • Award Highest Energy Saver prizes (press conference)
Throughout the 12-month grant period, Rhode Island Housing will meet with the EERMC and/or its Communications Subgroup and submit status reports as required.	

Additionally, a Work Plan Calendar showing all project tasks by week is provided in the attachments.

C. Company Profile:

Rhode Island Housing and Mortgage Finance Corporation (Rhode Island Housing) is a state housing finance agency based in Providence, RI. The agency was created by the Rhode Island General Assembly in 1973. Rhode Island Housing strives to ensure that all people who live or work

Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017

in Rhode Island can afford healthy attractive homes that meet their needs. To achieve our mission we offer affordable and innovative lending programs; provide housing-related education; and finance sensible development. Rhode Island Housing is quasi-state, self-sustaining agency and no taxpayer dollars are used to sustain the operation of Rhode Island Housing.

Over the decades, the agency has assisted over 66,000 first-time homebuyers to purchase homes, including 1,259 customers in 2016 alone. Mortgages are typically financed with the proceeds of tax-exempt mortgage revenue bonds, and target families earning up to approximately 115% of AMI. A typical Rhode Island Housing loan funds the purchase of a home that costs 20% below the state median sales price. Rhode Island Housing also provides second mortgage loans for closing costs and down payments. In 2016, 999 of our homebuyers took advantage of these assistance options.

Rhode Island Housing offers a full range of financial support for the development of multifamily affordable rental housing projects, including predevelopment loans, construction loans and permanent financing for new construction and substantial rehabilitation of existing properties. In the past five years, \$3.6 million in predevelopment and acquisition loans helped non-profit and for-profit developers assemble blighted properties for redevelopment projects; and nearly \$22 million in construction loans provided critical short-term, low-interest funding to carry projects through the construction phase. During this time, Rhode Island Housing also provided over \$69 million in bridge loans to support 11 projects as they reached the end of their tax credit compliance periods.

Rhode Island Housing also offers permanent financing to qualified developers to fund the purchase of large-scale affordable housing projects. Since 2011, Rhode Island Housing has provided over \$137 million in amortizing first mortgage financing and an additional \$60 million in second mortgages to finance property upgrades and improvements. We are confident that our diverse multifamily rental programs demonstrate the depth of our expertise in terms of underwriting, construction management, loan servicing, and asset management.

D. Relevant Experience:

Soon after its formation in 1973, Rhode Island Housing began financing the development of affordable rental housing through the Section 8 State Agency Set-Aside program and a number of other federal and state initiatives. In 1966, Rhode Island Housing became the allocating agency for the US Treasury low-income housing tax credit program. Rhode Island Housing has over 40 years of experience in both multifamily rental housing and single-family mortgage programs for low- and moderate-income households. We currently service more than \$1 Billion of existing mortgages. In addition, as the Contract Administrator for HUD's project based Section 8 and housing choice voucher programs, we provide rental assistance to more than 21,000 households in the state.

Rhode Island Housing has extensive experience administering programs related to housing finance and related homebuyer or resident support programs. To be successful with these programs, Rhode Island Housing has become a much relied upon resource in the community and regularly collaborates with non-profit organizations, service providers and others to deliver programs. Experience most similar to this proposed Education Program would be in programs such as:

- **Housing Stabilization Program:** Finding and maintaining stable housing is critical to both family well-being and a landlord's bottom line. Rhode Island Housing implemented this program in 2016 to provide support to clients. This focus on housing stabilization ensures that people who already have apartments received support to remain in their homes. In less than a year, 70 households were helped through this program. Rhode Island Housing has been providing Homebuyer Education for more than 20 years.

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

- **Community Development Efforts:** The corporation awarded more than \$400,000 for community development programs serving those living in Rhode Island Housing financed developments including:
 - Support programs in Central Falls, North Kingstown, Providence and Richmond, providing 2,300 youth with STEM-based learning, college-readiness, youth employment, leadership and arts programs.
 - Supported creative place-based community development activities in Newport, Providence and Woonsocket.

E. Examples of Prior Work:

In addition to the wide array of single-family and multifamily programs offered by Rhode Island Housing, some of the most relevant programs to that which is being proposed includes:

- **LeadSafe Homes Program:** Treated 43 homes using more than a half a million dollars in funding to reduce lead hazards in homes.
- **Housing Rental Programs:** Provided \$175,000 in federal rental assistance, including place-based support to more than 15,000 apartments and person-based support to more than 1,700 households. Administered \$162 million to facilitate the creation of or preservation of nearly 1,200 homes.
- **Hardest Hit Fund (HHF) & HelpCenter:** With a newly opened location in Warwick, these programs helped provide assistance to struggling homeowners. In 2016 the Center:
 - Served over 1, 029 families served with foreclosure prevention and mediation counseling.
 - Provided \$1 million in home improvement loans to 65 households in 20 RI communities.
 - Awarded \$36 million in HHF funds from the US Treasury for homeowners struggling to make mortgage payments.
- **CSSLP Loan Administration:** A result of the 2015 cesspool law requires homeowners to remove their cesspools within 12 months of the sale or transfer of real estate. In collaboration with other state agencies, Rhode Island Housing administers the Community Septic System Loan Program and the Sewer Tie-In Loan Fund helping owners meet the new requirements.

F. Reference Information:

Ms. Jennifer Hawkins
Executive Director
One Neighborhood Builders
hawkins@onenb.org(401) 351-8719

Ms. Michelle Wheelock
Children's Friend
mwheelock@cfsri.org
(401) 276-4300

G. Identification of Staff and Subcontractors:

Brigid Ryan, Energy Specialist & Liaison (Project Leader)
Jesus Diaz, Housing Stabilization Specialist
Erin Gorman, Housing Stabilization Specialist
Michael DiChairo, Assistant Director of Development
Susan Haloran, Manager Multifamily Workout & Quality Control
Mary Kate Harrington, Public Information Manager
DK Communications, LLC, Design Consultant

H. Staff Responsibilities:

Energy Specialist & Liaison – Overall program implementation, administration and reporting
Housing Stabilization Specialists – Primary tenant educators, class coordinators
Public Information Manager – Collateral materials development, outreach manager
Assistant Director of Development – Primary Owner/Property Manager Contact
Manager Multifamily Workout & Quality Control – Primary data collection and tracking

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

I. Staff Experience:

Brigid Ryan – Energy Specialist & Liaison

Rhode Island Housing's Energy Specialist & Liaison, Brigid Ryan will serve as the main contact and program administrator. Ms. Ryan has extensive experience in energy efficiency and renewable energy program and policy work. As the first- Energy Specialist for Rhode Island Housing she oversees sustainability/energy efficiency activities and assists with the development and strategic planning of new energy initiatives. Brigid has over 17 years of experience in housing and energy efficiency and in the administration of Church Community Housing's Land Trust program and their homebuyer-training program. Most recently she served as the Local Director for Emerald Cities Rhode Island, a start-up energy retrofit program that addressed environmental impacts while creating equitable access to careers.

Jesus Diaz – Housing Stabilization Specialist

As a Housing Stabilization Specialist with Rhode Island Housing, Jesus' primary focus is on preserving tenancy for Rhode Island Housing-involved tenants and cultivating relationships with new owners to expand the capacity of affordable housing. Prior to joining the team at Rhode Island Housing, Jesus spent seven years as a Property Manager for Tax Credit and Section 8 properties, including a 200+ resident elderly/disabled housing property in Central Falls, Rhode Island. In this role, he developed an extensive understanding of the many issues being faced by Rhode Island's most vulnerable populations.

Erin Goman – Housing Stabilization Specialist:

Erin graduated from the University of Rhode Island 2011 with a BA in Gender & Women's Studies. She served for over four years as a residential advocate at Sojourner House as well as the agency's Volunteer Program Coordinator and LGBTQ Advocacy Program Coordinator. At Rhode Island Housing Erin has held the position of Emergency Housing Specialist and Housing Stabilization Specialist, providing housing navigation and housing counseling services to homeless and housing insecure community members. Erin works with Rhode Island Housing-involved tenants to address a variety of problems that threaten housing security, with the primary purpose being to keep them housed and out of the homeless system. Erin also provides training and technical assistance to community service providers on everything from basic housing education and how to navigate the affordable housing system, to client-specific case study evaluation and consultation.

Mary Kate Harrington, Public Information Manager

Mary Kate Harrington serves as Rhode Island Housing's Public Information Manager, providing direction and support in developing messaging and outreach to key constituencies across the state and beyond. In collaboration with senior management, she handles online, print and marketing activities, including the agency's award-winning annual report, advertising and public information efforts. In her ten years with the agency, she has led numerous communications efforts to expand and increase awareness of Rhode Island Housing's programs and the positive impact housing development has on our state and its residents. A lifelong Rhode Islander, she has made a career out of helping non-profits better communicate their work to various audiences. She has a keen interest in capacity building for non-profits and emerging communications platforms.

Michael DiChiaro – Assistant Director of Development (Asset Management & Compliance)

Michael DiChiaro is responsible for oversight of the physical and financial condition of Rhode Island Housing's multifamily rental portfolio. Michael leads a team that also ensures owners' and property managers' compliance with various federal funding programs used to finance rental developments throughout Rhode Island, including the Low-Income Housing Tax Credit and

Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017

HOME. He has been employed at Rhode Island Housing for 23 years and has held numerous positions in both residential and commercial asset management. Michael holds a Bachelor of Science degree in Resource Economics and Commerce from the University of Rhode Island.

Susan Halloran, Manager Multifamily Workout & Quality Control

Susan Halloran is responsible for the asset management of multifamily affordable housing development portfolio. Susan monitors operating performance and drafts recommended action plans for troubled sites. Serves quality control reviewer for underwriting of multifamily affordable housing developments. She also supervises the financial audit and asset management team. Susan has been on the Rhode Island Housing staff since 2008.

III. Cost Proposal: Submitted under separate cover/envelop as requested.

IV. ISBE Proposal: Submitted under separate cover/envelop as required.

V. Project Description and Scope of Work:

Summary:

Rhode Island Housing is proposing to develop and implement an energy education program that will educate building owners, property managers and tenants on the importance of reducing energy use, options for non-fossil fuel electric generation, how New England's grid is structured and the need for conservation, energy diversification and security. The proposed program will target Master Metered buildings with a goal of expanding this newly developed program curriculum to multifamily properties with tenant paid utilities and ultimately Rhode Island Housing homebuyers.

Background and Motivation:

Rhode Island Housing supports the State's efforts and policies aiming to procure all cost-effective energy efficiency before further investing in traditional electrical generation and expansion of more grid infrastructure that may become obsolete as the energy generation supply system evolves. Rhode Island Housing is aware of the success that the EERMC has had in designing leading edge programs and its efforts as it reduces the amount of environmental pollution that disproportionately effects low-income and minority communities. Additionally, with the utility cost burden for low-income households three times that of other utility customers, it is important that Rhode Island Housing does what it can to ensure all cost-effective energy efficiency measures are implemented by our development partners and their residents.

Scope of Work

Identify and justify the target audience(s)

• Who is the target audience(s)?

Rhode Island Housing is proposing an energy education program that will target owners, managers and residents of affordable multi-family rental housing developments in our portfolio. The program design will be based on the US DOE Better Building's Community-Based Social Marketing Toolkit platform (the "Program"). By educating owners and property managers, as well as residents, the Program will have a direct impact on energy efficiency in residential units on an on-going basis.

Rhode Island Housing initially intends to target tenants and owners/property managers of master-metered multifamily buildings. Since they are not responsible for paying their utility bills, they are the least likely tenant population to have received communications from National Grid. They do not receive information about their actual energy use or the rising costs of electricity on a bill.

Once the Program curriculum and collateral are created and administered to this first targeted population sector during the 12-month grant period, Rhode Island Housing will extend the program to developments in

Rhode Island Housing Tenant Education Engagement and Education Program EERMC RFP Response August 2017

which tenants pay their own utilities, homeowners with Rhode Island Housing mortgages, and participants in our homebuyer education programs. For the initial grant period the four main program areas or target audiences are:

1. Property Managers (most in contact with residents)
2. Property Owners (most interested in seeing energy savings for operations)
3. Tenants of Master Metered Buildings (first education conducted by Rhode Island Housing staff but then ongoing education provided by building managers/owners).
4. All asset management, development, construction and design, homeownership and lending staff so they are knowledgeable about energy efficiency and clean energy programs. Program materials will be used for on-going education as to embed efficiency in all Rhode Island Housing programs.

• Why does the identified audience(s) need energy education?

Energy efficiency investments in low-income households offer many benefits to residents, utilities, and the community as a whole. Low-income energy efficiency upgrades improve participants' quality of life by helping them invest in their homes and enhance the comfort and functionality of their living environments. Moreover, energy education can assist residents of Rhode Island Housing funded development in keeping electricity bills low and reduce bill nonpayment problems. Energy efficiency helps to reduce operating expenses, and spur local economic development. Energy education not only helps keep to keep utility consumption affordable for low-income families but also advance the states' broader goals of improved public health and environmental protection.

The energy burden or percentage of one's salary paid to utility costs is most severe for low- and moderate-income households. According to ACEEE:

"low-income, African American, Latino, and renters pay up to three times more than the average household on home energy costs. Higher energy burdens have real implications on the health and wellbeing of families and individuals.Families like these households, who have to devote higher proportions of their income to utility bills, may have to make trade-offs between heating and cooling their homes and affording other important necessities, such as food, medicine, and childcare."

