nationalgrid

Andrew Marcaccio
Senior Counsel

November 12, 2021

VIA ELECTRONIC MAIL

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

RE: Docket 5189 – 2022 Annual Energy Efficiency Program Plan
Responses to Division Data Requests - Set 2 (Complete Set)

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company d/b/a National Grid ("National Grid" or the "Company"), attached please find the electronic version of the Company's complete set of responses to the Division of Public Utilities and Carriers' ("Division") Second Set of Data Requests in the above referenced docket.[1] Bates stamp has been applied to the attached electronic version.

Thank you for your attention to this filing. If you have any questions or concerns, please do not hesitate to contact me at 401-784-4263.

Sincerely,

Andrew S. Marcaccio

Enclosures

cc: Docket 5189 Service List
John Bell, Division
Margaret Hogan, Esq.
Jon Hagopian, Esq.

[1] Per the Commission's request, the Company is providing one copy of this transmittal for the Commission's file in this docket and six (6) copies, 3-hole punched for the Commission.

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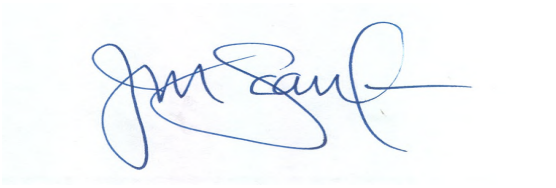
Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.



_____ November 12, 2021

Joanne M. Scanlon Date

Docket No. 5189 - National Grid – 2022 Annual Energy Efficiency Program
Service list updated 10/27/2021

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Division 2-1
2021 Results to Date

Request:

Please provide National Grid's 2021 RI Energy Efficiency Third Quarter report summarizing program performance to date and the associated supporting data files.

Response:

Please see the attached tables for data files from National Grid's RI Energy Efficiency Third Quarter report.

Attachment DIV 2-1-1 shows data for the electric portfolio. Attachment DIV 2-1-2 shows data for the gas portfolio. Attachment DIV 2-1-3 shows data for loan funds. Attachment DIV 2-1-4 shows data for test metrics.

Please note that the Division and the Company agreed that the Company would provide the attached Excel files in advance of the issuing date of the final Third Quarter report and as soon as practicable. And, that such Excel files would satsify this response. (The Third Quarter Report will be released as normal on or around November 12, 2021.)

Prepared by or under the supervision of: Jessica Darling

NATIONAL GRID ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND

Table 1: Summary of Electric 2021 Target and Preliminary 3rd Quarter Results

ELECTRIC PROGRAMS Sector and Program	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(18)	(13)	(14)	(15)	(19)	(16)	(17)
	Demand Reduction (Annual kW)			Energy Savings (Annual MWh)			Customer Participation			Expenses ($ 000)				Energy Savings (Lifetime MWh)				$/Lifetime kwh	
Commercial and Industrial	Target	Year To Date	Pct Achieved	Target	Year To Date	Pct Achieved	Target	Year To Date	Pct Achieved	Budget	Year To Date	Pct Achieved	Year End Forecast	Target	Year to Date	Pct Achieved	Year End Forecast	Target $/kWh	Year to Date
Large Commercial New Construction	1,856	1,000	53.9%	11,837	8,552	72.3%	145	92	63.2%	$ 8,188.2	5,613.8	68.6%	113.7%	189,441	126,592	66.8%	130.0%	$ 0.043	$ 0.044
Large Commercial Retrofit	11,648	3,004	25.8%	59,496	19,494	32.8%	2,882	2,221	77.1%	$ 31,565.2	11,549.7	36.6%	95.7%	744,562	211,389	28.4%	90.9%	$ 0.042	$ 0.055
Small Business Direct Install	1,134	889	78.4%	9,696	5,533	57.1%	571	324	56.7%	$ 8,883.6	3,841.0	43.2%	100.0%	105,134	68,248	64.9%	110.0%	$ 0.084	$ 0.056
Commercial ConnectedSolutions										$ 2,990.1	114.0	3.8%	100.0%						
Community Based Initiatives - C&I										$ 74.5	0.0	0.0%	100.0%						
Financing										$ 5,000.0	0.0	0.0%	100.0%						
SUBTOTAL	**14,638**	**4,893**	**33.4%**	**81,029**	**33,580**	**41.4%**	**3,598**	**2,636**	**73.3%**	**$ 56,701.6**	**21,118.4**	**37.2%**	**99.6%**	**1,039,136**	**406,229**	**39.1%**	**99.9%**	**$ 0.055**	**$ 0.052**
Income Eligible Residential																			
Single Family - Income Eligible Services	457	261	57.1%	3,120	1,533	49.1%	3,412	3,809	111.6%	$ 12,846.1	5,254.6	40.9%	85.0%	36,909	12,452	33.7%	85.0%	$ 0.348	$ 0.422
Income Eligible Multifamily	70	67	96.2%	1,554	609	39.2%	3,600	176	4.9%	$ 3,549.0	638.1	18.0%	100.0%	22,545	6,627	29.4%	100.0%	$ 0.157	$ 0.096
SUBTOTAL	**527**	**329**	**62.3%**	**4,674**	**2,142**	**45.8%**	**7,012**	**3,985**	**56.8%**	**$ 16,395.1**	**5,892.7**	**35.9%**	**88.2%**	**59,454**	**19,079**	**32.1%**	**90.7%**	**$ 0.276**	**$ 0.309**
Non-Income Eligible Residential																			
Residential New Construction	66	75	113.9%	979	470	48.0%	417	371	89.0%	$ 1,611.3	704.1	43.7%	99.6%	18,088	9,474	52.4%	100.0%	$ 0.089	$ 0.074
ENERGY STAR® HVAC	204	126	61.6%	3,181	2,234	70.2%	5,037	3,969	78.8%	$ 3,487.8	2,309.3	66.2%	100.0%	51,309	38,123	74.3%	117.1%	$ 0.068	$ 0.061
Energy*Wise*	445	466	104.9%	2,841	2,901	102.1%	11,223	9,705	86.5%	$ 15,692.2	13,508.2	86.1%	134.8%	14,385	12,573	87.4%	135.0%	$ 1.091	$ 1.074
Energy*Wise* Multifamily	158	161	101.9%	1,240	1,013	81.7%	3,600	753	20.9%	$ 2,804.3	817.5	29.2%	95.0%	16,307	6,697	41.1%	85.0%	$ 0.172	$ 0.122
ENERGY STAR® Lighting	1,872	1,417	75.7%	11,533	8,871	76.9%	68,164	49,871	73.2%	$ 5,274.8	2,692.4	51.0%	100.0%	26,801	18,716	69.8%	93.3%	$ 0.197	$ 0.144
Residential Consumer Products	1,019	549	53.9%	5,926	3,633	61.3%	33,111	28,995	87.6%	$ 2,681.2	1,739.3	64.9%	100.0%	38,130	22,013	57.7%	103.0%	$ 0.070	$ 0.079
Home Energy Reports	3,692	3,178	86.1%	26,852	23,112	86.1%	323,248	280,282	86.7%	$ 2,641.7	1,825.7	69.1%	87.5%	26,852	23,112	86.1%	106.6%	$ 0.098	$ 0.079
Residential ConnectedSolutions										$ 1,920.5	369.5	19.2%	94.1%						
Energy Efficiency Education Programs										$ 40.0	9.0	22.5%	100.0%						
Community Based Initiatives - Residential										$ 226.2	91.1	40.3%	100.0%						
Comprehensive Marketing - Residential										$ 332.7	71.9	21.6%	100.0%						
SUBTOTAL	**7,455**	**5,971**	**80.1%**	**52,553**	**42,234**	**80.4%**	**444,801**	**373,946**	**84.1%**	**$ 36,712.7**	**24,137.9**	**65.7%**	**113.3%**	**191,872**	**130,706**	**68.1%**	**106.5%**	**$ 0.191**	**$0.185**
Regulatory																			
EERMC										$ 738.5	387.8	52.5%	100.0%						
OER										$ 738.5	553.9	75.0%	100.0%						
SUBTOTAL										**$ 1,477.0**	**$ 941.7**	**63.8%**	**100.0%**						
TOTAL	**22,621**	**11,193**	**49.5%**	**138,256**	**77,956**	**56.4%**	**455,411**	**380,567**	**83.6%**	**$ 111,286.3**	**$ 52,090.8**	**46.8%**	**102.4%**	**1,290,462**	**556,014**	**43.1%**	**100.5%**	**$ 0.086**	**$0.094**
Municipal LED Street Lights										485.9	79.8	16.4%							

