Raquel Webster
Senior Counsel

December 6, 2019

BY HAND DELIVERY AND ELECTRONIC MAIL

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

RE: Docket 4979 – The Narragansett Electric Company d/b/a National Grid
2020 Energy Efficiency Program Plan
Responses to PUC Data Requests – Set 1

Dear Ms. Massaro:

In response to Commission counsel's request, I have enclosed 11 copies of National Grid's[1] responses to the Public Utilities Commission's (PUC) First Set of Data Requests in the above-referenced docket by PUC Request in sequential order with bates numbering.

Thank you for your attention to this filing. If you have any questions, please contact me at 781-907-2121.

Sincerely,

Raquel J. Webster

Enclosures

cc: Docket 4979 Service List
Jon Hagopian, Esq.
John Bell, Division

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

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PUC 1-1

Request:

Please update the response to COMM 1-1 in Docket No. 4888 to include the current proposal.

Response:

COMM 1-1 in Docket. 4888 has been incorporated into the 2020 Annual Plan (Plan) filed with the Public Utility Commission. The electric related portion of COMM 1-1 can be found in Plan, Attachment 5, Table E-11 (Bates 479). The gas related portion of COMM 1-1 can be found in Plan, Attachment 6, Table G-11 (Bates 490). For convenience, the Company has also included Tables E-11 and G-11 as Attachments PUC 1-1-1 and PUC 1-1-2.

Prepared by or under the supervision of: John Richards

Table E-11
National Grid
Rhode Island Electric Energy Efficiency 2003 - 2020
$(000)

Electric	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013[4]	2014	2015	2016	2017	2018	2019[5]	2020[6]
Energy Efficiency Budget ($Million)[1]	$23.1	$22.6	$23.1	$22.4	$22.5	$21.0	$32.4	$37.6	$59.2	$61.4	$77.5	$87.0	$86.6	$87.5	$94.6	$94.6	$107.5	$111.4
Spending Budget ($Million)[2]	$16.3	$15.8	$17.6	$16.5	$16.4	$14.7	$23.5	$28.8	$45.3	$55.3	$64.8	$80.6	$77.3	$77.6	$88.5	$88.7	$98.1	$101.4
Actual Expenditures ($Million)[3]	$22.8	$19.5	$23.4	$23.7	$21.9	$19.2	$31.7	$29.7	$40.0	$50.7	$72.9	$85.3	$87.4	$78.4	$94.8	$93.0	-	
Incentive Percentage	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Target Incentive[9]	$712,557	$781,959	$774,689	$726,627	$723,000	$647,689	$1,035,943	$1,267,043	$1,992,513	$2,434,131	$3,240,747	$4,032,000	$3,867,400	$3,878,087	$4,425,528	$4,436,022	$4,905,009	$5,072,353
Earned Incentive	$712,557	$604,876	$795,648	$760,623	$716,075	$675,282	$1,085,888	$1,333,996	$1,929,273	$2,469,411	$2,997,681	$4,223,321	$4,533,360	$4,128,034	$4,829,847	$4,940,402		
Annual Summer Demand kW Savings Goal Achieved (%)				106%	106%	113%	142%	78%	71%	83%	114%	78%	112%	101%	103%	116%		
Annual MWh Energy Savings Goal Achieved (%)				111%	102%	111%	115%	107%	94%	93%	99%	105%	115%	107%	115%	110%		
Energy Efficiency Program Charge ($/kWh)[7]	$0.00200	$0.00200	$0.00200	$0.00200	$0.00200	$0.00200	$0.00320	$0.00320	$0.00526	$0.00592	$0.00876	$0.00911	$0.00953	$0.01077	$0.01124	$0.00972	$0.01121	$0.01298
Annual Cost to 500 kWh/month Residential Customer w/o tax[8]	$12.00	$12.00	$12.00	$12.00	$12.00	$12.00	$19.20	$19.20	$31.56	$35.52	$52.56	$54.66	$57.18	$64.62	$67.44	$58.32	$67.26	$77.88
Annual Cost to 500 kWh/month Residential Customer w/ tax[9]	$12.50	$12.50	$12.50	$12.50	$12.50	$12.50	$20.00	$20.00	$32.88	$37.00	$54.75	$56.94	$59.56	$67.31	$70.25	$60.75	$70.06	$81.13

Notes:

(1) Energy Efficiency Budget includes total expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(2) Prior to 2017, Spending Budget Eligible for Shareholder Incentive includes: Implementation, Administration, General, and Evaluation Expenses; excludes EERMC and OER Costs, Commitments, Copays, and Outside Finance Costs. Beginning in 2017, Outside Finance Costs were also included. Beginning in 2018 Pilot expenses were also excluded. Beginning in 2019 ConnectedSolutions expenses and assessments were also excluded.

(3) Actual Expenditures is actual spend during calendar year. Includes expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(4) In the Company's gas and electric rate cases in docket 4323, the PUC approved the uncollectibles gross-up in the electric EE Program Charge effective February 1, 2013, and a new rate applicable to the gross-up of the gas EE Program Charge, effective February 1, 2013.

(5) 2019 values are planned.

(6) 2020 values are proposed.

(7) Beginning in 2012, the EE Program Charge includes the System Reliability Factor. It does not include the $0.0003 renewables per RI General Laws §39-2-1.2 and Order #19608, which appears on customer

(8) Reflects the annual cost excluding Gross Earnings Tax.

(9) Reflects the annual cost including Gross Earnings Tax.

Table G-11
National Grid
Rhode Island Gas Energy Efficiency 2003 - 2020
$(000)

Gas	2007[4]	2008	2009	2010	2011[5]	2012	2013[6]	2014	2015	2016	2017	2018	2019[7]	2020[8]
Energy Efficiency Budget ($Million)[1]	-	$7.3	$7.6	$4.8	$7.3	$13.7	$19.5	$23.5	$24.5	$27.7	$29.7	$28.1	$31.6	$34.4
Spending Budget ($Million)[2]	-	$6.6	$6.1	$4.5	$6.2	$12.9	$17.9	$21.8	$22.4	$25.0	$27.8	$26.2	$29.2	$31.7
Actual Expenditures ($Million)[3]	-	$7.4	$6.3	$5.5	$4.9	$13.3	$19.6	$21.5	$21.5	$24.6	$29.1	$28.8	-	-
Incentive Percentage	-	4.4%	4.4%	4.4%	4.4%	4.4%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Target Incentive	-	$288,734	$266,980	$199,743	$274,460	$570,382	$898,285	$1,089,700	$1,119,800	$1,251,654	$1,387,550	$1,309,076	$1,460,570	$1,584,101
Earned Incentive	-	$288,734	$262,121	$231,310	$239,863	$586,036	$968,229	$1,362,108	$1,387,079	$1,496,869	$1,633,531	$1,541,255		
Annual MMBtu Energy Savings Goal Achieved (%)		109%	139%	127%	117%	99%	109%	124%	111%	106%	113%	120%		
System Benefits Charge ($/therm) - all non-exempt customers[11]	$0.0071	$0.0107	$0.0150	$0.0150	$0.0411	$0.0384	$0.0417	-	-	-	-	-	-	
Residential System Benefits Chare ($/therm)	-	-	-	-	-	-	-	$0.0600	$0.0781	$0.0748	$0.0888	$0.0869	$0.0715	$0.1017
C&I System Benefits Charge ($/therm)	-	-	-	-	-	-	-	$0.0492	$0.0637	$0.0487	$0.0726	$0.0671	$0.0420	$0.0772
Annual Cost to 846 Therm/year Residential Customer w/o tax[9]	$6.04	$9.05	$12.69	$12.69	$18.28	$32.49	$35.28	$50.76	$66.07	$63.28	$75.12	$73.52	$60.49	$86.04
Annual Cost to 846 Therm/year Residential Customer w/tax[10]	$6.23	$9.33	$13.08	$13.08	$18.85	$33.49	$36.37	$52.33	$68.11	$65.24	$77.44	$75.79	$62.36	$88.70

Notes:

(1) Energy Efficiency Budget includes total expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(2) Prior to 2017, Spending Budget Eligible for Shareholder Incentive includes: Implementation, Administration, General, and Evaluation Expenses; excludes EERMC and OER Costs, Commitments, Copays, and Outside Finance Costs. Beginning in 2017, Outside Finance Costs were also included. Beginning in 2018 Pilot expenses were also excluded. Beginning in 2019 ConnectedSolutions expenses and assessment were also excluded.

(3) Actual Expenditures is actual spend during calendar year. Includes expenditures and commitments. Includes all demand side management program-related expenses, including rebates, administration and general expenses, evaluation, commitments for future years and Company incentive.

(4) Gas programs began during July 2007 and were not reported on separately that year since programs were still in development. The 2007 gas programs are included in 2008 reporting. Systems Benefit Charge shown for 2007 is the weighted average of $0.063 per decatherm from January 1, 2007 - June 30, 2007 and $0.107 per decatherm from July 1, 2007 through December 31, 2008.

(5) On July 25, 2011 the Commission ordered that National Grid could increase the gas System Benefits Charge from $0.15 to $0.411 per decatherm for the period of August 1, 2011 through December 31, 2011. Annual cost represents 7 months usage (632 therms) at $0.015 per therm and 5 months usage (214 therms) at $0.0411 per therm.

(6) In the Company's gas and electric rate cases in docket 4323, the PUC approved the uncollectibles gross-up in the electric EE Program Charge effective February 1, 2013, and a new rate applicable to the gross-up of the gas EE Program Charge, effective February 1, 2013.

(7) 2019 values are planned.

(8) 2020 values are proposed.

(9) Reflects the annual cost excluding Gross Earnings Tax.

(10) Reflects the annual cost including Gross Earnings Tax.

(11) The Gas EE Program Charge was uniform for all customers until 2014, at which time the Company proposed and the PUC approved individual factors for the residential and C&I sectors.

PUC 1-2

Request:

Please update the response to COMM 1-2 in Docket No. 4888 to include the current proposal.

Response:

Please see Attachment PUC 1-1-1 and PUC 1-1-2 in response to PUC 1-1.

Prepared by or under the supervision of: John Richards

PUC 1-3

Request:

Were there any programs and/or measures that were offered in the 2019 EE Plan that are not being offered in 2020 EE Plan? If yes, please identify and explain.

Response:

There were no programs that were offered in the 2019 EE Plan that are not being offered in the 2020 EE Plan.

The following measures were offered in the 2019 EE Plan and are not being offered in the 2020 EE Plan:

- In the residential Energy Star HVAC program, the following measures were offered in 2019 but removed in 2020; Oil Fuel Switching and Oil Fuel Switching ROF. These measure offerings have been replaced with the added level of detail showed in the added measure section for this program.

- For the Residential ConnectedSolutions program, the following measures were removed for 2020: EVs Peak - This measure is no longer offered in Rhode Island due to possible interference with the EV Time of Use Program evaluation.

- Water Heater Daily - This measure is not offered in Rhode Island due to low cost effectiveness and safety concerns around legionnaires disease.

- In the Commercial and Industrial sectors, the following measures were removed for 2020: Large Commercial Gas New Construction Program - WATER HEATER - ON-DEMAND 82, WATER HEATER - ON-DEMAND 90, WATER HEATER TANK 0.67 EF, Water Heating Boiler - 85% TE. These measures have been replaced with higher efficiency measures.

- Large Commercial Electric New Construction Program - Upstream - HVAC ECM Fan has been removed from the 2020 offering. This measure is now required by building code and can no longer be supported with energy efficiency incentives.

Prepared by or under the supervision of: Matthew Ray

PUC 1-4

Request:

How is the 2020 EE Plan different for low-income ratepayers compared to the 2019 EE Plan?

Response:

The 2020 EE Plan for serving low-income ratepayers incorporates enhancements set forth in the 2019 Process Evaluation. The key changes for 2020 are as follows:

- Developing and implementing a mobile App-based non-sWs (Standard Work Specification) based assessment process for the National Grid Income Eligible Services (IES) program to improve administrative efficiencies for auditors.
- Establishing key performance indicators to better measure the performance of the IES program.
- Improving Contractor Management including standardizing contractor recruitment, selection and payment to encourage all qualified contractors to participate in the IES program.
- Improving the survey process to obtain greater customer feedback on AMP, weatherization and heating system replacement processes.
- Improving Assessor capacity including enhanced recruitment, training and career opportunities for all energy assessment positions with a goal of providing long term, equitably compensated opportunities to diverse communities.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-5

Request:

Please provide a list of what specific decisions National Grid is seeking from the PUC.

Response:

The Company respectfully requests that the PUC approve the 2020 Annual Energy Efficiency Plan in its entirety. Specifically, the Company requests that the PUC approve the following:

- The total electric and gas spending budgets listed in Tables E-2 and G-2, located at Bates pages 467 and 481, respectively.
- The associated electric and gas savings goals listed in Tables E-7 and G-7, located at Bates pages 475 and 488, respectively.
- All proposed programs, pilots, demonstrations, and assessments contained therein.
- Proposed modifications to the performance incentive structure, including the addition of a delivered fuels carve-out mechanism and incremental performance incentive adjustment mechanisms related to the relationship between sector level planned and actual spend, as outlined at Bates pages163-169.

Prepared by or under the supervision of: Matthew Ray

PUC 1-6

Request:

Referencing the prefiled joint testimony of Porter and Ray (Joint Testimony) on Bates page 21, please explain how the incentive for all-electric homes accomplishes the promotion of fossil-fuel-free new construction.

Response:

The incentive for the all-electric homes will help to guide project teams to design and build fossil-fuel free homes that will support Rhode Island's Greenhouse Gas goals. The all-electric home will consist of electric heat, cooling, hot water heating, and appliances. The all-electric home incentive will promote fossil-fuel-free new construction by helping customers offset the potentially higher up-front construction costs of all-electric homes.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-7

Request:

Referencing the Joint Testimony on Bates page 38, please explain the nature of the "test" of instant-rebates, what data will be collected, and how that data will be used. Please also explain if this test is part of a pilot, demonstration, or assessment.

Response:

The test of instant-rebate processing will not be a pilot, demonstration, or assessment. If feasible, the instant-rebate processing will be another channel that customers can access for energy efficiency incentives when purchasing ENERGY STAR® consumer products. The language "test" was used since there is uncertainty whether the Company will be able to deploy the technology needed to offer instant rebates to customer within the program year. If implemented, the Company will look at customer use of the instant rebate channel versus other existing channels and customer satisfaction with the instant rebate offering.

Prepared by or under the supervision of: Angela Li

PUC 1-8

Request:

Referencing the Joint Testimony on Bates page 44, please explain when the PUC would review the justification of CHP projects greater than 1 MW generally. Will this review include a project-specific cost-benefit analysis, or does the project-specific analysis happen later?

Response:

Pursuant to the Company's proposal as outlined on Bates page 328 of the 2020 Energy Efficiency Plan the Company will provide notification to the Division of Public Utilities and Carriers (the Division), the Office of Energy Resources, and the Energy Efficiency and Resource Management Council of any CHP project with a net output of 1 MW or greater. The notification will occur after the project-specific cost benefit screening has been completed and before the offer letter is presented to the customer.

At that point, the Company will also submit specific additional documentation and supporting materials to the Division for its review including a project description, documentation related to the energy efficiency technical assistance and incentives, a natural gas capacity analysis, and a complete benefit cost analysis for the CHP project using the Rhode Island Test and an application of this test applying sensitivities related to the removal of economic benefits. Upon receipt of this information, the Division may then submit information requests to the Company.

If, at the end of fifty days from the date the Company provided notification to the Division, the Division has not provided the Company or the PUC its opinion of support or opposition to the project, the Company would retain the right to make a filing with the PUC seeking approval of the CHP project. At that time, the PUC would have an opportunity to review the project and a project-specific cost-benefit analysis included in the Company's filing.

In the event that the Division provides its opinion to the PUC that the Division supports the CHP project, the Company must file a notification with the PUC setting forth the pertinent facts relating to the project, including a project-specific cost-benefit analysis. At that time, the PUC will have the opportunity to approve or reject the project.

However, if the PUC takes no action within thirty days of the Company's notification and the Division (or any other party) has not objected to the proposed project, the project will be deemed approved.

Alternatively, if the Division (or any other party) objects to the project, the PUC will set the matter for a public hearing.

Prepared by or under the supervision of: Daniel Tukey

PUC 1-9

Request:

Is the new proposal for review of CHP projects greater than 1 MW also being proposed for other large projects?

Response:

No, the newly proposed review process for CHP projects greater than 1 MW is specific to CHP projects.

Prepared by or under the supervision of: Daniel Tukey

PUC 1-10

Request:

Referencing the Joint Testimony on Bates page 46, lines 10 to 12 please provide the early market assessment the witnesses are referring to.

Response:

The term "market assessment" on Bates Page 46 was used imprecisely. In 2018 and 2019, the Company conducted an informal assessment of the market interest in Zero Energy Buildings (ZEB) by gathering data on potential projects in Rhode Island. Data was gathered from National Grid sales team, National Grid vendors, local architects, and developers. This assessment was not a comprehensive survey of all architects and vendors, but more anecdotal information gathering to determine interest levels.

The Company gathered the following information:

National Grid Sales team:
- School districts interested in two potential New Construction ZEB school projects
- University interested in ZEB project

National Grid Vendors:
Multifamily Projects:
- In 2018: 30-unit building* (currently in planning phase), 7-unit building (currently under construction)
- In 2019: 48-unit project comprised of 3 buildings (currently in final design phase)

Municipality Projects:
- Three building projects under Providence Parks department are interested in ZEB and electrification

City of Providence Re: Power PVD "Race to Zero" Challenge Initiative
2019 Participants include:
- Zero Energy Small Home Community
- Education Facility, Roger Williams Zoo
- 30-unit multifamily project*

*Multifamily projects listed under "City of Providence" and under "Multifamily Projects" are the same project.

Prepared by or under the supervision of: Mona Chandra

PUC 1-11

Request:

Referencing the Joint Testimony on Bates page 56, line 4, please explain the "changing rebate policies" referenced by the witnesses.

Response:

Annual energy-saving targets are developed through a stakeholder engagement process, where factors such as product maturity, penetration of the market, state policy goals, and observed and anticipated customer receptiveness to specific offers and measures are considered when developing targets.

Rebate levels are determined in tandem with the saving targets and are set at levels deemed necessary to remove the customer cost barrier associated with energy efficient products without paying more than is necessary to drive customer adoption at targeted levels.

Evaluations assist with benchmarking rebate levels and ensuring that rebates are reasonable and in line with appropriate comparable rebates from other jurisdictions. Factors that may impact changes in rebate level include increases or decreases in the cost of efficient products, changes to savings targets for specific measures or products, and observations of market penetration, product maturity, or trends in customer adoption of incentivized technologies or measures.

Prepared by or under the supervision of: Angela Li

PUC 1-12

Request:

Please provide National Grid's estimate for the number of heat pumps that were installed in 2018 and to-date in 2019 that *could have* taken advantage of National Grid's delivered fuels heat pump programs. What portion of this estimated number of heat pumps is attributable to, or participated in, the 2018 and to-date 2019 program, if known?

Response:

The number of heat pumps incentivized for cooling and for delivered fuel heating system displacement are outlined in the table below. The Company does not have visibility into air source heat pump installations completed outside of incentive programs.

Customers who participated in the standard air source heat pump incentive are gas customers and/or chose to cool/heat a room or an isolated area, as opposed to partial/full displacement or full house heating system.

The ASHP displace/replace oil/propane/electric heat incentive was introduced in November 2018 and made available to customers with oil, propane or electric resistance heat to displace/replace a delivered fuel or electric resistance heating source.

It is unknown what portion of customers who participated in the 'standard' air source heat pump incentive (i.e. those who chose not to do a full/partial displacement of an existing heating system) could have participated in the larger incentive to displace/replace oil/propane/electric heating source, as there are several potential variables that could impact customer participation, including:

- Customer has natural gas for heating fuel therefore not eligible for heating system displacement or replacement;
- Customer may not have wanted to replace existing heating system;
- Customer only wants small area (i.e., one room) served;
- Customer's contractor may not have been an approved contractor at time of heating system replacement.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-12, page 2

Incentive Description	**2018 11/1/18 – 12/31/18**	**2019 01/01/19 – 11/20/19**
	# of incentives	**# of incentives**
Standard ASHP Incentive	1330	921
ASHP to displace/replace oil/propane/electric heat incentive	18	287

PUC 1-13

Request:

The Three-Year Energy Efficiency Plan provided targets that, at the time, included a need for National Grid to innovate savings to meet the targets. Please explain if that innovation was necessary and specifically how it was accomplished.

Response:

The Company defines innovation as any new technology, go-to-market strategy, pilot or process that may contribute to the achievement of all cost-effective energy savings. This includes innovation within existing programs based on new technologies, new measures, and new ideas from vendors that achieve a broader reach to customers, as well as to innovation through pilots, demonstrations and assessments.

Innovations as described above have been, and remain, necessary to achieving savings targets.

In the 2018-2020 Three Year Plan, a Future Innovation Adder of approximately 25,500 Annual MWh was included in 2019 in order to illustrate a potential path to the Company's achievement of specified saving targets. This Annual MWh adder was not planned to be met by any specific technological innovation, but instead has been addressed by expanding and innovating with program access, developing pathways to meeting additional demand for lighting savings, and in offering new services to customers where data has pointed to tangible savings opportunities.

Innovation is accomplished within the Company's delivery of EE programs and services through a process of continuous improvement.

Examples of some of the specific areas where this process has led to innovations that contributed to Company realization of incremental savings include:

- Improvements to EnergyStar Lighting program marketing and delivery, resulting in an anticipated 88% increase in the volume of incented products in 2019 vs. 2018. Even with a lower net-to-gross ratio than predicted, the Company believes that this increase in the volume of lighting products will lead to higher projected savings in 2019 compared to the Three-Year Plan (please see Attachment 1, Page 43, Bates page 223).
- A new 4th Tier in the Residential New Construction program for High Efficiency Homes
- Expanded Air Source Heat Pump (ASHP) incentive offerings
- 100% landlord incentives within the EnergyWise program
- Within the Commercial & Industrial sector, the launch of a restaurant initiative under the small business program, as well as proposed plans to offer a lodging initiative as well as a laundry initiative in 2020.

Prepared by or under the supervision of: Mona Chandra

PUC 1-13, page 2

Innovation is also accomplished within the Company's pilots, demonstrations and assessments. Examples of innovation via this process include:

- Demand Response Pilot - The Company, as part of its pilots efforts, tested commercial and residential active electric demand response in 2017 and 2018. The Company launched active electric demand response as a full program in 2019. This program, in the two summer seasons it has been operational, has performed above goals and is anticipated to achieve continued success.
- Commercial & Industrial demonstrations that are underway in 2019, and show promise to contribute savings in 2020 and beyond including Strategic Energy Management and Accelerate Performance.

PUC 1-14

Request:

Referencing Bates page 188 of the Plan, what does "moderate income" mean? Are there landlords who are not eligible to receive the 100% landlord incentive because of the financial status of their renters?

Response:

The Company has used the term moderate income to refer to customers whose household income falls within a range of 60-100% of area median income (AMI).

The 100% landlord incentive is not dependent on the financial status of the renters. Please see Attachment PUC 1-14 for a copy of a flyer the Company provides to landlords which includes participation qualifications.

Prepared by or under the supervision of: Angela Li

Increase efficiency. Increase comfort. See savings.

Landlords: receive 100% off insulation (up to $4,000)

National Grid offers solutions to improve the energy efficiency of your rental units and help keep your tenants happy.

We currently offer residential customers living in a 1-4 unit dwelling an instant incentive of 75% (up to $4,000) for approved insulation improvments. As a special incentive for you, National Grid is waiving the 25% co-pay for rental units. Your tenants will enjoy a more comfortable home and lower energy bills.

It all starts with a no-cost Home Energy Assessment
The on-site visit identifies energy efficiency opportunities. Performed by a qualified Energy Specialist, you'll get a custom energy report outlining energy efficiency recommendations, next steps, and rebates and incentives.

Available rebates and incentives

No-cost energy savings products installed during the assessment may include:

- ENERGY STAR® LED light bulbs
- Advanced power strips
- Low-flow showerheads
- Faucet aerators
- Programmable thermostats or discounted wireless thermostats (installed at a second appointment)

The assessment determines if you qualify for other rebates and incentives, such as:

- No-cost air sealing of leaks in drafty areas
- 100% off recommended insulation improvements (up to $4,000), per unit
- Rebates on heating and cooling equipment and water heaters
- The opportunity to apply for zero percent financing

Landlord qualification

Tenant must have a National Grid Electric or Gas account

- Must obtain a copy of the lease to keep on file
- Must be a year round lease, no summer rentals
- Must be in a 1-4 unit dwelling

Landlord occupied units may also qualify for 100% (up to $4,000) when insulation improvements are done in conjuction with all other rental units.

Tenants

If you are a residential tenant interested in any of National Grid's energy efficiency programs, we recommend working with your landlord to determine which improvements are the best fit. A conversation today may lead to a greener and more efficient home tomorrow!

1-888-633-7947
EnergyWiseInfo@RISEengineering.com

nationalgrid

PUC 1-15

Request:

Referencing pages 189-90 of the Plan, what are the "enhanced incentives" that are offered to customers with homes meeting the optimal building design and heating fuel type for electrification of the heating and water heating systems? Please also describe the standards used to determine that a home meets the optimal building design and heating fuel type for electrification of the heating and water heating systems.

Response:

The enhanced incentives refer to the Electrification of Heat and Hot Water incentives identified on Bates page 231. During the in-home Home Energy Assessment, energy specialists can identify housing configurations that would benefit from electrification of heat and/or hot water on the basis of housing attributes including well-insulated building envelopes and existing heating fuel type. Energy specialists will recommend high efficiency air source heat pumps if the home is suitable for the high efficiency air and/or water heating systems.

In 2020, the optimal building configurations for air source heat pumps will be developed within the High-Efficiency Heating, Cooling and Hot Water program and will allow for air source heat pumps to be successfully retrofitted and meet consumer expectations as their primary heating source.

Prepared by or under the supervision of: Angela Li

PUC 1-16

Request:

Attachment 1, Table 2. Please provide a short (i.e., about one sentence) description of each measure, including a description of how it saves electricity relative to a baseline technology. Please note if the measure only saves delivered fuels.

Response:

Please see Attachment PUC 1-16 for the above requested information.