Currently Rhode Island Housing is using several tools to mitigate the challenges renters face across the state in terms of housing affordability. However, the high cost of energy is presenting a challenge to building owners and operators. Generally, housing is considered affordable when households spend no more than 30% of their income on total housing costs including utilities. This presents a financial challenge for building owners who have little discretion on setting rents which are federally mandated (as they have to meet the 30% affordability test). Owners have no discretion over resident usage or the costs of energy, which in recent years has been volatile and unpredictable. Unique to the affordable housing rental market, when operating costs rise, non-profit and subsidized housing developers are not in a position to merely raise the rent to offset the increased rate hike. Either their tenants cannot afford a rate hike or they are not allowed to raise rents under subsidy and funding restrictions.

The solution to rising energy costs and its burden on renters is to reduce energy consumption and become more efficient. With the case of residents who live in master-metered buildings, tenants do not see their energy bill and therefore do not know how much energy they are consuming. They do not feel the direct effect of a 52% electric supply rate hike and therefore may not consider conserving energy. For those tenants and homeowners that do see their electric bill, there is often a significant disconnect between energy behavior and reductions in energy costs.

The master-metered tenant group is the most critical tenant sector to target as residents of master-metered buildings do not have individual meters and never receive a utility bill. As communications from National Grid are often through their account holders, mailings and emails, much of this market does not have access

Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017

to the same information as other Rhode Island residents. Further, they are often the highest energy users among rental residential sectors.

• How will you recruit or reach the target audience(s)?

Rhode Island Housing works with 15% of Rhode Island's rental market state-wide. The organization funds the development of new affordable housing units, contributes to the preservation of existing affordable units and is involved in the financing of almost all of the deed restricted affordable housing in Rhode Island. Staff at Rhode Island Housing reaches this audience on a daily basis in many ways through the processing of loan applications; administration of state and federal funding programs; design and construction oversight, lending and loan servicing; and ongoing asset management.

Education and outreach are important components to increasing participation in energy efficiency programs. First, Rhode Island Housing will target owners, property managers, and tenants of our existing portfolio through a well-designed education and outreach program. Moreover, coordinating with local organizations that are trusted messengers (e.g. churches, community centers, and local energy non-profits) to introduce and promote energy efficiency programs can play a valuable role in generating buy-in among residents.

Subsequently, the Program can be integrate into the new construction and significant rehabilitation program's final occupancy and rent up process. Rhode Island Housing would leverage its excellent working relationship to outreach with both its for-profit and non-profit developers, many of whom have identity of interest management companies. Reaching existing customers would be seamless and a welcome resource to help mitigate against fluctuating energy costs.

• How many people will this education reach?

The proposed program estimates conducting approximately 68 classes. These classes will be either development based (targeting multiple buildings) or building based for larger unit building types. The strategy will be to identify the worst performing buildings and those most in need of electrical and operational savings. Currently, Rhode Island Housing's portfolio includes over:

- 180 developments in Rhode Island Housing's financed portfolio alone;
- of which 122 developments or 68 percent are master metered, consisting of approximately 395 buildings; and
- equals 11,827 units housing over **21,000** Rhode Island's residents.

Taking the total number of master metered buildings, the average number of units and the average number of tenants per unit, **Rhode Island Housing estimates that it will reach roughly 14,000 tenants and over 50 property managers and building owners.**

The majority of these residents are National Grid customers, they do not get billed directly and therefore never see their electric use, costs, or information on National Grid's energy conservation program offerings. Additionally, Rhode Island Housing services loans for thousands of residents who live in developments where tenants pay their own utility costs. Rhode Island Housing also manages 1500 Section 8 Vouchers for 19 cities and towns in Rhode Island that do not have their own Public Housing Authority. Following the 12-month grant period Rhode Island Housing will continue using the program platform to reach out to all segments of business creating the potential to reach thousands more Rhode Islanders.

Identify and justify the energy topic(s)

• What energy topic(s) will you teach?

Volumes of work on energy efficiency, how to save energy, and energy behaviors exist. Many energy saving measures have been identified that range from complex to rather simple but effective behaviors. This proposed Program will not simply reiterate what is already available. It will include research what triggers action from this target market and to tailor a program to address their learning style and energy use. This

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

approach should address the lack of uptake of energy efficiency and solar programs in the low- and moderate-income markets. This proposal seeks to educate low- and moderate-income residents, the most cost burdened in Rhode Island. The program will provide instruction on:

- Rhode Island's energy is production, supply and distribution basics;
- How simple behavior changes can be the most effective energy reduction strategy;
- Why it is important to find alternatives to electricity generated from fossil fuels;
- What are the non-energy benefits of energy efficiency;
- Those items/areas identified through the marketing planning process and specific to the needs of the community being engaged;
- Why is there a need for energy diversity and security;
- What residents can do to reduce energy costs; and
- Why transportation emissions reduction is an important component of the energy conservation.

The final selection of topics will be based on the list above, development of strategies that emerge from both the identification of barriers and benefits specific to our target market as well as learnings from existing research, industry best practices as well as an analysis of the recently published Customer Participation Study conducted by National Grid. Engagement with National Grid will be key to understanding their outreach experience with this market sector in Rhode Island. Rhode Island Housing will seek to engage National Grid (and its vendors) on successes and failures as well as potential for collaboration to reach a greater number of low- and moderate-income residents.

• **Why is education on the identified energy topic(s) needed?**

Behavior change or modification is one of the most effective and least costly ways to save electricity yet it is often the measure of last resort. Technology, solar panels, wind farms all seem far more exciting than remembering to turn off a light or lowering your thermostat and putting on a sweater. Yet, technology, no matter how exciting, is often out of reach for renters and low and moderate-income families. Perceived or real, those who most need to alleviate their cost burden have the least access to technology.

A renter who does not pay for their utility costs does not need to rely on their landlord to add insulation, install new windows or invest in solar panels to save electricity. Therefore, behavior change can have a big impact. With the right education, tenants of all types can not only learn about the importance of energy efficiency but they can take control of the measures that require little or no investment.

• **How will this education benefit the public, the State, and the target audience(s)?**

This education is critical to the public, State and the target audience. Access to energy is critical to succeeding in modern society, but energy costs can be particularly burdensome for households with low incomes. These households face a higher "energy burden" since they spend a higher percentage of their income on energy bills. Low-income households face a median energy burden that is more than twice that of the median household. Spending more on energy means these households have less to spend on non-energy goods and services, which can directly impact their well-being as well as the vitality of a community.

Whether master metered or tenant metered, housing affordability and the subsidy structure used to ensure Rhode Island families can afford their homes, is a very difficult balance. To keep families from becoming homeless, the rising cost of utilities need to be mitigated or more state or federal subsidy will be needed to stabilize housing expenses. Education is a cost-effective way to achieve energy savings by avoiding resource waste. It is important to note, that reducing the energy burden on low-income households may achieve policy objectives beyond cost savings, such as reduced pollution and improved buildings. Low-income energy efficiency programs benefit more than just the program participants. Programs that target low-income

Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017

households provide all the benefits efficiency can bring, such as lower energy bills, reduced pollution, and economic growth to all utility customers. By obviating the need for additional supply-side investments, energy efficiency programs lower energy bills for all utility customers, not just program participants.

Describe and justify the education plan

• How will the identified energy topic(s) be taught? Why is this method the best or preferred method?

There is a myriad of energy efficiency knowledge and research and curriculum focused on energy efficiency education that is generating positive behavior change with utility users. Specifically, Rhode Island Housing is proposing the use of US DOE Better Building's Community-Based Social Marketing Toolkit platform for program design and topic identification. In addition, the BBC program's curriculum resources (videos, handouts, etc) will be included and that have been identified as most appropriate for the target audience.

These materials will be supplemented with more locally specific energy savings programs and resources. As a national leader in energy efficiency programs, Rhode Island's energy efficiency offerings consistently report underuse by low- and moderate-income residents. Education will include making owners, managers and tenants aware of Rhode Island's award-winning practices and how to take advantage of those programs.

• How will you assess baseline knowledge or other outcomes of interest?

As indicated in the CBSM toolkit, the program must first identify what behavior modifications should be the focus of the program. Because this list could include a very large number of energy saving behaviors, measures will be narrowed to a workable size based on tenant use and needs. Those measures will be prioritized according to likely impact, probability of success and market opportunities.

• How will you verify knowledge retention or measure impacts on other outcomes of interest?

As part of the Better Building's program design once strategies have been identified those strategies are then pilot tested. If the results do not meet expectations then adjustments will be made, retested and if expectations are met, then the measures will be implemented broadly and continually assessed for impact.

Participation in the program will be at no cost to the building owners or the tenants. In order to participate however, all must agree to engage with a building energy benchmarking system and agree to allow Rhode Island Housing. This way energy use is benchmarked at the initiation of the program and then continually over a 12-month period. Rhode Island Housing will submit reports of project status and share data results as they become available.

Identify potential barriers to success

• What are potential barriers to implementing the proposed project successfully and how will you address these barriers?

The first step to identifying barriers will be to review research on what has traditionally presented as barriers in the past on other programs both nationally and locally. The review will include an analysis of National Grid's recent Participation Study. Additional steps will include on-site observation of target audiences and the monitoring of focus group discussions and surveys. All attempts will be made to make the information and materials available in multiple languages.

During this process, program benefits (as seen from the end-user perspective) that might not be evident may also be unveiled and be used to develop strategies to overcome existing barriers. Finally, a trial of building to building energy consumption reduction competitions will be used to incentivize tenants to reduce energy use throughout their buildings. The building with the highest reduction in energy use will win recognition as well as individual tenant prizes (such as gift cards to grocery stores, etc.).

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

Identify any external funds that will be leveraged

• If any external funds will be leveraged to support the project, what are the sources, total amounts and uses of these funds?

\$25,000 of in-kind staff support from Rhode Island Housing will leverage the \$75,000 proposed request.

• How will any leveraged funds enhance the scope and/or outcomes of the project?

Rhode Island Housing recently expanded its staff capacity in the area energy expertise by creating an Energy Specialist and Liaison position within the organization. The grant funds will be used to pay for a portion of two Housing Stabilization Specialists positions, Additional resources will also be required in the form of collateral material design and production. Therefore, out of the total program budget of \$100,000, Rhode Island Housing will provide \$25,000 of in-kind staff support through the Energy Specialist, Housing Stabilization Specialists, Asset Management Staff, and the Public Information Officer.

Rhode Island Housing will build on its previous success targeting low and moderate income households in RI. Using not only our experience in educating low- to moderate-income consumers, Rhode Island Housing will also leverage its on-going relationships with existing buildings owners and developers. Finally, Rhode Island Housing's Energy Specialist is very active in the energy efficiency and clean energy sectors, is a stakeholder at many committees and convenings; she has developed a collaborative working relationship with program managers from National Grid, its vendors and regularly attends EERMC where she has built a relationships with many members.

EERMC Education and Outreach Objectives:

Rhode Island Housing is committed to meeting all of the education and outreach objectives listed in the RFP. An explanation on how those objectives will be delivered is included as an attachment.

Required Deliverables & Expected Tasks and Timeline:

Rhode Island Housing agrees to provide all items outlined in the Required Deliverables section of the RFP including but not limited to the sharing of all program collateral materials upon completion, interim reports and coordination with the EERMC communications subgroup. In addition Rhode Island Housing proposes the timeline for completion of deliverables as outlined in the attached Work Plan.

Attachments:

- A. Rhode Island Housing Tenant Engagement & Education Program Organization Chart
- B. Rhode Island Housing Tenant Engagement & Education Program Work Plan and Timeline
- C. Rhode Island Housing EERMC Education and Outreach Objectives
- D. Rhode Island Housing Equal Opportunity Statement
- E. Rhode Island Housing Annual Report
- F. DK Communications Consultant Bio

Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017

EERMC Education & Outreach Objectives:

The following commitments made in this proposal cover the follow EERMC objectives:

1. Educate significant portions of the RI Public....

Rhode Island Housing aims to reach approximately 14,000 residents within the grant year. This tenant sector traditionally does not receive energy efficiency and clean energy notifications and program announcements in the mail from National Grid. Additionally, after the one-year master-metered pilot is complete, Rhode Island Housing is committed to ongoing education efforts with all other programs administered by the organization. With Rhode Island Housing reaching over 15% of the RI rental market and many more mortgage holders, homebuyer trainees and those at risk for foreclosure, the impact on the number of Rhode Islanders over the years will be exponential.

2. Reach segments of the RI population that may not be reached by current programs....

Again, because Rhode Island Housing programs saturate the low- and moderate-income market with its other program offerings, including energy efficiency, clean energy and energy savings in our outreach compliments our efforts to making safe, affordable and healthy for all Rhode Islanders.

3. Leverage existing education programs and/or delivery pathways.

Again, Rhode Island Housing's close work within the sector is an existing pathway that is appropriate to use to expedite program delivery. Collaborating with National Grid will ensure no resources will be wasted through duplicate communications efforts. Wherever possible, Rhode Island Housing will coordinate communications with National Grid to ensure consistent messaging across the state and across sectors.

4. Provide public education on a wide range of modern, relevant energy topics.

The proposed program would education Rhode Island's energy transmission process, our sources of energy production, the need to reduce carbon emissions, the mix of fuels types currently employed in our generation facilities, the Rhode Island's nation leading policies, and all the ways (high tech, low tech, expensive and free) to reduce energy consumption and costs. It will also provide a look into the future of energy generation, supply and the need to reduce fossil fuel based energy production.

5. Compliment National Grid's energy efficiency programs without duplicating efforts.

Rhode Island Housing is committed to collaborating with National Grid as it does now. Coordination will leverage National Grid's experience and expertise as appropriate to ensure the effectiveness of both programs.