NOTES
(1)(4)(7) Targets from Docket 5076 - Attachment 5, Table E-7 (electric), Refiled December 22, 2020
(3) Pct Achieved is Column (2)/ Column (1).
(6) Pct Achieved is Column (5)/ Column (4).
(7) Participation was planned and is reported in 'net' terms which takes into account free-ridership and spillover.
(9) Pct Achieved is Column (8)/ Column (7).
(10) Approved Implementation Budget from Docket 5076, Attachment 5 Table E-3 (electric), Refiled December 22, 2020
(11) Year To Date Expenses include Implementation expenses.
(12) Pct Achieved is Column (11)/ Column (10).
(17) $/lifetime kWh = Column (11)/Column (14)
(16) Planned $/lifetime MWh from Docket 5076 - Attachment 5, Table E-5 (electric), Refiled December 22, 2020 - adjusted to reflect format of quarterly report. Program Implementation Expenses/lifetime kWh.
(18) (19) Year End Spending and Energy Savings forecasts are best estimates based on the information available and may change throughout the year.
Values in quarterly reports are preliminary and subject to change. Data is finalized in the Year-End Report.

NATIONAL GRID ENERGY EFFICIENCY PROGRAMS IN RHODE ISLAND
Table 2: Summary of Gas 2021 Target and Preliminary 3rd Quarter Results

GAS PROGRAMS	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(16)	(10)	(11)	(12)	(17)	(13)	(14)	(15)
Sector and Program	Energy Savings (Annual MMBtu)			Customer Participation			Expenses ($ 000)				Energy Savings (Lifetime MMBtu)				$/Lifetime MMBtu		Peak Hour Gas Demand Savings (MMBtu)
Commercial and Industrial	Target	Year To Date	Pct Achieved	Target	Year To Date	Pct Achieved	Budget	Year To Date	Pct Achieved	Year End Forecast	Planned	Year To Date	Pct Achieved	Year End Forecast	Planned	Year to Date	Year to Date
Large Commercial New Construction	27,631	34,102	123.4%	61	29	46.9%	$ 2,634.2	$ 1,722.8	65.4%	83.3%	437,398	472,585	108.0%	199.3%	$ 6.02	$ 3.65	17.05
Large Commercial Retrofit	187,283	46,460	24.8%	98	45	45.6%	$ 5,054.1	$ 1,977.8	39.1%	72.7%	1,455,776	444,254	30.5%	71.5%	$ 3.47	$ 4.45	23.23
Small Business Direct Install	4,886	1,927	39.4%	183	69	37.8%	$ 332.7	$ 45.2	13.6%	100.0%	48,861	18,624	38.1%	112.9%	$ 6.81	$ 2.43	0.96
Commercial & Industrial Multifamily	9,444	821	8.7%	729	69	9.5%	$ 953.2	$ 161.5	16.9%	100.0%	141,869	12,736	9.0%	70.0%	$ 6.72	$ 12.68	0.41
Commercial Pilots							$ 215.8	$ 103.8	48.1%	48.1%							
Community Based Initiatives - C&I							$ 24.8	$ -	0.0%	100.0%							
SUBTOTAL	**229,243**	**83,310**	**36.3%**	**1,071**	**212**	**19.7%**	**$ 9,214.8**	**$ 4,011.1**	**43.5%**	**79.1%**	**2,083,905**	**948,198**	**45.5%**	**99.2%**	**$ 4.42**	**$ 4.23**	**41.66**
Income Eligible Residential																	
Single Family - Income Eligible Services	10,055	3,860	38.4%	1,005	373	37.1%	$ 5,952.3	$ 2,426.4	40.8%	90.0%	201,104	77,204	38.4%	90.0%	$ 29.60	$ 31.43	1.93
Income Eligible Multifamily	14,399	926	6.4%	3,150	338	10.7%	$ 3,009.4	$ 284.1	9.4%	90.0%	315,545	16,812	5.3%	76.1%	$ 9.54	$ 16.90	0.46
SUBTOTAL	**24,454**	**4,787**	**19.6%**	**4,155**	**711**	**17.1%**	**$ 8,961.8**	**$ 2,711**	**30.2%**	**90.0%**	**516,649**	**94,016**	**18.2%**	**81.5%**	**$ 17.35**	**$ 28.83**	**2.39**
Non-Income Eligible Residential																	
Energy*Wise*	20,869	19,574	93.8%	1,694	3,415	201.6%	$ 8,117.6	$ 9,811.4	120.9%	198.1%	476,550	448,153	94.0%	150.0%	$ 17.03	$ 21.89	9.79
Energy Star® HVAC	38,345	16,609	43.3%	4,348	1,908	43.9%	$ 3,673.0	$ 1,590.8	43.3%	79.3%	667,485	294,275	44.1%	80.0%	$ 5.50	$ 5.41	8.30
EnergyWise Multifamily	8,633	2,685	31.1%	4,000	314	7.9%	$ 1,491.6	$ 693.8	46.5%	115.0%	148,675	48,131	32.4%	100.0%	$ 10.03	$ 14.42	1.34
Home Energy Reports	93,548	56,186	60.1%	152,324	152,543	100.1%	$ 450.9	$ 423.4	93.9%	83.3%	93,548	56,186	60.1%	83.8%	$ 4.82	$ 7.54	28.09
Residential New Construction	4,445	864	19.4%	323	71	22.0%	$ 674.8	$ 282.4	41.9%	77.9%	85,272	21,582	25.3%	59.9%	$ 7.91	$ 13.09	0.43
Comprehensive Marketing - Residential							$ 64.8	$ 28.3	43.7%	100.0%							
Community Based Initiatives - Residential							$ 75.8	$ 38.7	51.0%	100.0%							
SUBTOTAL	**165,840**	**95,917**	**57.8%**	**162,689**	**158,250**	**97.3%**	**$ 14,548.5**	**$ 12,868.9**	**88.5%**	**149.5%**	**1,471,530**	**868,327**	**59.0%**	**103.8%**	**$ 9.89**	**$ 14.82**	**47.96**
Regulatory																	
EERMC							$ 275.1	$ 144.4	52.5%	100.0%							
OER							$ 275.1	$ 206.3	75.0%	100.0%							
SUBTOTAL							**$ 550.1**	**$ 350.7**	**63.8%**	**100.0%**							
TOTAL	**419,537**	**184,013**	**43.9%**	**167,915**	**159,173**	**94.8%**	**$ 33,275.2**	**$ 19,941.2**	**59.9%**	**113.1%**	**4,072,084**	**1,910,542**	**46.9%**	**98.6%**	**$ 8.17**	**$ 10.44**	**92.01**

NOTES
(1)(4) Targets from Docket 5076 - Attachment 6, Table G-7 (gas), Refiled December 22, 2020.
(3) Pct Achieved is Column (2)/ Column (1).
(4) Participation was planned and is reported in 'net' terms which takes into account free-ridership and spillover.
(6) Pct Achieved is Column (5)/ Column (4).
(7) Approved Implementation Budget from Docket 5076, Attachment 6 Table G-3 (gas), Refiled December 22, 2020.
(8) Year To Date Expenses include Implementation expenses.
(9) Pct Achieved is Column (8)/ Column (7).
(13) Planned $/lifetime MMBtu from Docket 5076 - Attachment 6, Table G-5 (gas), Refiled December 22, 2029 - adjusted to reflect format of quarterly report. Program Implementation Expenses/lifetime MMBtu.
(14) $/lifetime MMBtu = Column (8)*1000/Column (11)
(15) Peak Hour Gas Demand Savings is a test metric in 2021 and represents a rough approximation of peak-hour gas demand impacts. Column(2) *0.01 *0.05
(16) (17) Year End Spending and Energy Savings forecasts are best estimates based on the information available and may change throughout the year.
Values in quarterly reports are preliminary and subject to change. Data is finalized in the Year-End Report.