Prepared by or under the supervision of: John Richards

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
EnergyWise Single Family	AC Timer	The installation of an air conditioner timer that provides ability to switch on and off an airconditioner. There is no savings claimed for this measure.	No
	Aerator - Electric	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	No
	Aerator - Oil	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	Yes
	Aerator - Others	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	Yes
	Air Sealing Kit - Oil	The installation of recessed lighting cans that provide air sealing benefits. Savings are achieved by replacing leaky recessed lighting cans in the participating household	Yes
	Air Sealing Kit - Electric	The installation of recessed lighting cans that provide air sealing benefits. Savings are achieved by replacing leaky recessed lighting cans in the participating household	No
	Air Sealing Kit - Others	The installation of recessed lighting cans that provide air sealing benefits. Savings are achieved by replacing leaky recessed lighting cans in the participating household	Yes
	LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	LED Bulbs (EISA Exempt)	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	LED Bulbs Reflectors	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures. Savings are achieved by replacing existing inefficient fixtures.	No
	LED Outdoor Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures. Savings are achieved by replacing existing inefficient fixtures.	No
	Pre-Wx	This captures non-energy related measures such as asbestos removal or remove knob and tube wiring to make a home ready for weatherization. There is no savings claimed for this measure.	No
	Refrigerator Rebate	The installation of high efficiency refrigerator. Savings are achieved by replacing existing inefficient refrigerator with a new refrigerator.	No
	Refrigerator Brush	The refrigerator brush for cleaning refrigerator coil to help refrigerator operate more efficiently. The baseline is uncleaned refrigerator coil.	No
	Showerhead - Electric	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on electric heating.	No
	Showerhead - Oil	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on oil heating.	Yes
	Showerhead - Others	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on propane heating.	Yes
	Smart Strip	A smart strip use current sensors and switching devices which turn off plug load when devices are not in use. Savings are achieved by eliminating standby power draw.	No
	Programmable Thermostat - Electric	Installation of a programmable thermostat, which gives the ability to adjust electric heating or air-conditioning operating times according to a preset schedule. Baseline is a without a programable thermostats installed.	No
	Programmable Thermostat - Oil	Installation of a programmable thermostat, which gives the ability to adjust oil heating or air-conditioning operating times according to a preset schedule.	No
	Programmable Thermostat - Other	Installation of a programmable thermostat, which gives the ability to adjust propane heating or air-conditioning operating times according to a preset schedule.	No
	LED Torchiere	The installation of ENERGY STAR rated LED torchieres. Savings are achieved by replacing the existing inefficient fixture with an efficient one.	No
	Ventilation - Other	The installation of ventilation to maintain appropriate ventilation after weatherization is complete. There is no savings claimed for this measure	No
	WiFi Thermostat - Electric	The installation of Wi-Fi thermostat with the ability to adjust electric heating or air-conditioning operating times according to a pre-set schedule to meet occupancy needs and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats.	No
	WiFi Thermostat - AC Only	The installation of Wi-Fi thermostat with the ability to air-conditioning operating times according to a pre-set schedule to meet occupancy needs and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats.	No
	WiFi Thermostat - Oil	The installation of Wi-Fi thermostat with the ability to adjust oil heating or air-conditioning operating times according to a pre-set schedule to meet occupancy needs and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats.	No
	WiFi Thermostat - Others	The installation of Wi-Fi thermostat with the ability to adjust propane heating or air-conditioning operating times according to a pre-set schedule to meet occupancy needs and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats.	No
	Wx - Oil	The installation of weatherization measures in oil heated homes. Savings are acheived by applying insulation upgrades or air sealing to minimize inflitration of outside air through cracks and leaks in the existing home shell.	No
	Wx Elec - Elec Heat Only	The installation of weatherization measures in electric heated homes. Savings are acheived by applying insulation upgrades or air sealing to minimize inflitration of outside air through cracks and leaks in the existing home shell.	No
	Pipe Insulation - Electric	The installation of domestic hot water pipe wrap to reduce electric water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	No
	Pipe Insulation - Oil	The installation of domestic hot water pipe wrap to reduce oil water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	Yes
	Pipe Insulation - Others	The installation of domestic hot water pipe wrap to reduce propane water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	Yes
	Participants	This measure tracks program participation and does not have an associated energy savings value.	No
	Heat Loans	This is not a measure but is the Heat Loan budget for this program and included in the Rebates and Other Incentives budget for this program listed in table E-2.	N/A
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
EnergyWise Multi Family	Aerator	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	No
	Aerator Oil	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	Yes
	Air Sealing Electric With AC	Thermal shell air leaks are sealed through strategic use and location of air-tight materials. The baseline efficiency case is the existing building before the air sealing measure is implemented. The baseline building is characterized by the existing air changes per hour (ACHPRE).	No
	Air Sealing Oil	Thermal shell air leaks are sealed through strategic use and location of air-tight materials. The baseline efficiency case is the existing building before the air sealing measure is implemented. The baseline building is characterized by the existing air changes per hour (ACHPRE).	Yes
	Common Exterior LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in outdoor common-areas. Savings are achieved by replacing existing inefficient fixtures.	No
	Common Exterior Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in outdoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Common Interior EISA Exempt	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor common areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Common Interior LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in indoor common-areas. Savings are achieved by replacing existing inefficient fixtures.	No
	Common Interior Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in indoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Exterior LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in outdoor dwelling units. Savings are achieved by replacing existing inefficient fixtures.	No
	Dwelling Exterior Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in outdoor dwelling-units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Interior EISA Exempt	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor dwelling units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Interior LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in indoor dwelling units. Savings are achieved by replacing existing inefficient fixtures.	No
	Dwelling Interior Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in indoor dwelling units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Heating System Retrofit-Boiler	Installation of high efficiency heating equipment to replace existing inefficient hydronic boiler(s) or steam boiler(s).	No
	Heating System Retrofit-Furnace	Installation of high efficiency heating equipment to replace an existing inefficient furnace.	No
	Insulation Electric With AC	Shell insulation upgrades applied in existing facilities including improved insulation in attics, basements and sidewalls. The baseline efficiency case is any existing home shell measures.	No
	Insulation Oil	Shell insulation upgrades applied in existing facilities including improved insulation in attics, basements and sidewalls. The baseline efficiency case is any existing home shell measures.	Yes
	Pipe Wrap DHW Elec	The installation of domestic hot water pipe wrap to reduce electric water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	No
	Pipe Wrap DHW Oil	The installation of domestic hot water pipe wrap to reduce oil water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	Yes
	Pipe Wrap Heating Oil	The installation of pipe wrap to reduce oil heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	Yes
	Refrigerator Rebate	The installation of a high efficiency refrigerator. Savings are achieved by replacing existing inefficient refrigerator with a new refrigerator.	No
	Showerhead Elec	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on electric heating.	No
	Showerhead Oil	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on oil heating.	Yes
	Smart Strip	A smart strip use current sensors and switching devices which turn off plug load when devices are not in use. Savings are achieved by eliminating standby power draw.	No
	Thermostat Electric With AC	Installation of a programmable thermostat, which gives the ability to adjust electric heating or air-conditioning operating times according to a preset schedule. The baseline is without programable thermostats installed.	No
	Thermostat Heat Pump	Installation of a programmable thermostat, which gives the ability to adjust electric heating or cooling operating times of a heat pump according to a preset schedule. The baseline is without programable thermostats installed.	No
	Thermostat Oil	Installation of a programmable thermostat, which gives the ability to adjust oil heating or air-conditioning operating times according to a preset schedule. The baseline is without programable thermostats installed.	Yes
	TSV Showerhead Elec	The high efficiency measures is a thermostatic shutoff valve combined with a low flow showerhead. The baseline is a federal code showerhead., Savings is realized due to the combination of a reduction in hot water usage associated with the shut valve associated with a person waiting for the shower temp to heat up and the lower flowrate assocatiated with the low flow showerhead.	No
	TSV Showerhead Oil	The high efficiency measures is a thermostatic shutoff valve combined with a low flow showerhead. The baseline is a federal code showerhead., Savings is realized due to the combination of a reduction in hot water usage associated with the shut valve associated with a person waiting for the shower temp to heat up and the lower flowrate assocatiated with the low flow showerhead.	Yes
	Common Exterior LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in outdoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Common Interior LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Interior LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor dwelling units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Custom	Vendors install a variety of high-efficient electric measures at multifamily facilities within common areas and dwelling units. Measures include lighting, HVAC, water heating, and insulation.	No
	Vending Miser	The installation of Vending Miser controls to help reduce the energy consumption of vending machine lighting and refrigeration systems. The baseline efficiency case is a standard efficiency refrigerated beverage vending machine without a control system capable of powering down lighting and refrigeration systems during periods of inactivity.	No
	Participants	This measure tracks program participation and does not have an associated energy savings value.	No
	Heat Loans	This is not a measure but is the Heat Loan budget for this program and included in the Rebates and Other Incentives budget for this program listed in table E-2.	N/A
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
Residential New Construction	Codes and Standards	Energy efficiency code trainings and advocacy work to improve energy efficiency of buildings and equipment within Rhode Island. Savings are claimed by increasing the percentage of code compliant residential homes.	No
	CP Home	Electric savings resulting from Energy Star Homes Code Plus projects which have a custom mix of measures and improvements. Code Plus projects are positioned below Tier 1 Energy Start Homes and above current URDH. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Clothes Washer	The installation of an Energy Star Clotheswasher in a Residential New Construction home. Savings are achieved by replacing a standard/inefficient clotheswasher.	No
	Dishwasher	The installation of an Energy Star Dishwasher in a Residential New Construction home. Savings are achieved by replacing a standard/inefficient dishwasher.	No
	Fixtures	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures. Savings are achieved by replacing existing inefficient fixtures.	No
	LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Renovation Rehab CP	Electric savings resulting from Renovation Rehab Code Plus projects which have a custom mix of measures and improvements. Renovation Rehab Code Plus projects are positioned below Tier 1 Renovation Rehab projects and above current URDH. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Refrigerator rebate	The installation of high efficiency refrigerator. Savings are achieved by replacing existing inefficient refrigerator with a new refrigerator.	No
	Renovation Rehab Tier 1 Home	Electric savings resulting from Renovation Rehab projects which includes a custom mix of replacement measures. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Renovation Rehab Tier 2 Home	Electric savings resulting from Renovation Rehab projects which includes a custom mix of replacement measures. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Renovation Rehab Tier 3 Home	Electric savings resulting from Renovation Rehab projects which includes a custom mix of replacement measures. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Renovation Rehab Tier 4 Home	Electric savings resulting from Renovation Rehab projects which includes a custom mix of replacement measures. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Showerhead	The installation of a low flow showerhead with a control that limits flow once the water is heated.	No
	Tier 1 Home	Electric savings resulting from Energy Star Homes projects which includes a custom mix of measures and improvements. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Tier 2 Home	Electric savings resulting from Energy Star Homes projects which includes a custom mix of measures and improvements. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Tier 3 Home	Electric savings resulting from Energy Star Homes projects which includes a custom mix of measures and improvements. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Tier 4 Home	Electric savings resulting from Energy Star Homes projects which includes a custom mix of measures and improvements. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.	No
	Adaptive Reuse	Electric savings resulting from converting abandoned mills and factory buildings into multifamily residences. Adaptive Reuse projects include a custom mix of measures and improvements.	No
	Participants	This measure tracks program participation and does not have an associated energy savings value.	No
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
ENERGY STAR® HVAC	ACQIVES	Savings are achieved by properly installing a central AC system compared to a standard installation. Check to make sure refrigerant levels are correct and adjust as needed.	No
	ACS16SEER13EER	The purchase and installation of high efficiency central air-conditioning (CAC) unit rather than a standard CAC system. The savings is achieved through the higher level of efficency for these units.	No
	DOWNSIZE	Reduction in system size consistent with manual J calculations for a new central AC installation.	No
	Central Heat Pump	The installation of a high efficiency rated heat pump compared to a standard heat pump. Savings achieved through higher level of efficiencies both for heating and cooling.	No
	Mini-Split Heat Pump	The installation of a more efficient rated Ductless MiniSplit system compared to a standard mini-split heat pump. Savings achieved through higher level of efficiencies both for heating and cooling.	No
	ECM Pumps	Heating hot water circulation retrofit projects replacing the existing hot water circulation systems with ECM pumps and zone valves. ECM pumps will work more efficiency than standard circulator pumps.	No
	HP Mini-split QIV	Savings are achieved by properly installing a mini-split heat pump compared to a standard installation. Check to make sure refrigerant levels are correct and adjust as needed.	No
	HPQIVES	Savings are achieved by properly installing a central ducted heat pump compared to a standard installation. Check to make sure refrigerant levels are correct and adjust as needed.	No
	HPTUNE	Savings are achieved by tuning up an existing heat pump to bring the existing equipment back up to its rated efficiency. This involved changing filters and checking the refrigerant flow to make sure it is still at the proper levels.	No
	WiFi Thermostat - cooling and oil heating	Installation of Wi-Fi thermostat with the ability to adjust heating or air-conditioning operating times according to a pre-set schedule to meet occupancy needs and minimize redundant HVAC operation and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats. Measure has both oil savings for the heating season and electric savings for cooling season..	No
	WiFi Thermostat - cooling and gas heating	Installation of Wi-Fi thermostat with the ability to adjust heating or air-conditioning operating times according to a pre-set schedule to meet occupancy needs and minimize redundant HVAC operation and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats. Measure has both gas savings for the heating season and electric savings for cooling season.	No
	Water Heater, Heat Pump <55 gallon	Installation of a heat pump water heater (HPWH) instead of a standard electric resistance water heater. Savings achieved through the higher efficiency for heat pumps. All units must be smaller than 55 gallons.	No
	Water Heater, Heat Pump >55 gallon, UEF 2.70	Installation of a high efficiency heat pump water heater (HPWH) instead of a standard heat pump water heater. Savings achieved through the higher efficiency of the incentivized heat pump. All units must be greater than or equal to 55 gallons.	No
	Central Ducted Heat Pump Fully Displacing Furnace - Oil	The installation of a high efficiency central heat pump fully replacing an oil furnace. Savings are achieved through the higher efficiency of the central heat pump when compared to the oil furnace.	Yes
	Central Ducted Heat Pump Fully Displacing Furnace - Propane	The installation of a high efficiency central heat pump fully replacing a propane furnace. Savings are achieved through the higher efficiency of the central heat pump when compared to the propane furnace.	Yes
	Central Ducted Heat Pump Partially Displacing Furnace - Oil	The installation of a high efficiency central heat pump partially replacing an oil furnace. Savings are achieved through the higher efficiency of the central heat pump when compared to the oil furnace. The existing furnace is used during extreme weather. This measure also includes integrated control that will allow the customer to control both the oil furnace and the central heat pump using one thermostat.	Yes
	Central Ducted Heat Pump Partially Displacing Furnace - Propane	The installation of a high efficiency central heat pump partially replacing an propane furnace. Savings are achieved through the higher efficiency of the central heat pump when compared to the propane furnace. The existing furnace is used during extreme weather. This measure also cincludes integrated control that will allow the customer to control both the propane furnace and the central heat pump using one thermostat.	Yes
	Central Ducted Heat Pump Partially Displacing Furnace w/o Controls - Oil	The installation of a high efficiency central heat pump partially replacing an oil furnace. Savings are achieved through the higher efficiency of the central heat pump when compared to the oil furnace. The existing furnace is used during extreme weather. This measure does not include intergrated controls and requires the customer to manually change from the central ducted heat pump to the oil furnace and vice versa.	Yes
	Central Ducted Heat Pump Partially Displacing Furnace w/o Controls - Propane	The installation of a high efficiency heat pump partially replacing a propane furnace. Savings are achieved through the higher efficiency of the central heat pump when compared to the propane furnace. The existing furnace is used during extreme weather. This measure does not include intergrated controls and requires the customer to manually change from the central ducted heat pump to the oil furnace and vice versa.	Yes
	Ductless Mini-Split Fully Displacing Boiler - Oil	The installation of high efficiency mini-split heat pumps fully replacing an oil boiler. Savings are achieved through the higher efficiency of the mini-split heat pumps when compared to the oil boiler.	Yes
	Ductless Mini-Split Fully Displacing Boiler - Propane	The installation of high efficiency mini-split heat pumps fully replacing a propane boilers. Savings are achieved through the higher efficiency of the mini-splitl heat pumps when compared to the propane boilers.	Yes
	Ductless Mini-Split Replacing Electric Resistance	The installation of high efficiency mini-split heat pumps fully replacing a electric resistance heaters. Savings are achieved through the higher efficiency of the mini-splitl heat pumps when compared to the electric resistance heating.	No
	Ductless Mini-Split Partially Displacing Boiler w/o Controls - Oil	The installation of high efficiency mini-split heat pumps partially replacing an oil boiler. Savings are achieved through the higher efficiency of the mini-split heat pumps when compared to the oil boiler. The existing boiler is used during extreme weather. This measure does not include intergrated controls and requires the customer to manually change from the mini-split heat pumps to the oil boiler and vice versa.	Yes
	Ductless Mini-Split Partially Displacing Boiler w/o Controls - Propane	The installation of high efficiency mini-split heat pumps partially replacing a propane boiler. Savings are achieved through the higher efficiency of the mini-split heat pumps when compared to the propane boiler. The existing boiler is used during extreme weather. This measure does not include intergrated controls and requires the customer to manually change from the mini-split heat pumps to the propane boiler and vice versa.	Yes
	Ductless Mini-Split Partially Displacing Boiler with Integrated Controls - Oil	The installation of high efficiency min-split heat pumps partially replacing an oil boiler. Savings are achieved through the higher efficiency of the mini-split heat pumps when compared to the oil boiler. The existing boiler is used during extreme weather. This measure also includes integrated control that will allow the customer to control both the oil furnace and the mini-split heat pumps which will allow the customer more ease in integrating their two heating sources. .	Yes
	Ductless Mini-Split Partially Displacing Boiler with Integrated Controls - Propane	The installation of high efficiency mini-split heat pumps partially replacing a propane boiler. Savings are achieved through the higher efficiency of the mini-split heat pumps when compared to the propane boiler. The existing boiler is used during extreme weather. This measure also includes integrated control that will allow the customer to control both the propane furnace and the mini-split heat pumps which will allow the customer more ease in integrating their two heating sources.	Yes
	HVAC Financing	This is not a measure but is the HVAC Financing for this program and is included in the Rebates and Other Incentives budget for this program listed in table E-2.	N/A
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
ENERGY STAR® Products	Dehumidifier Rebate	The Installation of high efficiency dehumidifiers compared to a standard efficiency dehumidifier.	No
	Dehumidifier Recycling	Removal and recycling of a old dehumidifier. Savings are based on the federal standard from approximatly 8 years ago.	No
	Energy Star Dryer	Installation of an Energy Star dryer compared to a standard efficiency dryer	No
	Freezer Recycling	The retirement of old, inefficient freezers and no replacement.	No
	Ladybug Electric	A showerhead adapter is attached to your existing showerhead. When the shower is initially turned on the Ladybug device monitors the water temperature. When the water temperature reaches bathing temperature the conservation mode is activated and the device triggers a trickle. Savings are based on electric water heating.	No
	Ladybug Gas	A showerhead adapter is attached to your existing showerhead. When the shower is initially turned on the Ladybug device monitors the water temperature. When the water temperature reaches bathing temperature the conservation mode is activated and the device triggers a trickle. Savings are based on gas water heating.	No
	Ladybug Oil	A showerhead adapter is attached to your existing showerhead. When the shower is initially turned on the Ladybug device monitors the water temperature. When the water temperature reaches bathing temperature the conservation mode is activated and the device triggers a trickle. Savings are based on oil water heating	Yes
	Ladybug Other	A showerhead adapter is attached to your existing showerhead. When the shower is initially turned on the Ladybug device monitors the water temperature. When the water temperature reaches bathing temperature the conservation mode is activated and the device triggers a trickle. Savings are based on propane water heating	Yes
	Pool Pump - 2 speed	The installation of a 2-speed pool pump. Operating a pool pump for a longer period of time at a lower wattage can move the same amount of water using significantly less energy.	No
	Pool Pump - variable	The installation of a variable speed drive pool pump. Operating a pool pump for a longer period of time at a lower wattage can move the same amount of water using significantly less energy.	No
	Refrigerator Recycling	The retirement of an old inefficient refrigerator. Savings are a weighted between primary and secondary recycled units.	No
	Refrigerator Recycling (Primary)	The retirement of an old inefficient refrigerator. Savings are a weighted between primary and secondary recycled units.	No
	Roadrunner Gas	A showerhead with a control that limits flow once water is heated. Savings are based on gas water heating.	No
	Roadrunner II Electric	A showerhead with a control that limits flow once water is heated. Savings are based on electric water heating	
	Roadrunner Oil	A showerhead with a control that limits flow once water is heated. Savings are based on oil water heating	Yes
	Roadrunner Other	A showerhead with a control that limits flow once water is heated. Savings are based on propane water heating	Yes
	Room Air Cleaners	Installation of an Energy Star room air cleaner compared to a standard efficiency room air cleaner	No
	Smart Strip	Switches off plug load using current sensors and switching devices which turn off plug load when electrical current drops below threshold low levels.	No
	Tier 2 APS	Shuts devices off after it no longer senses activity from its infrared controls.	No
	Room Air Conditioners	The installation of ENERGY STAR® qualified room air conditioners. ENERGY STAR® qualified air conditioners are typically 10% more efficient than models meeting federal standards.	No
	Storm Windows	The installation of Low E storm windows over existing windows. Savings are based on gas heating	No
	Storm Windows Electric	The installation of Low E storm windows over existing windows. Savings are based on electric heating	No
	Storm Windows Others	The installation of Low E storm windows over existing windows. Savings are based on propane heating	No
	Tier 2 APS OS	Shuts devices off after it no longer senses activity from its occupancy sensor.	No
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A
ENERGY STAR® Lighting	LED Bulb	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs.	No
	LED Bulb (Specialty)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs. "Specialty" refers to 3-way bulbs.	No
	LED Bulb (Hard to Reach)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs. Hard to Reach refers to LEDs sold in retailers that are located in hard to reach areas	No
	LED Bulb (Food Pantries)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs. These bulbs are distributed in food pantries	No
	LED Bulb (School Fundraiser)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs. These bulbs are sold through school fundraisers	No
	LED Bulb (Reflectors)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs.	No
	LED Bulb (Linear LED)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs.	No
	LED Bulb (Fixture)	The installation of Light-Emitting Diode (LED) screw-in bulbs and fixtures. Savings are based on a baseline of a combination of incanandescent, halogen and CFL bulbs.	No
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A
Home Energy Reports	New Mover electric	A Home Energy Report sent to recently activated electric only customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.	No
	New movers dual fuel	A Home Energy Report sent to recently activated electric and gas customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.	No
	Opt-out dual fuel	A Home Energy Report sent to electric and gas customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.	No
	Opt-Out electric	A Home Energy Report sent to electric only customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.	No
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
Single Family - Income Eligible Services	AC Replace	Replacement of existing inefficient room air conditioners with more efficient models. Savings are acheived by replacing an existing air conditioning unit with a more efficient unit.	No
	AP Remove	The removal of inefficient refrigerator. Savings are acheived by replacing an existing inefficient refrigerator with a new efficient refrigerator.	No
	Dehumidifier Rebate	The Installation of high efficiency dehumidifiers and the turn-in of existing inefficienct dehumidifiers. Savings are acheived by replacing an existing inefficient dehumidifier with a high efficient one.	No
	Early Retirement Clothes Washer Electric DHW & Electric Dr	The replacement and recycling of an ineffiicient clothes washer/dryer with an Energy Star rated washing machine.	No
	Early Retirement Clothes Washer Gas DHW & Electric Dryer	The replacement and recycling of an ineffiicient clothes washer/dryer with an Energy Star rated washing machine.	No
	Early Retirement Clothes Washer Electric DHW & Gas Dryer	The replacement and recycling of an ineffiicient clothes washer/dryer with an Energy Star rated washing machine.	No
	Early Retirement CW Oil DHW & Electric Dryer	The replacement and recycling of an ineffiicient clothes washer/dryer with an Energy Star rated washing machine.	No
	Early Retirement CW Gas DHW & Gas Dryer	The replacement and recycling of an ineffiicient clothes washer/dryer with an Energy Star rated washing machine.	No
	Early Retirement CW Propane DHW & Electric Dryer	The replacement and recycling of an ineffiicient clothes washer/dryer with an Energy Star rated washing machine.	No
	DHW - Electric	Domestic hot water measures include replacing high flow showerheads/faucet aerators with high-efficiency low-flow showerheads and faucet aerators. Savings are based on electric water heating.	No
	DHW - Gas	Domestic hot water measures include replacing high flow showerheads/faucet aerators with high-efficiency low-flow showerheads and faucet aerators. Savings are based on gas water heating.	No
	DHW - Oil	Domestic hot water measures include replacing high flow showerheads/faucet aerators with high-efficiency low-flow showerheads and faucet aerators. Savings are based on oil water heating.	Yes
	Education - TLC	Basic educational measures and TLC kit that includes refrigerator thermometer, LED nightlight, refrigerator coil brush and outlet/switch gaskets provided during an audit to help customers become more aware of energy efficiency.	No
	Fixtures	This measure is not offered in the Single Family Income Eligible Services program	No
	Freezer	This measure covers the replacement of an existing inefficient freezer with a new energy efficient model.	No
	Heating System	The installation of high efficiency heating . Savings are acheived by replacing an existing inefficient heating system with a high efficient one.	No
	Heat Pump Water Heaters	Installation of a heat pump water heater (HPWH) instead of an electric resistance water heater.	No
	LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Programmable Thermostat, Gas	Installation of a programmable thermostat, which gives the ability to adjust gas heating or air-conditioning operating times according to a preset schedule.	No
	Programmable Thermostat, Oil	Installation of a programmable thermostat, which gives the ability to adjust oil heating or air-conditioning operating times according to a preset schedule.	No
	Programmable Thermostat, Other	Installation of a programmable thermostat, which gives the ability to adjust propane heating or air-conditioning operating times according to a preset schedule.	No
	Refrigerator rebate	This measure covers the replacement of an existing inefficient refrigerator with a new ENERGY STAR® rated refrigerator.	No
	Smart Strip	A smart strip use current sensors and switching devices which turn off plug load when devices are not in use. Savings are achieved by eliminating standby power draw.	No
	Thermostat - Electric	Installation of a programmable thermostat, which gives the ability to adjust electric heating or air-conditioning operating times according to a preset schedule. Baseline is a without a programable thermostats installed.	No
	WATERBED	Replacement of waterbed mattress with a standard mattress.	No
	Wx Delivered Fuel	The installation of weatherization measures in delivered fuel heated homes. Savings are acheived by applying insulation upgrades or air sealing to minimize inflitration of outside air through cracks and leaks in the existing home shell.	No
	Wx Electric	The installation of weatherization measures in electric heated homes. Savings are acheived by applying insulation upgrades or air sealing to minimize inflitration of outside air through cracks and leaks in the existing home shell.	No
	Minisplit Heat Pumps - Electric Resistance	The installation of high efficiency mini-split heat pumps fully replacing a electric resistance heaters. Savings are achieved through the higher efficiency of the mini-splitl heat pumps when compared to the electric resistance heating.	No
	Minisplit Heat Pumps - Oil Fuel Switching	The installation of high efficiency mini-split heat pumps fully replacing an oil boiler. Savings are achieved through the higher efficiency of the mini-split heat pumps when compared to the oil boiler.	Yes
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
EnergyWise Income Eligible Multifamily Retrofit	AERATOR Elec	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	No
	AERATOR Oil	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.	Yes
	AIR SEALING ELEC WITH AC	Thermal shell air leaks are sealed through strategic use and location of air-tight materials. The baseline efficiency case is the existing building before the air sealing measure is implemented. The baseline building is characterized by the existing air changes per hour (ACHPRE).	No
	AIR SEALING OIL	Thermal shell air leaks are sealed through strategic use and location of air-tight materials. The baseline efficiency case is the existing building before the air sealing measure is implemented. The baseline building is characterized by the existing air changes per hour (ACHPRE).	Yes
	Common Ext LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in outdoor common-areas. Savings are achieved by replacing existing inefficient fixtures.	No
	Common Ext Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in outdoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Common Int LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in indoor common-areas. Savings are achieved by replacing existing inefficient fixtures.	No
	Common Int Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in indoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Custom	Vendors install a variety of high-efficient electric measures at multifamily facilities within common areas and dwelling units. Measures include lighting, HVAC, water heating, and insulation.	No
	Dwelling Ext LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in outdoor dwelling units. Savings are achieved by replacing existing inefficient fixtures.	No
	Dwelling Int LED Fixture	The installation of ENERGY STAR rated Light-Emitting Diode (LED) fixtures in indoor dwelling units. Savings are achieved by replacing existing inefficient fixtures.	No
	Heating System Retrofit-Boiler	Installation of high efficiency heating equipment to replace existing inefficient hydronic boiler(s) or steam boiler(s).	No
	Heating System Retrofit-Furnace	Installation of high efficiency heating equipment to replace existing inefficient furnace(s).	No
	INSULATION ELEC WITH AC	Shell insulation upgrades applied in existing facilities including improved insulation in attics, basements and sidewalls. The baseline efficiency case is any existing home shell measures.	No
	INSULATION OIL	Shell insulation upgrades applied in existing facilities including improved insulation in attics, basements and sidewalls. The baseline efficiency case is any existing home shell measures.	Yes
	Participant (NEB)	This measure tracks program participation and does not have an associated energy savings value.	No
	Pipe Wrap DHW Elec	The installation of domestic hot water pipe wrap to reduce electric water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	No
	Pipe Wrap DHW Oil	The installation of domestic hot water pipe wrap to reduce oil water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	Yes
	Pipe Wrap Heating Oil	The installation of pipe wrap to reduce oil heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.	Yes
	Refrig rebate	The installation of high efficiency refrigerator. Savings are achieved by replacing existing inefficient refrigerator with a new refrigerator.	No
	SHOWERHEAD Elec	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on electric heating.	No
	SHOWERHEAD Oil	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on oil heating.	Yes
	Smart Strip	A smart strip use current sensors and switching devices which turn off plug load when devices are not in use. Savings are achieved by eliminating standby power draw.	No
	Standalone WH Oil	Stand-alone storage water heaters are high efficiency water heaters that are not combined with space heating devices. The baseline efficiency case is an inefficient standalone tank water heater below a defined UEF level.	Yes
	Standalone WH Other	Stand-alone storage water heaters are high efficiency water heaters that are not combined with space heating devices. The baseline efficiency case is an inefficient standalone tank water heater below a defined UEF level.	Yes
	Tankless WH Oil	Tankless water heaters circulate water through a heat exchanger to be heated for immediate use, eliminating the standby heat loss associated with a storage tank. The baseline efficiency case is a standalone tank water heater below a defined UEF level.	Yes
	THERMOSTAT AC Only	Installation of a programmable thermostat, which gives the ability to adjust air-conditioning operating times according to a preset schedule. Baseline is a without a programable thermostats installed.	No
	THERMOSTAT Elec with AC	Installation of a programmable thermostat, which gives the ability to adjust electric heating or air-conditioning operating times according to a preset schedule. Baseline is a without a programable thermostats installed.	No
	THERMOSTAT Heat Pump	Installation of a programmable thermostat, which gives the ability to adjust electric heating or cooling operating times of a heat pump according to a preset schedule. Baseline is a without a programable thermostats installed.	No
	THERMOSTAT OIL	Installation of a programmable thermostat, which gives the ability to adjust oil heating or air-conditioning operating times according to a preset schedule.	Yes
	TSV Showerhead Elec	The high efficiency measures is a thermostatic shutoff valve combined with a low flow showerhead. The baseline is a federal code showerhead., Savings is realized due to the combination of a reduction in hot water usage associated with the shut valve associated with a person waiting for the shower temp to heat up and the lower flowrate assocatiated with the low flow showerhead.	No
	Common Int EISA Exempt	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor common areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Ext Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in outdoor dwelling-units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Int EISA Exempt	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor dwelling units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Int Reflector	The installation of ENERGY STAR rated Light-Emitting Diode (LED) reflector bulb in indoor dwelling-units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Common Ext LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in outdoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Common Int LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor common-areas. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Dwelling Int LED Bulbs	The installation of ENERGY STAR rated Light-Emitting Diode (LED) screw-in bulbs in indoor dwelling units. Savings are achieved by replacing existing inefficient incandescent and halogen bulbs.	No
	Vending Miser	The installation of Vending Miser controls to help reduce the energy consumption of vending machine lighting and refrigeration systems. The baseline efficiency case is a standard efficiency refrigerated beverage vending machine without a control system capable of powering down lighting and refrigeration systems during periods of inactivity.	No
	Participants	This measure tracks program participation and does not have an associated energy savings value.	No

Electric Programs			
Program	**Measure**	**Measure Description**	**Only Saves Delivered Fuels**
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A
Residential ConnectedSolutions	Thermostats New	Peak loads are reduced by increasing the thermostat settings during peak hours of peak days. Nine different thermostat manufacturers are currently supported in this BYOD (Bring Your Own Device) program. Customers can opt out of the program or individual events at any time.	No
	Thermostats Existing	Peak loads are reduced by increasing the thermostat settings during peak hours of peak days. Nine different thermostat manufacturers are currently supported in this BYOD (Bring Your Own Device) program. Customers can opt out of the program or individual events at any time.	No
	Battery Daily (number of unit)	Peak loads are reduced by discharging battery systems during peak hours of peak days. Five different battery integrators are currently supported in their BYOD (Bring Your Own Device) program. Customers can opt out of the program or individual events at any time.	No
	EVs Peak (customers)	This measure is no longer offered in Rhode Island due to possible interference with the EV Time of Use Program evaluation.	No
	Water Heater Daily (units)	This measure is not offered in Rhode Island due to low cost effectiveness and safety concerns around legionnaires disease.	No
	Behavioral Peak (customers)	Peak loads are reduced by emailing all residential and small/medium business customers with an email on file to ask them to voluntarily reduce electricity use at peak times by doing things such as delaying when they run dish washer, clothes dryers, and clothes washers until after peak hours on peak days.	No
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table E-2.	N/A
	Marketing	This is not a measure but is the Marketing budget listed for the program in table E-2.	N/A
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table E-2.	N/A
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table E-2.	N/A

PUC 1-17

Request:

Attachment 1, Table 3. Please provide a short (i.e., about one sentence) description of each measure, including a description of how it saves natural gas relative to a baseline technology. Please note if the measure only saves delivered fuels.