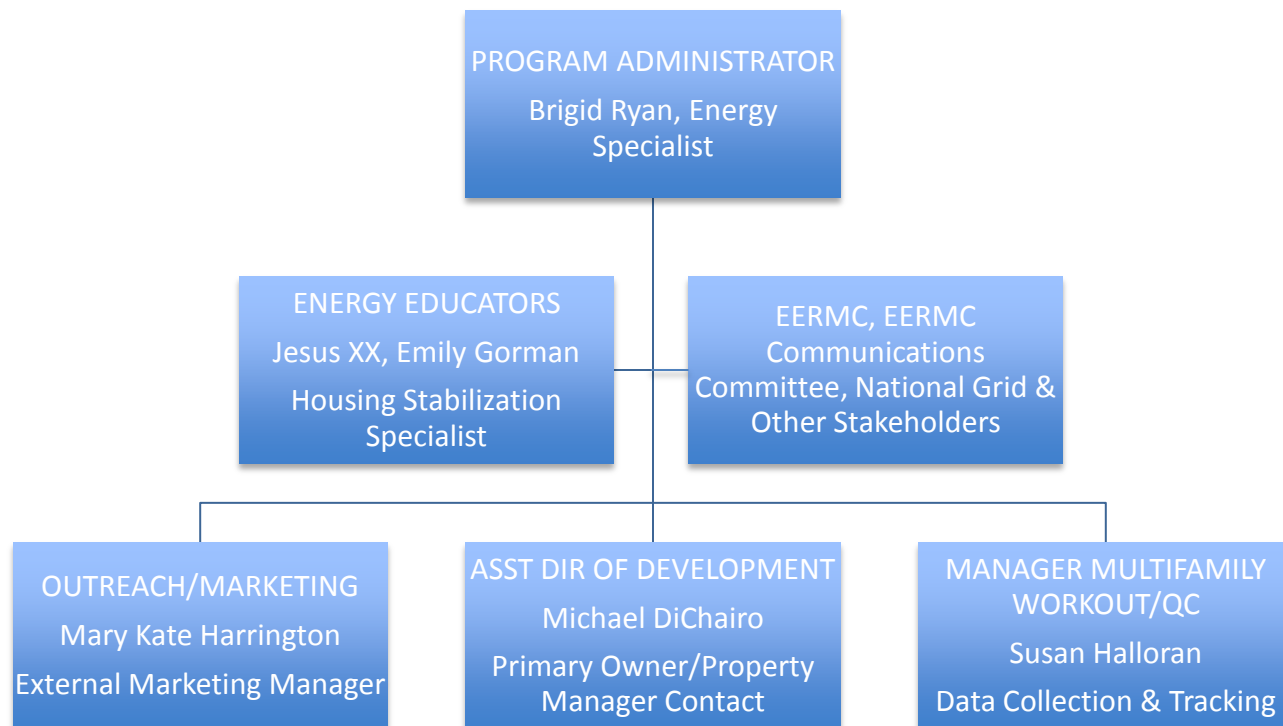
6. Identify and expand communication pathways for EERMC.

EERMC will be able to better promote public understanding of energy issues by leveraging Rhode Island Housing's existing communications network to a significant portion of Rhode Island residents most in need of benefiting from the state's successful energy reduction programs.

7. Complete project within 1 Year.

Rhode Island Housing views this proposal as Phase I of an ongoing residential education program and will consist of designing and implementing the master metered building tenant education program. Rhode Island Housing is committed to meeting all expected deliverable expectations for the target building sector within the one-year timeframe. After that, and separate from this proposal, Rhode Island Housing will continue its education efforts to reach as many Rhode Island renters and homeowners.

Rhode Island Housing Tenant Energy Engagement and Education Program



**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

August 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28 RFP Response Due	29	30	31		

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

September 2017

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
	RFP Award sometime in September					
24	25	26	27	28	29	30

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

October 2017 Program Month #1

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
	Develop Program Strategies & Curriculum, Work with Design Consultant					
8	9	10	11	12	13	14
	Develop Program Strategies & Curriculum, Work with Design Consultant					
15	16	17	18	19	20	21
	Develop Program Strategies & Curriculum, Identify Target Buildings, Outreach to Building Owners/PMs & Initiate Benchmarking					
22	23	24	25	26	27	28
	Develop Program Strategies & Curriculum, Identify Target Buildings, Outreach to Building Owners/PMs & Initiate Benchmarking					
29	30	31				
	Develop Program Strategies & Curriculum, Identify Target Buildings, Outreach to Building Owners/PMs & Initiate Benchmarking					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

November 2017 Program Month #2

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
	Finalize Pilot Strategies & Curriculum, Select Pilot Buildings & Create Draft Collateral Materials					
5	6	7	8	9	10	11
	Train Housing Stabilization Specialist, Meet with Building Owners/PMs					
12	13	14	15	16	17	18
	Train Housing Stabilization Specialist, Meet with Building Owners/PMs					
19	20	21	22	23	24	25
	Schedule Initial Pilot Tenant Trainings & Work with PMs to Advertise Classes					
26	27	28	29	30		
	Schedule Initial Pilot Tenant Trainings & Work with PMs to Advertise Classes					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

December 2017 Program Month #3

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
	Schedule Initial Pilot Tenant Trainings & Work with PMs to Advertise Classes					
3	4	5	6	7	8	9
	Conduct Initial Pilot Tenant Trainings/Focus Groups					
10	11	12	13	14	15	16
	Conduct Initial Pilot Tenant Trainings/Focus Groups					
17	18	19	20	21	22	23
	Review Focus Group Feedback & Adjust Strategies and Curriculum Accordingly					
24	25	26	27	28	29	30
	Review Focus Group Feedback & Adjust Strategies and Curriculum Accordingly					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

January 2018 Program Month #4

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6
	Finalize Curriculum, PowerPoint and Collateral Materials; Schedule Tenant Meetings					
7	8	9	10	11	12	13
	Print Collateral Materials, Schedule Tenant Meetings, Collect Baseline Energy Use Data					
14	15	16	17	18	19	20
	Print Collateral Materials, Schedule Tenant Meetings, Collect Baseline Energy Use Data					
21	22	23	24	25	26	27
	Start Tenant Trainings (2x per week), Collect Energy Use Data					
28	29	30	31			
	Start Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

February 2018 Program Month #5

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5	6	7	8	9	10
	Tenant Trainings (2x per week), Collect Energy Use Data					
11	12	13	14	15	16	17
	Tenant Trainings (2x per week), Collect Energy Use Data					
18	19	20	21	22	23	24
	Tenant Trainings (2x per week), Collect Energy Use Data					
25	26	27	28			
	Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

March 2018 Program Month #6

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2	3
4	5	6	7	8	9	10
	Tenant Trainings (2x per week), Collect Energy Use Data					
11	12	13	14	15	16	17
	Tenant Trainings (2x per week), Collect Energy Use Data					
18	19	20	21	22	23	24
	Tenant Trainings (2x per week), Collect Energy Use Data					
25	26	27	28	29	30	31
	Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

April 2018 Program Month #7

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
	Tenant Trainings (2x per week), Collect Energy Use Data					
8	9	10	11	12	13	14
	Tenant Trainings (2x per week), Collect Energy Use Data					
15	16	17	18	19	20	21
	Tenant Trainings (2x per week), Collect Energy Use Data					
22	23	24	25	26	27	28
	Tenant Trainings (2x per week), Collect Energy Use Data					
29	30					
	Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

May 2018 Program Month #8

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
	Tenant Trainings (2x per week), Collect Energy Use Data					
6	7	8	9	10	11	12
	Tenant Trainings (2x per week), Collect Energy Use Data					
13	14	15	16	17	18	19
	Tenant Trainings (2x per week), Collect Energy Use Data					
20	21	22	23	24	25	26
	Tenant Trainings (2x per week), Collect Energy Use Data					
27	28	29	30	31		
	Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

--	--	--	--	--	--	--	--

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

June 2018 Program Month #9

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
	Tenant Trainings (2x per week), Collect Energy Use Data					
3	4	5	6	7	8	9
	Tenant Trainings (2x per week), Collect Energy Use Data					
10	11	12	13	14	15	16
	Tenant Trainings (2x per week), Collect Energy Use Data					
17	18	19	20	21	22	23
	Tenant Trainings (2x per week), Collect Energy Use Data					
24	25	26	27	28	29	30
	Tenant Trainings (2x per week), Collect Energy Use Data					

- | |
|---|
| <p>General Tasks:</p> <ul style="list-style-type: none"> Report to EERMC Communications Committee as needed Supply EERMC & Communications Committee project status updates |
|---|

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

July 2018 Program Month #10

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
	Tenant Trainings (2x per week), Collect Energy Use Data					
8	9	10	11	12	13	14
	Tenant Trainings (2x per week), Collect Energy Use Data					
15	16	17	18	19	20	21
	Tenant Trainings (2x per week), Collect Energy Use Data					
22	23	24	25	26	27	28
	Tenant Trainings (2x per week), Collect Energy Use Data					
29	30	31				
	Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

August 2018 Program Month #11

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	6	7	8	9	10	11
	Tenant Trainings (2x per week), Collect Energy Use Data					
12	13	14	15	16	17	18
	Tenant Trainings (2x per week), Collect Energy Use Data					
19	20	21	22	23	24	25
	Tenant Trainings (2x per week), Collect Energy Use Data					
26	27	28	29	30	31	
	Tenant Trainings (2x per week), Collect Energy Use Data					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
 Tenant Education Engagement and Education Program
 EERMC RFP Response
 August 2017**

September 2018 Program Month #12

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4	5	6	7	8
	Compile Data & Track Energy Use vs. Baseline					
9	10	11	12	13	14	15
	Compile Data & Track Energy Use vs. Baseline, Draft Required Reports					
16	17	18	19	20	21	22
	Draft Required Reports					
23	24	25	26	27	28	29
	Finalize Required Reports, Present Findings, Award Highest Energy Savers Prizes/Press Conference					
General Tasks: <ul style="list-style-type: none"> • Report to EERMC Communications Committee as needed • Supply EERMC & Communications Committee project status updates 						

**Rhode Island Housing
Tenant Education Engagement and Education Program
EERMC RFP Response
August 2017**

2016

ANNUAL REPORT



RIHousing

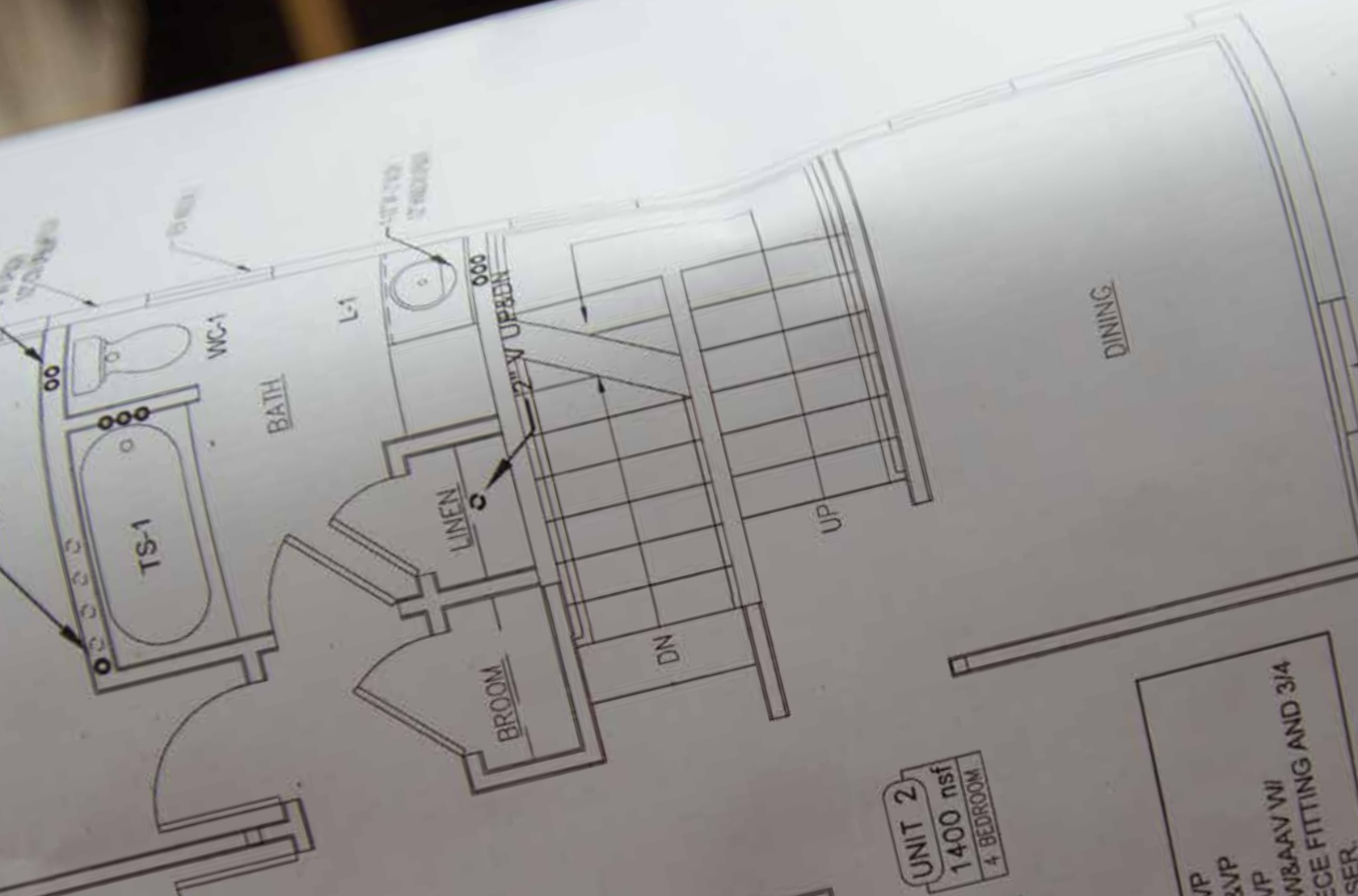


HOUSING INVESTMENT

Strengthening Our Communities.
Strengthening Our Economy.