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-1-3

Table 3
National Grid
Revolving Loan Funds

Large C&I Electric Revolving Loan Fund

	Income Statement	
(1)	2021 Funds Available	$7,010,036
(2)	2021 Loan budget	$15,000,000
(3)	Committed	$7,592,861
(4)	Paid	$3,570,544
(5)	Repayments	$3,770,440
(6)	Available 9/30/21	-$382,929
	Program Impact	
(7)	Number of loans	185
(7b)	Participants	86
(8)	Annual Savings (Net MWh)	13,695
(9)	Lifetime Savings (Net MWh)	151,469
(10)	Annual Savings (Net kW)	1,895

Small Business Electric Revolving Loan Fund

	Income Statement	
(1)	2021 Funds Available	$3,144,530
(2)	2021 Loan budget	$3,000,000
(3)	Committed	$0
(4)	Paid	$884,287
(5)	Repayments	$784,475
(6)	Available 9/30/21	$3,044,718
	Program Impact	
(7)	Number of loans	360
(8)	Annual Savings (Net MWh)	5,533
(9)	Lifetime Savings (Net MWh)	68,248
(10)	Annual Savings (Net kW)	889

Rhode Island Public Energy Partnership (RI PEP)

	Income Statement	
(1)	2021 Funds Available	$462,477
(2)	2021 Loan budget	$0
(3)	Committed	$0
(4a)	Funds Returned to OER	$462,477
(5)	Repayments	$37,753
(6)	Available 9/30/21	$37,754
	Program Impact	
(7)	Number of loans	0
(7b)	Participants	0
(8)	Annual Savings (Net MWh)	0
(9)	Lifetime Savings (Net MWh)	0
(10)	Annual Savings (Net kW)	0

C&I Gas Revolving Loan Fund

	Income Statement	
(1)	2021 Funds Available	$1,532,113
(2)	2021 Loan budget	$2,200,000
(3)	Committed	$709,476
(4)	Paid	$72,885
(5)	Repayments	$377,194
(6)	Available 9/30/21	$1,126,946
	Program Impact	
(7)	Number of loans	9
(7b)	Participants	7
(8)	Annual Savings (Net MMBtu)	10,360
(9)	Lifetime Savings (Net MMBtu)	138,081

Notes

1 Amount available as of January 1, 2021. Includes line (6) "Available 12/31/20" plus line (3) "Committed" in Table E-6 and G-6 of the 2020 Year End Report.

2 Budget adopted by Sales Team for 2021 operations. Budget includes projections of repayments made during 2021.

3 As of September 30, 2021

4 As of September 30, 2021

5 As of September 30, 2021

6 Fund balance as of September 30, 2021

7 As of September 30, 2021. Number is associated with paid loans.

7b Unique customer names for large business (one customer name can have multiple sub accounts as is in the case of a franchise). Customer accounts used for small business (not adjusted for net-to-gross). Number is associated with paid loans.

8 As of September 30, 2021. Number is associated with paid loans.

9 As of September 30, 2021. Number is associated with paid loans.

10 As of September 30, 2021. Number is associated with paid loans.

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-1-4

Table 4
National Grid
2021 Test Metrics

Customer Satisfaction[1]
94.2%

NOTES

[1]The Customer Satisfaction metric is based on an average across the EnergyWise, Single Family Income Eligible Services, and Residential Consumer Products Programs. The metric is based off customer responses to the following questions: Would you recommend this service to friend or family? How satisfied are you with the energy efficiency services you received?

Carbon Reduction[2]

	CO2 (Electricity)	CO2 (Natural Gas)	CO2 (Oil)	CO2 (Propane)	CO2 (Total)
Residential	16,133	5,611	1,188	(38)	22,894
Income Eligible	818	280	196	7	1,302
C&I	12,828	4,874	(227)	-	17,474
Total	29,779	10,765	1,157	(31)	41,670

NOTES
[2] Carbon emissions values are from AESC 2021, Appendix G Tabe 159.

Division 2-2
2021 Results to Date

Request:

Please refer to Bates Page 36, rows 11-18, in the section titled Recovery of Projected 2021 Gas Budget Overspend which states: "Q. Is the Company projecting an overspend of its approved 2021 EE implementation budget? A. Yes, in the gas portfolio the Company is projecting to exceed the approved implementation budget. The approved 2021 EE implementation budget for the gas portfolio was $33,275,200, the Company's projected actual spend is $37,722,432, which is 13% percent above the total gas portfolio implementation budget." Please explain to which extend the additional demand for weatherization in 2021 is accounted for in the 2022 Provisional Plan for gas.

Response:

The additional weatherization demand is accounted for in the 2022 Provisional Plan for gas given the current incentive levels of fifty percent of the overall weatherization costs up to a maximum of $4,000. Generally, the percentage of customers moving from the assessment phase to the weatherization phase will decline with lower incentive levels.

For planning and budgeting purposes, the Company is anticipating significant seasonality to 2022 productions levels, with the beginning of the year having much stronger activity, due to the current pipeline, than the end of 2022.

External factors such as a cold winter or impacts of increases in fuel prices could potentially drive up customer demand, which would then need to be balanced against any approved budget and competing demands on overall program budgets.

Prepared by or under the supervision of: Angela Li

Division 2-3
Benefits-Cost Analysis

Request:

Referring to Table E-5 Primary and Table G-5 Primary, please provide alternative tables that re-calculate the benefits-cost ratio for each individual program using the Utility Cost Test. For the electric portfolio, the following benefits should be omitted: natural gas, natural gas DRIPE, fuel oil, fuel oil DRIPE, propane, water, and non-resource (non-energy impact). For the natural gas portfolio, the following benefits should be omitted: electric energy and electric energy DRIPE, fuel oil, fuel oil DRIPE, propane, water, and non-resource (non-resource impacts).

Response:

The requested analysis has been performed and provided in Attachment Division 2-3-1 (electric) and Division 2-3-2 (gas).

The Company notes that the Utility Cost Test (UCT) has been specified for this response as the question specifies. Guidance from the California Standard Practice Manual, a common reference for benefit-cost analyses of demand side management programs, and National Standard Practice Manual (NSPM) indicate that, for the (UCT), costs in addition to benefits should be adjusted.[1, 2]

National Grid further notes that the instructions to provide this type of UCT analysis is novel and inconsistent with the RI Test of cost effectiveness as approved by the PUC.