Response:

Please see Attachment PUC 1-17 for the above requested information.

Because measures listed in Table 3 refer to natural gas program level measures, none of the measures listed only save delivered fuels.

Prepared by or under the supervision of: John Richards

Gas Programs		
Program	**Measure**	**Measure Description**
EnergyStar® HVAC	Boiler Reset	Boiler reset controls are devices that improve the efficiency of an existing boiler system by modulating the hot water temperature set point. Reset controls automatically control boiler water temperature based on outdoor temperature using a software program; load controls sense the thermal demand of the heating system and resets the water temperature based on the demand.
	Boiler90	The high efficiency case is a boiler with an AFUE greater than or equal to 90% while the baseline has an AFUE of 85%. The savings is due to an increase in efficiency.
	Boiler95	The high efficiency case is a boiler with an AFUE greater than or equal to 95% while the baseline has an AFUE of 85%. The savings is due to an increase in efficiency.
	Combo Condensing	The high efficiency case is a combo-boiler with an AFUE greater than or equal to 90% while the baseline has an AFUE of 85%. The savings is due to an increase in efficiency.
	Combo Condensing 95	The high efficiency case is a combo-boiler with an AFUE greater than or equal to 95% while the baseline has an AFUE of 85%. The savings is due to an increase in efficiency.
	Energy Star Cond Water Heater 0.80 UEF	Measure is a high efficiency condensing water heater replacing a federal code gas water heater. Savings is due to the higher efficiency associated with condensing water heaters.
	Furnace95 ECM	Measure is a high efficiency space heating gas-fired furnace greater than or equal to 95% AFUE with an electronically commutated motor (ECM) for the fan. baseline is an 85% AFUE furnace without an ECM motor. Savings is due to the increase in efficiency associated with the 95% AFUE furnace.
	Furnace97 ECM	Measure is a high efficiency space heating gas-fired furnace greater than or equal to 97% AFUE with an electronically commutated motor (ECM) for the fan. baseline is an 85% AFUE furnace without an ECM motor. Savings is due to the increase in efficiency associated with the 97% AFUE furnace.
	Heat Recovery Vent	Heat Recovery Ventilators (HRV) can help make mechanical ventilation more cost effective by reclaiming energy from exhaust airflows. An electric penalty results due to the increased electricity consumed by the system fans. The baseline efficiency case is an ASHRAE 62.2-compliant exhaust fan system with no heat recovery.
	Energy Star Storage Water Heater .64 UEF (Med Draw)	The high efficiency case is a stand-alone gas storage water heater with a unified energy factor >= 0.64. The baseline is a federal code gas water heater. Savings is due to the increase in efficiency associated with the 0.64 UEF water heater.
	Energy Star Storage Water Heater .68 UEF (High Draw)	The high efficiency case is a stand-alone gas storage water heater with a unified energy factor >= 0.68. The baseline is a federal code gas water heater. Savings is due to the increase in efficiency associated with the 0.68 UEF water heater.
	Energy Star On Demand Water Heater 0.87 UEF	The high efficiency case is a gas tankless water heater with a unified energy factor >= 0.87. The baseline is a federal code gas water heater. Savings is due to the increase in efficiency associated with the 0.87 UEF tankless water heater.
	Low Flow Showerhead	The high efficiency measures is a low-flow showerhead with a flowrate of 1.75 GPD or less. Savings is due to the lower flow rate when compared to a federal standard showerhead.
	TSV	The high efficiency measures is a thermostatic shutoff valve that automatically shuts off the water when the temperature of shower becomes warm before a person is taking a shower. The baseline is a federal code showerhead., Savings is realized due to the reduction in hot water usage associated with a person waiting for the shower temperature to heat up.
	TSV Showerhead	The high efficiency measures is a thermostatic shutoff valve combined with a low flow showerhead. The baseline is a federal code showerhead. Savings is realized due to the combination of a reduction in hot water usage associated with a person waiting for the shower temp to heat up and the lower flowrate associatiated with the low flow showerhead.
	Wifi Thermostat - Cooling And Heating	Installation of a Wi-Fi programmable thermostat which gives the ability to adjust heating and air-conditioning operating times according to a pre-set schedule and can be adjusted remotely. The baseline is a measure mix of programable themostats and manual thermostats. Savings occur due to the combination of being able to set your thermostat and also being able to adjust your thermostat while not at home.
	Wifi Thermostat - Gas Heat Only	Installation of a Wi-Fi programmable thermostat which gives the ability to adjust heating operating times according to a pre-set schedule and can be adjusted remotely. The baseline is a measure mix of programable themostats and manual thermostats. Savings occur due to the combination of being able to set your thermostat and also being able to adjust your thermostat while not at home.
	Programmable Thermostat	Installation of a programmable thermostat which gives the ability to adjust heating or air-conditioning operating times according to a pre-set schedule. The baseline is a manual thermostat. Savings occur due to the ability to pre-set your schedule eliminating the need to manually adjust when either going to bed or leaving your house.
	Combo Furnace	This measure promotes the installation of a combined condensing high-efficiency furnace and water heating unit. Combined furnace and water heating systems are more efficient than separate systems because they eliminate the standby heat losses of an additional tank. Savings occur both due to the increased efficiency of the furnace and the elimination of the storage tank which would have standby losses.
	Water Heater, Indirect, Gas	Installation of high efficiency gas water heaters: Indirect water heaters use storage tank that is heated by the main boiler. The energy stored by the water tank allows the boiler to turn off and on less often, saving energy.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.

Gas Programs		
Program	**Measure**	**Measure Description**
EnergyWise	Aerator	The installation of a low flow faucet aerator. Savings are achvied by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.
	Weatherization	The installation of weatherization measures in electric heated homes. Savings are achieved by applying insulation upgrades or air sealing to minimize infiltration of outside air through cracks and leaks in the existing home shell.
	Air Sealing Kit (Gas)	The installation of recessed lighting cans that provide air sealing benefits. Savings are achieved by replacing leaky recessed lighting cans in the participating household
	Showerhead	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on electric heating.
	Pipe Wrap	The installation of domestic hot water pipe wrap to reduce electric water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.
	Thermostat	Installation of a programmable thermostat, which gives the abilityy to adjust gas heating or air-conditioning operating times according to a preset schedule.
	WiFi Thermostat	The installation of Wi-Fi thermostat with the abuitty to adjust gas heating or air-conditioning operating times according to a pre-set schedule to meet occupancy needs and also be able to remotely adjust schedules when not at home. Baseline is a blend of manual thermostats and programable thermostats.
	Participants	This measure tracks program participation and does not have an associated energy savings value.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.
EnergyWise Multifamily	Air Sealing	Thermal shell air leaks are sealed through strategic use and location of air-tight materials. The baseline efficiency case is the existing building before the air sealing measure is implemented. The baseline building is characterized by the existing air changes per hour (ACHPRE)
	cust non-lgt	Vendors who install a variety of non-lighting gas measures at multifamily facilities within common areas and dwelling units. Gas measures include HVAC, insulation, and domestic hot water equipment and measures.
	Demand Circulator	Demand circulators save energy by recirculating cooled water that's been sitting in the hot water line, sending it back to the water heater through the cold water line. After water reaches a desired temperature, the controls will automatically turn off the pump. The baseline efficiency case is a hot water system without demand circulator controls.
	Duct Sealing	Ducts are sealed by reconnecting disconnected duct joints and sealing gaps or seams with mastic and fiber-mesh tape as appropriate. The baseline efficiency case is the existing facility or equipment prior to the implementation of duct sealing.
	Faucet Aerator	The installation of a low flow faucet aerator. Savings are achvied by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.
	Insulation	This relates to insulation upgrades which are applied in existing multifamily facilities. The baseline efficiency case is characterized by the total R-value of the existing attic, basement or sidewall.
	Low-Flow Showerhead	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on gas heating.
	Pipe Wrap (Heating)	The installation of pipe wrap to reduce gas heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.
	Pipe Wrap (Water Heating)	The installation of domestic hot water pipe wrap to reduce gas water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.
	Programmable Thermostat	Installation of a programmable thermostat which gives the ability to adjust heating or air-conditioning operating times according to a pre-set schedule. For the installation of a programmable thermostat, the baseline efficiency case is an HVAC system using natural gas to provide space heating without a programmable thermostat.
	Thermostatic Shut-off Valve	The high efficiency measures is a thermostatic shutoff valve that automatically shuts off the water when the temperature of shower becomes warm before a person is taking a shower. The baseline is a federal code showerhead. Savings is realized due to the reduction in hot water usage associated with a person waiting for the shower temperature to heat up.
	TSV Showerhead	The high efficiency measures is a thermostatic shutoff valve combined with a low flow showerhead. The baseline is a federal code showerhead. Savings is realized due to the combination of a reduction in hot water usage associated with a person waiting for the shower temp to heat up and the lower flowrate associatated with the low flow showerhead.
	WiFi thermostat gas	Installation of a Wi-Fi programmable thermostat which gives the ability to adjust heating operating times according to a pre-set schedule and can be adjusted remotely. The baseline is a measure mix of programable thermostats and manual thermostats. Savings occur due to the combination of being able to set your thermostat and also being able to adjust your thermostat while not at home.
	Participants	This measure tracks program participation and does not have an associated energy savings value.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.

Gas Programs		
Program	**Measure**	**Measure Description**
Home Energy Reports	New movers dual fuel	A Home Energy Report sent to recently activated electric and gas customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.
	New movers gas only	This group no longer receives home energy report. No savings are being claimed for this group.
	Opt-out dual fuel	A Home Energy Report sent to electric and gas customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.
	Opt-out gas only	A Home Energy Report sent to electric and gas customers that displays home energy consumption in comparison with peers and prompts energy conserving behavior. The baseline is a control group of homes that does not receive Home Energy Reports.
	Refill	This category is no longer used.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.
Residential New Construciton	CODES AND STANDARDS	Energy efficiency code trainings and advocacy work to improve energy efficiency of buildings and equipment within Rhode Island. Savings are claimed by increasing the percentage of code compliant residential homes.
	CP	Heating savings resulting from Energy Star Homes Code Plus projects with high efficient heating equipment, insulation, and infiltration. Code Plus projects are positioned below Tier 1 Energy Start Homes and above current URDH. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	CP-DHW	DHW savings resulting from Energy Star Homes Code Plus projects with high efficient water heating equipment. Code Plus projects are positioned below Tier 1 Energy Start Homes and above current URDH. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR CP	Heating savings resulting from Renovation Rehab Code Plus projects with replacement high efficient heating equipment, insulation, and infiltration. Renovation Rehab Code Plus projects are positioned below Tier 1 Energy Start Homes and above current URDH. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR CP-DHW	DHW savings resulting from Renovation Rehab Code Plus projects with replacement high efficient water heating equipment. Code Plus projects are positioned below Tier 1 Energy Start Homes and above current URDH. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 1	Heating savings resulting from Renovation Rehab projects with replacement high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 1 - DHW	DHW savings resulting from Renovation Rehab projects with replacement high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 2	Heating savings resulting from Renovation Rehab projects with replacement high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 2 - DHW	DHW savings resulting from Renovation Rehab projects with replacement high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 3	Heating savings resulting from Renovation Rehab projects with replacement high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 3 - DHW	DHW savings resulting from Renovation Rehab projects with replacement high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 4	Heating savings resulting from Renovation Rehab projects with replacement high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	RR Tier 4 - DHW	DHW savings resulting from Renovation Rehab projects with replacement high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	SHOWERHEAD	The installation of a low flow showerhead with a control that limits flow once the water is heated.
	Tier 1	Heating savings resulting from Energy Star Homes projects with high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 1 - DHW	DHW savings resulting from Energy Star Homes projects with high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 2	Heating savings resulting from Energy Star Homes projects with high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 2 - DHW	DHW savings resulting from Energy Star Homes projects with high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 3	Heating savings resulting from Energy Star Homes projects with high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 3 - DHW	DHW savings resulting from Energy Star Homes projects with high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 4	Heating savings resulting from Energy Star Homes projects with high efficient heating equipment, insulation, and infiltration. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Tier 4 - DHW	DHW savings resulting from Energy Star Homes projects with high efficient water heating equipment. This measure saves energy by increasing the efficiency when compared to the base case of the UDRH.
	Adaptive Reuse	Gas savings resulting from converting abandoned mills and factory buildings into multifamily residences. Adaptive Reuse projects include a custom mix of measures and improvements.
	Participants	This measure tracks program participation and does not have an associated energy savings value.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.

Gas Programs

Program	Measure	Measure Description
Single Family - Income Eligible Services	Heating System Replacement	The installation of high efficiency heating . Savings are acheived by replacing an existing inefficient heating system with a high efficient one.
	Weatherization	The installation of weatherization measures in electric heated homes. Savings are acheived by applying insulation upgrades or air sealing to minimize infiltration of outside air through cracks and leaks in the existing home shell.
	Participants	This measure tracks program participation and does not have an associated energy savings value.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.
Income Eligible Multifamily	Air Sealing	Thermal shell air leaks are sealed through strategic use and location of air-tight materials. The baseline efficiency case is the existing building before the air sealing measure is implemented. The baseline building is characterized by the existing air changes per hour (ACHPRE)
	Boiler Commercial	The installation of a high efficiency natural gas fired condensing hot water boiler. High-efficiency condensing boilers can take advantage of improved design, sealed combustion and condensing flue gases in a second heat exchanger to achieve improved efficiency. The baseline efficiency is determined based on the type of exhisting heating equipment installed.
	Boiler	The installation of high efficiency boiler to replace the existing inefficient furnace, hydronic boiler or steam boiler. The baseline efficiency is determined based on the type of exhisting heating equipment installed.
	Cust Non-Lgt	Vendors install a variety of non-lighting gas measures at multifamily facilities within common areas and dwelling units. Gas measures include HVAC, insulation, and domestic hot water equipment and measures.
	Demand Circulator	Demand circulators save energy by recirculating cooled water that's been sitting in the hot water line, sending it back to the water heater through the cold water line. After water reaches a desired temperature, the controls will automatically turn off the pump. The baseline efficiency case is a hot water system without demand circulator controls.
	Duct Sealing	Ducts are sealed by reconnecting disconnected duct joints and sealing gaps or seams with mastic and fiber-mesh tape as appropriate. The baseline efficiency case is the existing facility or equipment prior to the implementation of duct sealing.
	Faucet Aerator	The installation of a low flow faucet aerator. Savings are acheived by replacing an existing high flow rate faucet aerator with a low flow faucet aerator.
	Furnace	Installation of high efficiency furnace equipment to replace existing inefficient furnace(s).
	Indirect	Indirect water heaters use a storage tank that is heated by the main boiler. The energy stored by the water tank allows the boiler to turn off and on less often, saving considerable energy. The baseline efficiency case is the existing inefficient water heater.
	Insulation	This relates to insulation upgrades which are applied in existing multifamily facilities. The baseline efficiency case is characterized by the total R-value of the existing attic, basement or sidewall.
	Low-Flow Showerhead	The installation of a low flow showerhead with a control that limits flow once the water is heated. Savings are based on gas heating.
	On Demand Water Heater	On Demand water heaters circulate water through a heat exchanger to be heated for immediate use, eliminating the standby heat loss associated with a storage tank. The baseline efficiency case is a standalone tank water heater below a defined UEF level.
	Pipe Wrap (Heating)	The installation of pipe wrap to reduce gas heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.
	Pipe Wrap (Water Heating)	The installation of domestic hot water pipe wrap to reduce gas water heating. Savings are achieved by applying insulation in existing equipment without pipe insulation.
	Programmable Thermostat	Installation of a programmable thermostat which gives the ability to adjust heating or air-conditioning operating times according to a pre-set schedule. For the installation of a programmable thermostat, the baseline efficiency case is an HVAC system using natural gas to provide space heating without a programmable thermostat.
	Tank Water Heater	Tankless water heaters circulate water through a heat exchanger to be heated for immediate use, eliminating the standby heat loss associated with a storage tank. The baseline efficiency case is a standalone tank water heater below a defined UEF level.
	Thermostatic Shut-Off Valve	The high efficiency measures is a thermostatic shutoff valve that automatically shuts off the water when the temperature of shower becomes warm before a person is taking a shower. The baseline is a federal code showerhead., Savings is realized due to the reduction in hot water usage associated with a person waiting for the shower temperature to heat up.
	TSV Showerhead	The high efficiency measures is a thermostatic shutoff valve combined with a low flow showerhead. The baseline is a federal code showerhead. Savings is realized due to the combination of a reduction in hot water usage associated with a person waiting for the shower temp to heat up and the lower flowrate associatated with the low flow showerhead.
	WiFi Thermostat Gas	Installation of a Wi-Fi programmable thermostat which gives the ability to adjust heating operating times according to a pre-set schedule and can be adjusted remotely. The baseline is a measure mix of programable themostats and manual thermostats. Savings occur due to the combination of being able to set your thermostat and also being able to adjust your thermostat while not at home.
	Participants	This measure tracks program participation and does not have an associated energy savings value.
	Program Planning & Administration	This is not a measure but is the Program Planning & Administration budget listed for the program in table G-2.
	Marketing	This is not a measure but is the Marketing budget listed for the program in table G-2.
	Sales, Technical Assistance & Training	This is not a measure but is the Sales, Technical Assistance & Traning budget listed for the program in table G-2.
	Evaluation & Market Research	This is not a measure but is the Evaluation & Market Research budget listed for the program in table G-2.

PUC 1-18

Request:

Please update the response to Record Request 4 in Docket No. 4888 for the current proposal. For the table that was provided in that response, please reproduce the table with the following amendments:

- Column C will be "Power Sector Transformation 2020 Values
- Column D will be "2018-2020 3YP Plus 2019 Values"
- Column E will be "2019 Annual Plan Values"
- Column F will be "2019 Annual Plan Year-to-Date Actual"
- Column G will be "2020 Annual Plan Values"
- New rows should be added for non-residential customers

Response:

Below please find RIPUC Docket No. 4888 In Re: 2019 Energy Efficiency Plan Responses to Record Requests Issued at the Commission's Evidentiary Hearing On December 11, 2018 (http://www.ripuc.org/eventsactions/docket/4888-NGrid-RRs(12-18-18).pdf), with updated numbers from the current 2020 Plan and with five amended columns per the request stated above and a row added for small business.

Record Request No. 4 in Docket No. 4888:

a) What was proposed in the Three-Year Plan for heat pumps?
b) What would be the proposal if the 2020 EE Plan included only the Three-Year Plan proposal and the proposal included in the original settlement agreement PST docket concerning heat pumps?
c) What is the current 2020 EE Plan proposal? Please note what units the Company is using to indicate the number of units in each proposal.

Updated Response to Record Request No. 4 for 2020 Plan

Following the written response is a table that represents the numbers outlined below. The numbers below refer to the cell(s) in the table)

a) The total number of single-family homes and multi-family housing units included in 2020 within the Rhode Island 2018 – 2020 Energy Efficiency Plan: **109** (Cell A13)
    i. Market Rate Single Family (SF) Homes: **65** (Sum: Cell A1+Cell A2+Cell A3)
        1. Market rate SF - oil fuel switching: 20 (A1)
        2. Market rate SF - oil fuel switching replace on failure: 10 (A2)
        3. Market rate SF - electric resistance fuel switching: 35 (A3)

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ii. Income Eligible Single Family Homes: 0 (Sum: A4+A5+A6)
iii. Multifamily Housing Units: **44** (Sum: A7+A8+A9+A10+A11+A12)
iv. Small Business Unit: 0 (Sum: A14+A15+A16)

b)

i. Only the Three-Year Plan proposal: **109** single family homes and multifamily housings units. (A13)
ii. Three Year Plan Proposal PLUS the original settlement agreement Power Sector Transformation docket for heat pumps: **196** single family homes (A13+C13)

c) The total number of single family homes and multifamily units for 2020: **408** (G13)

I. Market Rate Single Family (SF) Homes: **193** (G1+G2+G3)
1.Market rate SF - oil fuel switching: 155 (G1)
2.Market rate SF - oil fuel switching replace on failure: 0 (G2)
3.Market rate SF - electric resistance fuel switching: 38 (G3)

II. Income Eligible Single Family (SF) Homes: **40** (G4+G5+G6)
1.Income eligible SF - oil fuel switching: 20 (G4)
2.Income eligible SF - oil fuel switching replace on failure: 0 (G5)
3.Income eligible SF - electric resistance fuel switching: 20 (G6)

III. iii. Multifamily (MF) Income Eligible Housing Units: **125** (G7+G8+G9)
4.MF income eligible - oil fuel switching: 0 (G7)
5.MF income eligible - oil fuel switching replace on failure: 0 (G8)
6.MF income eligible - electric resistance fuel switching: 125 (G9)

IV. iii. Multifamily (MF) Market Rate Housing Units: **50** (G10+G11+G12)
7.MF income eligible - oil fuel switching: 0 (G10)
8.MF income eligible - oil fuel switching replace on failure: 0 (G11)
9.MF income eligible - electric resistance fuel switching: 50 (G12)

d) The total number of small business units for 2020: **30** (G14+G15+G16)
4.Small business - oil fuel switching: 20 (G14)
5.Small business - oil fuel switching replace on failure: 0 (G15)
6.Small business - electric resistance fuel switching: 10 (G16)

Prepared by or under the supervision of: Laura Rodormer

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			A	B	C	D	E	F	G	H
			2018 - 2020 3YR Plan 2020 Values*	Transformation 2019 Values*	Power Sector Transformation 2020 Values	2018-2020 3YP Plus 2019 Values*	2019 Annual Plan Values*	Plan Year-to-Date Actual (as of 10/29/19)*	2020 Annual Plan Values*	Totals
1	HVAC Electric	Oil Fuel Switching	20	65	65	60	40	187	155	193
2		Oil Fuel Replace on Failure	10	0	0	15	5	0	0	
3		Electric Resistance to Heat Pump	35	9	9	75	40	36	38	
4	Income Eligible	Oil Fuel Switching	0	12	12	15	15	0	20	40
5		Oil Fuel Replace on Failure	0	0	0	0	0	0	0	
6		Electric Resistance to Heat Pump	0	1	1	15	15	9	20	
7	Multifamily Income Eligible	Oil Fuel Switching	0	0	0	15	15	0	0	175
8		Oil Fuel Replace on Failure	0	0	0	0	0	0	0	
9		Electric Resistance Fuel Switching	44	0	0	104	60	27	125	
10	Multifamily Market Rate	Oil Fuel Switching	0	0	0	0	0	0	0	
11		Oil Fuel Replace on Failure	0	0	0	0	0	0	0	
12		Electric Resistance Fuel Switching	0	0	0	0	0	0	50	
13	**RESIDENTIAL SUBTOTAL**		**109**	**87**	**87**	**299**	**190**	**259**	**408**	**408**
14	Small Business	Oil Fuel Switching	0	0	0	10	10	0	20	30
15		Oil Fuel Replace on Failure	0	0	0	0	0	0	0	
16		Electric Resistance to Heat Pump	0	0	0	10	10	0	10	
17	**SUBTOTAL SUBTOTAL**		**0**	**0**	**0**	**20**	**20**	**0**	**30**	**30**
18	**GRAND TOTAL**		**109**	**87**	**87**	**319**	**210**	**259**	**438**	**438**

* 2019 Values represents the number of homes/housing units that will receive air source heat pumps as primary heat source. Housing units included for MF Income Eligible Heat Pumps in the above table are estimated based off planned budget allocation.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-19

Request:

Please provide a table of all measures eligible for the proposed Delivered Fuels Performance Incentive Mechanism. Separate rows of the table by program sectors. Columns should include the following:

- The number of installations proposed in the plan
- The proposed cost of these installations
- The proposed budget of these installations
- The percentage of incentive to the participant (i.e., 100*participant incentive/measure cost) per unit
- If the same measure is also offered for non-delivered fuels, the percentage of the incentive to a non-delivered fuels participant per unit
- The expected incremental electrical energy saved or used in kWh per unit
- The expected incremental non-electrical energy saved or used per unit
- The net incremental energy saved in MMBtu per unit

Response:

Please see Attachment PUC 1-19.

Prepared by or under the supervision of: John Tortorella

RI PUC Docket 4979 Data Request 1-19, Schedule 1-19-1

Line No.	Sector	Program	Measure (Benefit Cost Model Abbreviation)	Measure (Full Name)	Count of Installations	Cost of Installations (Total Resource Cost)	Budget for Installations (Total of Customer Incentives)	Percentage of Cost of Installation Provided as Incentive to the Participant (100*participant incentive/measure cost) per unit	Percentage of Cost of Installation Provided as Incentive to a non-delivered fuels participant per unit for Comparable Measure	Net Electric (kWh) Savings Per Unit	Net Delivered Fuel (MMBtu) Savings Per Unit	Total Net Electric and Delivered Fuel (MMBtu) Savings Per Unit
								100 * (g ÷ f)				
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
1	Residential	EnergyStar HVAC	CDHP Fully Displ Furnace, Oil	Central Ducted Heat Pump Fully Displacing Furnace - Oil	8	$100,541	$24,000	24%	N/A	-6725.7	78.0	55.1
2	Residential	EnergyStar HVAC	CDHP Fully Displ Furnace, Propane	Central Ducted Heat Pump Fully Displacing Furnace - Propane	2	$25,387	$6,000	24%	N/A	-6725.7	78.0	55.1
3	Residential	EnergyStar HVAC	CDHP PART DISPFURNACE, OIL	Central Ducted Heat Pump Partially Displacing Furnace - Oil	50	$450,225	$150,000	33%	N/A	-3682.8	51.8	39.2
4	Residential	EnergyStar HVAC	CDHP PART DISPFURNACE, PROP	Central Ducted Heat Pump Partially Displacing Furnace - Propane	3	$27,014	$9,000	33%	N/A	-5388.3	68.8	50.5
5	Residential	EnergyStar HVAC	CDHP PART No Control DispFurnace, Oil	Central Ducted Heat Pump Partially Displacing Furnace w/o Controls - Oil	10	$81,041	$20,000	25%	N/A	-4849.5	62.0	45.4
6	Residential	EnergyStar HVAC	CDHP PART No Control DispFurnace, Prop	Central Ducted Heat Pump Partially Displacing Furnace w/o Controls - Propane	5	$40,520	$10,000	25%	N/A	-3314.5	46.6	35.3
7	Residential	EnergyStar HVAC	DMSHP FULL DISPBOILER, OIL	Ductless Mini-Split Fully Displacing Boiler - Oil	10	$125,676	$30,000	24%	45%	-7888.5	92.0	65.1
8	Residential	EnergyStar HVAC	DMSHP FULL DISPBOILER, PROP	Ductless Mini-Split Fully Displacing Boiler - Propane	4	$50,270	$12,000	24%	45%	-7918.2	92.0	65.0
9	Residential	EnergyStar HVAC	DMSHP WIC PART DISPBOILER, OIL	Ductless Mini-Split Partially Displacing Boiler with Integrated Controls - Oil	10	$101,952	$30,000	29%	45%	-4509.0	60.0	44.7
10	Residential	EnergyStar HVAC	DMSHP WIC PART DISPBOILER, PROP	Ductless Mini-Split Partially Displacing Boiler with Integrated Controls - Propane	2	$20,390	$6,000	29%	45%	-6421.5	81.2	59.3
11	Residential	EnergyStar HVAC	DMSHP woIC PART DispBoiler, Oil	Ductless Mini-Split Partially Displacing Boiler w/o Controls - Oil	50	$458,784	$100,000	22%	45%	-4058.1	54.0	40.2
12	Residential	EnergyStar HVAC	DMSHP woIC PART DispBoiler, Prop	Ductless Mini-Split Partially Displacing Boiler w/o Controls - Propane	1	$9,176	$2,000	22%	45%	-5779.4	73.1	53.4
13	Residential	EnergyWise Single Family	Wx - OIL	Weatherization - Oil	1,700	$6,800,000	$5,100,000	75%	75%	96.9	14.0	14.3
14	Low Income	Low Income Single Family	AMPMinisplit Heat Pumps - Oil Fuel Switching	Ductless Mini Split Heat Pump Displacing Oil	20	$300,000	$300,000	100%	100%	-8765.0	102.3	72.4
15	Low Income	Low Income Single Family	AMPWx DelFuel	Weatherization - Delivered Fuel	528	$2,376,000	$2,376,000	100%	100%	95.0	13.0	13.3

Source: 2020 Electric Portfolio Benefit Cost Model

PUC 1-20

Request:

Please provide a table of measures that are aimed at reducing gas or electric heating energy or demand, but that are available to gas, electric, or oil heat customers. Separate rows of the table by program sectors. Columns should include the following:

- The columns listed in 1-19
- For each of the columns above, the fraction of each that is expected to represent measure taken by oil heat customers (e.g., the percentage of installations expected to be installed at oil heat homes).