*Investing in homes.
Creating jobs.
Retaining and attracting talent.*



CONTENTS

RI Housing

ANNUAL REPORT

- 3.** Letter from the Governor
- 5.** Letter from the Executive Director and Board Chairman
- 6.** Investing by the Numbers
- 10.** Help to Buy Homes
- 14.** Help for Homeowners
- 18.** Help for Renters
- 22.** Building Homes
- 26.** Economic Impact
- 30.** 2016 Community Events
- 34.** Board of Commissioners
- 35.** Achievements
- 36.** Building Opportunities



LETTER FROM THE GOVERNOR



As we make great strides in revitalizing Rhode Island's economy, I am proud that RIHousing continues to be an important partner in our efforts. Through the corporation's initiatives to help Rhode Islanders find and keep good homes, we are making Rhode Island a more attractive place to do business.

RIHousing's work is even more important today, because Rhode Island is facing a significant shortage of housing at nearly every price point. Strong demand and an inadequate supply create an imbalance that makes housing too expensive for many of our residents.

Homes that are within financial reach of families and individuals are essential if businesses are going to attract and retain workers. RIHousing's efforts are critically important to our ability to address these issues and promote the state's economic growth.

2016 was a strong year for RIHousing, as it expanded existing programs and developed new ones to meet our state's ever-changing housing needs. Last year alone, RIHousing helped a record-breaking 1,625 Rhode Islanders purchase new homes. Meanwhile, the agency contributed \$657 million to our state's economy with investments in housing development, mortgages and rental assistance, to name just a few.

Investment in housing is a win-win for the state – it creates jobs and spurs economic development, all while meeting the housing demands of our growing and changing population.

In November, Rhode Islanders overwhelmingly approved the \$50 million Housing Opportunity Bond. This much-needed investment will restore communities, create homes for families and bring us closer to our goal of ensuring that everyone in Rhode Island has access to housing that fits their budget.

The economy is getting stronger every day – but we still have work to do. By investing in our state, we are making Rhode Island a place where families and businesses want to put down roots. Together, we will continue to create opportunities for Rhode Islanders by building safer homes, healthier neighborhoods and a stronger economy.

A handwritten signature in black ink that reads "Gina Raimondo".

Governor Gina M. Raimondo



LETTER FROM THE EXECUTIVE DIRECTOR AND BOARD CHAIRMAN



Expanding Partnerships & Leveraging Results

2016 was a record-breaking year for RIHousing. Under the leadership of Governor Gina Raimondo and the General Assembly, our state's economy continued to grow, and we are proud to say that RIHousing was a significant partner. We were able to capitalize on a number of opportunities and the improved economy to have an overall economic impact of \$657 million to the state's economy while also putting Rhode Islanders to work.

In terms of mortgage lending, 2016 was our biggest year in more than 40 years. Working with 36 lender partners and the local real estate community, we helped more Rhode Islanders purchase a home than ever before. With each home sale, jobs are created for realtors, loan originators, home improvement professionals and others.

We began the year by releasing a first-of-its-kind report – *Projecting Future Housing Needs* – in partnership with the Rhode Island Commerce Corporation and HousingWorks RI at Roger Williams University. Examining Rhode Island's current and future housing needs, the report provides the underpinning of much of our work. Its findings underscored the need for affordable homes to accommodate a broad range of income levels.

Housing is a critical component of a healthy economy. That's why the Governor, General Assembly, municipal officials and a diverse consortium of housing professionals and advocates came together to advocate for and secure the successful passage of the \$50 million Housing Opportunity Bond.

Housing investments strengthen our workforce, bolster our state's construction and real estate industries and ensure that every Rhode Island family has a home that meets their needs.

RIHousing is positioned to continue strengthening our communities and our economy in 2017.

Barbara G. Fields
Executive Director

Nicolas P. Retsinas
Chairman of the Board of Commissioners



INVESTING BY THE NUMBERS



\$657 million impact

in the RI economy in 2016 | **23%** increase from 2015



\$291 million

in loans to

1,625 homebuyers in 38 cities
and towns

| **35%** increase from 2015 and the
highest closing volume in history



Supported

700 jobs*



\$9.3 million

in extra assistance to **1,465** new homeowners with down payments and closing costs



\$31 million

to **177** homebuyers for purchase-rehab loans



162 Renewed Homes Program loans closed

for a total investment of **\$3.2 million**

INVESTING BY THE NUMBERS



295 Ocean State Grad Grants for homebuyers for a total investment of **\$1.8 million**



\$162 million in financing to construct or rehabilitate **1,186** rental apartments



Supported **816** jobs**



1,107 FirstHomes Tax Credits, which could generate
\$1.4 million
in federal income tax savings for new homebuyers in
the first year alone | **12% increase** from 2015



\$175 million
in funding from the U.S. Dept. of Housing and Urban
Development (HUD) to help more than **17,000 renters**

* Based on National Association of Realtors & RIRhousing data
** Based on National Association of Home Builders analysis

HELP TO BUY HOMES

Homeownership provides social and economic benefits. It strengthens communities across our state, providing families with stable housing and a place to call home.

Rhode Island's housing market continued to improve in 2016. In partnership with 36 Participating Lenders, we helped a record number of Rhode Islanders achieve their dream of homeownership.

Characteristics of RI Housing Homebuyers in 2016:

Average Age:	35
Average Credit Score:	693
Median Household Income:	\$61,398
Minority Participation:	25%
Female Head of Household:	45%
Purchased Single-Family Homes:	88%
Average Sales Price:	\$182,033
Loans through Participating Lenders:	79%
Homebuyers Receiving Extra Assistance:	90%

CATHERINE

Catherine and her dog, Epic, are settling into their new home in Warwick. She's painted the walls a gorgeous aqua blue, decorated with an eye towards her commitment to nature, and Epic is discovering the neighborhood and loving the front porch.

A native of Schenectady, New York with a degree in conservation biology, Catherine loves to travel – for fun and for her job. But when it came time to settle down, Rhode Island, with its compact size, beaches and changing seasons, had that special appeal. (Already some of her family had settled here.)

Attracted to an older classic-style home with architectural details, high ceilings and graceful charm, Catherine was able to take advantage of RIHousing's Renewed Homes Program.

Designed to help stabilize communities that were hit by unemployment and the housing crisis, the Renewed Homes Program was launched in February 2016. It offered \$20,000 in down payment assistance to qualified buyers who purchased a previously foreclosed home or other eligible property.

"My Realtor showed me this fantastic house in Warwick that had been built in 1925 and been vacant for several years, but it had good



CATHERINE

bones,” said Catherine. “I’d done some work with AmeriCorps, helping build homes in New Orleans, so I could see that this old home was structurally sound.”

Catherine got her mortgage through Coastway Community Bank, one of RIHousing’s Participating Lenders, and she also qualified for the Renewed Homes Program. She’s one of 162 first-time homebuyers who benefitted from the program, putting the \$20,000 she saved on her down payment to good use.

“I’ve got new hardwood floors, a new hot water heater and new screen doors. The Renewed Homes Program was very important to me,” Catherine said. “I knew I wanted to be in Rhode Island, and the program allowed me to settle into a wonderful home.” The Renewed Homes Program requires buyers to remain in their homes for five years – but that’s not an issue for Catherine, as she and Epic are here to stay.



2016 HIGHLIGHTS

- Broke records for first mortgage production, more than tripling the number of mortgages since 2012
- Provided homebuyer education to 3,373 individuals through in-person and online classes – an increase of 33% from 2015
- Worked with 36 lender partners that accounted for 79% of our mortgage activity
- Rolled out the **Renewed Homes Program** in 10 eligible Rhode Island communities
- Invested more than \$1.8 million to help almost 300 recent college graduates purchase their first homes with the **Ocean State Grad Grant**



Joanna

Joanna comes from a close-knit family. So when it came time to purchase her first home, she chose to buy in the neighborhood where she grew up. The first in her family to graduate from college, she has a good job at Hasbro. She began her homebuying journey on RIHousing's website, where she signed up for a homebuyer education class. One of more than 3,300 individuals who took homebuyer education classes in 2016, she notes that they were "incredibly eye opening and helpful."

When it came time to buy, Joanna qualified for RIHousing's FirstHomes Tax Credit as well as Down Payment and Closing Cost Assistance. Newly married, Joanna notes that her home "seemed like the kind of place to start our family and life together."

HELP FOR HOMEOWNERS

RIHousing knows that the journey to homeownership doesn't end at the loan closing. That's why we support homeowners throughout the life of the mortgage loan. RIHousing provides homeowners with innovative home improvement programs to support sustainable homeownership. And we provide assistance to those homeowners experiencing financial difficulty and in need of foreclosure prevention assistance. It's part of our mission: to help people buy and keep a home.

Help for Homeowners:

Home Improvement
Loans:
\$1 million
to 65 households

HelpCenter/Mediation:
1,029
households

LeadSafe:
\$543,493
in loans to
43 homes

Mortgage Servicing:
19,328
1st and 2nd
mortgages
\$1.4 billion

RICH

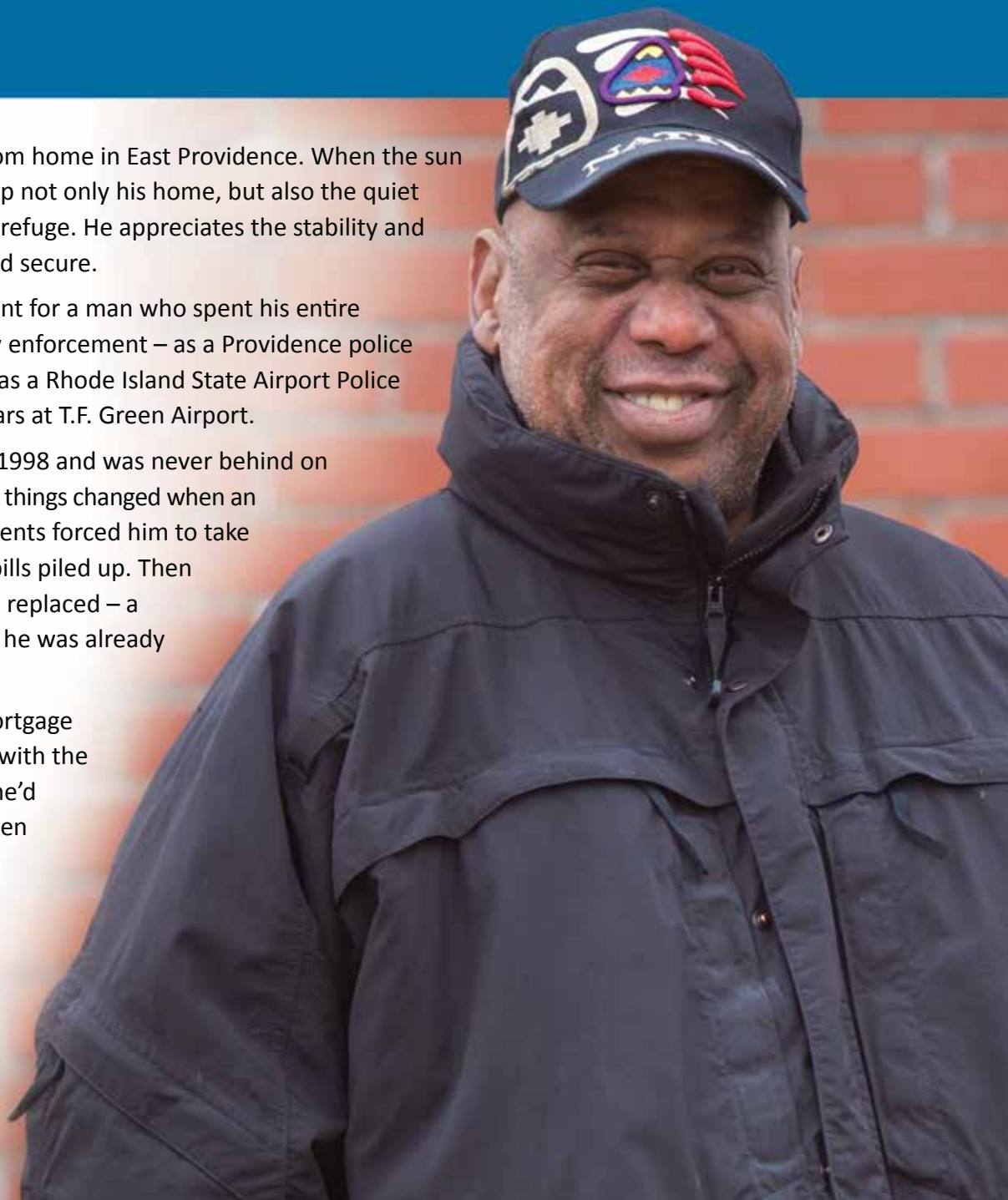
Rich loves his two-bedroom home in East Providence. When the sun hits it just right, it lights up not only his home, but also the quiet acre and a half that is his refuge. He appreciates the stability and calmness. It feels solid and secure.

That is especially important for a man who spent his entire professional career in law enforcement – as a Providence police officer for 29 years, then as a Rhode Island State Airport Police Officer K-9 Unit for 15 years at T.F. Green Airport.