[1] California Standard Practice Manual: Economic Analysis Of Demand-Side Programs And Projects, Appendix B provides a definition of the "Program Administrator Cost Test", also known as the UCT: http://www.calmac.org/events/spm_9_20_02.pdf
[2] National Standard Practice Manual: https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/

Prepared by or under the supervision of: Jessica Darling

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Calculation of 2022 Program Year Cost-Effectiveness - Electric UCT Adjusted
Attachment Division 2-3-1
All Dollar Values in ($000)

	DIV 2-3 Instructions Benefit/ Cost[1]	Total Benefit	Program Implementation Expenses[2]	Customer Contribution	Performance Incentive	¢/Lifetime kWh
Non-Income Eligible Residential						
Residential New Construction	1.21	$2,536.5	$1,541.7	$547.2		14.0
ENERGY STAR® HVAC	1.98	$12,569.0	$4,487.3	$1,848.5		8.2
Energy*Wise*	0.38	$6,143.2	$15,767.7	$540.7		121.1
Energy*Wise* Multifamily	0.94	$3,578.2	$3,271.1	$532.0		18.3
Home Energy Reports	2.04	$5,401.4	$2,641.3	$0.0		9.8
Residential Consumer Products	2.16	$9,611.9	$2,837.4	$1,606.6		9.3
Residential ConnectedSolutions	1.60	$2,883.8	$1,802.4	$0.0		N/A
Energy Efficiency Education Programs			$40.0			
Residential Pilots			$0.0			
Community Based Initiatives - Residential			$255.1			
Comprehensive Marketing - Residential			$357.9			
Non-Income Eligible Residential SUBTOTAL	**1.12**	**$42,724.1**	**$33,002.0**	**$5,075.0**	**$0.0**	**18.9**
Income Eligible Residential						
Single Family - Income Eligible Services	0.66	$8,804.9	$13,267.2	$0.0		34.5
Income Eligible Multifamily	1.05	$3,715.1	$3,536.3	$0.0		14.5
Income Eligible Residential SUBTOTAL	**0.75**	**$12,520.0**	**$16,803.5**	**$0.0**	**$0.0**	**26.8**
Commercial & Industrial						
Large Commercial New Construction	2.79	$37,643.4	$12,454.1	$1,021.5		6.1
Large Commercial Retrofit	1.71	$70,350.5	$30,308.7	$10,742.0		12.0
Small Business Direct Install	0.98	$11,491.7	$9,732.8	$1,974.1		17.5
Commercial ConnectedSolutions	2.42	$10,621.2	$4,386.9	$0.0		N/A
Commercial Pilots			$0.0			
Community Based Initiatives - C&I			$85.0			
Finance Costs			$2,000.0			
Commercial Workforce Development			$157.5			
C&I SUBTOTAL	**1.66**	**$130,106.8**	**$59,125.0**	**$13,737.6**	**$5,500.0**	**11.6**
Regulatory						
OER			$1,911.5			
EERMC			$1,274.4			
Rhode Island Infrastructure Bank			$5,000.0			
Regulatory SUBTOTAL			**$8,185.9**			
TOTAL	**1.31**	**$185,350.9**	**$117,116.5**	**$18,812.6**	**$5,500.0**	**15.2**

Notes:

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Calculation of 2022 Program Year Cost-Effectiveness - Natural Gas UCT Adjusted
Attachment Division 2-3-2
All Dollar Values in ($000)

	DIV 2-3 Instructions Benefit/ Cost	Total Benefit	Program Implementation Expenses	Customer Contribution	Performance Incentive	$/Lifetime MMBtu
Non-Income Eligible Residential						
Energy Star® HVAC	0.90	$6,900.2	$3,732.5	$3,892.9		$17.34
EnergyWise	0.79	$7,336.5	$8,645.9	$670.2		$19.47
EnergyWise MultiFamily	1.26	$2,311.2	$1,489.2	$344.0		$12.46
Home Energy Reports	3.87	$1,712.1	$441.8	$0.0		$4.72
Residential New Construction	1.03	$986.7	$513.2	$447.0		$14.79
Comprehensive Marketing - Residential			$68.0			
Community Based Initiatives - Residential			$85.0			
Residential Pilots			$0.0			
Residential Workforce Development			$0.0			
Non-Income Eligible Residential Subtotal	**0.95**	**$19,246.7**	**$14,975.5**	**$5,354.1**	**$0.0**	$16.61
Income Eligible Residential						
Single Family - Income Eligible Services	0.56	$3,539.9	$6,371.8	$0.0		$29.12
Income Eligible Multifamily	1.43	$4,207.9	$2,948.9	$0.0		$10.80
Income Eligible Workforce Development			$0.0			
Income Eligible Residential Subtotal	**0.83**	**$7,747.8**	**$9,320.7**	**$0.0**	**$0.0**	$18.95
Large Commercial & Industrial						
Large Commercial New Construction	3.38	$11,582.7	$3,186.6	$243.0		$4.35
Large Commercial Retrofit	2.89	$21,701.6	$4,696.3	$2,810.2		$5.63
Small Business Direct Install	3.26	$1,394.7	$355.9	$71.3		$4.66
Commercial & Industrial Multifamily	2.00	$2,085.9	$957.3	$84.0		$7.94
Commercial Pilots			$215.8			
Community Based Initiatives - C&I			$28.3			
Finance Costs			$0.0			
Commercial Workforce Development			$67.5			
Commercial & Industrial Subtotal	**2.55**	**$36,764.8**	**$9,507.6**	**$3,208.6**	**$1,700.0**	$5.42
Regulatory						
EERMC			$487.8			
OER			$731.7			
Regulatory Subtotal			**$1,219.5**			
Grand Total	**1.41**	**$63,759.3**	**$35,023.4**	**$8,562.7**	**$1,700.0**	$10.74

Notes:
(1) DIV 2-3 Instructions = Total Benefits from Table G-6 / Program Implementation Expenses from Table G-3. Also includes effects of free-ridership and spillover.
-Excluding: Economic, Electric Energy and Electric Energy DRIPE, Fuel Oil, Fuel Oil DRIPE, Propane, Water, and Non-Resource (Non-Resource Impacts) Benefits
-Including: Natural Gas, Natural Gas DRIPE, Electric Capacity, Carbon, and NOx Benefits

(2) For Implementation Expenses derivation, see Table G-3.
(3) Following the California or NSPM guidance on the UCT, costs in addition to benefits should be adjusted. In this response the company did not make any adjustments to costs. Please see the references below for more information:
-California BCA handbook: http://www.calmac.org/events/spm_9_20_02.pdf
-National Standard Practice Manual: https://www.nationalenergyscreeningproject.org/national-standard-practice-manual/

Division 2-4
Economic Development Benefits

Request:

For all questions in this section, please refer to Attachment 4, Section 3.10 on Economic Development Benefits starting on Bates 389 in the 2022 Original Plan. 2-4. Please provide all the workpapers and documentations supporting the economic development multiplier presented in Figure 1. Multipliers by Energy Efficiency Program Type on Bates Page 391.

Response:

Documentation of the economic development multipliers is provided in the National Grid report, "Implementation of The Brattle Group Methodology: Documentation of REMI Inputs and Results" (NG Report). This report is an attachment to the Brattle Study, "15 Brattle Group Review of RI Test and Proposed Methodology Final" that was provided with the 2021 EEPP. That Brattle Study is attached as Attachment DIV 2-4-1. The NG Report begins on pdf page 28.

Attachment DIV 2-4-2 represents workpapers and is an Excel file that shows the calculation of the multipliers from the REMI results and 2019 EEPP inputs, as described in the report. There is a tab in the Excel file for each program category, Electric, Gas, CHP and Demand Response (DR).

Prepared by or under the supervision of: Alfred P. Morriessey, Jr.

Review of RI Test and Proposed Methodology

PREPARED FOR

National Grid

PREPARED BY

Mark Berkman

Jürgen Weiss

January 31, 2019

THE Brattle GROUP

Notice

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Table of Contents

Executive Summary

National Grid asked the Brattle Group to review the current methodology for determining the economic benefits associated with the "Rhode Island Test."

We have some concerns with the current methodology, but believe there are relatively simple adjustments to how economic benefits are calculated that would allow an economic benefits calculation that is free of double counting and represents the potential impacts of National Grid's energy efficiency (including CHP) and demand response programs on the Rhode Island economy in an unbiased fashion.

Our major recommendations are to adjust the current methodology by a) including **net** (rather than gross) changes in spending; and b) to add consideration of the net impact of changes in disposable income as a result of the evaluated programs.