Response:

Please see Attachment PUC 1-20.

Attachment PUC 1-20 presents the measures that are offered in the Residential programs that are aimed at reducing gas or electric heating energy or demand. These measures can be categorized as the following:

- Heating system replacement including heating equipment, pumps, controls, sizing optimization, installation quality assurance/quality control, maintenance
- Hot water heating system replacement
- Hot water conservation
- Pipe insulation
- Weatherization
- Air sealing
- Thermostats

While these measures are available to gas, electric, or oil heat customers, they will only reduce gas or electric heating energy or demand for customers with gas or electric heating and/or hot water heating, not for customers with oil heat and/or hot water. For example, a customer who originally has oil heat and/or hot water heating and converts to a high efficiency gas or electric heat or hot water system will increase gas or electric heating energy use or demand as they are adding new gas or electric consumption they didn't have before. Therefore, the fraction of each measure that is expected to represent quantities of oil heat customers ("column i" in Attachment PUC 1-20) will be zero.

Prepared by or under the supervision of: Laura Rodormer

Line No.	Sector	Program	Measure (Benefit Cost Model Abbreviation)	Measure (Full Name)	Count of Installations	Cost of Installations (Total Resource Cost)	Budget for Installations (Total of Customer Incentives)	Percentage of Cost of Installation Provided as Incentive to the Participant (100*participant incentive/measure cost) per unit	Percentage of Cost of Installation Provided as Incentive to a non-delivered fuels participant per unit for Comparable Measure	Net Electric (kWh) Savings Per Unit	Net Delivered Fuel (MMBtu) Savings Per Unit	Total Net Electric and Delivered Fuel (MMBtu) Savings Per Unit	
								100 * (g ÷ f)					
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	
1	Residential	Energywise	Energywise	AERATOR - Electric	40	$280	$280	100%	0%	36.60	-	0.12	ELECTRIC MEASURES
2	Residential	Energywise	Energywise	Air Sealing Kit - Electric	10	$200	$200	100%	0%	93.83	-	0.32	
3	Residential	Energywise	Energywise	Pre-Wx	537	$161,100	$161,100	100%	0%	-	-	-	
4	Residential	Energywise	Energywise	Showerhead - Electric	24	$480	$480	100%	0%	34.30	-	0.12	
5	Residential	Energywise	Energywise	Programmable thermostat - Electric	750	$75,000	$75,000	100%	0%	214.60	-	0.73	
6	Residential	Energywise	Energywise	Wifi thermostat - Electric	10	$3,000	$2,000	67%	0%	97.00	-	0.33	
7	Residential	Energywise	Energywise	Wx Elec - Elec Heat only	200	$800,000	$600,000	75%	0%	782.20	-	2.67	
8	Residential	Energywise	Energywise	Pipe Insulation - Electric	350	$2,450	$2,450	100%	0%	33.30	-	0.11	
9													
10	Residential	Residential Lost Opportunity	Energy Star Homes	Codes and Standards	1	$0	$0	0%	0%	248,396.87	-	847.53	
11	Residential	Residential Lost Opportunity	Energy Star Homes	CP Home	2	$1,574	$690	44%	0%	1,889.88	9.16	15.60	
12	Residential	Residential Lost Opportunity	Energy Star Homes	Renovation Rehab CP	2	$1,574	$690	44%	0%	784.79	-	2.68	
13	Residential	Residential Lost Opportunity	Energy Star Homes	Renovation Rehab Tier 1 Home	12	$22,488	$10,800	48%	0%	429.39	21.14	22.61	
14	Residential	Residential Lost Opportunity	Energy Star Homes	Renovation Rehab Tier 2 Home	9	$24,903	$13,680	55%	0%	1,744.94	7.26	13.21	
15	Residential	Residential Lost Opportunity	Energy Star Homes	Renovation Rehab Tier 3 Home	8	$112,856	$21,144	19%	0%	2,336.45	-	7.97	
16	Residential	Residential Lost Opportunity	Energy Star Homes	Renovation Rehab Tier 4 Home	1	$18,438	$6,974	38%	0%	2,745.20	-	9.37	
17	Residential	Residential Lost Opportunity	Energy Star Homes	Showerheads	5	$0	$0	0%	0%	129.00	-	0.44	
18	Residential	Residential Lost Opportunity	Energy Star Homes	Tier 1 Home	82	$118,490	$72,570	61%	0%	875.42	2.78	5.77	
19	Residential	Residential Lost Opportunity	Energy Star Homes	Tier 2 Home	56	$272,160	$85,400	31%	0%	1,944.70	6.40	13.04	
20	Residential	Residential Lost Opportunity	Energy Star Homes	Tier 3 Home	70	$538,160	$185,500	34%	0%	2,603.92	10.74	19.62	
21	Residential	Residential Lost Opportunity	Energy Star Homes	Tier 4 Home	10	$120,120	$69,740	58%	0%	3,813.86	-	13.01	
22	Residential	Residential Lost Opportunity	Energy Star Homes	Adaptive Reuse	100	$114,219	$70,000	61%	0%	591.45	-	2.02	
23													
24	Residential	Residential HVAC	Energy Star HVAC	DOWNSIZE	40	$8,500	$10,000	118%	0%	172.55	-	0.59	
25	Residential	Residential HVAC	Energy Star HVAC	Central Heat Pump	20	$8,376	$7,000	84%	0%	628.38	-	2.14	
26	Residential	Residential HVAC	Energy Star HVAC	Mini-Split Heat Pump	700	$190,267	$245,000	129%	0%	300.30	-	1.02	
27	Residential	Residential HVAC	Energy Star HVAC	ECM Pumps	5550	$1,054,500	$555,000	53%	0%	142.00	-	0.48	
28	Residential	Residential HVAC	Energy Star HVAC	HP Mini-split QIV	264.5	$34,385	$46,288	135%	0%	66.30	-	0.23	
29	Residential	Residential HVAC	Energy Star HVAC	HPQIVES	78	$14,196	$13,650	96%	0%	239.97	-	0.82	
30	Residential	Residential HVAC	Energy Star HVAC	HPTUNE	10	$1,488	$1,750	118%	0%	180.20	-	0.61	
31	Residential	Residential HVAC	Energy Star HVAC	WiFi Tstat-cool only,Elec	120	$31,800	$9,000	28%	0%	64.40	3.11	3.33	
32	Residential	Residential HVAC	Energy Star HVAC	WiFi Tstat-heat and cool,Gas	1200	$318,000	$90,000	28%	0%	64.40	-	3.33	
33	Residential	Residential HVAC	Energy Star HVAC	HPWH < 55 gallon UEF 2.7	550	$292,617	$330,000	113%	0%	1,258.28	(0.47)	3.74	
34	Residential	Residential HVAC	Energy Star HVAC	HPWH >=55 gallon UEF 2.0	10	$3,743	$1,500	40%	0%	163.51	-	0.56	
35	Residential	Residential HVAC	Energy Star HVAC	Elec Res to MSHP	37.5	$224,438	$112,500	50%	0%	5,302.08	-	18.09	
36													
37	Residential	Residential Retrofit Multifamily	EnergywiseMF	AERATOR	500	Average incentive based on measure mix, not at the individual measure level			0%	83.42	-	0.28	
38	Residential	Residential Retrofit Multifamily	EnergywiseMF	AIR SEALING ELEC WITH AC_mr	1000				0%	100.94	-	0.34	
39	Residential	Residential Retrofit Multifamily	EnergywiseMF	INSULATION ELEC WITH AC_mr	1000				0%	37.85	-	0.13	
40	Residential	Residential Retrofit Multifamily	EnergywiseMF	Pipe Wrap DHW Elec_mr	65				0%	110.94	-	0.38	
41	Residential	Residential Retrofit Multifamily	EnergywiseMF	SHOWERHEAD Elec_mr	50				0%	110.94	-	0.38	
42	Residential	Residential Retrofit Multifamily	EnergywiseMF	THERMOSTAT Elec with AC_mr	1200				0%	241.66	-	0.82	
43	Residential	Residential Retrofit Multifamily	EnergywiseMF	TSV Showerhead Elec_mr	65				0%	288.10	-	0.98	
44													
45	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPDHWELEC	10	$100	$100	100%	0%	160.00	-	0.55	
46	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPDHWGAS	10	$100	$100	100%	0%	-	-	0.83	
47	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPHEATSYSTEM	396	$1,980,000	$1,980,000	100%	0%	10.00	8.00	8.03	
48	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPHP Water Heaters	5	$13,750	$13,750	100%	0%	814.00	-	2.78	
49	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPProgrammable Thermostat, Gas	10	$1,250	$1,250	100%	0%	11.20	-	3.42	
50	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPTHERMOSTAT, Electric	10	$2,000	$2,000	100%	0%	251.70	-	0.86	
51	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPWATERBED	2	$1,300	$1,300	100%	0%	872.00	-	2.98	
52	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPWx Elec	46.2	$207,900	$207,900	100%	0%	1,231.00	-	4.20	
53	Low Income	Low Income Retrofit 1-4	Single Family - Appliance Management	AMPMinisplit Heat Pumps - Electric Resistance	20	$300,000	$300,000	100%	0%	5,891.20	-	20.10	
54													
55	Low Income	Low Income Retrofit Multifamily	Low Income Retrofit Multifamily	AERATOR Elec	130	Average incentive based on measure mix, not at the individual measure level			0%	83.42	-	0.28	
56	Low Income	Low Income Retrofit Multifamily	Low Income Retrofit Multifamily	Pipe Wrap DHW Elec	10				0%	110.94	-	0.38	
57	Low Income	Low Income Retrofit Multifamily	Low Income Retrofit Multifamily	SHOWERHEAD Elec	100				0%	186.62	-	0.64	
58													
59	Residential	Residential Retrofit	Energy Wise Single Family	Aerator	100	$1,000	$1,000	100%	0%	0.08	0.00	0.08	GAS MEASURES
60	Residential	Residential Retrofit	Energy Wise Single Family	Weatherization	2,050	$8,200,000	$6,314,000	77%	0%	11.09	72.40	11.09	
61	Residential	Residential Retrofit	Energy Wise Single Family	Air Sealing Kit (Gas)	575	$11,500	$11,500	100%	0%	0.39	0.00	0.39	
62	Residential	Residential Retrofit	Energy Wise Single Family	Showerhead	325	$6,500	$6,500	100%	0%	0.19	0.00	0.19	
63	Residential	Residential Retrofit	Energy Wise Single Family	Pipe Wrap	5,000	$60,000	$60,000	100%	0%	0.06	0.00	0.06	
64	Residential	Residential Retrofit	Energy Wise Single Family	THERMOSTAT	1,500	$172,500	$172,500	100%	0%	1.01	0.00	1.01	
65	Residential	Residential Retrofit	Energy Wise Single Family	WiFi THERMOSTAT	250	$87,500	$50,000	57%	0%	3.11	18.00	3.11	
66													
67	Residential	Residential New Construction	Residential New Construction	CODES AND STANDARDS	358	$0	$0	0%	0%	1.00	0.00	1.00	
68	Residential	Residential New Construction	Residential New Construction	CP	10	$10,740	$3,100	29%	0%	8.87	0.00	8.87	
69	Residential	Residential New Construction	Residential New Construction	CP-DHW	10	$4,000	$0	0%	0%	1.30	0.00	1.30	
70	Residential	Residential New Construction	Residential New Construction	RR CP	5	$3,936	$1,550	39%	0%	6.96	0.00	6.96	
71	Residential	Residential New Construction	Residential New Construction	RR CP-DHW	5	$2,000	$0	0%	0%	0.58	0.00	0.58	
72	Residential	Residential New Construction	Residential New Construction	RR Tier 1	20	$36,750	$21,000	57%	0%	5.99	0.00	5.99	
73	Residential	Residential New Construction	Residential New Construction	RR Tier 1 - DHW	20	$8,000	$1,000	13%	0%	0.59	0.00	0.59	
74	Residential	Residential New Construction	Residential New Construction	RR Tier 2	10	$27,671	$18,750	68%	0%	11.09	0.00	11.09	
75	Residential	Residential New Construction	Residential New Construction	RR Tier 2 - DHW	10	$4,000	$1,500	38%	0%	0.89	0.00	0.89	
76	Residential	Residential New Construction	Residential New Construction	RR Tier 3	5	$46,650	$12,675	27%	0%	14.85	0.00	14.85	
77	Residential	Residential New Construction	Residential New Construction	RR Tier 3 - DHW	5	$2,000	$750	38%	0%	1.19	0.00	1.19	
78	Residential	Residential New Construction	Residential New Construction	RR Tier 4	1	$12,995	$7,000	54%	0%	19.57	0.00	19.57	
79	Residential	Residential New Construction	Residential New Construction	RR Tier 4 - DHW	1	$400	$200	50%	0%	0.73	0.00	0.73	
80	Residential	Residential New Construction	Residential New Construction	SHOWERHEAD	325	$6,500	$6,500	100%	0%	0.19	0.00	0.19	
81	Residential	Residential New Construction	Residential New Construction	Tier 1	55	$89,667	$57,750	64%	0%	8.95	0.00	8.95	
82	Residential	Residential New Construction	Residential New Construction	Tier 1 - DHW	55	$22,000	$2,750	13%	0%	0.76	0.00	0.76	
83	Residential	Residential New Construction	Residential New Construction	Tier 2	85	$413,117	$167,875	41%	0%	11.29	0.00	11.29	
84	Residential	Residential New Construction	Residential New Construction	Tier 2 - DHW	85	$34,000	$12,750	38%	0%	1.06	0.00	1.06	
85	Residential	Residential New Construction	Residential New Construction	Tier 3	30	$230,638	$69,000	30%	0%	15.12	0.00	15.12	
86	Residential	Residential New Construction	Residential New Construction	Tier 3 - DHW	30	12000	4500	38%	0%	1.43	0.00	1.43	
87	Residential	Residential New Construction	Residential New Construction	Tier 4	2	23375.84	14000	60%	0%	15.76	0.00	15.76	
88	Residential	Residential New Construction	Residential New Construction	Tier 4 - DHW	2	800	400	50%	0%	1.57	0.00	1.57	
89	Residential	Residential New Construction	Residential New Construction	Adaptive Reuse	100	117700	70000	59%	0%	2.28	0.00	2.28	
90													
91	Residential	Residential HVAC	Energy Star Heating System	BOILER RESET	30	9000	3000	33%	0%	4.50	0.00	4.50	
92	Residential	Residential HVAC	Energy Star Heating System	Boiler90	65	201035.25	29250	15%	0%	9.01	0.00	9.01	
93	Residential	Residential HVAC	Energy Star Heating System	Boiler95	275	907236	220000	24%	0%	11.14	0.00	11.14	
94	Residential	Residential HVAC	Energy Star Heating System	COMBO CONDENSING	35	47779.2	21000	44%	0%	8.22	0.00	8.22	
95	Residential	Residential HVAC	Energy Star Heating System	COMBO CONDENSING 95	1,100	2924185	1320000	45%	0%	10.11	0.00	10.11	
96	Residential	Residential HVAC	Energy Star Heating System	ENERGY STAR COND WATER HEATER 0.80 U	5	6425	1250	19%	0%	7.00	-43.00	7.00	
97	Residential	Residential HVAC	Energy Star Heating System	Furnace95ECM	325	358891	97500	27%	0%	6.16	0.00	6.16	
98	Residential	Residential HVAC	Energy Star Heating System	Furnace97ECM	50	81396	25000	31%	0%	6.99	0.00	6.99	
99	Residential	Residential HVAC	Energy Star Heating System	HEAT RECOVERY VENT	20	19200	5000	26%	0%	7.70	-133.00	7.70	
100	Residential	Residential HVAC	Energy Star Heating System	ENERGY STAR STORAGE WATER HEATER .6	40	6600	4000	61%	0%	3.00	-43.00	3.00	
101	Residential	Residential HVAC	Energy Star Heating System	ENERGY STAR STORAGE WATER HEATER .6	45	7425	4500	61%	0%	3.00	-43.00	3.00	
102	Residential	Residential HVAC	Energy Star Heating System	ENERGY STAR ON DEMAND WATER HEATE	100	69646	60000	86%	0%	7.08	-41.71	7.08	
103	Residential	Residential HVAC	Energy Star Heating System	LOW_FLOW_SHOWERHEAD	50	1000	325	33%	0%	1.20	0.00	1.20	
104	Residential	Residential HVAC	Energy Star Heating System	TSV	25	750	287.5	38%	0%	0.38	0.00	0.38	
105	Residential	Residential HVAC	Energy Star Heating System	TSV_SHOWERHEAD	35	1400	525	38%	0%	1.84	0.00	1.84	
106	Residential	Residential HVAC	Energy Star Heating System	WiFi Thermostat - cooling and htg	425	113900	31875	28%	0%	3.11	104.00	3.11	
107	Residential	Residential HVAC	Energy Star Heating System	WiFi Thermostat - gas ht only	2,750	737000	206250	28%	0%	3.11	0.00	3.11	
108	Residential	Residential HVAC	Energy Star Heating System	Programmable Thermostat	400	5376	10000	186%	0%	1.34	0.00	1.34	
109	Residential	Residential HVAC	Energy Star Heating System	Combo Furnace	10	23680	7000	30%	0%	20.72	0.00	20.72	
110	Residential	Residential HVAC	Energy Star Heating System	Water Heater, Indirect, Gas	200	217600	80000	37%	0%	2.72	0.00	2.72	
111													
112	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	Air Sealing_MF	3,900	Average incentive based on measure mix, not at the individual measure level			0%	1.22	0.00	1.22	
113	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	CUST NON-LGT_MF	58				0%	44.55	0.00	44.55	
114	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	Duct Sealing_MF	10				0%	0.00	0.00	0.00	
115	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	Faucet Aerator_MF	1,866				0%	0.73	0.00	0.73	
116	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	INSULATION_MF	3,200				0%	0.73	0.00	0.73	
117	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	Pipe Wrap (Water Heating)_MF	882				0%	1.14	0.00	1.14	

118	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	Programmable Thermostat_MF	400				0%	1.75	0.00	1.75
119	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	TSV Showerhead_MF	200				0%	1.41	0.00	1.41
120	Residential	Residential Retrofit Multifamily	EnergyWise Multifamily	WiFi thermostat gas_MF	500				0%	3.11	18.00	3.11
121												
122	Commercial &	C&I Multifamily	C&I Multifamily	Air Sealing_MF_CI	250				0%	1.22	0.00	1.22
123	Commercial &	C&I Multifamily	C&I Multifamily	CUST NON-LGT_MF_CI	175				0%	28.94	0.00	28.94
124	Commercial &	C&I Multifamily	C&I Multifamily	Faucet Aerator_MF_CI	600				0%	0.73	0.00	0.73
125	Commercial &	C&I Multifamily	C&I Multifamily	Insulation_MF_CI	600				0%	0.01	0.00	0.01
126	Commercial &	C&I Multifamily	C&I Multifamily	Low-Flow Showerhead_MF_CI	200	Average incentive based on measure mix, not at the individual measure level			0%	0.97	0.00	0.97
127	Commercial &	C&I Multifamily	C&I Multifamily	Pipe Wrap (Water Heating)_MF_CI	3,000				0%	1.14	0.00	1.14
128	Commercial &	C&I Multifamily	C&I Multifamily	Programmable Thermostat_MF_CI	400				0%	1.75	0.00	1.75
129	Commercial &	C&I Multifamily	C&I Multifamily	TSV Showerhead_MF_CI	288				0%	1.41	0.00	1.41
130	Commercial &	C&I Multifamily	C&I Multifamily	WiFi thermostat gas_MF_CI	200				0%	3.11	18.00	3.11
131												
132	Low Income	Single Family - Appliance Management	Single Family - Appliance Management	HEATSYSTEM	242	1210000	1210000	100%	0%	7.90	16.00	7.90
133	Low Income	Single Family - Appliance Management	Single Family - Appliance Management	WEATHER	660	3300000	3300000	100%	0%	12.40	93.00	12.40
134												
135	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	Air Sealing_LI	1,554				0%	3.27	0.00	3.27
136	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	BOILER Commercial_LI	32				0%	138.96	0.00	138.96
137	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	BOILER_LI	30				0%	19.40	0.00	19.40
138	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	CUST NON-LGT_LI	110				0%	58.96	0.00	58.96
139	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	Faucet Aerator_LI	2,400	Average incentive based on measure mix, not at the individual measure level			0%	0.30	0.00	0.30
140	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	Insulatioin_LI	3,884				0%	1.18	0.00	1.18
141	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	Low-Flow Showerhead_LI	500				0%	1.07	0.00	1.07
142	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	Pipe Wrap (Water Heating)_LI	700				0%	1.14	0.00	1.14
143	Low Income	Low Income Retrofit Multifamily	Low Income Multifamily	TSV Showerhead_LI	100				0%	1.66	0.00	1.66

Source 2020 Electric Portfolio Benefit Cost Model

PUC 1-21

Request:

Please explain if there are electric savings associated with weatherization of delivered-fuel homes. If so, please explain if these savings have typically counted towards National Grid's achievement of kWh and kW savings targets and actual performance in previous plans. Please also explain if these savings are counted in the proposed savings Core Electric targets and would be eligible to count toward actual Core Electric performance in the proposed Plan.

Response:

There are electric savings associated with weatherization of delivered fuel homes. In plans prior to the 2020 Energy Efficiency Program Plan (EEPP), the kWh and kW savings from delivered fuel weatherization were included in the overall program kWh and kW savings targets and actual performance. In the 2020 EEPP, the kWh savings associated with delivered fuel homes has been removed from the Core Electric performance targets. The kWh associated with delivered fuel homes has been converted into MMBTU and included in the Delivered Fuels Performance Incentive Mechanism. The kW savings associated with weatherization of delivered fuel homes continue to be included in the demand component of the Core Electric Performance Incentive Mechanism.

Prepared by or under the supervision of: Angela Li

PUC 1-22

Request:

For all efficiency plans filed since 2008, please provide a table with the following gas, electric, and delivered fuels weatherization by year:

- The number proposed
- The number achieved
- The percentage of incentive to the participant (i.e., 100*participant incentive/measure cost) per unit

Response:

Please see Attachment PUC 1-22 for the requested information.

Prepared by or under the supervision of: Angela Li

Weatherization By Fuel Type

Program	**Plan/Actual**	**Fuel Type**	***2008***	***2009***	***2010***	***2011***	***2012***	***2012***	***2013***
			# Participants	**# Participants**	**# Participants**	**# Participants**	**# Participants**	**% of incentive**	**# Participants**
IES SF	Plan	Gas	336	319	83	215	430	100%	100
IES SF	Plan	Electric	4	20	13	17	28	100%	28
IES SF	Plan	Delivered Fuel	195	253	372	503	221	100%	400
IES SF	Actual	Gas	419	319	115	190	388	100%	356
IES SF	Actual	Electric	8	9	10	16	14	100%	20
IES SF	Actual	Delivered Fuel	207	265	126	304	379	100%	372
EnergyWise SF	Plan	Gas					1,500	81%	2,000
EnergyWise SF	Plan	Electric					26	77%	100
EnergyWise SF	Plan	Delivered Fuel					700	78%	450
EnergyWise SF	Actual	Gas					1,020	90%	1,538
EnergyWise SF	Actual	Electric					99	81%	85
EnergyWise SF	Actual	Delivered Fuel					65	92%	635

Notes:

Programs with discreet weatherization participation are shown above.

EnergyWise did not plan with weatherization participation values until 2012. Planning was accomplished by savings value.

Participation values include all participation for the program year and inclusive of customers that may have participated more than once in the same year.

Income Eligible Services (IES) is at no cost to the customer, therefore the incentive level is 100%

% of incentive = Incentive amount/Total Project Cost

Plan = proposed # of participants in the plan

Actual = Achieved # of participants

Weathization articipation values are informational and not specific program metric.

Weatherization By Fuel Type

			Year					
Program	**Plan/Actual**	**Fuel Type**	***2013***	***2014***	***2014***	***2015***	***2015***	***2016***
			% of incentive	**# Participants**	**% of incentive**	**# Participants**	**% of incentive**	**# Participants**
IES SF	Plan	Gas	100%	420	100%	400	100%	420
IES SF	Plan	Electric	100%	20	100%	20	100%	33
IES SF	Plan	Delivered Fuel	100%	400	100%	400	100%	412
IES SF	Actual	Gas	100%	479	100%	423	100%	602
IES SF	Actual	Electric	100%	33	100%	16	100%	32
IES SF	Actual	Delivered Fuel	100%	509	100%	325	100%	368
EnergyWise SF	Plan	Gas	75%	2,000	75%	2,400	80%	1,830
EnergyWise SF	Plan	Electric	61%	100	75%	88	75%	156
EnergyWise SF	Plan	Delivered Fuel	75%	500	25%	945	25%	500
EnergyWise SF	Actual	Gas	90%	2,187	78%	1,737	61%	1,989
EnergyWise SF	Actual	Electric	76%	174	80%	158	73%	112
EnergyWise SF	Actual	Delivered Fuel	43%	838	50%	873	41%	719

Notes:
Programs with discreet weatherization participation are
EnergyWise did not plan with weatherization participat
Participation values include all participation for the pro
Income Eligible Services (IES) is at no cost to the custom
% of incentive = Incentive amount/Total Project Cost
Plan = proposed # of participants in the plan
Actual = Achieved # of participants
Weathization articipation values are informational and

Weatherization By Fuel Type

Program	**Plan/Actual**	**Fuel Type**	***2016***	***2017***	***2017***	***2018***	***2018***	***2019***
			% of incentive	**# Participants**	**% of incentive**	**# Participants**	**% of incentive**	**# Participants**
IES SF	Plan	Gas	100%	440	100%	500	100%	600
IES SF	Plan	Electric	100%	18	100%	35	100%	24
IES SF	Plan	Delivered Fuel	100%	400	100%	440	100%	510
IES SF	Actual	Gas	100%	584	100%	481	100%	370
IES SF	Actual	Electric	100%	24	100%	41	100%	24
IES SF	Actual	Delivered Fuel	100%	376	100%	391	100%	239
EnergyWise SF	Plan	Gas	70%	2,250	67%	2,275	74%	2,300
EnergyWise SF	Plan	Electric	72%	158	87%	183	75%	392
EnergyWise SF	Plan	Delivered Fuel	42%	600	44%	1,823	56%	1,538
EnergyWise SF	Actual	Gas	75%	2,184	79%	1,957	77%	1,762
EnergyWise SF	Actual	Electric	77%	178	80%	184	77%	147
EnergyWise SF	Actual	Delivered Fuel	45%	741	52%	1,464	65%	1,604

Notes:
Programs with discreet weatherization participation are
EnergyWise did not plan with weatherization participat
Participation values include all participation for the pro
Income Eligible Services (IES) is at no cost to the custom
% of incentive = Incentive amount/Total Project Cost
Plan = proposed # of participants in the plan
Actual = Achieved # of participants
Weathization articipation values are informational and

Weatherization By Fuel Type

Program	Plan/Actual	Fuel Type	*(through 11/25/19)*
			% of incentive
IES SF	Plan	Gas	100%
IES SF	Plan	Electric	100%
IES SF	Plan	Delivered Fuel	100%
IES SF	Actual	Gas	100%
IES SF	Actual	Electric	100%
IES SF	Actual	Delivered Fuel	100%
EnergyWise SF	Plan	Gas	75%
EnergyWise SF	Plan	Electric	75%
EnergyWise SF	Plan	Delivered Fuel	75%
EnergyWise SF	Actual	Gas	
EnergyWise SF	Actual	Electric	81%
EnergyWise SF	Actual	Delivered Fuel	78%

Notes:
Programs with discreet weatherization participation are
EnergyWise did not plan with weatherization participat
Participation values include all participation for the pro
Income Eligible Services (IES) is at no cost to the custom
% of incentive = Incentive amount/Total Project Cost
Plan = proposed # of participants in the plan
Actual = Achieved # of participants
Weathization articipation values are informational and

PUC 1-23

Request:

Page 12 of Attachment 1 of the 2019 Energy Efficiency Program Plan (2019 Plan) filed in Docket No. 4888 says the following:

> "Another area of stakeholder interest has been in the area of deliverable fuels. Customers that heat their homes with deliverable fuels have participated in the no-cost home energy assessment portion of the program but have continued to undergo weatherization installations at a lower rate than customers that heat with electricity or natural gas. The program has increased incentive levels for deliverable fuel customers to the same level as other heating fuels since Q3 of 2018 and is planning to continue these levels through 2019."