Rich bought his house in 1998 and was never behind on a mortgage payment. But things changed when an illness and medical treatments forced him to take time off from work. The bills piled up. Then the furnace needed to be replaced – a significant expense when he was already on a razor-thin budget.

Rich fell behind on his mortgage payments and was faced with the very real possibility that he'd lose the house, maybe even be homeless.

"I couldn't believe it. It was a nightmare," said Rich. "I worked my whole life, then to think I'd be out on the street."



RICH

So he turned to the RIHousing HelpCenter. Established in 2007, at the height of the mortgage foreclosure crisis, the HelpCenter provides free assistance to homeowners who are struggling to make their mortgage payments.

The HelpCenter is dedicated to providing professional support and education to help Rhode Islanders protect themselves from losing their homes and make informed decisions for their futures.

The HelpCenter's mortgage counselors were able to work with Rich's mortgage holder to adjust his mortgage payments to an amount he could sustain.

Today Rich is feeling much better and is able to work part time as a security guard. And his home is back on solid footing too.



2016 HIGHLIGHTS

- Awarded \$36 million in Hardest Hit Fund (HHF) money from the U.S. Treasury for homeowners struggling to make mortgage payments
- Opened a new Jefferson Boulevard (Warwick) location for HelpCenter and Hardest Hit Fund Rhode Island
- Provided foreclosure prevention and mediation counseling to 1,029 families
- Purchased 283 tax liens (\$1.1 million) through the Madeline Walker Program to help homeowners remain in their homes
- Provided \$1 million in home improvement loans to 65 households in 20 Rhode Island communities



Mortgage Servicing

2016 was an exciting year for RIHousing's Loan Servicing division. We celebrated the milestone achievement of 20 years of mortgage servicing, and we became the only Housing Finance Agency (HFA) in New England to offer mortgage sub-servicing. With the creation of our sub-servicing arm – Mortgage Servicing Solutions – we took on an additional 7,147 loans totaling half a billion dollars.

"This announcement is the first step into a new line of business and a real opportunity for us to grow and do even more in Rhode Island," Barbara Fields, Executive Director of RIHousing, noted. "Under Governor Raimondo's tenure, our Board of Commissioners has supported our investments in upgrading and modernizing our information technology. Those investments made it possible for RIHousing to be in a unique position to take on the management of MaineHousing's portfolio."

HELP FOR RENTERS

A healthy housing mix includes both homeownership and rental opportunities. Renters make up 41 percent of our state's household population. Access to affordable rental housing ensures that families, individuals, seniors, veterans and those with special needs have access to a quality rental home in close proximity to work, education and transportation. RIHousing provides an array of programs to create and preserve affordable rental opportunities, and to provide services renters need to thrive.

RENTERS

CHALLENGES

- Average rent prices for studio, 1-, 2- and 3-bedroom apartments are highest since 2002*
- 51% of RI renters pay more than 30% of their income for rent
- Median household income for renters remains stagnant**

SOLUTIONS

- 17,335 households received rental assistance via three federal programs***
- A typical RIHousing renter spends only 30% of their income on rent
- Nearly 1,200 rental units were built or preserved in 2016

* Based on RIHousing Survey data

** HousingWorks RI at Roger Williams University

*** PBRA (Project Based Rental Assistance); HCVF (Housing Choice Voucher Program); FSS (Family Self-Sufficiency)

LITUANIA

At their home in Warwick, life is just a little bit hectic for Lituania, her husband and four children. Early evenings are a whirlwind of activities. But Lituania wouldn't have it any other way.

"It's crazy, sometimes," Lituania chuckles. "There's work, grocery shopping, cooking dinner and helping with homework. It's kind of crazy, but the older children help the younger one."

Things have changed from four years ago. Then, Lituania was a single mother struggling to pay bills. Her credit was in bad shape, and she needed help to pay for an apartment. She knew that to turn her life around, she'd need to get new skills and a better-paying job.

Lituania enrolled in RIHousing's Family Self-Sufficiency (FSS) Program. FSS provides job training, education and other services to help participants in the Housing Choice Voucher Program gain skills and experience necessary to obtain jobs and achieve their financial goals. An interest-bearing escrow account enables participants to build savings.

"With RIHousing's support, I was able to fix my credit, attend school, get training and save some money," says Lituania.



LITUANIA

RIHousing works with 150 FSS participants each year, the majority are female heads of household. Lituania is one of 15 participants to graduate from the program in 2016.

FSS was a bridge to self-sufficiency. Today Lituania is working as a medical assistant and earning a degree in nursing. She was able to give up her housing voucher and purchase her first home. While her house needs some updating, the money she saved is helping make repairs.

She is glad to move on to make room for the next person who may need help.

“Look at where I am now. I came from basically nothing – it’s the American dream,” says Lituania.



2016 HIGHLIGHTS

- Provided \$175 million in federal rental assistance, including place-based support to more than 15,000 apartments and person-based support to more than 1,700 households
- In partnership with the Providence Housing Authority (PHA), opened our wait list for the first time in more than 12 years
- Awarded more than \$400,000 for community development programs serving those living in our developments:
 - o Supported programs in Central Falls, North Kingstown, Providence and Richmond, providing 2,300 youth with STEM-based learning, college-readiness, youth employment, leadership and arts programs
 - o Supported creative place-based community development activities in Newport, Providence and Woonsocket



New focus on housing stabilization

Finding and maintaining stable housing is critical to both family well-being and a landlord's bottom line. RIHousing implemented its Housing Stabilization program in September 2016 to provide support to clients of RIHousing's programs. This focus on housing stabilization ensures that people who already have apartments receive support to remain in their homes.

In 2016, 70 households – facing a wide range of issues that put their tenancy at risk – were helped through this program. We recognize that helping tenants stay housed is good for families and makes good economic sense.



BUILDING HOMES

The availability of a range of housing options is part of building a strong economy. With projections showing the state needs 3,500 new homes per year to meet anticipated growth, RIHousing is working to produce and preserve apartments and homes by leveraging an array of public and private sources and by creating housing options throughout the state.

Financing of Housing Development in 2016:

\$78 million
first mortgage

\$58 million
in LIHTC equity

\$11 million
administered grants
and loans

\$15 million
in public/private funding

\$162 million
Total Development Cost

1,186 homes
(132 new, 1,054 preserved)

Serviced \$804 million in multi-family loans for 13,552 rental units at 174 developments across the state.

RAFFINI

Spring is coming and for Raffini, who is a resident and farm manager at the Sankofa Apartments, it's time to get out the gardening supplies, cultivate the seedlings and plant fresh vegetables in the community garden.

Located in Providence's West Elmwood neighborhood, Sankofa is a unique housing development that has transformed nine vacant lots into rental homes, a community farm, event space, community kitchen and a soon-to-be-constructed greenhouse.

"This is such a special place," says Raffini. "We bring together so many people from so many different backgrounds and cultures. It's about more than a place to live; it's community, it's home, it's feeling safe and embraced. It's love."

Developed by the West Elmwood Housing Development Corporation (WEHDC), Sankofa Apartments is a community that links safe, affordable housing with access to freshly grown food and job training while reclaiming abandoned and blighted properties.

"We are cultivating land, lives and community," says Sharon Conard-Wells, Executive Director WEHDC. "Sankofa not only gives its residents a place to live, but also provides them with on-site social, economic and nutritional opportunities."



RAFFINI

“We are a different kind of housing development,” says Conard-Wells. “RIHousing recognized that and worked to make Sankofa a reality.”

Recognized as place-making at its best, Sankofa represents a \$13.8 million investment in the local economy. RIHousing provided the first mortgage and construction loans, as well as federal Low Income Housing Tax Credits (LIHTC). The development also received funding from the Building Homes Rhode Island state bond, NeighborWorks America and LISC Rhode Island.

At Sankofa, Raffini shows off artwork from a new youth program that encourages children to think differently. “We are telling them: don’t fit into someone else’s box. Figure out who you are, embrace your history and let the world fit you.”

It is, after all, a concept at the very heart of Sankofa, an Akan-Ghanian word meaning to reach back, take from the past what is good and bring it into the present.



2016 HIGHLIGHTS

- Financed the development and preservation of nearly 1,200 homes, a 60% increase over 2015. This represents a \$162 million investment in communities throughout the state and the creation of 816 well-paying jobs
- Provided more than half a million dollars in funding to reduce lead hazards at 43 homes through our LeadSafe Homes program
- Awarded 9% Low Income Housing Tax Credits (LIHTC) for developments in Pawtucket, Providence and Smithfield to leverage \$25.5 million in private and public financing and finance the development of 148 homes
- Preserved and upgraded five developments utilizing HUD's Federal Financing Bank (FFB) Risk Sharing program: totaling 585 units and \$43 million in loans for developments in Cumberland, Burrillville, Lincoln, Smithfield and Warwick and ensuring the affordability of these homes for another 40 years



Fernwood

Amy, her son and daughter proudly show off their new home in rural Burrillville – one they helped build. Every Saturday and Sunday and two evenings a week, they worked at building their dream home. Seven families worked together to build their homes – the first of 30 in the Fernwood Development. The sweat equity cuts the costs of each home nearly in half, making the dream of homeownership truly affordable for families.

The development, by Neighbor-Works Blackstone River Valley, was made possible by leveraging state housing bond money.



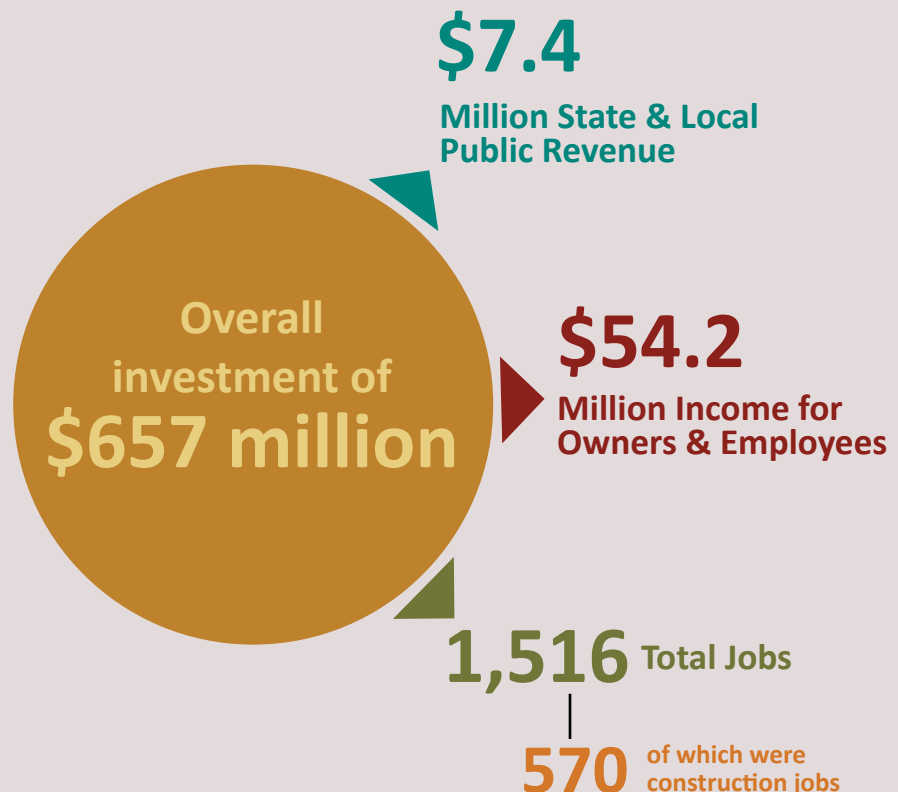
ECONOMIC IMPACT

The development and rehabilitation of housing is a major factor in creating jobs and growing the economy.

Development activity not only creates homes and restores vacant properties to the tax rolls, it also revitalizes communities and generates revenue from building material sales, income taxes and fees for inspections and zoning approvals.

For every dollar invested and job created, there's a ripple effect in the surrounding economy.