With respect to a), the current methodology in the Rhode Island Benefit Cost Test (RI Test) would focus on the economic impact of program spending on the Rhode Island economy. However, this approach only analyzes the "gross" impact of the evaluated programs and fails to take into consideration that a major component of energy efficiency (including CHP) and demand response programs is **avoided** (emphasis added) spending. A proper evaluation of the economic impacts of an evaluated program therefore needs to consider the impact of program spending net of avoided spending, hence focus on net incremental spending due to an evaluated program.

With respect to b), the current methodology omits calculating the impact of customer savings on the Rhode Island economy, ostensibly to avoid double counting of benefits. However, while customer savings are indeed already being captured by existing benefit-cost tests, such tests do not capture the "ripple effects" of changes in disposable income on the Rhode Island economy and thus potentially underestimate the economic benefits of the evaluated programs. As with a), it is important that the economic benefits be evaluated on a "net" basis so that only the portion of economic impacts not already captured by existing benefit-cost metrics are being counted.

We lay out a simple approach for implementing these improvements to the proposed economic impact methodology, which builds largely on National Grid's use of the REMI model, a widely respected macro-economic model that can be used to derive reasonable and unbiased estimates of the economic benefits of evaluated programs under the Rhode Island test.

I. Overview and Terminology

We were asked by National Grid to evaluate past approaches to estimating the economic impacts of energy efficiency programs and to propose a methodology for estimating such impacts for energy efficiency (EE) and demand response (DR) programs and Combined Heat and Power (CHP) projects for inclusion as required by the Rhode Island Benefit Cost Test (RI Test).[1] National Grid has also asked us to prepare an analysis of the economic development impacts of these programs. This includes the creation of a multiplier to assist in future updates to economic impact estimates.

While CHP is an eligible measure within National Grid's Large Commercial and Industrial Retrofit program, there are inherent differences between EE and CHP projects that result in a somewhat different allocation to macroeconomic sectors. Therefore, this report provides a specific methodology for the creation of a CHP multiplier.

This report includes two parts. Part 1 outlines the methodology we propose to estimate the economic impacts of National Grid's energy efficiency and demand response programs and CHP projects. The method we propose is designed to accurately measure these impacts while avoiding double counting with other elements of the test and to coordinate with other planning and evaluation efforts undertaken by National Grid. Part 2 presents the findings of the economic impact analysis completed in conjunction with National Grid.

Before describing our proposed method to implementing an approach to estimate the economic benefits as part of the RI Test while avoiding double counting issues, we first summarize some basic concepts related to the measurement of benefits and costs of energy efficiency (including CHP) and demand response programs.

First, it is important to make the distinction that while all of the benefits and costs within the RI Test are appropriate for inclusion in benefit/cost (B/C) metrics; several of these benefits are not easily monetized for inclusion in an economic impact assessment. For the purpose of this study, we refer to these as non-monetary benefits and do not include them in our economic impact assessment, even though some of them could have significant ultimate economic impacts. For example, the value of greenhouse gas (GHG) emissions reductions beyond RGGI requirements likely reflects "avoided costs" to society that would have real economic consequences in the long run. These avoided costs would then translate into higher disposable income at some point in the future. However, over the forecast horizon considered by the analysis, the quantification of the impacts of lowered GHG emissions on disposable income (and the reduction in spending, for example on climate change adaptation measures, is highly uncertain. For these reasons, we propose

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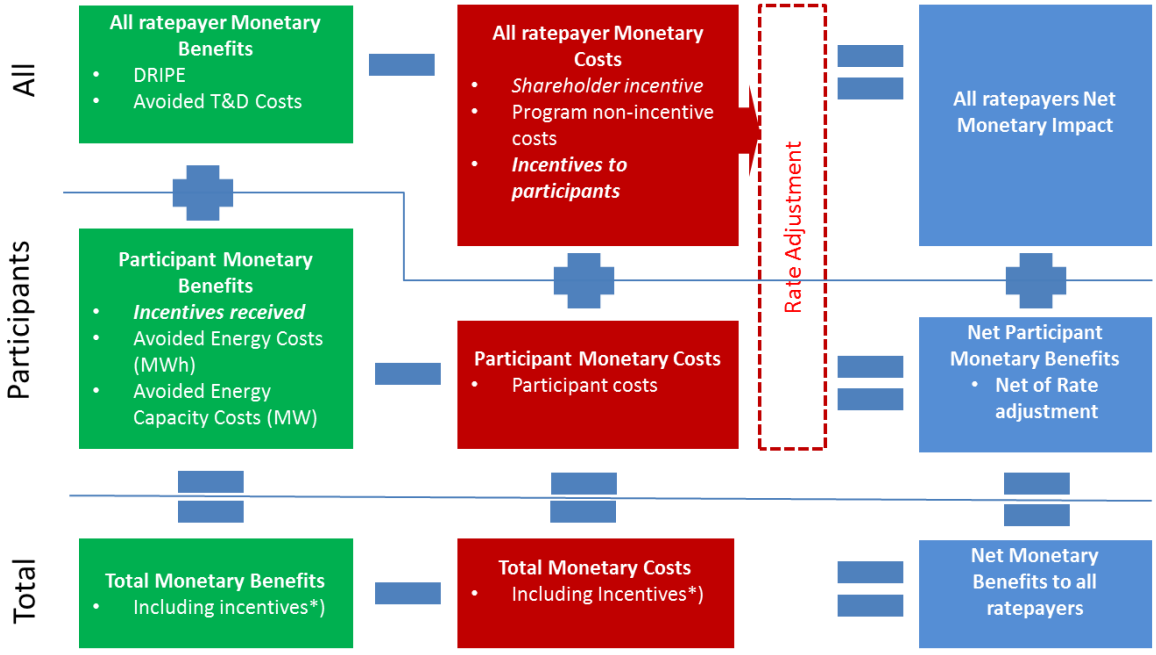
[1] The Rhode Island PUC established a Framework for Cost-Benefit Analysis Section 1.2(B) of the Least Cost Procurement Standard for the procurement of energy efficiency resources, approved by the Rhode Island PUC in Docket 4684.

not to attempt to estimate the economic impacts of certain benefits (and costs) in the economic benefits calculation for the RI Test. Such non-monetized benefits include avoided GHG emissions (beyond those monetized through the RGGI program), NOx emissions reductions, improved thermal comfort, noise reduction, property value increases, national security benefits, health benefits, reduced tenant complaints, improved safety, reduced safety related emergency calls and improved lighting quality.

Second, as illustrated in Figure 1, (monetary) benefits and costs accrue to two types of parties: participants and all ratepayers/customers. All customers (participants and non-participants) benefit from lower wholesale prices (Demand Reduction Induced Price Effects - DRIPE) and avoided Transmission and Distribution (T&D) costs, all of which, all else equal, lower customer retail rates, and all participants pay the program costs for energy efficiency (including CHP) and demand response programs, which National Grid recovers through adders to its retail rates. Program participants may in addition incur their own costs to participate, but also receive monetary benefits in the form of rebates and lower electricity consumption.[2]

Figure 1: Treatment of (participant and non-participant) net monetary customer savings



*) Incentives are a transfer from (non-participating) to participating ratepayers and don't affect net monetary benefits across all ratepayers

All National Grid program costs (including rebates) are recovered from all ratepayers through retail rate adders. As a consequence, program participants' net monetary benefits equal their private

[2] Some customers (residential) don't pay for capacity separately. However, since their electricity rate will include a component to include capacity, avoided capacity costs flow into lower electricity costs for those customers through lower electricity consumption.

monetary benefits (lower electricity bills, rebates) and benefits accruing to all ratepayers (lower electricity rates due to DRIPE plus lower distribution and transmission rates due to avoided T&D expenses) minus the impact of any increase electricity rates due to National Grid recovering its total program costs). "Non-participants" net benefits are equal to the change in their electricity bills due to the changes in electric rates, which could be positive or negative, depending on whether the factors putting downward pressure on rates (DRIPE, avoided T&D costs) are larger or smaller than the factors putting upward pressure on rates (National Grid recovering its program costs via rate adders). Importantly, and as shown in Figure 1 above as the final row, the total net benefit to all ratepayers is the sum of participant and non-participant (all) (monetary) benefits minus participant and utility (monetary) costs. These net monetary benefits to all ratepayers represent "net customer savings" that can have additional impacts on the Rhode Island economy to the extent they are spent in Rhode Island.