Please explain by what administrative process, if any, National Grid increased the incentive levels for these customers during the 2018 Program Year.

Response:

National Grid, upon approval of the Energy Efficiency Program Plan (EEPP), is responsible for implementing, delivering, and reporting the planned and actual savings and spending for the programs and sectors in the EEPP. During the course of the year, incentives for programs and measures are continually assessed and, if necessary, adjusted to manage both savings goals and budget.

In 2018, providing parity to deliverable fuels customers was discussed as it had been for the past few years and was identified as a priority for several stakeholders in the Technical Working Group. In preparation for the 2019 program year, the delivered fuel incentive in 2018 was increased to gauge customer response and prepare for the following program year. The change in the incentive level was discussed with stakeholders at the Technical Working Group and during Residential Sector Team meetings with EERMC consultants and OER. While this incentive change was discussed with stakeholders, incentives are subject to change as needed to support program goals and targets.

Prepared by or under the supervision of: Angela Li

PUC 1-24

Request:

Will customers be required to have an on-site home energy assessment to receive incentives for high efficiency heating equipment? Are customers required to have an on-site home energy assessment to receive incentives for other products, including heat pump hot water heaters?

Response:

On-site Home Energy assessments are required for customers who participate in the HVAC Electric Air Source Heat Pump (ASHP) measure for displacement/replacement of oil, propane or electric heating systems. This program design was intended to create an optimal thermal envelope to complement the new delivery of heat through ASHPs, and to maximize the likelihood of a positive customer experience associated with the installation and operation of an ASHP.

An on-site Home Energy assessment is not a requirement to receive incentives for other forms of high efficiency heating equipment.

An on-site Home Energy assessment is not a requirement to receive incentives for high efficiency water heating equipment.

PUC 1-25

Request:

Note 21 on Bates page 102 of the filing describes that there is an expected increase in heating energy use that partially offsets an expected decrease in lighting energy use when a participant replaces an incandescent light with an LED light.

a. Please confirm that this net energy use is captured in the Technical Reference Manual and is embedded in the benefits cost analysis of the measure, program, and plan.
b. Please explain whether this expected increased use of energy for heating has previously been included in setting National Grid's electric or natural gas savings targets, and/or if it was accounted for in actual electric or natural gas performance in any previous year. For example, is National Grid's actual gas savings performance inclusive of increased gas use due to installation of LEDs in gas-heating homes?
c. Please explain whether this expected increased use of energy for heating is included in setting National Grid's electric (Core or Delivered Fuels) or natural gas savings targets, and/or if it will be accounted for in actual electric or natural gas performance in the 2020 Plan and Program Year.

Response:

a) Treatment of increased heating energy requirements due to installations of efficient lighting varies by program. The table below indicates how each program that includes lighting measures treats potential increase in heating load in both the Technical Reference Manual (TRM) and Benefit Cost (B/C) Analysis (BCA) models for the proposed 2020 Energy Efficiency programs:

Sector	Program	Captured in TRM	Treatment of Increased Heating Due to Lighting
Commercial and Industrial	All Measures Except Custom	Yes	Captured as negative electric, gas, oil, propane savings/benefit in electric B/C model
Commercial and Industrial	Custom - Systems Approach	Yes - Indicated to be custom calculation	Calculated on a project-by-project basis, so value is not defined in TRM; planned value captured as negative electric, gas, oil, propane savings/benefit in electric B/C model

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Sector	Program	Captured in TRM	Treatment of Increased Heating Due to Lighting
Commercial and Industrial	Custom - Whole Buildings Approach	Yes - Indicated to be custom calculation	TRM: Calculated on a project-by-project basis, so value is not defined in TRM. BCA: An interactive model of building energy use is developed to determine savings from all measures implemented in buildings participating in the Whole Buildings Approach. Total electric savings count toward electric targets, total gas savings count toward gas targets, and total benefits (inclusive of delivered fuel penalties) are distributed between the electric and gas portfolios for BCA calculations.
Residential	EnergyStar Lighting	Yes	Captured as negative electric, gas, oil, propane savings/benefit in electric B/C model
Residential	EnergyWise Single Family	No	The increased heating value is not defined in the TRM but embedded in energy savings for participants receiving weatherization. The heating savings from weatherization are estimated using a billing analysis that also captures heating impacts due to lighting changes. The planned weatherization savings are factored in to the electric or gas B/C model, based on heating fuel type, to capture this effect.
Residential	Low Income Single Family	No	The increased heating value is not defined in the TRM but embedded in energy savings for participants receiving weatherization/heating system. The heating savings from weatherization/heating system are estimated using a billing analysis that also captures heating impacts due to lighting changes. The planned savings is factored in to the electric or gas B/C model, based on heating fuel type, to capture this effect.

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Sector	Program	Captured in TRM	Treatment of Increased Heating Due to Lighting
Residential	EnergyWise Multifamily	No	The increased heating value is not defined in the TRM but embedded in energy savings for participants receiving weatherization/heating system. The heating savings from weatherization/heating system are estimated using a billing analysis that also captures heating impacts due to lighting changes. The planned savings is factored in to the electric or gas B/C model, based on heating fuel type, to capture this effect.
Residential	Low Income Multifamily	No	The increased heating value is not defined in the TRM but embedded in energy savings for participants receiving weatherization/heating system. The heating savings from weatherization/heating system are estimated using a billing analysis that also captures heating impacts due to lighting changes. The planned savings is factored in to the electric or gas B/C model, based on heating fuel type, to capture this effect.
Residential	New Construction	No	The REM/Rate model used to model impacts in the New Construction program takes into account increase heating use due to installation of lighting measures). A delta wattage is used to estimate this increased heating usage and factors in heating loads. Negative gas or delivered fuels are not listed separately in the electric benefit-cost model.

b) The table below indicates how each program treated expected increased use of heating energy due to lighting in 2018 and 2019 program years in setting the Company's savings targets, for which data is most readily available. The approach for these impacts varies from program to program. One of two approaches is used:

- Some programs use building simulation models or billing analysis to model savings. In these cases, the heating increases associated with lighting contribute to goals and achievement of savings for the program.

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- In cases where building simulation models or billing analysis are not used, increased heating is included as a separate stream of negative savings in the benefit-cost model. For electric heat, the increased use counts against electric target setting and performance. Gas and delivered fuel heating impacts do not affect savings targets or tracking towards achievement of those targets. In those cases, the negative savings from increased heating is included as a negative benefit in the electric benefit-cost model, impacting the benefit-cost ratio, but not the savings achievement.

Sector	Program	Treatment of Increased Heating Load from Efficient Lighting in 2018 and 2019
Commercial and Industrial	All Except Custom	Increased use of electric heat is counted against electric goals and performance. Increased gas and delivered fuel heating use is not counted towards electric or natural gas savings goals or performance but is included as a negative electric benefit in cost effectiveness calculations.
Commercial and Industrial	Custom - Systems Approach	Increased use of electric heat is counted against electric goals and performance. Increased gas and delivered fuel heating use is not counted towards electric or natural gas savings goals or performance but is included as a negative electric benefit in cost effectiveness calculations.
Commercial and Industrial	Custom - Whole Buildings Approach	An interactive model of building energy use is developed. Total electric savings count toward electric target setting and performance, total gas savings count toward gas target setting and performance, and total benefits (inclusive of delivered fuel penalties) are distributed between the electric and gas portfolios for both target setting and performance.
Residential	EnergyStar Lighting	Increased gas and delivered fuel heating use is not counted towards electric or natural gas savings goals or performance but is included as a negative electric benefit in cost effectiveness calculations. In 2019, increased use of electric heat is counted against electric goals and performance.
Residential	EnergyWise Single Family	Increased heating use is counted towards natural gas/electric savings goals for participants receiving weatherization since increased heating load from lighting changes are embedded in the savings calculation.

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Sector	Program	Treatment of Increased Heating Load from Efficient Lighting in 2018 and 2019
Residential	Low Income Single Family	Increased heating use is counted towards natural gas/electric savings goals for participants receiving weatherization/heating system since increased heating load from lighting changes are embedded in the savings calculation.
Residential	EnergyWise Multifamily	Increased heating use is counted towards natural gas/electric savings goals for participants receiving weatherization/heating system since increased heating load from lighting changes are embedded in the savings calculation.
Residential	Low Income Multifamily	Increased heating use is counted towards natural gas/electric savings goals for participants receiving weatherization/heating system since increased heating load from lighting changes are embedded in the savings calculation.
Residential	New Construction	Actual gas savings performance is inclusive of increased gas use due to installation of LEDs in gas-heated homes. It is embedded in REM/Rate models which are used to calculate heating savings and program goals.

c) For programs where savings from each fuel are separately specified in the benefit-cost model, such as EnergyStar Lighting and C&I (except Custom), heating fuel impacts from gas and delivered fuels only affect the benefit-cost screening and do not contribute to electric savings targets.

For other programs, to the degree that increased heating fuel usage due to lighting are included in the energy savings for a program due to their inclusion in a whole building modeling approach or a billing analysis approach, the increased heating fuel usage due to lighting is accounted for in savings targets and performance targets in the 2020 plan. Savings from the delivered fuel weatherization measures within the EnergyWise Single Family and Low Income Single Family programs contribute to the Delivered Fuel performance incentive mechanism. The savings from these two weatherization measures are derived from billing analysis approaches and are therefore impacted by lighting measures that are also installed by the program.

PUC 1-26

Request:

Regarding delivered fuel customers, please provide the following information:

a. Do delivered fuel customers have higher electric bills on average than natural gas customers?
b. On what basis have delivered fuels customers received rebates or incentives for weatherization in the past? Please include the corresponding percentage or dollar amounts of the rebates or incentives.
c. On what basis have delivered fuels customers received rebates for high efficiency air source heat pumps in the past? Please include the corresponding percentage or dollar amounts of the rebates or incentives.

Response:

a. The Company does not currently directly track which of its customers use delivered fuels. To inform this response, the Company extracted average monthly electric usage data for Rhode Island residential customers that are natural gas heating customers and those that are not.

   From this data, it is not possible to definitively say that the residential customers that are not gas heating customers are delivered fuel customers. For example, some of the customers that are not gas heating customers may use electric resistance heating. With the limitations of the available data, the Company can conclude that residential customers that are not gas heating customers had higher average monthly electric usage in 2018 than customers that are natural gas heating customers. A significant confounding factor in this analysis that is not represented in the below table is the potential differences between customers in regions of the state that have access to the gas network and those that do not. For instance, lack of access to the gas network, and thus higher reliance on delivered fuels for heating, is more prevalent in the western portion of Rhode Island. There may be inherent differences in housing stock in this region vs. the more densely populated areas of the state that feature a higher incidence of gas usage for heating. These differences are not incorporated into the analysis below, which simply reports average electric utilization among two generic customer classes. This analysis also does not account for demographic or home characteristics that impact usage across the state.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-26, page 2

Table 1. Summary of Average Residential Customer Monthly Energy Use in 2018

Year	Gas Heating Customer Indicator	Count of Billed Premises	Average Monthly Electric Usage (kWh)
2018	Yes	209,903	527
	No	242,990	637

b. While Income Eligible customers have had access to delivered fuel weatherization, market rate customers were first able to access delivered fuel weatherization through an American Recovery and Reinvestment Act (ARRA) grant beginning in 2012. When ARRA ended, delivered fuels were supported through RGGI funds for another year and then transitioned to energy efficiency funding.

Please see Attachment PUC 1-26, which shows past weatherization incentives.

c. Customers who have chosen to displace or replace their delivered fuel for heating have received rebates for high efficiency air source heat pumps. Please see the table below for the dollar amounts of rebates paid.

2019 ASHP Fuel Optimization Rebates

Fuel	**Customer Count**	**Rebates Paid**
OIL	188	$582,384.50
PROPANE	13	$41,266.66
Grand Total	**201**	**$623,651.16**

Prepared by or under the supervision of: Laura Rodormer

PUC 1-27

Request:

When a natural gas customer receives a rebate for weatherization services, does a portion of the rebate come from the electric energy efficiency budget? If so, does this portion represent the cooling savings from weatherization?

Response:

Natural gas weatherization services are funded solely by the gas energy efficiency budget. Electric savings that result from weatherization are a secondary benefit that contribute to the gas portfolio benefit cost ratio, but are not claimed as electric savings in the electric portfolio.

Prepared by or under the supervision of: Angela Li

PUC 1-28

Request:

As proposed in the Plan, if a customer switches from delivered fuels to natural gas, will the utility claim any energy savings associated with reducing a customer's former fuel source? If so, please explain.

Response:

The Company does not claim any energy savings associated with a customer's switch from a delivered fuel to baseline gas equipment.

Customer installation of energy efficient natural gas heat and water heating equipment produces claimable gas savings only. If a customer chooses to install energy efficient gas equipment, regardless of the fuel source that the customer is transitioning from, savings are calculated on the basis of the natural gas consumption of the new, efficient equipment relative to baseline (i.e. less efficient) gas equipment.

Prepared by or under the supervision of: Angela Li

PUC 1-29

Request:

Are the net-to-gross ratios for conversions from delivered fuels negotiated or measured? Is the answer the same for the following:

a. partial conversion;
b. adding cooling or heating where previously there was none;
c. reducing cooling load; and
d. the decision to install higher-efficiency equipment in association with the fuel conversion?

Response:

The net-to-gross (NTG) value of 90% (assuming 10% free ridership) is a negotiated value that is proposed in the 2020 Energy Efficiency Plan. Pending approval of the 2020 Energy Efficiency Plan, the value will be used starting in 2020. (In Massachusetts, the 90% NTG value is a negotiated value that is currently being used per the approval of the 2019 – 2021 three-year Energy Efficiency Plan.)

The 90% NTG value is also a negotiated value for (a) partial conversion, (b) adding cooling or heating where previously there was none, (c) reducing cooling load, and (d) the decision to install higher-efficiency equipment in association with the fuel conversion. This 90% NTG negotiated value is used for all Oil/Propane to central ducted or mini-split heat pumps installations going through the Energy Star HVAC program."

PUC 1-30

Request:

Please provide a table in which the first column is all the benefits and costs in the RI Benefit Cost Framework, the second columns identifies if the benefits/cost category is quantified or qualified in the Plan, the third column is the quantification or qualification of the category, and the fourth column includes any notes National Grid would like to offer on the category or response.

Response:

Please see Attachment PUC 1-30 for the requested information.

Column (C) includes the benefit/cost category from the RI Benefit Cost Framework.
Column (D) indicates if that category is quantified, qualified, or neither in the Plan.
Column (E) includes the quantification or qualification of the category in the Benefit Cost Analysis for the Plan.
Column (F) provides a description of how the category is treated in the Benefit Cost Analysis for the Plan.
Column (G) provides an indicator of whether the category is a Benefit, Cost, or Undetermined value in the Benefit Cost Analysis for the Plan.

Line No.	Category Level	Category Number	Mixed Benefit-Cost, Cost, or Benefit Category	Treatment in Benefit-Cost Analysis (Quantified, Qualified, Not Treated)	Value ($2019 NPV) or description if qualfied	Description and Notes	Benefit or Cost
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	Power System Level	1	Energy Supply & Transmission Operating Value of Energy Provided or Saved (Time- & Location-specific LMP)	Quantified	$ 30,027,157	Energy Efficiency Measures: Winter peak electric energy (kWh) savings are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter peak energy from Appendix B of the avoided cost schedules in the AESC 2018 study.	Benefit
2					$ -	Active Demand Response Measures: The Active Demand Response program (ConnectedSolutions) only operates during the Summer at system peak times, therefore there are no winter energy benefits.	No Value
3				Quantified	$ 22,615,542	Energy Efficiency Measures: Winter off-peak electric energy (kWh) savings are monetized for winter peak by multiplying savings during this period by the avoided retail cost of winter off-peak energy from Appendix B of the avoided cost schedules in the AESC 2018 study.	Benefit
4					$ -	Active Demand Response Measures: The Active Demand Response program (ConnectedSolutions) only operates during the Summer at system peak times, therefore there are no winter energy benefits.	No Value
5				Quantified	$ 20,252,236	Energy Efficiency Measures: Summer peak electric energy (kWh) savings are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer peak energy from Appendix B of the avoided cost schedules in the AESC 2018 study.	Benefit
6					$ 176.52	Active Demand Response Measures: Summer peak electric energy (kWh) savings are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer peak energy from Appendix B of the avoided cost schedules in the AESC 2018 study.	
7				Quantified	$ 12,096,671	Energy Efficiency Measures: Summer off-peak electric energy (kWh) savings are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer off-peak energy from Appendix B of the avoided cost schedules in the AESC 2018 study.	Benefit
8					$ 115	Active Demand Response Measures: Summer off-peak electric energy (kWh) savings are monetized for winter peak by multiplying savings during this period by the avoided retail cost of Summer off-peak energy from Appendix B of the avoided cost schedules in the AESC 2018 study.	
9				Quantified	$ 20,093,870	Energy Efficiency Measures: Value of avoided summer generation capacity benefit is monetized by the AESC 2018 study avoided costs	Benefit
10					$ 568,739	Active Demand Response Measures: Value of avoided summer generation capacity benefit is monetized by the AESC 2018 study avoided costs	Benefit
11		2	Renewable Energy Credit Cost / Value	Quantified	See Notes	summer peak, and summer off-peak retail energy costs from the preceding category.	Benefit
12		3	Retail Supplier Risk Premium	Quantified	See Notes	Wholesale Risk Premium is built into the retail costs of electric energy and electric capacity sourced from the AESC 2018 study and used to calculate the benefits of avoided energy and capacity.	Benefit
13		4	Forward Commitment: Capacity Value	Quantified	See Notes	Forward capacity avoided costs are included in capacity benefits.	Benefit
14		5	Forward Commitment: Avoided Ancillary Services Value	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
15		6	Utility / Third Party Developer Renewable Energy, Efficiency, or DER costs	Quantified	$ 106,287,561	National Grid costs to implement the energy efficiency portfolio (including active demand response measures). Total budget includes costs for Program Planning & Administration; Marketing; Customer Incentives; Sales Technical Assistance and Training; and Evaluation & Market Research	Cost
16		7	Electric Transmission Capacity Costs / Value	Quantified	$ 26,523,103	Energy Efficiency: Electric transmission capacity benefits are quantified by multiplying a statewide Pooled Transmission Facility (PTF) transmission value from AESC 2018 study by the summer kW saved from efficiency measures	Benefit
17					$ 5,494,126	Active Demand Response: Electric transmission capacity benefits are quantified by multiplying a statewide Pooled Transmission Facility (PTF) transmission value from AESC 2018 study by the summer kW saved from active Demand Response measures	Benefit
18				Quantified	$ 23,106,699	Energy Efficiency: Electric distribution capacity benefits are quantified by multiplying a Company-generated distribution value ($/kW) by the summer kW saved from efficiency measures.	Benefit
19					$ 4,786,435	Active Demand Response: Electric distribution capacity benefits are quantified by multiplying a Company-generated distribution value ($/kW) by the summer kW saved from active Demand Response measures	Benefit
20		8	Electric transmission infrastructure costs for Site Specific Resources	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
21		9	Net risk benefits to utility system operations (generation, transmission, distribution)	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
22		10	Option value of individual resources	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
23		11	Investment under Uncertainty: Real Options Cost / Value	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined

24		12	Energy Demand Reduction Induced Price Effect	Quantified	$ 50,307,034	Energy Efficiency measures: Electric Energy (kWh) DRIPE values quantified based on the energy DRIPE values included in the AESC 2018 study. Calculated for each of winter peak, winter off-peak, summer peak, and summer off-peak.	Benefit
25					$ 162	Demand Response measures: Electric Energy (kWh) DRIPE values quantified based on the energy DRIPE values included in the AESC 2018 study. Calculated for each of winter peak, winter off-peak, summer peak, and summer off-peak.	Benefit
26				Quantified	$ 26,022,809	Energy Efficiency measures: Electric Generation Capacity (kW) DRIPE value quantified by multiplying avoided summer kW by applicable capacity DRIPE values ($/kW) from the AESC 2018 study.	Benefit
27				Quantified	$ 12,277,470	Demand Response measures; Electric Generation Capacity (kW) DRIPE value quantified by multiplying avoided summer kW by applicable capacity DRIPE values ($/kW) from the AESC 2018 study.	Benefit
28				Quantified	See Fuel benefits	Additional DRIPE benefits for oil fuel savings from energy efficiency measures are quantified by multiplying oil fuel savings (MMBtu) by applicable oil DRIPE values ($/MMBtu) from the AESC 2018 study. These benefits are included in the category "Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water". Active demand response measures do not have oil fuel savings and therefore do not have oil DRIPE benefits.	Benefit
29				Quantified	See notes	Gas Resource Benefits in the Electric energy efficiency Benefit Cost Model includes Gas Supply DRIPE and Gas-Electric Cross DRIPE monetized by multiplying the gas savings attributable to the electric portfolio measures by applicable avoided cost series from the AESC 2018 study. These benefits are included in the category "Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water". Active demand response measures do not have gas savings and therefore do not have gas DRIPE benefits.	Benefit
30		13	Greenhouse gas compliance costs	Quantified	See notes	Avoided cost of compliance with criteria air pollutant regulations are included in the wholesale electric energy commodity costs from the AESC 2018 study and are included in the calculation of the energy benefits in the category "Energy Supply & Transmission Operating Value of Energy Provided or Saved (Time- & Location-specific LMP)"	Benefit
31		14	Criteria air pollutant and other environmental compliance costs	Quantified	See notes	Avoided cost of compliance with criteria air pollutant regulations are included in the wholesale electric energy commodity costs from the AESC 2018 study and are included in the calculation of the energy benefits in the category "Energy Supply & Transmission Operating Value of Energy Provided or Saved (Time- & Location-specific LMP)"	Benefit
32		15	Innovation and Learning by Doing	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
33		16	Distribution capacity costs	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
34		17	Distribution delivery costs	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
35		18	Distribution system safety loss/gain	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
36		19	Distribution system performance	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
37		20	Utility low income	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
38		21	Distribution system and customer reliability / resilience impacts	Quantified	$ 135,045	Value of Improved Reliability benefit calculated based on reliability value from the AESC 2018 study multiplied by the avoided summer kW savings. Applies to both energy efficiency measures and active demand response measures.	Benefit
39					$ 665,891		Benefit
40		22	Distribution system safety loss/gain	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
41	Customer Level	23	Program participant / prosumer benefits / costs	Quantified	$ 18,470,609	Energy Efficiency measures: Participant contribution cost is the direct cost of the measure that is not covered by the customer rebate/incentive for energy efficiency measures.	Cost
42					$ -	Active demand response measures: There is no customer cost for the ConnectedSolutions Active Demand Response program.	Cost
43				Quantified	$ 47,478,235	calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2020 Annual Plan (Bates 452-453). Non resource, non-energy impacts may include but are not limited to labor, material, facility use, health and safety, materials handling, national security, property values, and transportation.	Benefit
44		24	Participant non-energy costs/benefits: Oil, Gas, Water, Waste Water	Quantified	$ 14,711,621	Energy Efficiency measures: Quantification of Resource Benefits from: Natural Gas, Oil, Propane, Water & Sewage. Natural Gas Benefits are based on Appendix C of the 2018 AESC study, Oil and Propane Benefits are based on Appendix D of the 2018 AESC study, Water & Sewage Benefits are dervied from an internet survey of rates poste by the City of Providence and Narragansett Bay Commission.	Benefit
45					$ -	Active demand response measures: no corresponding benefits for oil, gas, water, wastewater in the Active Demand Response benefit cost analysis so this value is zero	Benefit
46		25	Low-Income Participant Benefits	Quantified	See Notes	Low-Income Participant Benefits benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2020 Annual Plan (Bates 452-453). See the category "Program participant / prosumer benefits / costs" for these benefits	Benefit

47		26	Consumer Empowerment & Choice	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
48		27	Non-participant (equity) rate and bill impacts	Quantified	See Notes	efficiency programs on annual customer bills by aggregating rate and consumption changes, including non-participants. Electric bill impact models used to generate the electric results were adapted from models originally built by Synapse Energy Economics on behalf of the Division of Public Utilities and Carriers in 2013. Bill Impacts are included in Attachment 7 of the 2020 Annual Plan (Bates 493-508).	Benefit (but not included in BCA screening)
49	Societal Level	28	Greenhouse gas externality costs	Quantified	$ 42,064,864	Energy Efficiency measures: Quantified Non-embedded Greenhouse gas reduction benefits obtained from the 2018 AESC Study. Non-embedded CO2 values are sourced from the following tables in the 2018 AESC Study: Table 154 for electric savings and Table 156 for gas savings and oil savings.	Benefit
50					$ 168	Active Demand Response measures: Quantified Non-embedded Greenhouse gas reduction benefits obtained from the 2018 AESC Study. Non-embedded CO2 values are sourced from the following tables in the 2018 AESC Study: Table 154 for electric savings and Table 156 for gas savings and oil savings.	Benefit
51		29	Criteria air pollutant and other environmental externality costs	Quantified	$ 1,980,510	Quantified Non-embedded NOx reduction benefits obtained from the 2018 AESC Study. Additional research would be required to determine other benefit streams from air pollutants and other environmental externalities	Benefit
52		30	Conservation and community benefits	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
53		31	Non-energy costs/benefits: Economic Development	Quantified	$ 236,602,965	Energy efficiency measures: Quantified Economic Development Benefits based on the methodology described in the 2020 Annual Plan, (Bates 455-457 and 459)	Benefit
54					$ 4,935,021	Active demand response measures: Quantified Economic Development Benefits based on the methodology described in the 2020 Annual Plan, (Bates 455-457 and 459)	Benefit
55		32	Innovation and knowledge spillover (Related to demonstration projects and other RD&D preceding larger scale deployment)	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
56		33	Societal Low-Income Impacts	Not Quantified or Qualified	See Notes	Additional research necessary to determine applicabililty and qualitative/quantitative impacts for cost effectiveness screening of energy efficiency programs.	Undetermined
57		34	Public Health	Quantified	See Notes	Health Benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2020 Annual Plan (Bates 452-453), however they are aggregated with other Non-Energy Impacts and therfore their value is not broken out here.	Benefit
58		35	National Security and US international influence	Quantified	See Notes	National Security and US international influence benefits are included within the calculation of Non-Energy Impacts as described within the Non-Energy Impacts section of the 2020 Annual Plan (Bates 452-453), however they are aggregated with other Non-Energy Impacts and therfore their value is not broken out here.	Benefit

PUC 1-31

Request:

Considering all heat pumps offered as proposed in the 2020 Plan, is there a risk that the refrigerant used in these heat pumps will leak? If so, would these leaks pose any environmental or health costs and how are those costs captured in the benefit-cost analysis?

Response:

Any product, including air source heat pumps, that contains refrigerant has the potential to experience leaks. The risk is elevated if the equipment is not installed and/or maintained correctly.

Through the HVAC Electric program, the Air Conditioning and Mini-split Check (referred to in Plan documents and program implementation materials as "AC Check" and "MS Check") training and procedures provide information on proper installation and preventative maintenance to ensure proper commissioning and start-up and to help identify and prevent issues that could cause leaks.

As is consistent with the benefit cost modeling approach utilized for other measures that include refrigerant (high efficiency air conditioning systems and refrigerators, for instance), the potential environmental or health costs associated with any leaks that could result from the installation or operation of these systems are not included in the benefit-cost analysis for air-source heat pump measures proposed in the 2020 Plan.

PUC 1-32

Request:

National Grid's distribution customers invest in energy, capacity, and REC supply resources through contracts with for [sic] renewable energy facilities and by tariff with the Renewable Energy Growth Program facilities. Are the reductions in market revenue for these facilities' products considered in the benefit-cost analysis?

Response:

The Benefit Cost Analysis conducted for the 2020 Energy Efficiency Plan utilizes avoided costs from the Avoided Energy Supply Components in New England: 2018 Report (AESC 2018) and its supporting appendices.[1] The developed avoided cost streams that monetize future electric energy savings in the benefit cost analysis include the cost of wholesale RECs. A major component of the development of the avoidable future REC costs includes forecasts of unavoidable renewable generation as a result of the following state policies:

- Rhode Island Renewable Energy Growth Program: 160 MW of contracts by 2019, followed by 35 MW of contracts per year (net of contract attrition) through 2029.
- Rhode Island Net Metering: 100 MW in service by 2022 under virtual net metering"[2]

Besides the incorporation of the avoided costs from the AESC 2018 study, the benefit-cost analysis of the energy efficiency portfolio is not otherwise adjusted to account for these factors. This includes reductions in market revenue for Renewable Energy Growth Program Facilities, as these costs are not "avoidable" in the sense that the term is typically used in applying avoided cost benefits to the benefit-cost analysis model of the energy efficiency portfolio.

[1] https://www.synapse-energy.com/sites/default/files/AESC-2018-17-080-Oct-ReRelease.pdf
[2] Avoided Energy Supply Components in New England: 2018 Report, Synapse Energy Economics, Inc., page 126.