Economic Impact in 2016:



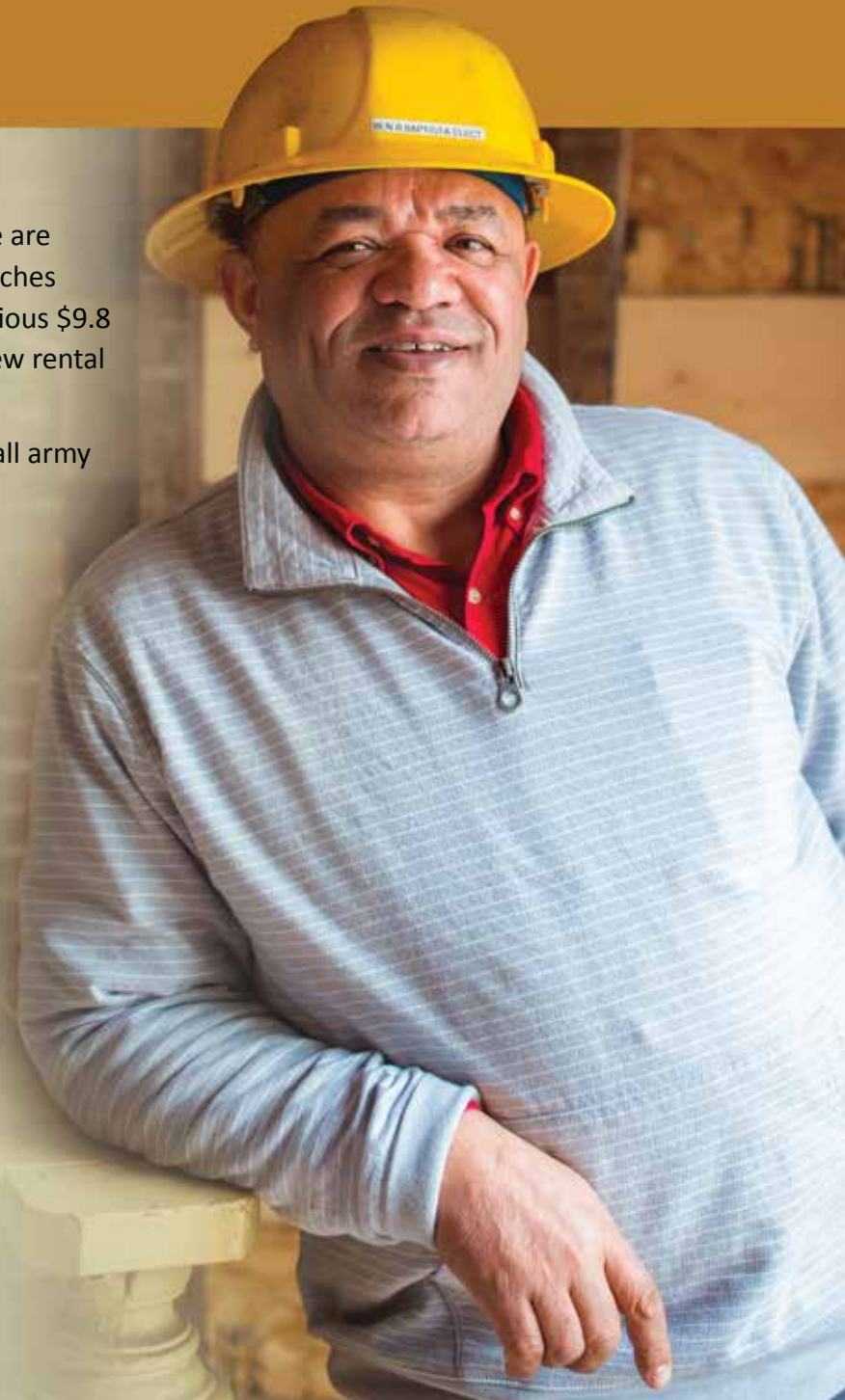
BEN

At Amherst Gardens in Providence's Olneyville neighborhood, it seems everywhere you turn there are construction workers busy putting the finishing touches on over a dozen buildings that are part of an ambitious \$9.8 million construction project that will result in 36 new rental homes and two commercial spaces.

A development of this size and scale requires a small army of skilled tradesmen, including framers, plumbers, roofers, drywallers, painters, masons, landscapers, excavators, floorers and electricians. B. Baptista Electric is one of 13 subcontractors working for general contractor Pezzuco Construction.

Ben Baptista, President and CEO of the firm, came to the U.S. as a child from Cape Verde, settling with his family in Boston. He started working for himself at age 14 and never looked back. Moving to Rhode Island and raising his family here, Ben knows firsthand how highly skilled construction jobs can support a family.

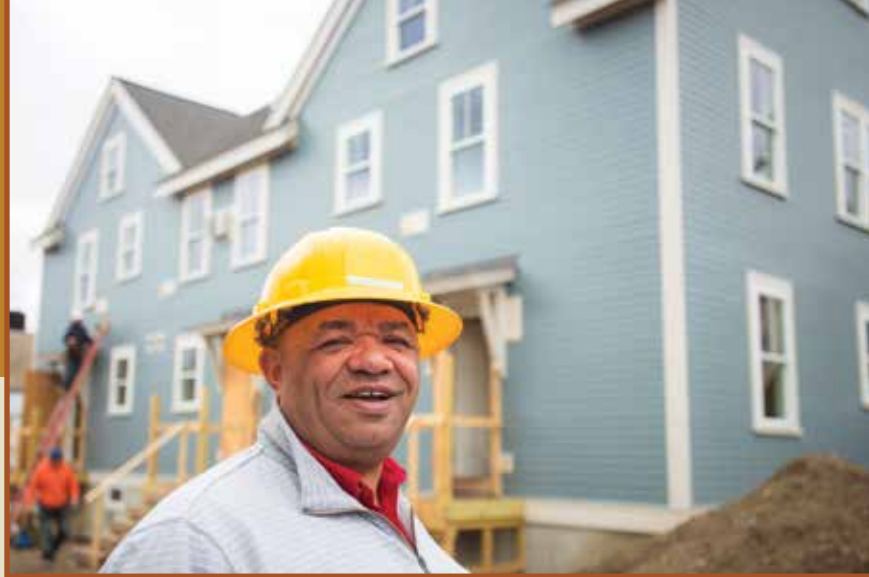
Now, as the owner of his own company, Ben employs 14 electricians. "These are good-paying jobs. If we make money, we spend money both in the community and on our families. These projects aren't just revitalizing neighborhoods. They're employing people."



BEN

With 45-55 percent of his work over the last ten years coming from RIHousing-funded projects, Ben is quick to note that while things are picking up now, it was RIHousing developments that kept him going through the Great Recession. “It was a lifeline,” he says. “Without this work I would have had to lay off half of my guys. Instead, three of my employees have purchased their own homes in the last two years.”

Ben says there is a need for more workers skilled in the trades. “Construction is an industry that drives the economy. It is everything,” he says. “Without it, where would you go? You need a place to live, a place to work, streets to drive on. These are good jobs where you can do a good day’s work and support your family.”



2016 HIGHLIGHTS

- Created 816 jobs (570 in construction) with 2016 development activity
- Generated 700 jobs through our 2016 mortgage lending activity
- Generated additional jobs in construction trades as a result of our 203(k) purchase-rehab lending, which accounted for 11% of our 2016 mortgage lending activity



Julie Leddy

The economic benefits of housing development are far-reaching and have a meaningful and significant impact on our state. Take, for example, the work of Public Housing Authorities (PHA) in Rhode Island. Combined, the 25 different PHAs employ more than 500 individuals at jobs including administration, asset management, program management, maintenance and groundskeeping. With over 10,000 rental vouchers and nearly 10,000 homes, the work of PHAs is felt across the state.

“PHAs provide housing to tens of thousands of Rhode Islanders on an annual basis,” notes Julie Leddy, Executive Director at Coventry Housing Authority. “In fact, we touch the lives of more than 32,000 Rhode Islanders each and every day.”

2016 COMMUNITY EVENTS



A. Amherst Gardens Groundbreaking, Providence: City Councilwoman Sabina Matos (at the podium) celebrates the groundbreaking for a 36-unit residential development in Olneyville.



B. Transit-Oriented Development Tour: RI Representative Carlos Tobon (right) joins Central Falls and Pawtucket Mayors Diossa and Grebien and RI Housing for a tour of the future commuter rail station in Pawtucket.

C. HelpCenter Grand Opening: Senators Reed and Whitehouse, Congressman Langevin, Governor Raimondo, Warwick Mayor Avedisian and State Senator Juan Pichardo open the new HelpCenter in Warwick.



Our thanks to all the partners who made 2016 such a success! It is through the combined efforts and support of our partners at the national, state and local levels that we were able to help so many Rhode Islanders!



D. Ashton Village Ribbon Cutting, Cumberland: Lt. Governor Daniel McKee and Al Valliere of Nationwide Construction celebrate new homes at the historic mill village.

E. Report Launch: Commerce Secretary Stefan Pryor speaks with RIHousing's Barbara Fields at the release of the *Projecting Future Housing Needs* report.

F. Sankofa Ribbon Cutting, Providence: Congressman Cicilline joins Providence Mayor Elorza, State Representative Grace Diaz, State Senator Juan Pichardo, and City Council President Luis Aponte to cut the ribbon at Sankofa Apartments in West Elmwood.



2016 COMMUNITY EVENTS



A. Dean Street Studios Groundbreaking, Providence: RIHousing joins Federal Home Loan Bank of Boston, Riverwood Mental Health Services and Women's Development Corp. to break ground.



B. Cherry Briggs Ribbon Cutting, Johnston/Providence: Senator Reed, Governor Raimondo and Treasurer Magaziner join Aaron Gornstein, POAH (far right), and Brenda Clement, HousingWorks RI, to celebrate the opening of Cherry Hill in Johnston and Aaron Briggs in Providence. It is the first project to utilize funding from the state's Housing Preservation and Production Program.

C. Fernwood Ribbon Cutting, Burrillville: New homeowners and their supporters from the U.S. Dept. of Agriculture, Navigant Credit Union, Federal Home Loan Bank, Rhode Island Housing Resources Commission, NeighborWorks America, LISC RI and the Housing Assistance Council celebrate new homes for families.

D. Amherst Gardens Groundbreaking, Providence: Kyle Bennett, United Way RI, joins Jeanne Cola, LISC RI, at a celebration of a 36-unit residential development.





E. HUD Secretary Julian Castro Visits RI: Senator Reed and Congressman Cicilline join Secretary Castro (second from left), Central Falls Mayor Diossa and Executive Director Barbara Fields to raise awareness of lead hazards.

F. Lucy's Hearth, Middletown: Senator Reed, Senate President Paiva Weed, State Representative Ruggiero and others open the new Lucy's Hearth, which provides shelter and critical services to women and children.

G. Mulvey's Hardware Ribbon Cutting, Woonsocket: Treasurer Magaziner joins Secretary of State Nellie Gorbea, LISC Rhode Island, Federal Home Loan Bank of Boston, NeighborWorks Blackstone River Valley, NeighborWorks America and Bank of America at the celebration of a mixed-use development on Main Street.



BOARD OF COMMISSIONERS

We are thankful for the service of our board members.

Chairman



Nicolas P. Retsinas
Director Emeritus
Joint Center for
Housing
Harvard University

2016 Board Members



Maria F. Barry
National Community
Development Banking
Executive
*Bank of America
Merrill Lynch*



Michael DiBiase
Director
*Rhode Island
Department of
Administration
(ex officio)*



Scottye Lindsey
Director
*Rhode Island
Department of
Business Regulation
(ex officio)*



Seth Magaziner
General Treasurer
*State of Rhode Island
(ex officio)*



Stephen P. McAllister
Manager
*Eastern Region
U.S. Chamber of
Commerce*



Kevin Orth
Managing Partner
*Atlantic American
Partners*

ACHIEVEMENTS

RIHousing is proud to have been recognized, along with our partners, for the following:

Rhode Island Historical Preservation & Heritage Commission (RIHPHC) and Preserve RI

Historic Preservation Project Award: Ashton Village, Cumberland

Partner: Valley Affordable Housing

Charles L. Edson Tax Credit Excellence Award (Honorable Mention)

Special Needs Housing Award: Veterans for Tomorrow, Providence

Partner: The Arc of Blackstone Valley

National Council of State Housing Agencies (NCSHA Awards)

Homeownership: Encouraging New Production: Habitat for Humanity, South County Loan Origination

Providence Preservation Society

At-Large Project Award: Veterans for Tomorrow, Providence

Partner: The Arc of Blackstone Valley

Greater Providence Chamber of Commerce and Blue Cross & Blue Shield of RI

Exemplary Award for the 2016 Annual Worksite Health Awards

Providence Business News

Best Places to Work Award

Partners in Housing Awards

We honored the following for their contributions to promoting healthy families, healthy communities and a healthy Rhode Island:

Senator Juan Pichardo: *Housing Champion*

Representative Cale Keable: *Housing Champion*

Coastway Community Bank: *Participating Lender*

Joseph A. Caffey: *Lifetime Achievement (given posthumously)*

We invite all readers to view our official financial disclosures on our website at rhodeislandhousing.org/financials.

All photographs by Gretchen Ertl Photography, unless otherwise noted below.

Pages 30 and 31:

A: Amherst Groundbreaking: Alexander Watrous Photography

B. Transit-Oriented Development Tour: Reinhard Sokol

F. Sankofa: Reinhard Sokol

Page 32 and 33:

B. HUD Visit: HUD/Sammy Mayo Jr.

D. Amherst Gardens: Alexander Watrous Photography

E. Cherry Briggs: Jesse Banks III Photography



BUILDING OPPORTUNITIES

Housing is the starting point.
It's the foundation for families.
It's a bridge to the middle class.
It strengthens communities and creates jobs.

About RIHousing

RIHousing is an independent, privately funded public purpose corporation created by the General Assembly in 1973. The corporation works to improve the state's economy by increasing the supply of housing that is within financial reach of Rhode Island families. As part of its mission, the corporation helps Rhode Islanders find, rent, buy, build and keep a good home. RIHousing raises capital by selling bonds and lends the proceeds to eligible homebuyers and homeowners, and to developers working to meet the growing demand for housing in Rhode Island. Taxpayer dollars are not used to sustain the operation of RIHousing.



RIHousing

44 Washington Street, Providence, RI 02903
(401) 457-1234 • rhodeislandhousing.org

102 AFFIRMATIVE ACTION/EQUAL EMPLOYMENT OPPORTUNITY

Rhode Island Housing has adopted an Affirmative Action Plan, which is updated annually. Copies of the plan are filed with the EEO Administrator, Office of Personnel, State of Rhode Island, in accordance with appropriate State regulations. Rhode Island Housing does, and will continue to ensure that job applicants and employees are treated fairly and in accordance with the law. Rhode Island Housing is committed to taking affirmative action to eliminate all vestiges of past societal discrimination and assuring its workforce is reflective of the Rhode Island population. Rhode Island Housing shall use as recruitment sources: internal job posting program, majority and minority newspapers, and all other avenues deemed appropriate (i.e., job fairs, nonprofit community organizations).