II. RI Test Methodology Review

A. RI Test Description

The Rhode Island Public Utilities Commission (RIPUC) revised its Total Resource Cost Effectiveness Standard to include both economic development and environmental benefits, and to align with the new Cost-Benefit Framework, renaming it the RI Test.[3] This test is to be applied to energy efficiency (including CHP) and demand response programs. National Grid presented its first RI Test results to the RIPUC.[4]

The revised cost-benefit test, the RI Test, incorporates non-embedded greenhouse gas reductions (reductions not already captured in baseline avoided costs) and economic development impacts. The focus here is on the latter impact.

The elements of the RI Test are as follows:

Benefits:

1. Electric Energy Benefits
2. Electric Generation Capacity Benefits
3. Electric Transmission Capacity and Distribution Capacity Benefits
4. Natural Gas Benefits
5. Fuel Benefits (including the value of delivered fuel savings from programs that influence delivered fuel consumption)
6. Water and Sewer Benefits

[3] See for example, Danny Musher, RI Office of Energy Resources, "Overview of Rhode Island Cost-Effectiveness Practice, June 15, 2017.

[4] National Grid, Overview of RI Test, Rhode Island Public Utilities Commission, Technical Session RIPUC Docket 4684, September 13, 2017.

7. Non-Energy impacts
8. Price Effects
9. Non-embedded Greenhouse Gas Reduction Benefits
10. Economic Development Benefits
11. Non-embedded NOx Reduction Benefits
12. Value of Improved Reliability

Sum of 1 through 12 on a present value basis for the program lifetime

Costs:

1. Participant costs
2. Utility Cost
    - Participant incentives, Evaluation, Marketing, Sales/Technical Assistance, Evaluation, Company Shareholder Incentive

Sum of 1 through 3 on a present value basis for the first year of the program.

The test equation is stated as:

Benefit Cost Ratio (BCR) = the Present Value of Total Benefits/the Present Value of Total Costs

National Grid routinely estimates benefits 1-9 and 11-12 as well as all of the cost categories. The main purpose of this report is to propose and implement a methodology for benefit item 10 while avoiding potential double counting of the other benefits.

B. Concerns Regarding Economic Impact Evaluations under the RI Test

In this section, we review the current methodology for calculating economic impacts, and how National Grid incorporates those impacts in the RI Test.

1. Background

The Least Cost Procurement Standards that dictate the RI Test does not prescribe a definition of what constitutes the newly added economic impacts component or the appropriate method to measure this component.[5] However, a presentation by the RI Office of Energy Resources at the RIPUC in June 2017[6] suggested three contributing components to economic impacts of energy efficiency (including CHP) and demand response programs: 1) participant bill savings; 2) customer

[5] Least Cost Procurement Standards (Standards) approved at the Open Meeting on April 27, 2017 in Docket 4684

[6] Danny Musher, RI Office of Energy Resources, "Overview of Rhode Island Cost-Effectiveness Practice, June 15, 2017.

Continued on next page

costs; and 3) program/participant costs. The RIPUC presentation indicated that the first two elements are already accounted for in previously performed B/C tests, leaving the third element to be measured as the change in Gross Domestic Product (GDP) associated with program and participant spending. This change could be calculated by applying a GDP multiplier to dollars spent.[7]

National Grid had previously conducted a study, "Macroeconomic Impacts of Rhode Island Energy Efficiency Investments: REMI Analysis of National Grid's Energy Efficiency Programs", using REMI, a commercial macroeconomic model.[8] This study took into account 1) construction impacts from program and participant spending; 2) bill savings to customers resulting in increased customer spending on good and services; and 3) increased rates and participant investment costs, which will partially offset the impact of bill savings (i.e., potential economic impacts depend on customer spending of savings due to programs net of program and participant costs) resulting in economic multipliers per dollar of spending on energy efficiency and CHP measures.

In a September 2017 presentation to the RIPUC,[9] National Grid explained how it utilized the GDP multiplier resulting from the REMI analysis in the RI Test in a representation of the economic benefits of energy efficiency and CHP.[10] As indicated in this presentation and in Attachment 4 of its 2018 Annual Energy Efficiency Plan, the Company indicated that it was concerned that the benefit of bill savings to customers was already accounted for in benefit/cost screening since the value of all energy savings was already included as a monetary benefit. In addition, the impact of customer costs was also already included as a negative dollar benefit. Therefore, National Grid only used the resulting REMI multipliers associated with the construction impacts to avoid potential double counting.

2. Potential concerns with most recent approach

We have two concerns with the current approach to estimating economic impacts. The first relates to the treatment of items deemed already covered by existing B/C tests and their exclusion due to the potential for double counting. The second has to do with estimating the economic impact of program and customer spending. We discuss our potential concerns with each of these next.

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7 Ibid, page 6.

8 Ibid, page 17. See also National Grid Customer Department, Macroeconomic Impacts of Rhode Island Energy Efficiency Investments, REMI Analysis of National Grid's Energy Efficiency Programs, October 2014.

9 National Grid, Overview of Rhode Island Test, Rhode Island Public Utilities Commission, Technical Session, RIPUC Docket No. 4684, September 13, 2017

10 Ibid, page 16.

a. The current approach to avoid double counting understates the economic impact

National Grid correctly identifies ratepayer benefits and costs to be already reflected in the existing B/C test. Any estimate of the economic impact of energy efficiency (including CHP) and demand response programs, such as an estimate of GDP impacts of these programs, would also include these same benefits. However, current B/C tests only reflect the **direct** (emphasis added) savings to customers. They do not reflect some additional economic impacts, sometimes called indirect and induced impacts, resulting from net consumer savings from the evaluated programs. As highlighted in Figure 1 above, energy efficiency (including CHP) and demand response programs (if cost-effective) will likely lead to net monetary savings to all ratepayers in the aggregate. Some of these monetary savings will be spent on goods and services, and this additional spending can have an impact on the Rhode Island economy. Ignoring these indirect effects on the Rhode Island economy therefore likely understates the economic impact of the programs under consideration. Put differently, there is likely a multiplier affect associated with increased disposable income resulting from the programs and the currently proposed approach (and the one most recently applied by National Grid) ignores this multiplier effect. Our proposed approach, outlined below, therefore is to include this multiplier (and still avoids double counting).

b. Measurement of construction impacts must be on a net basis to correctly capture the incremental benefit of the programs

National Grid's current methodology to measure incremental economic impacts suggests analyzing the economic impact of program and (incremental) participant spending on the Rhode Island economy to develop a multiplier for this effect. This approach captures the economic impact of program related **gross spending** (emphasis added) by both National Grid and participants. However, as is clear from the benefit and cost categories under existing B/C tests, most of the benefits of these programs are **avoided spending** (emphasis added) on energy (electricity, gas), capacity (generation, transmission and distribution). By focusing on gross spending, the proposed methodology fails to take into the account the economic impacts on Rhode Island of reductions in spending under the programs that would have occurred in the absence of these programs. By doing so, the proposed methodology likely overestimates the economic impact of the programs, even though the exact size of the bias depends on the impact on Rhode Island of the program related spending versus the spending avoided by the programs. The relative impact of either depends on the sectors, in which both gross and avoided spending occur. As we describe below, we propose to develop estimates of **net spending** (emphasis added) due to the evaluated programs as the basis for developing multipliers.