Prepared by or under the supervision of: John Tortorella

PUC 1-33

Request:

National Grid's Technical Reference Manual includes many non-energy benefits. Please explain if the Technical Reference Manual includes any non-energy costs, such as participant time.

Response:

Currently there is no NEI for "participant time" in the Rhode Island TRM. As stated in Appendix E of the Rhode Island Technical Reference Manual (RI TRM), "Quantifiable benefits (beyond electric savings) that are the result of the installation of a measure. Fossil fuel, water, and maintenance are examples of non-electric benefits. Non-electric benefits (NEB) can be negative (i.e. increased maintenance or increased fossil fuel usage which results from a measure) and therefore are sometimes referred to as 'non-electric impacts'".

The RI TRM does contain NEBs with negative values. NEBs are more broadly categorized as Non-Energy Impacts (NEIs) and can include both positive and negative values. Negative NEIs can be understood to be non-energy costs. Measures with a negative NEI value include certain efficient heating equipment measures such as Boilers, Combined Heat and Power, Whole Building Heater, and Boiler Condensers. These measures have a negative NEI value due to a greater need for maintenance than the traditional less-efficient equipment they replace.

Prepared by or under the supervision of: Benjamin Crosby

PUC 1-34

Request:

Referencing page 188 of the Plan, describe the time commitment for the customer for the audit and on-site work. Does the Benefit Cost Analysis account for this time commitment, and, if so, please describe how?

Response:

As referenced on Bates page 188 of the Energy Efficiency Plan, a home energy assessment generally takes two to three hours. The Benefit Cost Analysis does not account for this customer time commitment.

Prepared by or under the supervision of: Angela Li

PUC 1-35

Request:

Please provide the benefit-cost analysis that support rejecting gas-to-electric heat pump space heating conversions or explain why none exists.

Response:

The Company has not prepared a benefit-cost analysis for gas-to-electric heat pump space heating conversions. Typically, the Company performs a benefit-cost analysis in support of measures that will be incentivized for customers. Referring to the information provided below, given current market realities, gas-to-electric heat pump space heating conversions do not currently provide favorable customer economics. As such, the Company has not proposed providing incentives or investing in the development of a market segment unlikely to produce near-term adoption or positive customer experience. There is no preclusion on customers who choose to pursue these conversions outside of energy efficiency programs or incentives, and the Company claims no savings or benefits in those scenarios.

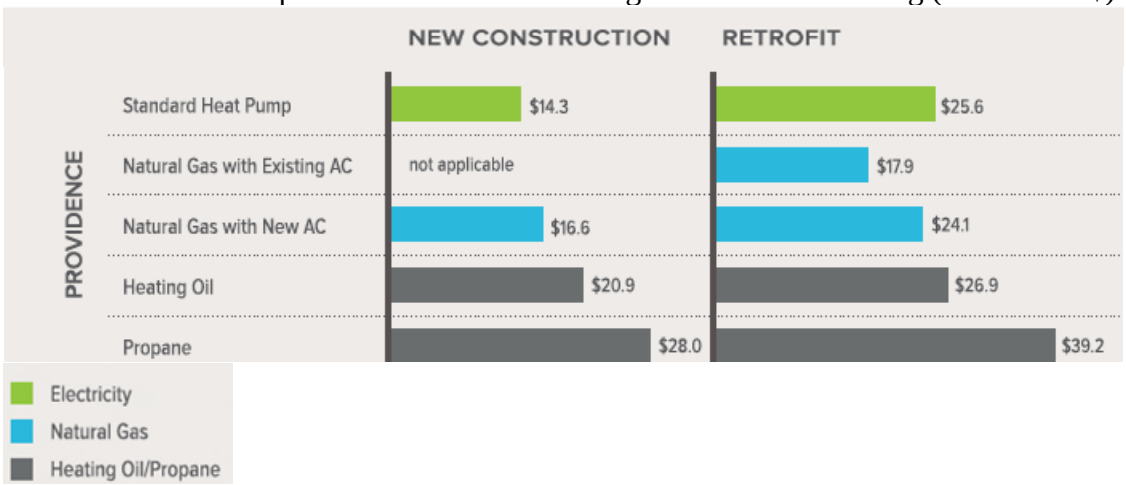
On page 17 of the Rhode Island and Massachusetts "Ductless Mini-Split Heat Pump (DMSHP) Impact Evaluation" study (December 30th, 2016),[1] the study states the following regarding the conversion from natural gas heat to mini-split heat pumps: "For natural gas, the figure shows a temperature breakpoint above 70F° for [the winters of 2015 and 2016], meaning a DMSHP would essentially never be cost-effective, compared with an 80% efficient heating system. This effectively means a DMSHP does not offer a viable direct replacement for a gas-fired system at today's energy prices."

In addition, the 2018 Rocky Mountain Institute Report "The Economics of Electrifying Buildings"[2] by Sherri Billimoria, Leia Guccione, Mike Henchen and Leah Louis-Prescott, reports that in Providence, Rhode Island electrification of space and water heating and air conditioning costs are higher over the lifetime of the appliances when compared to performing the same functions with natural gas with existing air conditioning (see graph below).

[1] http://ma-eeac.org/wordpress/wp-content/uploads/Ductless-Mini-Split-Heat-Pump-Impact-Evaluation.pdf

[2] https://rmi.org/insight/the-economics-of-electrifying-buildings/

Net Present Cost of Space and Water and Heating and Air Conditioning (Thousands $)



Source: https://rmi.org/insight/the-economics-of-electrifying-buildings/

Prepared by or under the supervision of: Laura Rodormer

PUC 1-36

Request:

Please provide the benefit-cost analysis that supports rejecting gas-to-electric heat pump water heating conversions or explain why none exists.

Response:

The Company has not prepared a benefit-cost analysis for gas-to-electric heat pump water heating conversions. Typically, the Company performs a benefit-cost analysis in support of measures that will be incentivized for customers. Given the low cost of gas currently, gas-to-electric heat pump water heating conversions do not produce favorable customer economics at this time. As such, the Company has not proposed providing incentives or investing in the development of a market segment unlikely to produce near-term adoption or positive customer experience. There is no preclusion on customers who choose to pursue these conversions outside of energy efficiency programs or incentives, and the Company claims no savings or benefits in those scenarios.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-37

Request:

Please provide the benefit-cost analysis for gas heat pumps offered in this plan or explain why none exists.

Response:

The Company has not yet prepared a benefit-cost analysis for gas heat pumps. Gas heat pumps remain a nascent technology that the Company has not yet determined are an appropriate measure to include in energy efficiency programs.

The Company has proposed a C&I demonstration in the 2020 Energy Efficiency Plan, with a goal of verifying potential savings, benefits and barriers to customer adoption. With these questions addressed, the Company anticipates being in a better position to evaluate whether gas heat pumps should become a full-fledged measure within energy efficiency programs, including creation of associated benefit-cost models and development of a path to claiming savings associated with customer adoption of this technology.

Prepared by or under the supervision of: Laura Rodormer

PUC 1-38

Request:

Referencing the Joint Testimony on Bates Page 10, are the witnesses explaining the Plan is reliable because it continues to offer programs that were previously found to be best-in-class? If so, please provide the information that underlies this statement. If not, please provide further explanation of why the plan is reliable.

Response:

The Company does not consider the plan reliable solely because it continues to offer best in class programs, but rather because the programs offered in the Plan are improved upon with new implementation strategies, measures, and offerings, which is in compliance with the definition of "reliable" as stated in the Least Cost Procurement Standards at 1.2.D. Further, the Company engaged in a thorough review process of programs, down to the measure level, with the consulting team to the Energy Efficiency and Resource Management Council (EERMC) and other stakeholders through three drafts of the 2020 Annual Energy Efficiency Plan. The result is the most robust Plan offered to date, highlighting the offerings, process, customer feedback, proposed changes for the new program year, the rationale for those changes and upcoming evaluations. The Company believes that all of the above noted actions demonstrate the reliability of the Plan.

To support the Company's statement that the Plan offers "best in class" programs, the Company would point to the American Council for an Energy Efficiency Economy's (ACEEE) 2019 State Scorecard. For Rhode Island, the scorecard allocated a perfect score to the category of "Utility & Public Benefits Programs & Policies."

Prepared by or under the supervision of: Matthew Ray

PUC 1-39

Request:

Referencing the Joint Testimony on Bates pages 10 to 11, please provide the underlying information that supports the statement that the plan is offering "all achievable potential for 2020."

Response:

The Company believes that the 2020 Plan offers all achievable potential savings for 2020 while complying with the requirements of Least Cost Procurement since the Plan is cost effective, reliable, prudent and environmentally responsible.

The Company also believes that the 2020 Plan offers all achievable potential savings for 2020 since the savings goals proposed in the 2020 Plan were arrived at after an extensive engagement process throughout 2019 with external stakeholders at monthly Energy Efficiency Technical Working Group (TWG) and Energy Efficiency and Resource Management Council (EERMC) meetings.

Throughout this process, a detailed, iterative review and discussion of planned measures, programs, and resulting savings goals in the Plan was undertaken by the independent, third-party consulting team hired by the EERMC to support councilmembers tasked with representing the interests of Rhode Island energy consumers.

This process culminated with a certification by the third-party consultancy that the 2020 Plan as submitted was compliant with the Least Cost Procurement statute and a vote in favor of the Plan by the EERMC on October 3, 2019.

Prepared by or under the supervision of: Matthew Ray

PUC 1-40

Request:

Referencing the Joint Testimony on Bates pages 12 to 13, please explain how "less expensive than the cost of additional energy supply" is calculated with consideration of delivered fuels. Are delivered fuels costs included as a part of an aggregated cost, or are the delivered fuel efficiency costs compared to delivered fuel energy costs separately?

Response:

The costs included in the cost of energy supply are noted in the 2020 EEPP in Table 4, Bates page 104. Fuel costs are included in the cost of energy supply calculation as excerpted below. Delivered fuel efficiency costs are not compared to delivered fuel energy costs separately. Rather, the costs of delivered fuel are considered in aggregate with the other costs considered in the cost of energy supply calculation.

Cost	Included	Explanation
Fuel Costs	Yes	Non-regulated delivered fuels are an energy supply cost to customers that utilize these fuels for heating. The fuel costs in this category are separate from those embedded in the cost of the electric market. While not a direct cost of electric energy supply, National Grid includes incentives for delivered fuel energy efficiency measures in its electric portfolio. Therefore, to achieve symmetry with costs associated with electric energy efficiency, delivered fuels costs should be included in this comparison.

Prepared by or under the supervision of: John Tortorella

PUC 1-41

Request:

Please provide a single table with rows indicating all pilots, assessments, and demonstrations. Please make the columns the following:

- Cost
- Savings
- Years operated
- Report filed (yes/no)

Response:

Please refer to the table on the following page for the details requested on all pilots, demonstrations, and assessments proposed for 2020.

Prepared by or under the supervision of: Mona Chandra

	Name	Sector	Fuel	Budget (Cost)			Savings		Years Operated	Reports Filed****
				Gas	Electric	Total	Gas	Electric		
Pilots										
	Gas DR	C&I	Gas	$366,015		$366,015	78.5 DTherms peak hour*		2018-2020	No
	Zero Energy Buildings	C&I	Electric		$106,269	$106,269		Unknown	2018-2020	No
	Path to Zero Energy Home Pilot	Resi	Electric		$287,846	$287,846		Unknown	2017-2020	No
Demonstrations										
	Performance based Procurement (Accelerate Performance)	C&I	Dual	$9,711	$29,134	$38,845	0.02 Therms/ SF(approx.)	3 kWh/SF (approx.)	2018-2020	No
	Underutilized EE tech. on mechanical power transmission systems	C&I	Electric		$251,693	$251,693		75 MWh	2018-2020	No
	SEM	C&I	Dual	$124,800	$395,200	$520,000	5410 Therms	1700 MWh	2018-2020	No
	HVAC Lighting Controls Plus**	C&I	Dual	$118,756	$237,513	$356,269	No signification savings	1.8 kWh/SF (approx.)	2020	No
	Kitchen Exhaust	C&I	Dual	$18,846	$9,423	$28,269	21,000 Therms	65 MWh	2020	No
	Absorption Air Cleaning	C&I	Dual	$170,846	$85,423	$256,269	0.07 Therms/SF	0.453	2020	No
	Small Business Heat Pumps		Electric		$279,293	$279,293		30 MWh	2019-2020	No
	Gas Heat Pumps	C&I	Gas	$27,269		$27,269	15,000-20,000 Therms (For a 400 – 600 mbh unit)		2020	No
Assessments										
	Emerging Lighting Market Interventions Secure Lighting Spec (SLS)	C&I	Electric		$43,897	$43,897		Unknown	2018-2020	No
	Innovation Electric***	C&I	Electric		$100,000	$100,000		Unknown	2020	No
	Innovation Gas***	C&I	Gas	$100,000		$100,000	Unknown		2020	No
	Innovation Electric	Resi	Gas	$75,000		$75,000	Unknown		2020	No
	Home Energy Score Evaluation	Resi	Gas	$10,000		$10,000	Unknown		2020	No
Total Pilots						$760,130				
Total Demonstrations						$1,757,908				
Total Assessments						$328,897				

*Peak hour DTherm reduction for the Gas DR Pilot, is an estimate and does not apply towards a formal target or shareholder incentive

**Correction: HVAC Lighting Control Plus is a dual fuel demonstration. Gas budgets for this demonstration were not updated in the Table 3, Attachment 8, of the filed 2020 Energy Efficiency Plan. Gas budgets have been included as a correction in the table above. Corrections to Table 3, Attachment 8 will be filed prior to the 2020 Energy Efficiency Plan hearing. Table G2 and G3, Attachment 6, Bates Page 481& 482 of the filed 2020 Energy Efficiency Plan, do include the gas budget associated with this demonstration.

***The Innovative gas and electric demonstrations, for C&I, have been reclassified as "Assessments". The impact of this change will reduce the associated shareholder incentive by $10,000. Corrections to the 2020 Energy Efficiency Plan will be filed prior to the 2020 Energy Efficiency Plan hearing date.

**** At this time no formal evaluation reports have been filed as all pilots, demonstrations and assessments have either not started or have not been in testing phase long enough for evaluations. Please refer to Tables 2,3,4,and 5, Attachment 8, Bates pages 515, 516 and 517 for evaluation method for pilots demonstrations and assessments. Attachment 8 also provides details on evaluation methodology, where applicable, for each pilot demonstration and assessment.

Prepared by or under the supervision of: Mona Chandra

PUC 1-42

Request:

For each pilot, assessment, and demonstration, please provide the following:

a. A short (e.g., about a single sentence) stating what question or issue is being tested.
b. A list of the specific tests used to answer the question or issue above, the costs associated with each test, and how each test is designed to achieves [sic] new and useful information.
c. A list of costs necessary to support the specific activities above.
d. The timing of when results will be delivered for each activity.
e. The format in which results will be delivered for each activity.

Response:

The Company has proposed the following 13 pilots, demonstrations and assessments in 2020:

1. Gas Demand Response (Commercial and Industrial)
2. Zero Energy Building Pilot (Commercial and Industrial)
3. Path to Zero Energy Home Pilot (Residential)
4. Performance Based Procurement - Accelerate Performance (Commercial and Industrial)
5. Underutilized Energy Efficiency Technology on Mechanical Power Transmission Systems (Commercial and Industrial)
6. Strategic Energy Management – SEM (Commercial and Industrial)
7. HVAC Lighting Controls Plus
8. Kitchen Exhaust Demonstration (Commercial and Industrial)
9. Absorption Air Cleaning (Commercial and Industrial)
10. Small Business Heat Pumps Demonstration (Commercial and Industrial)
11. Gas Heat Pumps Demonstration (Commercial and Industrial)
12. Emerging Lighting Market Interventions Secure Lighting Spec (SLS) Assessment (Commercial and Industrial)
13. Home Energy Score Evaluation Assessment (Residential)

Responses to each of the above questions are addressed below, by individually proposed pilot, demonstration or assessment. As a general rule (and as reflected in the responses below), it is typically not possible to isolate and assign or allocate specific costs to specific tests. For instance, costs associated with driving customer participation within a pilot are related to tests associated with identifying customer engagement and incentive strategies but are also a necessary precondition to measuring and validating ongoing savings and benefit impacts of this participation. As a result, for each pilot, demonstration, and assessment, the Company has identified the questions to be addressed and the test design proposed to inform answers to

identified questions. The Company has also identified budgeted costs broken down by cost category but cannot specifically link budgeted costs to specific tests.

1. Gas DR Pilot (Commercial and Industrial)

a. The goal of the extended/expanded Gas DR pilot is to test the following: 1) strategies for C&I customer engagement, activation and compensation related to participation in demand response activities related to reducing customer usage of natural gas during periods of peak demand, and 2) once enrolled, a customer's ability to participate in events in a manner which has meaningful impact on gas demand during these periods.

b. The Company intends to address the following questions during this pilot:

Question	**Form of test**
Can RI gas C&I customers be incentivized to participate in gas demand response events with 3 or 24 hour event windows? [3-hour events – Peak Period Demand Response (PPDR), 24-hour events – Extender Demand Response (EDR)]	Level of customer enrollment as a function of identified addressable market
Will enrolled customers reliably participate in in called events, absent utility managed direct load control?	Average metered reductions in demand relative to customer baselines, customer committed capacity
Will customers who participate in three-hour events demonstrate reduced consumption over a full (24-hour) gas day, or will reduction consumption during the peak 3 hour window simply be shifted within the peak gas day?	Comparisons of 'Peak Period Demand Response' customer participants full gas day usage to baseline consumption for those customers on non-demand response event days

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c. A list of costs associated with the pilot:

Pilot Activity	Marketing & Advertising	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Budget for six customer enrollments in PPDR and 2 customers in EDR	$ 9,524	$ 266,775	$ 54,232	$ 35,484	$ 366,015

d. Timing for delivery

- Learnings from the winter 2019/2020 (both recruitment and ensuing customer participation) will be available at the end of the Winter Gas DR season – in the Spring of 2020.

- Learnings from recruitment activities leading into the Winter of 2020/2021 will be available by the end of 2020. Additional observations based on customer participation patterns during the Winter of 2020/2021 will be available in the Spring of 2021

e. Learnings and results (customer enrollment, costs, resulting aggregate demand reduction during peak periods) from the Gas DR pilot will be communicated in the Energy Efficiency Quarterly Reports that the Company files with the PUC following each calendar quarter.

2. Zero Energy Building Pilot (Commercial and Industrial)

a. The purpose of the Zero Energy Building (ZEB) pilot is to test whether the Zero Energy Building Pilot program design, which supports individual projects and provides education and training information to building and industry professionals, can successfully drive market participation in Zero Energy Buildings in Rhode Island.

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b. The Company intends to address the following questions during this pilot:

Question	**Form of Test**
Can the current pilot design that supports projects in goal setting, incentives, technical assistance, operations and maintenance planning, monitoring and documentation drive customers to participate in the pilot program and achieve Zero Energy building goals?	Customer participation in pilot program. Achievement of Zero Energy Building goals at design.
Will the buildings that do participate in Zero Energy Building pilot maintain Zero Energy levels after one-year of occupancy?	Achievement of Zero Energy Building goals after one year of operation of the occupancy of the project.

c. A list of costs associated with the pilot for enrollment of two projects:

Pilot Activity	**Evaluation & Market Research**	**Marketing & Advertising**	**Participant Incentive**	**Program Planning and Administration**	**Sales Training and Technical Assistance**	**Total**
Electric	$ 20,000	$ 22,000	Participant incentive payout expected in 2021 and is not included in 2020 budget	$ 16,269	$ 48,000	$106,269

d. Timing for delivery:
Expected enrollment of two ZEB projects in 2020 that will be completed in the 2021-2022 time-frame. Updates on projects will be available in Q3 of 2020 and performance and achievement of ZEB design status will be available in 2021.

e. Learnings and updates (customer enrollment, costs, ZEB goal setting achievement for two projects) will be communicated in the Energy Efficiency Quarterly Reports that the Company files with the PUC. ZEB goal achievement from participating projects will be provided in 2021-2022 (these updates are subject to participation in the ZEB pilot program).

Prepared by or under the supervision of: Mona Chandra

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3. Path to Zero Energy Home Pilot (Residential)

a. The Path to Zero Energy Ready was established to inject funds into the market to build professional capabilities and test market acceptance, provide training for building professionals, demonstrate proof-of-concept and assist with incremental cost of zero energy.

b. The Company intends to address the following questions during this pilot:

Question	**Form of Test**
Can the current pilot design that supports awareness, technical training, incentives, marketing, monitoring and documentation drive customers to participate in the pilot program and achieve Zero Energy goals?	Contractor and customer participation in pilot program. Enrollment of projects that achieve Zero Energy goals at design stage.
Will Zero Energy Homes maintain Zero Energy levels after one-year of occupancy?	Achievement of Zero Energy goals after one year of operation of the occupancy of the project.

c. A list of Costs associated with the pilot:

Pilot Activity	**Evaluation & Market Research**	**Marketing & Advertising**	**Participant Incentive**	**Program Planning and Administration**	**Sales Training and Technical Assistance**	**Total**
	$ 17,000	$ 26,000	$ 190,000	$ 10,846	$ 44,000	$ 287,846

d. Timing for delivery:

The results for the activities occur throughout the year. Expected enrollment of five new Zero Home Energy projects in 2020, that the Company will complete in 2021-2022 timeframe. Updates on projects will be available in Q3 of 2020 and performance and achievement of Zero Energy design status will be available in 2021.

e. The format in which results will be delivered for each activity:
Activities are delivered through the following formats

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Category	Format in which results will be delivered
Awareness	Newsletter articles, attending/presenting at public events
Technical Training	Increase Industry Knowledge (training), Increase Professional Certifications, Zero Energy Workshops
Accelerating Performance	Project Certification, Project Certification Builder Incentives (upon completion), Promote & support
Marketing	Case studies, fact sheets, website, Zero Energy Workshop

Learnings and updates (customer enrollment, costs, Zero Energy goal setting achievement all applicable projects) will be communicated in the Energy Efficiency Quarterly Reports that the Company files with the PUC. ZEB goal achievement from participating projects will be provided in 2021-2022 (these updates are subject to participation in the ZEB pilot program).

4. Performance Based Procurement (Accelerate Performance) Demonstration (Commercial and Industrial)

a. The goal of the Performance Based Procurement (Accelerate Performance) demonstration is to determine whether engaging with the building owner in early stages of a design project and setting Energy Use Intensity (EUI) goals for the design team can drive achievement of deeper energy efficiency and achievement of the EUI goals set for the project.

b. The Company intends to test the above question by engaging two customers/building owners in this demonstration. The information gathered from this demonstration will help inform the New Construction Program process of engaging with owners and design teams, interventions needed in the process and, timing of interventions to achieve EUI goal. Participating project owners, as part of the demonstration design receive utility design support with an "owners' representative" on the team, who will stay engaged through the design and process of the project. The project will avail incentives through the existing New Construction program.

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c. Costs associated with Performance based Procurement Demonstrations: Two project participation

Performance based Procurement (Accelerate Performance) Demonstration	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Gas	Customer incentive for this initiative is budgeted from existing New Construction program budgets.	$ 2,711	$ 7,000	$ 9,711
Electric		$ 8,134	$ 21,000	$ 29,134
Total				$38,845

d. Results and delivery of this demonstration depends upon customer project timelines.

e. Demonstration updates and results from the two demonstration projects will be presented in the Energy Efficiency Quarterly reports in 2020.

5. Underutilized EE technology on mechanical power transmission systems (Commercial and Industrial)

a. The goal of this demonstration is to test if providing technical expertise, educational and training information to small and medium sized manufacturing facilities to conduct comprehensive compressed air supply and demand side system assessments will result in cost-effective savings from optimizing both supply and demand energy performance of small and medium size facilities.

b. For this above stated demonstration, the Company will:
1) Engage with three customer facilities;
2) Conduct four webinar series with all customers;
3) Conduct field studies at three selected customer sites. This will include instrumentation to measure pressure, flow and power at these sites. Collection of

customers' facilities data for the duration of the measurement process (one-week duration per site)

4) Analyze the data collected and share findings and recommendations for improvements for each site the customer. Information gathered from these three test sites will be used to determine answers to the question posed by the demonstration (as stated in response PUC 1-42 5.a. above)

c. Costs associated with this demonstration for three facilities include:

Underutilized EE tech. on mechanical power transmission systems Demonstration:	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
	$ 100,000	$ 21,693	$ 130,000	$ 251,693

d. Time to delivery for each activity at start of project

1) Customer engagement – 11 weeks
2) Four Webinars – 9 weeks
3) Field Study – 20 weeks
4) Analysis and reports – 6 weeks

This demonstration will begin in Q2 of 2020 upon approval of the 2020 Energy Efficiency Plan.

e. Demonstration updates and results from the three customer sites as part of this demonstration project will be presented in the Energy Efficiency Quarterly reports in 2020 and 2021

6. Strategic Energy Management (SEM) (Commercial and Industrial)

a. The primary question being tested with Strategic Energy Management/Continuous Energy Improvement (SEM/CEI) is: Can SEM/CEI establish a culture of continuous improvement that will lead to longer-term improvements in energy performance, including the customers' ability to identify and act on operations and maintenance measures in the short-term and address capital measure in the medium to long-term.

b. The test is initiated through a multiplicity of interventions, including individual and group coaching, and cohort workshops. Additionally, the Strategic Energy Management/Continuous Energy Improvement implementation partner leads customers on activities such as energy treasure hunts, where the customer and vendor walk the facility looking for energy efficiency opportunities and quick-to-implement energy savings measures. The primary objective of the tests is to enact a set of processes for business energy management that will lead to continuous, direct energy savings.

   Specifically, the workshops and energy treasure hunts are designed to implement a process where the customer can identify and implement operation and maintenance energy savings. Whereas the interventions and coaching are designed to achieve a process of continuous energy improvement by demonstrating the financial and operational benefits of energy efficiency.

c. The Strategic Energy Management/Continuous Energy Improvement costs are not broken down by test, rather there is a set and established budget of $395,200 for electric and $124,800 for gas. The budgets encompass the delivery of this demonstration through an experienced vendor who the Company has engaged for this demonstration.

d. The Strategic Energy Management/Continuous Energy Improvement demonstration is set to continue through 2020. The SEM/CEI demonstration will undergo a review by an external evaluation firm (as recommended by the consultants to the Energy Efficiency Resource Management Council) during the first quarter of 2020 to ensure the vendor's site-specific regression model is collecting all relevant data to claim savings as well as collecting information that may be needed for a robust evaluation. Additionally, the Company will look to understand if the demonstration is producing energy savings that are expected based on examples from other jurisdictions that have implemented SEM/CEI.

e. Savings results from this demonstration will be presented as part of the Energy Efficiency Annual Report for 2020.

7. HVAC Lighting Controls Plus Demonstration (Commercial and Industrial)

a. The purpose of HVAC Lighting Controls Plus demonstration is to 1) test and determine the energy savings impacts and non-energy benefits of enhancing the

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Company's existing Performance Lighting PLUS (PL+) initiative with a networked lighting package that includes integration with Power Over Ethernet, and HVAC controls, and to 2) Discover the project cost and customer acceptance of using networked lighting controls to control systems beyond just lighting.

b. This demonstration will be conducted in four steps to answer the questions above.

1) High level energy modeling using base case as an ASHRAE 90.1-2013 compliant building located in Providence, Rhode Island to determine the magnitude of energy savings potential of Network Lighting Controls+ systems, HVAC Controls Upgrade to lighting system with networked lighting controls Implement HVAC controls: predominately demand control ventilation (or ventilation reset) and thermostat setbacks;
2) Detailed modelling of Rhode Island building types;
3) Customer acquisition and deployment of the demonstration;
4) Analysis and learnings for program integration into an HVAC Lighting Controls Plus initiative.

c. Costs associated with this demonstration and tests are: 4-6 customer sites

HVAC Lighting Controls Plus Demonstration:	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Gas	Customer incentives for this demonstration are part of existing lighting and HVAC program offerings. Additional incentives structure to be determined if necessary, after step 2 detailed in response 7.b. of PUC I-42	$ 5,423	$ 113,333	$ 118,756
Electric		$ 10,846	$ 226,667	$ 237,513
Total				$ 356,269

Prepared by or under the supervision of: Mona Chandra

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d. This demonstration will have the following activities and timelines from project start:

Test 1 – Modeling 4-6 weeks from project start. This activity was completed in September of 2019. High level savings potential from the modelling has been determined. (This activity is not included in the 2020 costs associated with this demonstration, information provided in this test is to present the details of this demonstration from start to finish)

Test 2 – Detailed modelling 8 weeks. Detailed savings potential for specific building types in Rhode Island.

Test 3 – Customer acquisition and deployment at 4-6 customer sites, 7-12 months from project start. This test will provide information on cost and customer acceptance of the proposed program design for this demonstration.

Test 4 – Analysis and Monitoring & Verification at 4-6 customer sites, 12-16 months from project start and after installation and operation.

This demonstration will start in Q1 of 2020 upon approval of the 2020 Energy Efficiency Plan.

e. Results from the analysis including customer costs and acceptance analysis will be presented as part of Rhode Island Energy Efficiency Quarter Reports.

8. Kitchen Exhaust Demonstration (Commercial and Industrial)

a. To test three potential strategies to reduce energy use in commercial kitchen exhaust systems and if successful incorporate these strategies into the existing program offerings.

b. Strategies to be studied and tested are: electrostatic filtration, behavior-change campaigns and demand control ventilation. To test these strategies the demonstration will be divided into four steps.