In order to provide equal employment and advancement opportunities to all individuals, employment decisions at Rhode Island Housing will be based on merit, qualifications, and abilities. Rhode Island Housing does not discriminate in employment opportunities or practices on the basis of race, color, religion, sex, national origin, gender expression or identity, age, disability, marital status, sexual orientation, or any other characteristic protected by law.

Any employees with questions or concerns about any type of discrimination in the workplace are encouraged to bring these issues to the attention of their immediate supervisor or the human resources director. Employees can raise concerns and make reports without fear of reprisal. Anyone found to be engaging in any type of unlawful discrimination will be subject to disciplinary action, up to and including termination of employment.

The Human Resources Director is responsible for administering the Affirmative Action program and serves as Affirmative Action/EEO Officer for Rhode Island Housing.

DK Communications, LLC is a woman owned marketing and communications firm located in Providence, Rhode Island. Established in 2010 by principal owner Dyana Koelsch. The firm has seven employees and provides our clients with a full slate of creative and public relations services. DK works hand in hand with highly skilled partners and vendors that provide additional depth and specialized services for our clients.

WHY DK COMMUNICATIONS?

DK Communications has extensive experience in real estate public relations. Our firm has worked on several marquee real estate projects in Rhode Island, including 111 Westminster (Superman Building), Rhode Island Housing, 195 Providence Innovation and Design District, and Laurelmead Cooperative Inc. As former reporters we have strong relationships with reporters, bloggers, web reporters, and editors throughout the region and the country.

The DK Communications team has deep experience in Rhode Island and New England providing services for public and private clients. We work closely with large projects that involve multiple moving parts and require purposeful communication and marketing.

Our in-house digital marketing experts are able to quickly respond to chatter with consistent clear facts and our public relations creative team has a core of gifted artists with track records of creating impactful, original communications.

Previous Experience and Background

DK Communications serves clients from several sectors providing brand development and implementation, creative services including design and logo development, message development and communication strategy, advertising and public relations. DK has provided communication services for the following clients:

Economic Development

Providence Warwick Convention and Visitors Bureau
South County Tourism Council
The 195 Redevelopment Commission
Highrock Development (111 Westminster)
OSHEAN- (RI's fiber optic broadband network)
The Economic Development Foundation- Highland Industrial Park
RI Association of Realtors
Peregrine Group
Pawtucket Central Fall Transit Oriented District

State and Municipal Entities

Providence Water Authority Board
Rhode Island Housing

Health

Care New England/ Memorial Hospital

Brigham and Women's Hospital- RI Cardiac Center
Rhode Island Office of Health Insurance Commissioner
Providence Plan
The Rhode Island Health Exchange
The National Children's Study- RI
Rhode Island Housing

Education

Bryant University- Hassenfeld Institute for Public Leadership
Brown University School of Public Health

Private Companies

NORAD
Chisholm Chisholm & Kilpatrick

Retail

ICON Lighting
Sharper Image
Daniele Foods

Not for Profit

The Providence Public Library
Button Hole Golf Course
The Diocese of Providence

Prior to forming DK Communications, members of our team have worked with the following real estate clients:

Procaccianti Companies
Quonset Business Park
Riggs & Gallagher
New Boston Development Partners
RI Economic Policy Council

Cost Proposal - Task Sheets

Offeror's Name:	Rhode Island Housing
------------------------	----------------------

Task Sheets. Please add or delete rows for team members and add or delete task tables as needed.

Task 1: Design & Implement a Tenant Energy Engagement and Education Program			
Labor Costs			
Subcontractor or Team Member Name and/or Job Title	Hourly Rate	Estimated Hours	Evaluated Price (Hourly Rate * Estimated Hours)
Energy Specialist	\$51	500	\$25,500
Housing Stabilization Specialists	\$39	900	\$35,100
Public Information Manager	\$53	175	\$9,275
Asst. Dir. of Development	\$65	150	\$9,750
Mngr Multi-family Workout/QC	\$56	175	\$9,800
Additional expenses that are not included in hourly rate			
Description of Expense			Price
Program Incentives & Prizes			\$1,575
DK Communications, LLC (Design Costs)			\$5,000
Printing Costs			\$4,000
Total Task Price:			\$ <u>100,000</u>

Cost Proposal - All-Inclusive Price and Signature Page

Offeror's Name:	Rhode Island Housing
------------------------	----------------------

One All-Inclusive Price. This number represents the sum of all total task prices and any other costs and expenses charged to EERMC.

All-Inclusive Price:	\$75,000 EERMC \$25,000 RIH In-kind Staff
-----------------------------	--



Signature of Authorized Person

8/28/17
Date

Eric Shorter - Director of Development
Printed Name, Title

ISBE Proposal – List of ISBEs Page

Offeror's Name:	Rhode Island Housing
------------------------	----------------------

Please see Sections 1.5, 1.6, 1.7, 3.6, 3.7, and 3.8 of the RFP for additional information.

Is the offeror a State certified ISBE (MBE, WBE or Disability Business Enterprise):	YES <input type="radio"/>	NO <input checked="" type="radio"/>
	If YES, provide the total dollar amount representing work that will be done by the offeror: <div style="text-align: right;">\$ _____</div>	

Identification of ISBE Subcontractors (Please add rows as necessary)		
ISBE Subcontractor's Name	ISBE Mailing Address, Email Address, and Phone Number	The total dollar amount representing work that will be done by the ISBE Subcontractor
		\$ _____
		\$ _____
		\$ _____

ISBE Proposal – Participation Rate and Signature Page

Offeror's Name:	Rhode Island Housing
------------------------	----------------------

A. Total amount of dollars representing work that will be done by the ISBEs:	\$ 0 _____
B. All-Inclusive Price Listed in the Cost Proposal:	\$ 0 _____
ISBE Participation Rate (=A/B):	0 _____ %



Signature of Authorized Person

8/28/17

Date

Eric Shorter - Director of Development

Printed Name, Title



**THE BY-LAWS
of the
RHODE ISLAND ENERGY EFFICIENCY AND
RESOURCE MANAGEMENT COUNCIL**

**Adopted February 12, 2015
Pursuant to RIGL §42-140.1-6(b)**

Table of Contents

	Page(s)
Article I – The Council	3
Section 1. Name	3
Section 2. Purposes and General Powers	3-4
Section 3. Seal	4
Section 4. Office	4
Section 5. Fiscal / Program Year	4
Section 6. Nondiscrimination	4
Article II – Council Membership	5
Section 1. Composition of the Council	5
Section 2. Term of Office	5
Section 3. Vacancies	5
Section 4. Resignations	5
Section 5. Removal	5
Section 6. Prohibition of Compensation of Members	6
Article III - Officers	6
Section 1. Number and Title	6
Section 2. Duties of the Chairperson	6
Section 3. Duties of the Vice Chairperson	6
Section 4. Executive Director	6
Section 5. Duties of the Executive Director	6
Article IV - Committees	7
Section 1. Executive Committee	7
Section 2. Other Committees	7
Section 3. Task Forces and Other Non-Member Committees	7
Section 4. Committee Meetings	7
Article V – Council Meetings	7
Section 1. Meetings	7
Section 2. Notice of Meetings	7-8
Section 3. Specification of Business	8
Section 4. Notice of Cancelled Meeting	8
Section 5. Special Meetings	8
Section 6. Quorum	8
Section 7. Voting	8
Section 8. Executive Session	8
Section 9. Conflict of Interest	8-9
Article VI – Amendments to By-Laws	9
Section 1. Amendments	9
Article VII – Parliamentary Authority / Other Operating Procedures	9
Section 1. Parliamentary Procedure	9
Section 2. Roll Call Vote	9

Article I -The Council

Section 1. Name: The Rhode Island Energy Efficiency and Resource Management Council – hereinafter referred to as “the EERMC” or “the Council” – is authorized, created, and established pursuant to Rhode Island General Law (RIGL) §42-140.1.

Section 2. Purposes and General Powers and Duties: Pursuant to RIGL §42-140.1-3, the purposes of the EERMC are:

- (1) Evaluate and make recommendations, including, but not limited to, plans and programs, with regard to the optimization of energy efficiency, energy conservation, energy resource development; and the development of a plan for least-cost procurement for Rhode Island; and
- (2) Provide consistent, comprehensive, informed and publicly accountable stake-holder involvement in energy efficiency, energy conservation, and energy resource management; and
- (3) Monitor and evaluate the effectiveness of programs to achieve energy efficiency, energy conservation, and diversification of energy resources; and
- (4) Promote public understanding of energy issues and of ways in which energy efficiency, energy conservation, and energy resource diversification and management can be effectuated.

Pursuant to RIGL §42-140.1-5, the EERMC shall have the power to:

- (1) Develop and recommend for implementation plans, programs and standards for energy conservation, energy efficiency, and diversification of energy resources.
- (2) Monitor and evaluate plans and programs for energy conservation, energy efficiency and diversification of energy resources; in order to effectuate such evaluations the council may request audits, including performance audits, of any program for energy conservation, energy efficiency or diversification of energy resources, that is established pursuant to Rhode Island law or is administered by a state agency, a request for an audit of any program operative pursuant to an order or decision of the public utilities commission shall be made to the commission; the council may make findings and recommendations with regard to changes, modification or continuation of any programs which it has authority to monitor or evaluate.
- (3) Submit to the joint committee on energy an annual report on/or before April 15 of each year, commencing in 2008, regarding the activities of the council, its assessment of energy issues, the status of system reliability, energy efficiency and conservation procurement and its recommendations regarding any improvements which might be necessary or desirable.
- (4) Participate in proceedings of the public utilities commission that pertain to the purposes of the council, including but not limited to proceedings regarding least-cost procurement as provided for in § 39-1-27.7.
- (5) Advise electric distribution companies with regard to implementation of least cost procurement.
- (6) Advise the commission of energy resources, and recommend policies, standards, strategies, plans, programs, and procedures with regard to functions of the office of energy resources including but not limited to plans, strategies, and programs to:
 - a. implement cost-effective energy conservation and energy efficiency programs;
 - b. promote the development of eligible renewable energy resources for Rhode Island;
 - c. foster distributed generation of electricity and demand response;

- d. assist low-income households in meeting energy needs; and
 - e. coordinate the use of funds, resources, and programs from diverse resources to achieve the purposes of the office.
- (7) Consider such other matters as it may deem appropriate to the fulfillment of its purposes, and may advise the governor, the general assembly, other parties, and the public with regard to matters pertaining to its purposes and duties, which advice may include findings and recommendations.

The EERMC has additional general powers, pursuant to RIGL §42-140.1-6, which include:

- (1) To make any studies of conditions, activities, or problems related to the state's energy needs, usage, and supplies to carry out its responsibilities.
- (2) To adopt amend bylaws, to establish committees, to elect and/or appoint officers and agents, and to engage consultants and professional services as necessary and appropriate to fulfill its purposes.
- (3) To accept and administer grants from the federal government and from other sources, public or private, for the carrying out of any of its functions, which loans or grants shall not be expended for other than the purposes for which provided.
- (4) To work with the appropriate federal, regional, and state agencies, and private entities.
- (5) To apply for, accept and expend allocations, grants and bequests of funds, for the purpose of carrying out the lawful responsibilities of the council.

The EERMC shall have the power to enter into contracts with persons and entities in furtherance of its purposes. The EERMC shall have such additional purposes and powers as may be delegated to it from time to time by the General Assembly, and all incidental powers as may be necessary and practical for carrying out its purposes and duties as herein described

Section 3. Seal: The seal shall include the words "State of Rhode Island Energy Efficiency & Resource Management Council" positioned around a graphical representation of the sun, land, and sea.

Section 4. Office: The administrative office of the Council shall be located at the offices of its executive director ~~at the Rhode Island Office of Energy Resources, One Capitol Hill—4th Floor, Providence, Rhode Island 02908.~~

Commented [BT(1): In case our location ever changes, I'd remove the address.

Section 5. Fiscal/Program Year: The fiscal/program year of the Council shall be on calendar year basis beginning on the first day of January and ending on the thirty-first day of December.

Section 6. Nondiscrimination: The members, officers, employees, service-providers and other persons or organizations selected and/or served by and for the Council shall be treated and considered entirely on a nondiscriminatory basis with regard to sex, marital status, sexual preference, race, religion, disability, national origin or age, except as applicable to federal or state mandated eligibility criteria for specific programs or services.

Article II - Council Membership

Section 1. Composition of the Council: The membership of the Council shall be governed by RIGL §42-140.1-4. The Council shall consist of ~~thirteen~~ fifteen (15) members appointed by the governor with the advice and consent of the senate.

Commented [OER2]: Updated this section to reflect the current law

- A. ~~Nine~~ Eleven (11) members shall be voting members, and the governor shall give due consideration to appointing persons with knowledge of:
1. energy regulation and law;
 2. large commercial/industrial users;
 3. small commercial/industrial users;
 4. residential users;
 5. low income users;
 6. environmental issues pertaining to energy;
 7. energy design and codes;
 8. large nonprofit institutional users;
 - 7-9. small nonprofit institutional users;
 - 8-10. energy efficiency education and employment tracking; and
 - 9-11. municipal energy users.
- B. Four (4) members shall be ex-officio, non-voting members, representing:
1. an electric distribution entity;
 2. a gas distribution entity;
 3. fuel oil or heating fuel industry; and
 4. the commissioner of the office of energy resources.
- C. From the ~~nine~~ eleven (11) voting members, the governor shall appoint one person to be chairperson of the council and one person to be vice chairperson of the council.
- D. The commissioner of the office of energy resources shall be the executive secretary and executive director of the council.

Section 2. Term of Office: Pursuant to RIGL §42-140.1-4(b), with the exception of the commissioner of the office of energy resources, Members of the council shall be appointed for a term of five (5) years and may be reappointed.