III. Proposed Approach

A. Measuring Economic Impacts

There is no detailed discussion in the documents referenced above regarding how economic impacts should be quantified in the RI Test.[11] A review of economic impact analyses of energy efficiency programs including in particular a study conducted by the U.S. Environmental Protection Agency[12] indicates that a range of measures are often used to determine such programs' impacts on the local economy including:

- Jobs (defined variously as full-time equivalents (FTEs), job years, payroll, and labor income)
- Personal income
- Gross output
- Value added or Gross Domestic Product (GDP) (state product)
- Taxes and fees

The RIPUC presentations referenced above focused on GDP although reference is also made to employment and jobs. The same is true for National Grid's 2014 study. We conclude that State GDP is indeed the correct measure to be added to benefits in the RI Test for the reasons detailed below. GDP is defined as value added. Value added is defined as:

Value added = profits – depreciation cost + labor cost

Thus, GDP is sometimes referred to as industry contribution to the economy. Industry is broadly defined here to include economic activity by all sectors of the economy. In contrast the benefits (other than economic impacts) considered in the RI Test are all related to energy consumers. Avoided costs result in lower rates to consumers; investments in energy efficiency provide energy savings to consumers.

B. Measuring Net Impacts

As highlighted above, the impacts of the evaluated programs must be compared against a baseline. The baseline should reflect the projected economic activity absent the evaluated programs. The data to estimate net impacts are available because they are captured as part of the benefits and costs calculations under current B/C tests. For example, avoided costs reflect capacity and energy investments that would be made absent the efficiency programs. This investment will result in

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[11] These sources are listed in notes 3, 4, and 6 above.

[12] See for example U.S. Environmental Protection Agency, "Quantifying the Multiple Benefits of Energy Efficiency and Renewable Energy, A Guide to State and Local Governments, Part 2, Chapter 5, 2018 Edition

Continued on next page

construction and operations employment, higher sales, and more taxes. Thus, it is possible that on net, more jobs would be added under the baseline than with the efficiency program. Our work for Rhode Island on renewables impacts[13] found this to be the case in several years under certain scenarios because of differences in labor requirements and customer cash flow effects (higher upfront spending and lower disposable income, but more savings and higher disposable income in later years).

IV. Proposed Methodology

Based on these findings, our review of National Grid's 2014 REMI study with supporting data and discussions with National Grid staff, we believe that with modest refinements designed to avoid double counting and to properly estimate net impacts of programs the method National Grid used previously and which relied on REMI will provide a reliable basis for estimating the economic impact component of the RI Test.[14] The EPA study referred to above considers this method for estimating economic impacts a reasonable approach. REMI has been widely used for this purpose and offers several benefits including state level data and the ability to account for the influence of price as well as spending. REMI is a commercial economic market simulation model that National Grid licenses. REMI provides the means to estimate economic impacts attributable to energy efficiency programs measured in terms of value added, gross output, employment and taxes. The proposed methodology requires the careful determination of how much is spent, and on what, for each of the programs being evaluated. While both the levels, as well as the categories, of spending likely differ between the various energy efficiency programs as well as between energy efficiency measures on the one hand, and DR and CHP programs on the other hand, the methodology described below will be applicable across all programs, for which economic impacts are to be estimated.

Figure 2 below summarizes our proposed approach. It shows how the existing Benefit-Cost framework can be used to develop inputs for the economic impact assessment and how the results of the economic impact assessment can be adjusted to derive a measure of "net incremental economic impact", i.e. a measure of additional impacts of National Grid's energy efficiency (including CHP) and demand response programs in Rhode Island not already captured by its standard economic benefit cost methodology.

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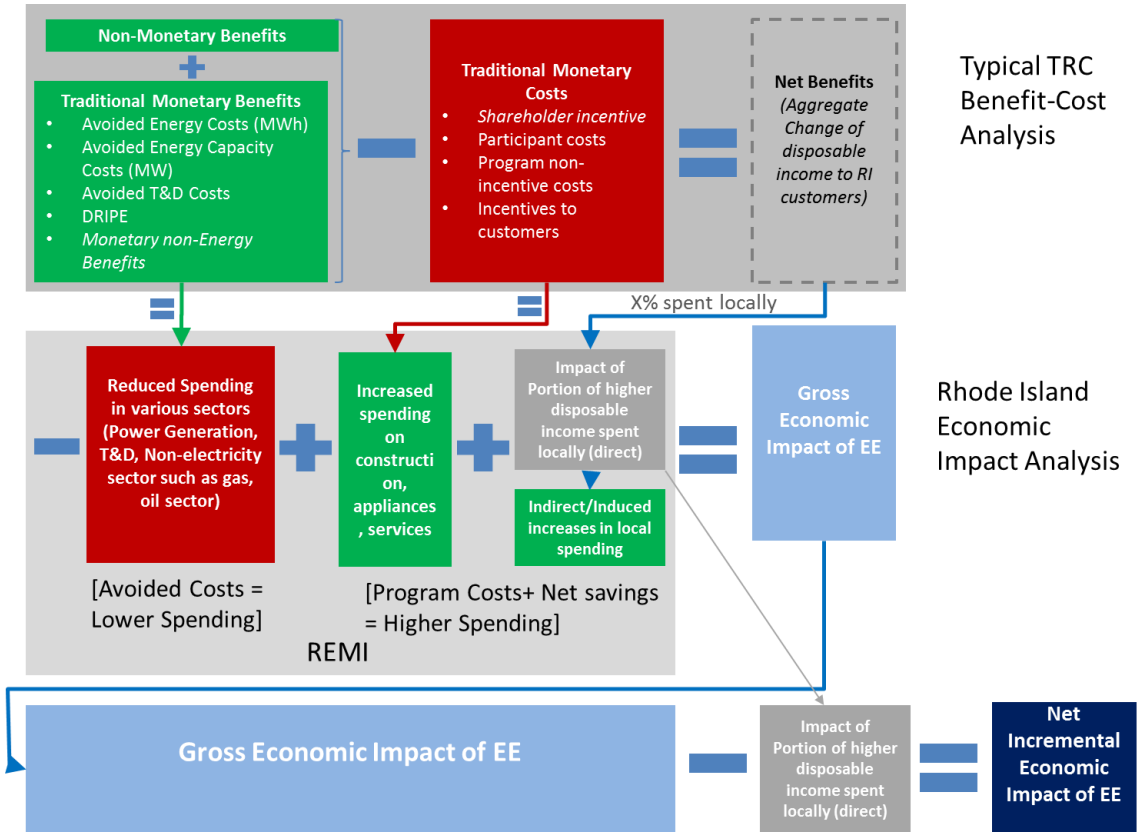
[13] Jurgen Weiss and Mark Berkman, "Renewable Energy Growth Program Analysis, Economic, Jobs, and Environmental Impacts for Program Years 2015 and 2016 and the Overall Program Years 2015 to 2019," Prepared for the Rhode Island Office of Energy Resources and Rhode Island Distributed Energy Board, by The Brattle Group, May 12, 2017.

[14] We have been in discussion with Courtney Lane and Al Morrissey of National Grid.

Figure 2: Schematic Overview of Proposed Economic Impact Methodology for RI Test



In its current benefit-cost methodology, National Grid calculates Net Benefits (and resulting B/C ratios) by estimating savings primarily in the form of avoided costs in the electric and natural gas sectors.[15] It also estimates program and participant costs. The difference between savings and costs is a measure of net benefits. With the exception of shareholder incentives, which increase disposable income to National Grid's shareholders, these net benefits are passed on to National Grid's Rhode Island customers and increase their disposable income.[16] Existing B/C calculations by National Grid already calculate this net monetized benefit as an aggregate (i.e. in dollars) per measure and program, even though the split of net benefits is likely different for program participants and non-participants.[17] However, this total net monetary benefit across all customers/ratepayers represents not only the monetary value of the overall efficiency gain

15 National Grid also estimates the benefits of avoided non-embedded greenhouse gas emissions and non-energy benefits. As described above they are not included in the economic benefit estimate.

16 It is conceivable that some National Grid shareholders also spend part of their increased disposable income in ways that impact the Rhode Island economy. We propose not to consider this potential effect.