1) High level energy modeling to determine the magnitude of energy savings from each strategy in commercial kitchen exhaust systems. Costs associated with this effort are presented in response 8.d of PUC 1-42.

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The following steps will continue in 2021 timeframe if the strategies and savings from step 1 show promising results.

2) Customer acquisition and agreement for installation of air cleaning systems and monitoring equipment in 5 commercial kitchens.

3) Monitoring of systems before and after air cleaning systems, so that baselines performance can be determined. Monitoring of systems for 8 months after installation of air filtration systems and implementation of strategies to determine savings potential.

4) Analysis of data, qualitative and quantitative to determine potential for integrating into existing programs.

c. Costs associated with this demonstration:

Kitchen Exhaust Demonstration:	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Gas	Customer incentive is not budgeted for 2020	$ 10,846	$ 8,000	$ 18,846
Electric		$ 5,423	$ 4,000	$ 9,423
Total				$28,269

d. High level energy modeling will take 4-6 weeks from start of this demonstration. This demonstration will begin in Q1 of 2020.

e. Results from the energy modeling analysis will be presented as part of Rhode Island Energy Efficiency Quarter Reports.

9. Absorption Air Cleaning (Commercial and Industrial)

a. The goal of Absorption Air Cleaning demonstration is to determine a) the barriers to adoption of this technology and to determine a strategy to scale participation of this technology within programs c) Measuring energy savings and monitoring to ensure that indoor air quality (IAQ) is not compromised with this technology.

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b. The company intends to address the following questions with this demonstration:

Question	**Form of test**
Can RI C&I customers be incentivized to adopt this technology?	Customer enrollment in this demonstration
What strategy can be employed to scale participation?	Research of technology adoption in other utility programs, customer sites and conduct interviews with National Grid staff and its implementers, other key stakeholders such as manufactures, their reps, engineers and contractors.
What are the impacts from this technology on savings and IAQ?	Measurement and data collection from customer sites to determine savings and IAQ results as well as documenting challenges with implementing technology in existing buildings.

c. Costs associated with this demonstration include implementing this technology in 2-3 customer sites:

Absorption Air Cleaning Demonstration:	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Gas	Customer incentive will be part of existing program budget	$ 10,846	$ 160,000	$ 170,846
Electric		$ 5,423	$ 80,000	$ 85,423
Total				$ 256,269

Prepared by or under the supervision of: Mona Chandra

PUC 1-42, page 14

d. This demonstration will take 18 months to complete from start to finish. Timing for delivery include the following steps with some overlap in steps

1) Background research and interviews – 12 weeks
2) Customer acquisition – 16 weeks
3) Monitoring – 36 weeks
4) Analysis and learnings – 30 weeks

This demonstration will begin in Q2 of 2020.

e. Results from this demonstration will be presented as part Rhode Island Energy Efficiency Quarter Reports in 2020 – 2021.

10. Small Business Heat Pumps demonstration (Commercial and Industrial)

a. The goal of this demonstration is to determine barriers to adoption, incentive structure, technical and monitory, to scale electric heat pumps in the small business customer vertical.

b. The company intends to address the following questions with this demonstration:

Question	Form of test
What strategy can be employed to scale participation?	Research of technology adoption in other utility programs and customer sites. Conduct interviews with implementers, other key stakeholders such as contractors, sub-contractors, manufactures and their reps, to determine barriers to adoption
Can small business customers be incentivized to adopt this technology?	Customer enrollment in this demonstration
What are the impacts from installations and operations of this technology on small business customers?	Process and impact evaluation of installing electric heat pumps in small business application

PUC 1-42, page 15

c. Cost associated with installing electric heat pumps in 30 customer locations are:

Small Business Heat Pump Demonstration	Marketing & Advertising	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Electric	$ 20,000	$ 207,900	$ 21,693	$ 29,700	$ 279,293

d. Delivery and timing for this demonstration requires the following steps:

1) Research and interviews – Initial research and interviews were completed in Oct 2019
2) Customer acquisition – 6 months from start. This stage is expected to launch in Q2 of 2020
3) Process and Impact evaluation – 12 months
4) Analysis and learnings - 3 months

e. Results from this demonstration will be presented as part Rhode Island Energy Efficiency Quarter Reports in 2020 and 2021.

11. Gas Heat Pumps Demonstration (Commercial and Industrial)

a. The purpose of the Gas Heat Pump demonstration is to research savings potential within RI from this technology.

b. To determine the savings potential the Company will: 1) engage with existing customers in the Northeast who have installed this technology to determine savings, barriers to installation and key customer site criteria needed to make this technology viable for customers. 2) The Company will then apply this customer site criterion to the existing customer base in RI, to determine the total technical savings potential based on the number of customers that have the potential to install this technology in RI (includes athletic facilities, pools, food and beverage processing plants, hotels and multi-family residential buildings)

PUC 1-42, page 16

c. Costs associated with this demonstration are:

Gas Heat Pump Demonstration	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Electric	There is no participant/customer incentive associated with this demonstration	$ 16,269	$ 11,000	$ 27,269

d. Timing and activities for implementing this demonstration are:

1) Customer research and case studies – 4 months
2) Savings potential in RI – 2 months

This demonstration will begin in Q1 of 2020, on approval of 2020 Energy Efficiency Plan.

e. Results from this demonstration will be presented as part of Rhode Island Energy Efficiency Quarter Reports in 2020.

12. Emerging Lighting Market Interventions Secure Lighting Spec (SLS) Assessment (Commercial and Industrial)

a. Does integration within Lighting Manufacturers Representative (LMR) process create an increase in projects, and therefore savings, in code-based lighting incentive offerings.

b. Understand LMR process. Insert code-base lighting specifications into design and bid process, possibly through the LMR platforms. Measure participation change. Learnings from this demonstration will inform if the direct insertion in the LMR process increase quantity of code-based lighting projects.

c. Costs associated with this Assessment are to engage with one Lighting Manufacturers Representatives and determine measure participation change.

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Emerging Lighting Interventions SLS Assessment	Participant Incentive	Program Planning and Administration	Sales Training and Technical Assistance	Total
Electric	There is no participant/customer incentive associated with this assessment	$ 16,269	$ 27,628	$ 43,897

d. The timing for each activity to accomplish this demonstration are:

1) Engaging with Lighting Manufacturers Representative to develop solution - This has been completed in 2019
2) Tool development to insert code-based lighting specifications into design bid process – 6 months
3) Deployment with one LMR – 3 months
4) Measure participation change – 6 months

This demonstration will begin in Q1 of 2020, on approval of 2020 Energy Efficiency Plan.

e. Findings from this Assessment will be provided as part of the Rhode Island Energy Efficiency Quarter Reports in 2020.

13. Home Energy Score Evaluation Assessment (Residential)

a. In 2018 and 2019, National Grid implemented an assessment of the United States Department of Energy's Home Energy Score (HES) asset-based score. In 2020, this assessment will be evaluated within the EnergyWise evaluation to determine if additional savings were achieved over standard weatherization.
b. The HES evaluation will be a subset of the overall EnergyWise evaluation. An estimate of $10,000 has been budgeted for the HES portion of the study.
c. $10,000 has been budgeted for the HES evaluation.
d. Evaluation will be completed in 2020.
e. Findings will be provided within the EnergyWise evaluation report.

PUC 1-43

Request:

For the gas DR pilots, please explain how the proposed activities are different (test something different) from activities in New York and Massachusetts. Are the activities known to be different from work in any other jurisdiction?

Response:

The Company believes that there are several aspects of the proposed Gas DR pilot that will produce distinct learnings compared with those available from gas demand response pilot activities previously undertaken in New York and Massachusetts.

First, the composition of commercial and industrial customer gas demand is different in Rhode Island than in National Grid's Massachusetts and New York service territories. The proposed Gas DR pilot will provide Rhode Island specific insight into the potential impact and participation profiles of enrolled and participating customers relative to the overall gas system in Rhode Island.

Additionally, the proposed Gas Demand Response pilot differs from previously executed pilots in other jurisdictions in the following ways:

- The proposed pilot includes multiple tiers of potential customer participation, offering customers the option to participate in either three- hour or twenty-four-hour curtailment programs.
- The proposed pilot offers a modified incentive structure, offering customers a combination of availability payments and energy payments incentives. Availability payments incentives, which are based on committed and demonstrable capacity, are incentive payments for customers to remain ready to participate in demand response events during the demand response season. Energy payments incentives are earned payments based on delivered reductions when events are called.
- The proposed pilot is based upon customer initiation and control of curtailment during events, not upon utility-initiated direct load control. While the Company intends to concurrently pursue this approach in an expanded pilot in downstate NY, it has not previously been tested by the Company outside of the single customer participating in a pilot led by Fraunhofer Center for Sustainable Energy in Massachusetts.

Prepared by or under the supervision of: Christopher Porter and Mona Chandra

PUC 1-44

Request:

For the gas DR pilots, are the pilots focused on constraints on the distribution system, transmission system, or both?

Response:

Generally, the purpose of the Gas DR pilots is to understand customer appetite and ability to participate in gas demand response events, the appropriate incentive and performance payment structures required to drive this enrollment and ongoing participation, go to market and customer recruitment strategies, and to confirm the reliability of customer participation in gas demand response events when called.

Depending on the specific nature of customer demand and available transmission and distribution infrastructure and gas supply in specific areas, these pilots could provide support for distribution and transmission system constraints in addition to reducing Company gas procurement costs through allowing for a lesser volume of gas supplies to be purchased at times when those costs are typically high.

The "Peak Period Demand Response" program (i.e. the three-hour curtailment program) would be most likely to provide distribution level constraint relief, while the "Extended Demand Response" program (i.e. the full gas day curtailment program) would be more likely to provide relief on potential transmission system constraints.

PUC 1-45

Request:

Please list all demand response (DR) pilots that are focused on shifting energy use to times when energy can be procured at a lower cost, rather than DR that is focused on offsetting or eliminating the need for capital investment. Please list all DR pilots that are focused on offsetting or eliminating the need for capital investment.

Response:

The proposed gas demand response pilot expansion is the only demand response pilot proposed in the 2020 Energy Efficiency Plan.

The purpose of this pilot expansion is to further test and understand customer appetite and ability to participate in gas demand response events, the appropriate incentive and performance payment structures required to drive this enrollment and ongoing participation, and the potential impact and benefit of customer participation in gas demand response programs.

Specifically, the single proposed gas demand response pilot is not exclusively focused on either time shifting for cost avoidance or offsetting/eliminating the need for capital investment. The pilot is designed to test a gas demand response program's ability to provide both. The Company believes that gas demand response has the potential to reduce Company gas procurement costs through allowing for a lesser volume of gas supplies to be purchased at times when those costs are high. Additionally, at sufficient scale and with sufficiently demonstrated reliability (both dimensions which the proposed pilot expansion is designed to inform), gas demand response also offers the potential for offsetting or eliminating the need for capital investment in gas infrastructure.

Prepared by or under the supervision of: Mona Chandra

PUC 1-46

Request:

Referencing the Joint Testimony on Bates page 49, please explain if Strategic Energy Management/Continuous Energy Improvement has any direct savings, and how those savings are achieved.

Response:

Strategic Energy Management/Continuous Energy Improvement is both a commercial and industrial customer engagement tool for driving customer actions that produce direct savings as well as a process through which these savings are calculated and documented via site-specific regression models.

Strategic Energy Management/Continuous Energy Improvement achieves direct savings through a variety of interventions, including individual and group coaching, as well as through activities such as energy treasure hunts where the vendor and customer walk the facility in search of energy saving opportunities. When these activities lead to direct savings (as calculated and documented via the regression model approach highlighted above), those savings are attributed directly to the Strategic Energy Management/Continuous Energy Improvement demonstration.

In addition to behavioral/operations and maintenance measures that can produce savings on their own, without incremental capital investment by the customer, these activities can also result in the identification of savings opportunities which are dependent upon the installation of new equipment at the customer site in order to achieve identified savings opportunities. To the extent that this new equipment includes cost-effective measures, these installations can be eligible for additional energy efficiency program incentives, and savings resulting from these installed measures are tracked and claimed within complementary programs (most typically Commercial & Industrial Retrofit) via standard approaches for these measures.

Prepared by or under the supervision of: Daniel Tukey

PUC 1-47

Request:

Referencing the Joint Testimony on Bates page 52, are the savings from gas heat pumps solely based on manufacturers' claims?

Response:

The Company's estimated savings for gas heat pumps, presented in Attachment 8, Table 3, Bates page 516, are based on manufacturers' claims and research and development work done by the Energy Solutions Center, Inc. (ESC). ESC is a non-profit organization of energy utilities and equipment manufacturers that promotes energy efficient natural gas solutions and systems for use by residential, commercial, and industrial energy users.

ESC conducted a study and analysis of nine technologies as a component of a study identifying energy efficient gas solutions that could be deployed to maximize commercial customer Return on Investment (ROI).

Gas heat pumps were one of the nine technologies evaluated as part of this study, and savings estimates determined by this study were used to validate manufacturers' claims in preparing the savings estimates conveyed in Attachment 8, Table 3.

Prepared by or under the supervision of: Mona Chandra

PUC 1-48

Request:

Referencing the Joint Testimony on Bate page 45 and Bates pages 515 to 516 of the Plan, "innovations" are contained within demonstrations for both gas and electric and the expected savings from each are described as "unknown." The Plan states that "Demonstrations" will contribute savings to the programs in which they are offered and are included in costs, benefits, and savings and in the calculation of the performance incentive. Please explain how, since the savings from Innovations are unknown, the $200,000 budget for Innovations are included in the calculation for the incentive.

Response:

The Innovation demonstrations for both gas and electric, as referenced on Table 2 and 3, Bates pages 515 and 516, have been reclassified as "Assessments," as the savings from these efforts are unknown and will not be claimed towards the Company's 2020 savings targets.

The impact of this reclassification will reduce the associated shareholder incentive by $10,000. To accurately reflect this change, prior to the 2020 Energy Efficiency Plan hearing, the Company will file corrections to the following attachments: Attachment 5, Tables E-2 and E-3, Bates pages 467 and 468; Attachment 6, Tables G-2 and G-3, Bates pages 481 and 482; Attachment 8, Tables 2 and 3, Bates pages 515 and 516.

Prepared by or under the supervision of: Mona Chandra

PUC 1-49

Request:

Please list in a table all measures, programs, pilots, etc. that are eligible to count toward the System Efficiency performance incentive. Include columns that show the demand reduction expected, the performance incentive, total costs, total benefits, and the benefit-to-cost ratio. Please include the expected shareholder incentive from the System Efficiency performance incentive in total costs.

Response:

The programs with demand reduction savings that qualify for the System Efficiency performance incentives (also called the System Efficiency Performance Incentive Mechanism [PIM]) are:

- Residential ConnectedSolutions
- Commercial ConnectedSolutions

Please see Attachment 1, Table 2, Bates page 250 of the 2020 Energy Efficiency Plan for the list of measures included in the Residential ConnectedSolutions program and the anticipated units and customer incentives associated with each measure.

Please see Attachment 2, Table 1, Bates page 372 of the 2020 Energy Efficiency Plan for measures (collectively referred to as 'subprograms') included in the Commercial ConnectedSolutions program, including associated customer incentives.

Total costs, total benefits and the resulting benefit-cost-ratio are calculated at the program level and not at the measure (or sub-program) level.

Please see the table below for program level information regarding the following: demand reduction, program level performance incentive, program level total costs, program level total benefits, and program level benefit-to-cost ratios that includes the System Efficiency performance incentive in total costs.

Prepared by or under the supervision of: Mona Chandra

PUC 1-49, page 2

Programs	**Active Demand Reduction Expected (kW)**	**Performance Incentive ($)**	**Implementation Costs ($)**	**Total Benefits ($)**	**Benefit to Cost Ratio (Costs include performance incentive)**
Residential Connected Solutions	1,672	$20,540	$461,627	$1,697,118	3.52
Commercial Connected Solutions	49,000	$601,830	$2,078,479	$27,031,185	10.09
Total	50,672	$622,370*	$2,540,106	$28,728,303	9.08

*The maximum earnable performance incentive for the System Efficiency PIM in 2020 is capped at 25 MW of demand reduction (and $622,370 in earned performance incentive), per the terms of Article II, Section C.19.a of the Amended Settlement Agreement in RIPUC Docket Nos. 4770/4780, Bates page 70.

Prepared by or under the supervision of: Mona Chandra

PUC 1-50

Request:

How are savings from demonstrations included in National Grid's targets for calculation of the shareholder incentive? Please confirm there are demonstrations for which savings are unknown.

Response:

As each demonstration tests a new technology or solution as part of an existing program (refer to Attachment 10, Bates page 562 for definitions), the demonstration budgets roll up into associated program budgets.

Because demonstrations are executed as part of existing programs, savings targets are not explicitly linked to demonstrations. Instead, demonstrations are a component of individual program strategies, and, as such, help to establish the programmatic savings expectations that roll up to sector and portfolio level savings targets. Savings realized during demonstrations do contribute to reported savings and towards the Company's achievement of performance incentives.

The two innovation demonstrations under C&I gas and electric have been reclassified as "Assessments," as estimated savings from these efforts are currently unknown. The budgets for these efforts have been removed from associated shareholder incentive calculations.

The impact of the reclassification of these "Demonstrations" to "Assessments" will reduce the associated shareholder incentive by $10,000. To accurately reflect this change, prior to the 2020 Energy Efficiency Plan hearing, the Company will file corrections to the following attachments: Attachment 5, Tables E-2 and E-3, Bates pages 467 and 468; Attachment 6, Tables G-2 and G-3, Bates pages 481 and 482; Attachment 8, Tables 2 and 3, Bates pages 515 and 516.

Prepared by or under the supervision of: Mona Chandra

PUC 1-51

Request:

Please compute the incentives National Grid would have earned in the previous five years had the new incentive designs (both the targets and budget-target adjustments) been in place. Please break out performance by Core, Delivered Fuel, and Gas and report this in a table. In the same table, please provide the percentage of the redesigned target incentive National Grid would have achieved and the percentage of the allowed target incentive National Grid did achieve.

Response:

The Delivered Fuel component of the Company's proposed performance incentive mechanism for 2020 cannot be directly applied to past year's results for two reasons:

1) The Company did not produce savings goals for delivered fuel to air-source heat pump conversions in prior years, so there would be no target against which to compare realized air source heat pump savings in order to calculate that measure's contribution to a Delivered Fuel component of the performance incentive mechanism.

2) In the 2020 plan, the Company applied updated energy savings impacts for heat pumps based on an Energy Optimization study conducted by Navigant in the fall of 2018. This study analyzed a selection of fuel switching measures that were evaluated for the Massachusetts Program Administrators' 2019-2021 three-year plan. As part of this study, Navigant included savings estimates for converting from oil or propane to both high efficiency ducted heat pumps and mini-split heat pumps and looked at this both from a partial displacement scenario (existing equipment remains on-site) and a full displacement scenario (existing equipment is removed and ducted/mini-split heat pump provides all the heating load). These measure scenarios were set up specifically with fuel switching involved and due to this, National Grid feels these estimates are more accurate than the older study that was the basis for heat pump savings in prior years. Past heat pump savings were based on the customer moving from a less efficient ducted/mini-split heat pumps to a high efficiency ducted/mini-split heat pump in a lost opportunity methodology.

Because the savings values are not comparable between years in the planned or tracked data, the comparison of the performance under each scenario would not be comparable.

In light of this, the Company has instead developed schedules showing how performance incentive achievement for electric energy (kWh), electric demand (kW) and natural gas energy (MMBtu) would have been impacted had the spending vs. budget rules proposed in the 2020

plan been in place in those years. Please see Attachments PUC 1-51-1, 1-51-2, and 1-51-3 for these comparisons.

As demonstrated in the attachments, in the vast majority of instances, these rules would have had no impact on the performance incentive earned by the Company in each fuel, sector, year combination. In those specific situations where the proposed changes would have led to a different performance incentive payout, a description of the magnitude and driver of each change is provided below:

Electric Energy (kWh) changes:

- Attachment PUC 1-51-1, Line 5. The 2017 Non-Income Eligible Residential performance incentive would increase by $32,397 under the 2020 proposed budget rules. This change is triggered because of the overachievement of savings compared to goal while expenditures were kept below 100% (as opposed to the 95% of budget threshold in place in 2017).
- Attachment PUC 1-51-1, Line 9. The 2016 Commercial & Industrial performance incentive would increase by $266,766 under the 2020 proposed budget rules. This change is triggered because savings are under 100% of goal but the amount that savings fell short of 100% of goal was smaller than the amount by which expenditures were below 100% of budget and the Company therefore would have received an increase in performance incentive earned relative to design level.
- Attachment PUC 1-51-1, Line 15. The 2014 Commercial & Industrial performance incentive would increase by $198,627 under the 2020 proposed budget rules. This change is triggered because savings are under 100% of goal but the amount that savings fell short of 100% of goal was smaller than the amount by which expenditures were below 100% of budget and the Company therefore would have received an increase in performance incentive earned relative to design level.
- Attachment PUC 1-51-1, Line 5. In the 2018 Non-Income Eligible Residential program, there is a difference of $3,347 from actual earnings and the earnings calculated using the newly-proposed 2020 budget levels. Note that this change does not arise from a change in the budget rules. In the 2018 annual report the earned performance incentive for this sector was revised downwards by $3,347 to account for a change to tracked savings found in the annual report process. This difference is shown in this analysis for replicability with the 2018 annual report.

Electric Demand (kW) changes:

- Attachment PUC 1-51-2, Line 9. The 2016 Commercial & Industrial performance incentive would increase by $65,844 under the 2020 proposed budget rules. This change is triggered because savings are under 100% of goal but the amount that savings fell short of 100% of goal was smaller than the amount by which expenditures were below 100%

of budget and the Company therefore would have received an increase in performance incentive earned relative to design level.

Natural Gas Energy (MMBtu) changes:

- Attachment PUC 1-51-3, Line 3. The 2018 Commercial & Industrial performance incentive would decrease by $73,100 under the 2020 proposed budget rules. This change is triggered because savings were over 100% of goal but the amount that savings exceeded 100% of goal was smaller than the amount by which expenditures exceeded 100% of budget and the Company is therefore penalized through a reduction in performance incentive earned relative to design level.
- Attachment PUC 1-51-3, Line 4. The 2017 Income Eligible Residential performance incentive would increase by $952 under the 2020 proposed budget rules. This change is triggered because of the overachievement of savings compared to goal while expenditures were kept below 100% (as opposed to the 95% of budget threshold in place in 2017).

Comparison of Electric Energy (kWh) Performance Incentive for 2014 - 2018 with existing and proposed budget adjustment rules

	Year	Sector	Expenditures as % of Budget	Savings as % of Unadjusted Goal	Actual Earned Performance Incentive		2020 Proposed PI Budget Adjustment Rules		Change from Actual to Proposed	
					$	% of Target Incentive	$	% of Target Incentive	$	% of Target Incentive
Line No.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
1	2018	Income Eligible Residential	104.8%	91.2%	$306,396	73.6%	$306,396	73.6%	$0	0.0%
2	2018	Non-Income Eligible Residential[A]	103.0%	118.3%	$1,360,195	118.0%	$1,363,542	118.3%	$3,347	0.3%
3	2018	Commercial & Industrial	92.2%	105.4%	$1,685,635	114.4%	$1,685,635	114.4%	$0	0.0%
4	2017	Income Eligible Residential	92.4%	113.3%	$514,021	122.6%	$514,021	122.6%	$0	0.0%
5	2017	Non-Income Eligible Residential	97.5%	120.2%	$1,262,532	120.2%	$1,294,929	123.3%	$32,397	3.1%
6	2017	Commercial & Industrial	103.2%	111.0%	$1,808,179	111.0%	$1,808,179	111.0%	$0	0.0%
7	2016	Income Eligible Residential	84.9%	113.6%	$489,449	125.0%	$489,449	125.0%	$0	0.0%
8	2016	Non-Income Eligible Residential	91.7%	114.5%	$1,218,569	124.9%	$1,218,569	124.9%	$0	0.0%
9	2016	Commercial & Industrial	83.7%	99.4%	$1,321,449	98.1%	$1,588,215	117.9%	$266,766	19.8%
10	2015	Income Eligible Residential	92.8%	110.2%	$420,809	118.8%	$420,809	118.8%	$0	0.0%
11	2015	Non-Income Eligible Residential	94.4%	119.6%	$1,289,782	125.0%	$1,289,782	125.0%	$0	0.0%
12	2015	Commercial & Industrial	106.6%	111.6%	$1,473,993	111.6%	$1,473,993	111.6%	$0	0.0%
13	2014	Income Eligible Residential[B]	103.0%	134.6%	$586,811	125.0%	$586,811	125.0%	$0	0.0%
14	2014	Non-Income Eligible Residential[B]	103.2%	119.9%	$1,460,075	119.9%	$1,460,075	119.9%	$0	0.0%
15	2014	Commercial & Industrial[B]	94.0%	97.6%	$2,176,435	92.8%	$2,375,062	101.3%	$198,627	8.5%

Notes:

A. The 2018 Non-Income Eligible Residential actual earned performance incentive was manually adjusted downwards by $3,347 in the 2018 Annual Report. The calculation method for earned performance incentive does not actually change due to the changes in budget rules.

B. In the 2014 program the electric performance incentive did not include a demand (kW) component. The electric performance incentive target was therefore set as 5% of budget upon achieving 100% of electric energy (kWh) savings.

Comparison of Electric Demand (kW) Performance Incentive for 2015 - 2018 with existing and proposed budget adjustment rules

	Year	Sector	Expenditures as % of Budget	Savings as % of Unadjusted Goal	Actual Earned Performance Incentive		2020 Proposed PI Budget Adjustment Rules		Change from Actual to Proposed	
					$	% of Target Incentive	$	% of Target Incentive	$	% of Target Incentive
Line No.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
1	2018	Income Eligible Residential	104.8%	136.9%	$222,875	125.0%	$222,875	125.0%	$0	0.0%
2	2018	Non-Income Eligible Residential	103.0%	122.4%	$604,938	122.4%	$604,938	122.4%	$0	0.0%
3	2018	Commercial & Industrial	92.2%	111.0%	$760,363	120.4%	$760,363	120.4%	$0	0.0%
4	2017	Income Eligible Residential	92.4%	128.1%	$224,560	125.0%	$224,560	125.0%	$0	0.0%
5	2017	Non-Income Eligible Residential	97.5%	125.1%	$562,471	125.0%	$562,471	125.0%	$0	0.0%
6	2017	Commercial & Industrial	103.2%	88.5%	$458,085	65.6%	$458,085	65.6%	$0	0.0%
7	2016	Income Eligible Residential	84.9%	155.0%	$209,764	125.0%	$209,764	125.0%	$0	0.0%
8	2016	Non-Income Eligible Residential	91.7%	117.2%	$522,621	125.0%	$522,621	125.0%	$0	0.0%
9	2016	Commercial & Industrial	83.7%	87.8%	$366,182	63.4%	$432,026	74.8%	$65,844	11.4%
10	2015	Income Eligible Residential	92.8%	136.2%	$189,756	125.0%	$189,756	125.0%	$0	0.0%
11	2015	Non-Income Eligible Residential	94.4%	118.4%	$552,764	125.0%	$552,764	125.0%	$0	0.0%
12	2015	Commercial & Industrial	106.6%	107.1%	$606,256	107.1%	$606,256	107.1%	$0	0.0%

Comparison of Natural Gas Energy (MMBtu) Performance Incentive for 2014 - 2018 with existing and proposed budget adjustment rules

	Year	Sector	Expenditures as % of Budget	Savings as % of Unadjusted Goal	Actual Earned Performance Incentive		2020 Proposed PI Budget Adjustment Rules		Change from Actual to Proposed	
					$	% of Target Incentive	$	% of Target Incentive	$	% of Target Incentive
Line No.	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
1	2018	Income Eligible Residential	104.1%	127.8%	$398,873	125.0%	$398,873	125.0%	$0	0.0%
2	2018	Non-Income Eligible Residential	96.2%	141.8%	$781,073	125.0%	$781,073	125.0%	$0	0.0%
3	2018	Commercial & Industrial	116.8%	105.4%	$361,309	105.4%	$288,209	84.1%	($73,100)	-21.3%
4	2017	Income Eligible Residential	99.7%	120.1%	$351,774	120.1%	$352,726	120.4%	$952	0.3%
5	2017	Non-Income Eligible Residential	98.3%	134.3%	$768,481	125.0%	$768,481	125.0%	$0	0.0%
6	2017	Commercial & Industrial	93.8%	100.3%	$513,276	107.0%	$513,276	107.0%	$0	0.0%
7	2016	Income Eligible Residential	89.2%	105.0%	$314,692	117.7%	$314,692	117.7%	$0	0.0%
8	2016	Non-Income Eligible Residential	90.3%	105.7%	$700,514	117.0%	$700,514	117.0%	$0	0.0%
9	2016	Commercial & Industrial	79.6%	105.6%	$481,663	125.0%	$481,663	125.0%	$0	0.0%
10	2015	Income Eligible Residential	88.3%	115.0%	$314,067	125.0%	$314,067	125.0%	$0	0.0%
11	2015	Non-Income Eligible Residential	87.8%	116.8%	$653,036	125.0%	$653,036	125.0%	$0	0.0%
12	2015	Commercial & Industrial	87.1%	105.7%	$419,976	121.3%	$419,976	121.3%	$0	0.0%
13	2014	Income Eligible Residential	93.4%	127.4%	$286,232	125.0%	$286,232	125.0%	$0	0.0%
14	2014	Non-Income Eligible Residential	102.4%	133.9%	$602,108	125.0%	$602,108	125.0%	$0	0.0%
15	2014	Commercial & Industrial	72.2%	115.5%	$473,768	125.0%	$473,768	125.0%	$0	0.0%

PUC 1-52

Request:

What problems are addressed by the modifications to savings goals and budget adjustments used to calculate the earned shareholder incentive.