Section 3. Vacancies: Pursuant to RIGL §42-140.1-4(d), A vacancy other than by expiration shall be filled in the manner of the original appointment but only for the unexpired portion of the term. The appointing authority shall have the power to remove its appointee for just cause.

Section 4. Resignations: A member may resign at any time by submitting written notice to the Governor, Executive Director and Chairperson. The resignation shall take effect at the time specified in such notice, and unless otherwise specified in such notice, and acceptance shall not be necessary to make it effective.

Section 5. Removal: The Executive Committee of the Council may recommend to the Governor the removal of any member who (a) fails to attend at least two-thirds (2/3) of the regularly scheduled meetings of the Council during a twelve (12) month period, (b) fails to attend three (3) consecutive meetings of the Council or (c) fails to perform his/her duties in a

manner consistent with the Council's mission and/or these by-laws; and/or any authorizing or companion legislation pertinent to the Council.

Section 6. Prohibition of Compensation of Members: Pursuant to RIGL §42-140.1-4(e), the members of the council shall not be compensated for their service but shall be reimbursed for their actual expenses necessarily incurred in the performance of their duties. The provisions of this section shall not apply to the executive secretary/executive director.

Article III - Officers

Section 1. Number and Title: Pursuant to RIGL §42-140.1-4(a), the governor shall appoint one person to be chairperson of the council and one person to be vice chairperson of the council.

Section 2. Duties of the Chairperson: The Chairperson of the Council shall:

- A. Preside at all meetings of the Council, if present;
- B. Execute instruments, as authorized by the Council, in the name of the Council;
- ~~B.C.~~ Call special meetings of the Council, or reschedule a regular meeting of the Council;
- ~~C.D.~~ Appoint ad-hoc committees, workgroups or task forces to assist the Council;
- ~~D.E.~~ Appoint Chairpersons of committees;
- ~~E.F.~~ Appoint members of the Council to committees;
- G. Be an ex-officio member of all committees, and shall be Chairperson of the Executive Committee;
- F.H. Recommend appointees to the Governor with input from the Executive Committee; and
- I. Develop and recommend a regular, monthly meeting schedule for the year to the full Council;
- J. Develop the agendas for meetings of the Council; and
- ~~G.K.~~ Exercise and perform such other powers and duties as may from time to time be assigned by the Governor, or the Council, or prescribed by these by-laws; and, in general, to perform all the duties incident to the office of the Chairperson.

Commented [OER3]: New duty

Commented [OER4]: New duty

Commented [OER5]: Moved from Ex Comm

Section 3. Duties of the Vice-Chairperson: The Vice-Chairperson shall, in the absence of the Chairperson, perform all the duties of the Chairperson, and, when so acting, shall have all the powers of, and be subject to all the restrictions, upon the Chairperson. The Vice-Chairperson shall also have such other powers, and perform such other duties, as, from time to time, may be prescribed by the Chairperson, Council, or these by-laws.

Section 4. Executive Director: The commissioner of the office of energy resources shall be the executive secretary and executive director of the council.

Section 5. Duties of the Executive Director: The Executive Director shall be responsible for:

- A. Informing the Council of pertinent local, statewide, regional, and national developments in the field of energy efficiency, renewable energy, and other energy-related matters;
- B. Seeing that all orders and resolutions of the Council are effected;

C. Assisting the Chairperson in scheduling and rescheduling any regular or special meetings of the Council;

D. Assisting the Chairperson in developing council agendas;

~~B~~-E. Assisting the Executive Committee in developing and recommending annual budgets to the full Council;

F. Keeping and maintaining all of the Council's minutes, financial records, and other reports in hard copy or electronically, and overseeing the maintenance of~~maintain~~ the Council's public website as specified by the Council;

~~C~~-G. Recommending appointees to the Governor; and

~~D~~-H. Other duties and responsibilities as assigned and/or required.

Article IV - Committees

Section 1. Executive Committee: The Council shall have an Executive Committee comprised of officers and any other members designated by the Council. Only voting members listed in Article II, Section 1A shall have the ability to vote in the Executive Committee; any other designated individuals may participate at the invitation of the Chairperson, but may not vote. The Chairperson of the EERMC shall be the Chair of the Executive Committee. The Executive Committee must meet, at a minimum, one time per year.

The Committee shall be responsible for:

- A. Establishing and reviewing Council member performance standards and codes of conduct consistent with mission of the Council;
- B. Evaluating the performance of members annually;
- C. Reviewing these by-laws annually and recommending ing any changes to the full Council;
- D. The recruitment of potential members and oversight of the education of existing members;
- E. Developing and recommending annual budgets to the full Council; and
- ~~E. Developing the agendas for meetings of the Council; and~~
- F. Exercising any of the powers and authority of the Council that the Council may delegate to the Committee, subject to the control of the Council, except the power to amend or repeal these by-laws and any matter required by law to be exercised by the Council.

Commented [OER6]: Moved to Chairperson

Section 2. Other Committees: The Council may create other committees that shall have, and may exercise, such powers as shall be conferred or authorized by resolution of the Council. Such other committees will have such name or names as may be determined from time to time by resolution adopted by the voting members of the Council. The Council, by such affirmative vote, shall have power, at any time, to change the powers, and to dispose of, any such committee.

Section 3. Task Forces and Other Non-Member Committees: The Council may recommend to the Chairperson the creation of one or more ad-hoc committees, work groups or task forces, solely to make recommendations to the Council, which may consist of one or more persons who may but need not be Council members. No such task force or committee shall have or exercise any of the authority of the Council in the management of the affairs of the Council.

Section 4. Committee Meetings: At all Council committee meetings, the majority of the membership of said committee shall, at any meeting, constitute a quorum for the transaction of business. Each committee will comply with RIGL §42-46, Open Meetings, accessible to the general public, keep regular minutes of its proceedings and report the same to the Council when required.

Article V – Council Meetings

Section 1. Meetings: The Council shall meet monthly at a place, date and time to be designated by the Chairperson. The meetings shall be open, accessible to the general public, and keep regular minutes of its proceedings and report the same to the Council when required in accordance with RIGL §42-46, Open Meetings.

Section 2. Notice of Meetings: Notice of all meetings shall be given to any member either in writing, personally, by telephone, by facsimile or email to his or her house or office either directly or by leaving a message. Notice of any meeting of the Council shall be sent to each Council member not less than seven (7) days before the meeting; this may be waived, consistent with the Open Meetings Law and other applicable provisions, if circumstances warrant.

Section 3. Specification of Business: Notice of any meeting of the Council shall specify the place, the day, and the hour of the meeting, and, where practicable, an agenda of the business to be conducted at said meeting. In the case of a special meeting, the notice shall contain the general nature of the business to be transacted.

[A council member may request that the Chairperson add or adjust items on a meeting agenda if the request is made at least 72 hours in advance of a scheduled meeting. Such requests must be submitted to the Chairperson in writing or via email. If the Chairperson denies or does not act on the request, the Council member may make a motion at the scheduled meeting to adjust an item on the agenda for discussion purposes only or to add an item to the next meeting's agenda. Votes may only be added to an agenda 48 hours or more in advance of a scheduled meeting.](#)

Section 4. Notice of Cancelled Meeting: When a scheduled Council meeting is cancelled, notice of the cancellation shall be given consistent with Section 2 of this Section.

Section 5. Special Meetings: The Chairperson of the Council, a majority of the members of the Council, or a majority of the Executive Committee shall have the authority to call a special meeting of the Council.

Section 6. Quorum: Pursuant to RIGL §42-140.1-4(c), a simple majority of the total number of voting members shall constitute a quorum. If, however, such quorum shall not be present at any meeting, the members shall have power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present.

Section 7. Voting: Each voting member shall be entitled to one vote. A vote of a majority of the members present at a meeting at which a quorum is present shall be the act of the EERMC. Voting by proxy, by mail or any other means where the member is not in attendance is not permitted.

Section 8. Executive Session: The Council, upon an affirmative vote of a majority of its members, may vote to go into executive session, and hold a meeting closed to the public. At the discretion of the Council, such executive session may also be closed to the Executive Director. The vote of each Council member on the question of holding a meeting closed to the public, and the reasons for holding such a meeting, shall be recorded and entered in the minutes of the meeting. A meeting or executive session so closed to the public shall be limited to the following matters:

- A. Sessions pertaining to litigation, or work sessions pertaining to the same;
- B. Any discussions or considerations related to the contracting of energy consulting services or other contracted services wherein advance public information would be detrimental to the interest of the public; and

C. Any and all matters which may be contained in RIGL §42-46-5, or any amendment thereof.

Section 9. Conflict of Interest: Council members shall not engage in any conduct resulting in a real, potential, or apparent conflict of interest. A conflict of interest may arise when any action by a Council member or staff, whether isolated, recurring, or continuous, is to the direct financial advantage of a Council member or staff and their family defined as a spouse and dependent children as well as any person related to such Council member or staff whether by blood, marriage or adoption. Council members shall not participate in the selection, evaluation, choice, or management of a proposal, application or contract, covered by state and/or federal funds, if a real, potential, or apparent conflict of interest would be involved. Such a conflict of interest would arise when any Council member or staff or any member of their family, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in the firm/organization selected for a contract.

The attendance of any member at a meeting of the Council or committee, in which the member has an interest, shall be counted in determining the presence of a quorum and shall not prohibit the Council or committee from authorizing, approving or ratifying a contract or award made by an affirmative vote of the Council or committee. However, the member shall recuse from any discussion and shall abstain from voting on any matter in which the member has interest.

Council members shall neither solicit nor accept gratuities, favors, or anything of monetary value from contractors, sub-recipients, parties of project contractors, or entities associated with such.

Article VI - Amendments to By-Laws

Section 1. Amendments: These by-laws shall not be amended except by a two-thirds (2/3) affirmative vote of the members constituting the Council at a properly called and noticed Council meeting. No vote to amend the by-laws shall be taken unless notice, in writing, and a copy of the proposed changes, has been given to the Council membership at least two (2) weeks prior to the Council meeting at which the vote on said amendment is to be taken.

Article VII - Parliamentary Authority and Other Operating Procedures

Section 1. Parliamentary Procedure: Roberts Rules of Order shall govern the proceedings of Council meetings, insofar as they are not inconsistent with these by-laws. These rules may be relaxed at the discretion of the Chairperson, in view of the nature of the discussion, should there be no objection from the membership.

Section 2. Roll Call Vote: The Chairperson, at his/her discretion, may request a roll call vote. A request for a roll call vote by any member is subject to a majority vote of the Council.

Attached is the proposal for the ExecComm from June 2014.
From the June 2014 meeting notes:

3. Other Business Discussion and Vote on Executive Committee Formation

Commissioner Gold explained that some Council members have been discussing the need for an Executive Committee (see attached) to address administrative matters, including overseeing budgets, consultant team selection and management, PUC dockets, and annual and 3-year plans.

The Committee would also develop the EERMC meeting agendas. The Committee would have publicly posted meetings and we would take minutes, following all the Robert's rules. It would also consider the creation of additional ad hoc committees as needed.

Commissioner Gold added that draft rules of procedures for the Council were developed some time ago but were never codified. One of the Committee's first responsibilities will be to review those procedures and finalize them, which would include the appointment of a Vice Chair.

Chairman Ryan said that the general purpose of the Executive Committee would be to allow that group to get into the weeds and discuss issues in more depth so that the full Council meetings will not need to get as detailed.

Mr. Parker asked if this group would be responsible for finalizing language on official documents, and if so, could they do it via email as a formal committee. Chairman Ryan explained that email decisions are not allowed in Rhode Island. If there are not more than two voting members on a phone call at one time, it does not need to follow open meetings rules. The final decision will be made by the Council's legal counsel.

The Council discussed the idea of employing the consent agenda model, in which the full Council does one vote on everything that the Executive Committee has approved. It might be a way of streamlining meetings. Abigail Anthony noted that there are some things that would make sense for consent agenda and some things that would not.

Mr. Justynski made a motion to create the Executive Committee. Joe Newsome seconded and the motion passed unanimously.

EERMC EXECUTIVE COMMITTEE PROPOSAL

June 12, 2014

Purpose

- Create a strong, engaged executive committee invested in all administrative matters

Members

- EERMC Chair – Chair, Paul Ryan
- EERMC Vice Chair (Large C & I) – Chris Powell
- EERMC Environmental Representative – Abigail Anthony
- RI OER (Executive Director, Chief of Staff and OER staff person)
- Utility Representative
- Consultant Team

Scope of Duties

- Oversee budgets, C-team selection and management, PUC dockets, annual and three year plans
- Provide coordinated and consistent direction to C-Team from EERMC/OER
- Check-in with OER staff on general administrative issues.
- Provide opportunity for C-Team to bring important issues from the Collaborative back to the EERMC
- Formalize proposal for ad hoc standing committees – C & I, Residential and System Reliability
- Liaison with Demand Collaborative
- Make suggestions for needed additional short-term committees
- Generally make sure that we're all on the same page
- Committee chair leads discussions and update Council after every committee meeting
- Consider allowing remote participation
- Meets monthly one week before the EERMC meeting
- Committee meetings are public

Meeting Schedule

- Thursday, July 10th, 2:00 - 3:00 PM, Conference Room B
- Thursday, August 7th, 3:00 - 4:00 PM, Conference Room B
- Thursday, September 4th, 2:00 - 3:00 PM, Conference Room B
- Thursday, October 2nd, 2:00 - 3:00 PM, Conference Room B
- Thursday, November 6th, 2:00 - 3:00 PM, Conference Room B
- Thursday, December 4th, 2:00 - 3:00 PM, Conference Room B