Response:

The proposed modifications to the savings goal and budget adjustment mechanisms used to calculate the Company's earned shareholder incentive are designed to address what have been characterized by stakeholders as two gaps in the current shareholder incentive model.

First, the current model does not incorporate a mechanism that links the Company's earned performance incentive to achievement of savings goals related to reduction in customer usage of delivered fuels. While costs associated with delivering these savings are incorporated into the eligible spending budget that determines the overall size of the performance incentive pool, the Company's actual performance incentive earnings each year are determined on the basis of achieved savings of only electric energy, electric passive demand, and gas. With the allocation of a specified portion of the overall performance incentive opportunity linked to the achievement of delivered fuels savings goals (as measured through the implementation of weatherization measures for customers who rely on delivered fuels for home heating, or who partially or completely displace delivered fuel consumption for heating purposes with air source heat pumps), the introduction of this delivered fuels component of the performance incentive mechanism adds a level of accountability for the Company for the achievement of these goals and their attendant contribution to state energy policy goals.

Second, the introduction of incremental budget adjustment mechanisms builds on existing performance incentive mechanisms, while addressing additional scenarios that are not addressed by the current mechanism. Specifically, under the current mechanism in place for 2019, the Company has an opportunity to increase earned performance incentive when exceeding savings targets at or below 95% of planned spending. Additionally, the Company's performance incentive earnings are reduced when spending exceeds 105% of budgeted levels while not achieving savings goals.

However, once the Company has achieved 100% or more of planned savings, there is no performance incentive-based mechanism to encourage the Company to manage spending. By introducing additional accountability for the Company when the proportion of over-spend relative to budget exceeds the proportion of achieved savings relative to target, this mechanism more completely aligns Company incentives with those of the customers funding these programs.

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Similarly, the current mechanism reduces the Company's performance incentive earnings when spending exceeds budgets by more than 5% and savings goals are not achieved. However, the current mechanism does not create performance incentive-based mechanisms to encourage the Company to manage spending when spending falls below budgeted levels and savings goals are not achieved. The introduction of a symmetrical performance incentive adjustment mechanism in situations where the proportion of under-spend relative to budget exceeds the proportion of achieved savings relative to target savings introduces an incentive for the Company to manage program spending in these scenarios.

PUC 1-53

Request:

Referencing the Joint Testimony on Bates page 59, lines 19 to 20, please provide the supporting evidence that electrification of heating has greater uncertainty in savings. Please explain why this uncertainty is or is not commonly shared by the utility, ratepayers, and participants.

Response:

There are two primary drivers of greater uncertainty in savings for heating electrification measures relative to the more traditional mechanism through which Company savings performance is evaluated and compensated under the existing performance incentive mechanism: portfolio effects and the depth of data supporting the establishment of savings targets. Both of these are described in more detail below:

Portfolio effects: In the Company's existing performance incentive mechanism, savings performance is measured and determined at the sector (i.e. residential, income-eligible, C&I) level. By definition, this performance is derived from the implementation of dozens of measures and technologies. In any given year, any number of factors can influence market acceptance and adoption of any specific savings measure, technology or approach, and the existence of a portfolio of approaches within each sector provides the Company with the flexibility needed to adapt to market developments in the pursuit of maximum achievable savings and resulting benefits for customers. In the event that an unanticipated market development limits the Company's opportunity or ability to pursue a particular form of savings, this can be addressed, and sector level savings targets achieved, through the accelerated pursuit of alternative technologies or approaches that might develop faster than anticipated or represent an increased opportunity to achieve savings on behalf of customers. This diversity of potential approaches and pathways is the source of reduced uncertainty.

The portfolio of potential approaches available to achieve savings goals within the delivered fuels performance incentive carve-out is much smaller and is limited just to weatherization and the installation of air source heat pumps. This dependence upon just two measures creates uncertainty.

Depth of supporting data: Savings targets established under and linked to the current performance incentive mechanism are informed by a combination of years of performance data, participation data, existing evaluations on the market such as free ridership, spill over and residential participation, and market data and resource availability from vendors. All of these things are used to inform savings targets that are developed in conjunction with external stakeholders and validated by third-party experts.

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In the case of the proposed air source heat pump targets in 2020, the availability of supporting data relative to other measures was more limited. A number of studies are currently underway, including a market adoption study being performed by a third-party consultancy on behalf of the Company as well as a technical potential study to inform air source heat pump targets in future plans. However, sufficient progress had not been made as of the time of goal-setting for the 2020 plan to inform these goals. Additionally, the air-source heat pump market, particularly when deployed as primary heating system with the goal of displacing existing delivered fuel-based heating systems, is relatively nascent, and the Company has only been providing incentives for the displacement of delivered fuels heating sources with air source heat pumps in Rhode Island since 2018. As a result, the depth of historical performance data to inform go-forward targets that are available for other measures with a longer performance history are not present.

The Company believes that, regarding the performance incentive mechanism as proposed, this uncertainty is appropriately shared between the Company, customers, and program participants. This is primarily a function of the fact that the performance incentive opportunity presented to the Company through the proposed delivered fuels carve-out mechanism is not incremental to the historical incentive pool, but rather, is carved out of an overall pool that continues to be set on the same basis as the overall pool in past years. Effectively, the Company has proposed shifting the achievement of a portion of the potential performance incentive pool from an area of lower savings uncertainty to an area of higher savings uncertainty.

The Company believes that external stakeholders recognized this shift and that the establishment of and support for wider performance bands (60% to 150%) under which the Company could earn a performance incentive (relative to the traditional 75%-125% band applied to the other savings pools that drive Company achievement of performance incentive) represents an appropriate sharing of this uncertainty between the Company and customers.

PUC 1-54

Request:

When are CHP projects included in Program Year targets and budgets and when are they included in actual Program Year review for the purposes of calculating National Grid's performance?

Response:

Anticipated costs and savings associated with CHP projects are included in the Program Year targets and budgets established during the Company's annual planning process and are included in budgets and savings targets included in the Annual Plans filed with the Rhode Island Public Utilities Commission. Typically, CHP projects are included in a specific Program Year's targets and budgets only after a customer has committed to the CHP project within that Program Year. CHP projects are also included in a specific Program Year's targets and budgets if there is a completed benefit screening for the project, the customer has received an offer letter, and there is a high probability of the project completing construction within the Program Year.

Annual savings resulting from installed CHP projects are included in the Program Year review for purposes of calculating National Grid's performance upon completion of the commissioning and post-inspection processes associated with each project.

Commissioning is the process following installation whereby the operating details of the technical assistance study and minimum requirements document (MRD) are verified. A minimum of 20% of the identified energy savings and incentives are included in the Program Year review after the commissioning process is completed.

Post-inspection is the process by which the Company ensures that an installed CHP project complies with the terms outlined in the project's MRD. The MRD contains engineering hardware and operational specifications that directly affect savings estimates. A maximum of 80% of the energy savings and incentives are included in the Program Year review in the year in which the post-inspection process is completed.

Prepared by or under the supervision of: Daniel Tukey

PUC 1-55

Request:

When are financing dollars (including on-bill repayment dollars) included in Program Year targets and budgets and when are they included in actual Program Year review for the purposes of calculating National Grid's performance?

Response:

The Company utilizes, and typically requests funding for, three distinct financing mechanisms in support of achieving planned savings in Energy Efficiency Plan submissions:

- Heat Loans
- Revolving Loan Funds (On-Bill Repayment)
- Rhode Island Infrastructure Bank.

Heat Loans:

Funds utilized in support of the Heat Loan financing mechanism are used to 'buy-down' interest charges that residential customers would typically make to private lenders in servicing loans associated with the installation of energy efficiency measures in their homes. Effectively, from the customer perspective, these buy-downs turn the loans into interest-free loans, while allowing customers to access and leverage external sources of capital in funding up-front investments required to achieve savings.

Estimated funds required to support the Heat Loan program are budgeted for the years in which interest payments are made to participating lenders on behalf of customers who have received loans. Actual spending in the program is tracked in the years in which payments are made to lenders.

No direct savings are associated with Heat Loans. Rather, savings are claimed on the basis of the installation of measures supported by the loan and are claimed in the Program Year in which the supported measure(s) is (are) installed.

Revolving Loan Funds (On-Bill Repayment):

Financing dollars for support of the on-bill repayment "financing" mechanisms are included in Company budgets in the years in which the Company plans to make injections into Revolving Loan Funds (also known as "On-Bill Repayment" funds) for customer financing of projects. Such funds are requested in years in which the Company believes that such injections will be

necessary to support sufficient availability of funds within the Revolving Loan Fund mechanism in order to meet customer demand for these loans, taking into account expectations around installation of measures that will rely on this support and anticipated recovery of capital back into the funds based on customer repayment of outstanding loans over the course of each calendar year.

Financing dollars injected into Revolving Loan Funds each year are reported each program year, during the year in which such injections are made.

As described above with the Heat Loan program, savings resulting from measures implemented by customers with the support of revolving loan fund financing are reported and included in Company calculations of achieved energy savings in the year in which those measures are post-inspected and paid.

Rhode Island Infrastructure Bank:

Transfers of ratepayer funds to the Rhode Island Infrastructure Bank (RIIB) are budgeted for during each year's planning cycle based on the demand for these funds as assessed by RIIB.

Actual expenditures associated with these transfers are tracked and reported during the program year in which such transfers are made.

As with the other financing mechanisms described above, the savings resulting from measures implemented on the basis of customer utilization of loan funds enabled by RIIB financing are reported and included in Company calculations of achieved energy savings in the year in which those measures are post-inspected and paid.

PUC 1-56

Request:

When are Rhode Island Infrastructure Bank (RIIB) dollars (including on-bill repayment dollars) included in Program Year targets and budgets and when are they included in actual Program Year review for the purposes of calculating National Grid's performance?

Response:

The Company's On-Bill Repayment (OBR) mechanisms for Large Commercial and Industrial customers, both electric and gas, are separate from the funds that are transferred to the Rhode Island Infrastructure Bank (RIIB) to support the Efficient Buildings Fund. Please see PUC 1-55 for more information regarding the Company's Revolving Loan Funds/OBR.

Transfers of customer funds to the Rhode Island Infrastructure Bank (RIIB) are budgeted for during each year's planning cycle based on the demand for these funds as assessed by RIIB.

Actual expenditures associated with these transfers are tracked and reported during the program year in which such transfers are made.

As with the other financing mechanisms the Company supports, the savings resulting from measures implemented on the basis of customer utilization of loan funds enabled by RIIB financing are reported and included in Company calculations of achieved energy savings in the year in which those measures are post-inspected and paid.

Prepared by or under the supervision of: Benjamin Rivers

PUC 1-57

Request:

For each year since 2016, please provide the amount and date of any transfers of program dollars to the RIIB.

Response:

Please see the table below, which includes the amount and date of all transfers of program dollars to the Rhode Island Infrastructure Bank for each year beginning in 2016.

Year	**Amount**	**Date of Transfer**
2016	$1,870,500	11/01/2016
2017	$5,000,000	10/31/2017
2018	$5,000,000	10/12/2018
2019	$5,000,000	03/13/2019

Prepared by or under the supervision of: Benjamin Rivers

PUC 1-58

Request:

For each year since 2016, please provide the following information about RIIB-financed projects in a table:

1. Rows should be each project or project segment financed by RIIB that was supported with Energy Efficiency program dollars.
2. Column indicating the year the date the project or project segment was selected for a loan
3. Column indicating the year the project or project segment was completed (went into service)
4. Column indicating the total loan for the project or project segment
5. Column indicating the portion of the project cost that will support installing measures that were part of National Grid's EE Plan in the year the project was selected
6. Column indicating the total disbursement for the project or project segment to-date
7. Column indicating the portion of the disbursements that supported installing measures that were part of National Grid's EE Plan in the year the project was selected
8. The total expected energy or demand savings (separating electric from gas from delivered fuels)
9. The portion of expected energy or demand savings that will come from measures that were part of National Grid's EE Plan in the year the project was selected
10. The total to-date energy or demand savings associated with completed (in service) project segments that were part of National Grid's EE Plan in the year the project was selected
11. The total actual budget expenditure used to support National Grid's reported actual budget for the purposes of calculating the shareholder incentive

Response:

This response was prepared in consultation with the Rhode Island Office of Energy Resources (OER) and the Rhode Island Infrastructure Bank (RIIB). Please reference Attachment PUC 1-58, which provides numerical answers to sub parts 1, 2, 3, 4, 6 and 8. The remaining sub parts are addressed herein.

Prepared by or under the supervision of: Benjamin Rivers

The column headers in Attachment PUC 1-58 are explained in more detail below.

1. The column labeled "Round" refers to the Efficient Buildings Fund (EBF) borrowing round in which the municipality was scored "highly enough" by OER to be placed on the Project Priority List (PPL) and considered for an EBF loan. Not all municipalities that are listed on the PPL move forward to borrow money from RIIB.
2. The column labeled "Application #" refers to the number associated with the most granular level of data that National Grid tracks in its savings tracking system InDemand.
3. The column labeled "EE Loan Date" refers to the date and year that the municipality signed loan documents with RIIB.
4. The column labeled "Application Complete" refers to the year a National Grid incentive application was completed for a measure installed at a customer's property.
5. The column labeled "Year Claimed" refers to the year the measure is post inspected, paid, and claimed by the Company in its annual goals.
6. The column labeled "Total Loan" refers to the amount of money that a municipality has borrowed from the RIIB in a EBF Financing Round shown in the first column. This information is only available at the municipality level.
7. The column labeled "Disbursements to Date" refers to the amount of money that has been disbursed to a municipality by RIIB for eligible project costs up to August 15, 2019.
8. The column labeled "Savings (net kWh)" or "Savings (net therms)" refers to the amount of savings claimed by National Grid in the year listed in the "Year Claimed" column.

Because the Company does not have numerical answers to subparts 5, 7, 9, 10 and 11 as requested by the PUC, the Company has provided written explanations below addressing each subpart in turn.

Subpart 5

Column indicating the portion of the project cost that will support installing measures that were part of National Grid's EE Plan in the year the project was selected:

After consulting with its partners, the Company believes that all project costs are required for the safe and effective installation of energy efficiency measures and compliance with state and local laws. Funds borrowed by a municipality often include a "cost of issuance" which include the borrower's cost of bond council, financial advisors, and local council. According to RIIB this amount is typically not materially significant for these loans.

Subpart 7

Column indicating the portion of the disbursements that supported installing measures that were part of National Grid's EE Plan in the year the project was selected:

After consulting with its partners, the Company is not aware of any disbursements that support costs that are not defined as eligible costs. Eligible costs include energy efficient equipment, installation costs, cost of issuance, and additional engineering as needed. Related costs such as required asbestos remediation or temporary heating equipment if a HVAC is taken off line are also considered eligible costs. Eligible projects are discussed in OER Rule 300-RICR-00-00-1.8.

All applications that have been completed and claimed or are under construction are listed in the Company's Technical Reference Manual (TRM) or have been screened through the Company's Custom Screening Tool.

Subpart 9

The portion of expected energy or demand savings that will come from measures that were part of National Grid's EE Plan in the year the project was selected:

The savings being claimed by National Grid are located in the far-right column of Attachment PUC 1-58.

After consulting with its partners, the Company is not aware of any substantial additional kWh or therm savings related to completed measures that are not captured and claimed by National Grid. The Company is aware that new overhead doors were installed at public works facilities in West Warwick and Pawtucket and that there were some savings associated with their installation based on feedback from National Grid's municipal sales person and Project Summary Form (PSF) List updates, but has not received definitive information on the installation and energy savings of these doors from Clough Harbor and Associates (CHA) by the time this response was written. CHA is the engineering firm that conducts post-installation inspections for the EBF. There are no applications in National Grid's system of record for these two installations most likely because these installations did not pass National Grid's Cost/Benefit test and the Company was unable to pay an incentive for these doors.

Subpart 10

The total to-date energy or demand savings associated with completed (in service) project segments that were part of National Grid's EE Plan in the year the project was selected:

The savings being claimed by National Grid are located in the far-right column of Attachment PUC 1-58.

The Company asserts that the savings captured through National Grid's InDemand system account for the vast majority of savings being produced. Small amounts of non-claimable savings may be associated with the two overhead door installations highlighted in Subpart 9.

Subpart 11

The total actual budget expenditure used to support National Grid's reported actual budget for the purposes of calculating the shareholder incentive:

The Company included the amounts listed in PUC 1-57 as eligible spending when calculating each year's shareholder incentive. The Company intends to do the same in 2019.

2016 Electric

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to Date	Savings (net kWh)
1	West Warwick	6505556	7/8/2016	2016	2016	$ 1,300,000	$ 1,300,000	38,334
1	West Warwick	6524707	7/8/2016	2016	2016	$ 1,300,000	$ 1,300,000	28,904
1	West Warwick	6533747	7/8/2016	2016	2016	$ 1,300,000	$ 1,300,000	15,848
1	Westerly	6573487	7/8/2016	2016	2016	$ 1,291,965	$ 1,041,965	52,373
1	Pawtucket	6455584	7/8/2016	2016	2016	$ 3,915,000	$ 1,785,866	48,160
1	Providence	5904860	7/8/2016	2016	2016	$ 1,252,000	$ 1,252,000	13,416
1	Providence	5919033	7/8/2016	2016	2016	$ 1,252,000	$ 1,252,000	22,016
1	Providence	6228484	7/8/2016	2016	2016	$ 1,252,000	$ 1,252,000	4,411
								223,461

2016 Gas

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to Date	Savings (net therms)
1	Pawtucket	6421974	7/8/2016	2016	2016	$ 3,915,000	$ 1,785,866	673
1	Pawtucket	6342131	7/8/2016	2016	2016	$ 3,915,000	$ 1,785,866	981
1	Pawtucket	6480293	7/8/2016	2016	2016	$ 3,915,000	$ 1,785,866	475
								2,128

2017 Electric

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to Date	Savings (net kWh)
1	West Warwick	6749697	7/8/2016	2017	2017	$ 1,300,000	$ 1,041,965	2,663
1	West Warwick	6939023	7/8/2016	2017	2017	$ 1,300,000	$ 1,041,965	3,451
1	Pawtucket	7001644	7/8/2016	2017	2017	$ 3,915,000	$ 1,785,866	786
1	Providence	6693568	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	4,621
1	Providence	6662697	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	2,824
1	Providence	6737467	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	2,205
1	Providence	6625442	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	27,548
1	Providence	6625455	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	25,415
1	Providence	6625457	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	24,289
1	Providence	6737480	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	1,219
1	Providence	6916901	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	52,122
1	Providence	7674300	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	54,393
1	Providence	6822883	7/8/2016	2017	2017	$ 1,252,000	$ 1,252,000	5,653
1	Cranston	6625724	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	5,021
1	Cranston	7268825	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	30,560
1	Cranston	6625723	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	31,995
								274,766

2017 Gas

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to Date	Savings (net therms)
1	Pawtucket	7002594	7/8/2016	2017	2017	$ 3,915,000	$ 1,785,866	364
1	Cranston	6455612	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	6,782
1	Cranston	7031448	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	188
1	Cranston	6942590	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	306
1	Cranston	6342130	7/8/2016	2017	2017	$ 2,240,000	$ 2,240,000	437
								8,078

2018 Electric

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to Date	Savings (net kWh)
1	West Warwick	7711379	7/8/2016	2018	2018	$ 1,300,000	$ 1,300,000	10,385
1	West Warwick	6727622	7/8/2016	2018	2018	$ 1,300,000	$ 1,300,000	437,329
1	Westerly	7473134	7/8/2016	2018	2018	$ 1,291,965	$ 1,041,965	861,729
1	Pawtucket	7737645	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	23,310
1	Pawtucket	7759558	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	9,702
1	Pawtucket	7737641	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	10,444
1	Pawtucket	7737639	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	460
1	Pawtucket	7737644	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	25,705
1	Pawtucket	7737643	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	11,122
1	Providence	7645793	7/8/2016	2018	2018	$ 1,252,000	$ 1,252,000	7,579
2	Warren	7991590	12/13/2017	2018	2018	$ 504,000	$ 404,187	18,880
2	Warren	7988707	12/13/2017	2018	2018	$ 504,000	$ 404,187	52,785
2	Warren	7993136	12/13/2017	2018	2018	$ 504,000	$ 404,187	3,816
2	East Providence	7675015	12/13/2017	2018	2018	$ 2,370,000	$ 526,744	13,423
2	East Providence	7682444	12/13/2017	2018	2018	$ 2,370,000	$ 526,744	34,575
3	Hopkinton	7473084	12/13/2017	2018	2018	$ 221,000	$ 218,790	81,208
								1,602,453

2018 Gas

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to date	Savings (net therms)
1	Pawtucket	7881480	7/8/2016	2018	2018	$ 3,915,000	$ 1,785,866	13,201
1	Cranston	7609157	7/8/2016	2018	2018	$ 2,240,000	$ 2,240,000	24,838
1	West Warwick	7711378	7/8/2016	2018	2018	$ 1,300,000	$ 1,300,000	6,702
								44,741

2019 Electric

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements	Savings (net kWh)
2	Cumberland	7244042	12/13/2017	2018	2019	$ 1,343,000	$ 1,143,109	707,649
								707,649

2019 Gas

Round		Application #	EE Loan Date	Application Complete	Year Claimed	Total Loan	Disbursements to Date	Savings (net kWh)
No completed applications as of 8/15/2019								

PUC 1-59

Request:

Please provide a table for each year since 2016 that has the following information in columns for each year:

- The energy or demand savings National Grid expected from RIIB-financed efficiency projects broken out by fuel type
- The energy or demand savings National Grid included in its performance targets broken out by fuel type
- The energy or demand savings National Grid claimed to meet its performance targets broken out by fuel type
- The difference between claimed savings and targeted savings.

Response:

Please see Attachment PUC 1-59 for a table containing the requested information for plan years 2016 through 2019.

Please note the following comments about relevant elements of the table provided in Attachment PUC 1-59:

- Values displayed in Column (A) represent aspirational savings potential from Rhode Island Infrastructure Bank (RIIB) financed projects as described in prior year plan filings. These numbers reflect approximate savings that the RIIB and National Grid anticipated would be realizable over time if all of the potential projects under discussion were completed, evaluation impacts remained the same, and transferred dollars could be leveraged at the anticipated three to one leverage ratios. Particularly in initial years these savings estimates were clearly aspirational, and the Company believes that this year's estimates are more likely to prove accurate than those conveyed in previous years. However, this can only be assessed over time and in retrospect.

- Values displayed in Column (B) are 0 in each year as the Company does not develop or maintain a specific planning line item for savings that will result from Efficient Buildings Fund (EBF) transfers in any given year. There are two reasons for this:

    - The Company sees the EBF as a tool that enables savings from municipalities and is considered when the Company estimates savings from municipalities and streetlights in each planning cycle. If savings do not materialize from

municipal or streetlighting projects the Company must make up for these savings in other initiatives or programs.

- As with other commercial and industrial financing mechanisms, the Company does not directly attribute savings to financing mechanism in planning or reporting. Rather, these financing mechanisms are individual components of a portfolio of enablers (other examples of these enablers include marketing spend and workforce development investments) that ultimately drive targeted and realized savings within specific programs but are difficult to reliably attribute to an anticipated pool of savings in any individual year.

2016 - Electric (kWh)

Energy savings described in plan (kWh)	Energy savings in perf. Target	Energy claimed (net kWh)	Difference between column B and C
Not stated	0	223,461	(223,461.00)

2016 - Gas (therms)

Energy savings described in plan (therms)	Energy savings in perf. Target	Energy claimed (net therms	Difference between column B and C
Not stated	0	2,128	(2,128.00)

2017 - Electric (kWh)

Energy savings described in plan (kWh)	Energy savings in perf. Target	Energy claimed (net kWh)	Difference between column B and C
11,000,000	0	274,766	(274,766)

2017 - Gas (therms)

Energy savings described in plan (therms)	Energy savings in perf. Target	Energy claimed (net therms)	Difference between column B and C
~50,000	0	8,078	(8,078)

2018 - Electric (kWh)

Energy savings described in plan (kWh)	Energy savings in perf. Target	Energy claimed (net kWh)	Difference between column B and C
4,000,000	0	1,602,453	(1,602,453)

2018 - Gas (therms)

Energy savings described in plan (therms)	Energy savings in perf. Target	Energy claimed (net therms)	Difference between column B and C
90,535	0	44,741	(44,741)

2019 Electric (kWh)

Energy savings described in plan (kWh)	Energy savings in perf. Target	Energy claimed (net kWh)	Difference between column B and C
4,000,000	0	707,649	(707,649)
			Savings claimed as of 8/15/2019

2019 - Gas (therms)

Energy savings described in plan (therms)	Energy savings in perf. Target	Energy claimed	Difference between column B and C
35,000	0	0	0
			Savings claimed as of 8/15/2019

PUC 1-60

Request:

Referencing National Grid's responses to 1-58 and 1-59, please provide any further evidence that the energy or demand savings National Grid claimed in order to meet its performance targets actually occurred in the years they were claimed to earn a shareholder incentive. For any year in which other measures were implemented to make up for lower-than-expected RIIB-financed savings, please explain how, if at all, National Grid made up for those missed savings.

Response:

Energy and demand savings reported for a given calendar year result from the installation and realization of energy saving measures that occurred during that calendar year.

Savings for all installed measures, regardless of the mechanism utilized to finance the installation of those measures, are verified through multiple mechanisms:

- Where appropriate, post-installation inspections are conducted in order to verify the correct and completed installation of measures prior to savings being claimed.
- Additionally, third party evaluation, verification & measurement experts conduct surveys or utilize other sampling methodologies in order to ensure the accuracy of energy and demand savings for installed measures at the portfolio level.

In each plan, the Company develops and proposes energy and demand savings goals for individual measures, programs, sectors, and portfolios through a collaborative stakeholder process.[1] While these goals are informed by bottom-up analysis, review of data, and estimates of program and measure specific market opportunity based upon the best information available at the time that plans are developed, goals are fundamentally established, and managed during the course of each year, at the sector level.

In any given calendar year, some planned measures and programs realize energy and demand savings more quickly than planned, as market opportunities and customer appetite for measures develops more quickly than anticipated and the Company and implementation partners work to fully exploit those opportunities. Conversely, it is also not uncommon for specific measures or programs to develop less quickly than was anticipated during the planning process.

In line with this reality, in years when RIIB financed projects in the streetlighting and municipal building space have been slower to materialize than was hoped for during the planning process,

[1] See Attachment 10, Bates 560-564 for definitions of measures, programs, sectors, and portfolios.

the Company works to achieve its sector level savings goals through relying on the same approaches as would be employed when the market opportunity associated with any other measure or program develops less quickly than was hoped for during the planning process. The Company addressed this through consistently adapting to market conditions and pursuing alternative sector and program opportunities that are developing more quickly or showing higher potential for in-year savings than was anticipated during the planning process. For example, in 2017 and 2018 the Company saw greater than planned energy and demand savings achieved in the prescriptive lighting subprogram (E1 Light: Perspective), allowing the Company to achieve the commercial and industrial sector's overall energy savings goals despite RIIB financed projects producing less in-year energy savings than had been aspired to during the planning process.

PUC 1-61

Request:

Referencing Bates page 342 of the Plan, please provide the status of the development of the common reporting platform for the Efficient Buildings Fund.

Response:

Cadmus, an energy and environmental consulting firm working for the Rhode Island Infrastructure Bank (RIIB), has established an electronic file sharing platform to be used by the Rhode Island Office of Energy Resources (OER), RIIB, and the Company to securely exchange documents relevant to our joint work on the Efficient Buildings Fund (EBF).

The OER and RIIB have begun uploading documents to this platform, and the OER is concurrently developing a standardized file and organizational structure for collecting and storing these documents.

The Company will begin depositing documents to the system once the Company's Digital Risk and Security team certifies that the platform has been implemented in a manner that is compliant with Company standards given the nature of the data.

Prepared by or under the supervision of: Benjamin Rivers

PUC 1-62

Request:

Referencing Bates pages 345 to 346 of the Plan, will the Company be injecting $500,000 into the gas revolving loan fund? If so, please explain the first sentence on Bates page 346 of the Plan, which states that the Company is "still considering requesting an injection into this fund."

Response:

Yes, the Company will be injecting $500,000 into the gas revolving loan fund. The entire paragraph at the top of Bates page 346 should have been deleted because it is language from a prior version of the Plan.

Prepared by or under the supervision of: Benjamin Rivers

PUC 1-63

Request:

Please provide the total amount of money ratepayers have provided to support the RIIB and the total amount of money RIIB has loaned for energy efficiency projects.

Response:

Ratepayers have provided a total of $16,870,447 to support the Efficient Buildings Fund (EBF). As of November 25, 2019, the Rhode Island Infrastructure Bank (RIIB) has loaned out $18,100,003 to support energy efficiency projects.

Prepared by or under the supervision of: Benjamin Rivers