17 More specifically, National Grid calculates direct benefits to program participants, DRIPE benefits that accrue to all customers (program participants and non-participants), and the rate increase required to pay for program costs and shareholder incentive, which is recovered from all customers. The net of the aggregated benefits and costs constitute increases to Rhode Island consumer disposable income.

Continued on next page

resulting from the evaluated programs; it also represents the change in disposable income to National Grid's Rhode Island customers/ratepayers.

Since the change in disposable income (the net monetary savings) may be spent on goods and services that have an impact on the Rhode Island economy, this measure is one of three important ingredients in an economic impact test (as described above) and, given that National Grid's current estimates exclude it from consideration, should be added. This can be done without double counting, as described further below.

The other two inputs are increases and decreases in direct spending. As Figure 2 illustrates, the direct benefits of evaluated programs, i.e. avoided monetary costs,[18] represent a **decrease** in spending relative to a world without these programs. All else equal, they would be expected to reduce economic activity including potentially in Rhode Island. These decreases in spending have not previously been reflected in National Grid's economic impact assessments or proposed to be included in the economic benefits calculation under the RI Test, but, to avoid overestimating the impacts from National Grid's programs should be reflected in a modified economic impact analysis. Program costs have previously been included and should continue to be included: They result in **increases** in spending relative to a "but-for world" without these programs.

Hence, any economic impact analysis using REMI performed for individual energy efficiency (including CHP) and demand response programs would consist in a) assigning the decreases (avoided monetary costs) in spending as well as the increases (program and customer costs) in spending to individual REMI sectors and to increase household and commercial spending proportionally to the three customer classes' net savings from each evaluated program.[19] With these inputs, REMI will estimate state GDP impacts.

However, these impacts will be "gross" in the sense that they include the direct impact on the Rhode Island economy of a portion of customers' financial savings from the programs. To illustrate this point, assume that the traditional B/C calculation determines a net increase in average customer disposable income of $200/year. If a customer is assumed to spend 75% of additional disposable income on goods and services in Rhode Island, the REMI model would assume a **direct** increase in economic activity of $150 (75% of $200). In addition, the $150 of extra spending in Rhode Island would have indirect and induced effects – additional spending on a restaurant visit would lead to higher income to restaurant employees, some of which would again be spent in Rhode Island. The REMI analysis estimates the direct, indirect and induced economic impact of

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[18] This includes all benefits that represent avoided spending that would have occurred absent the evaluated programs since these avoided costs would have resulted in economic activity absent the evaluate programs. They include lower spending on energy through lower prices (DRIPE) for energy and capacity, lower purchases of energy and capacity (MWh and MW savings), lower expenditure on T&D infrastructure, and potentially lower spending on natural gas and other fuels.

[19] The same methodology can be used to assess economic benefits at an aggregated or disaggregated level, *i.e.*, for a collection of measures, individual programs or across programs.

Continued on next page

the programs. Yet clearly counting both the $200 in additional disposable income and the $150 in direct economic activity as savings would be double counting, and this is likely the reason why the economic impact of increased disposable income has not been included in past economic impact assessments. Therefore, to determine "net incremental" economic impacts therefore requires subtracting from the gross estimate the direct impact of the portion of increased disposable income being spent in Rhode Island (i.e., the gray box at the bottom of Figure 2 above or $150 in the example).[20] Only the resulting net incremental benefits estimated should be added as the economic impact benefit (#10 in the list above).

A Rhode Island Test benefit cost ratio including the economic impact component is then calculated as the ratio of total benefits divided by total costs.

V. Implementation

In this section we describe how the proposed methodology would be implemented. Since National Grid evaluates cost-effectiveness at the measure and program level, the above methodology needs to be translated into measuring economic impacts at the measure and/or program level as well.

A. Energy Efficiency

For each of the evaluated programs, National Grid estimates, on an annual basis, various categories of costs and benefits, which mirror the costs and benefits required by the RI Test and which were described above. Costs associated with customer incentives are captured at the measure level, but all other costs such as marketing, sales and technical assistance, and evaluation activities are measured at the program level. In addition, shareholder incentive costs are captured at the sector level, and regulatory costs at the portfolio level.

National Grid currently (as of 2018) calculates benefits and costs for 223 measure/program combinations in its energy efficiency programs. This likely makes developing (annual) economic impact estimates for each measure/program combination impractical, given the resulting need to run the REMI model 223 times to develop economic impact estimates. We also note that, since measures will be deployed at the same time and as a bundle, estimating the economic impact by individual measure may miss interaction effects when measures are deployed in combination.

For these two reasons, we propose that at least initially economic impacts should be estimated at the program level (except for CHP) and the resulting multipliers applied at the measure level when evaluating the cost-effectiveness of individual measures. While not providing the level of

[20] Existing B/C tests may calculate the net benefit including both monetary and non-monetary benefits. As discussed above, for the economic benefits evaluation only monetary savings should be included. Therefore, to adjust REMI results from gross to net, only the net **monetary** (emphasis added) customer savings calculated in existing B/C tests should be subtracted from the REMI economic benefit estimates to determine the incremental economic benefits due to the evaluated programs.

granularity, doing so would still inform potential shifts in the relative spending among programs to reflect potentially asymmetric economic impacts on Rhode Island.

To better inform program design through changes in measure mix, we propose, as an ongoing research activity, to periodically assess the economic impacts of "measure groups", i.e., measures that are broadly similar in both their benefit and cost pattern (similar ultimate measures and hence similar economic activity, similar ratio of program expense, similar impact on avoided cost categories).

B. Combined Heat and Power (CHP)

The Least Cost Procurement Standards and R.I.Gen.Laws §39-1-27.7(c) (6)(iii) direct National Grid to incorporate the economic development benefits of CHP in Rhode Island as part of its cost-effectiveness screening.

CHP projects impact the economy in similar ways to EE and DR programs. The costs estimated include both customer and incentive costs. Just like EE programs, CHP costs become "additional spending" in affected REMI sectors. Similarly, National Grid estimates electricity savings. It includes a negative savings estimate for gas, indicating that the avoided electricity costs (from purchases) come at the expense of having to purchase natural gas. Therefore, the (negative) natural gas "savings" should be treated as additional expenditures for the natural gas sector in REMI. If operation and maintenance (O&M) expenses are available for a project, they should be treated like other costs in REMI, i.e., as increases in spending in the affected sectors. As with EE, National Grid separately estimates energy and capacity benefits from CHP. The monetized savings represent reduced spending in the electricity sector in REMI. As with EE programs, National Grid already estimates annual and lifetime net monetary savings from any of the assumed CHP projects. Just with the Net Benefits for EE programs, these savings represent additional income and should be added to REMI as such (most likely accruing to the industrial sector) to estimate the gross incremental economic impact of CHP. To estimate the net incremental economic impact, the portion of net savings assumed to be spent in Rhode Island (the direct impact of increased consumer spending due to higher income) should be removed from the REMI estimated increase in state GDP.

While CHP projects have the same kind of economic impacts as EE and DR programs, there are some inherent differences that require a somewhat different treatment. For example, unlike EE and DR programs, CHP programs lead to net energy savings by increasing consumption of natural gas as a fuel for the CHP, but reducing the purchase of electricity in a way that leads to net savings to consumers (and society, since CHP increases the efficiency of the combined production of heat and power). We have reviewed the approach for estimating net savings from CHP and concluded that it properly incorporates this idiosyncrasy. Also, given that CHP projects involve different spending patterns (for example on a power plant) than EE and DR programs, it leads to a different allocation to macroeconomic sectors within REMI. Because the relative share of spending across CHP projects can vary substantially by project and CHP projects tend to be sizable, National Grid proposes to screen projects individually if they are greater than 3 MW. We believe that this is a

reasonable approach to balance insights that can be gained from a project-by-project analysis with the additional effort required to develop a project-level analysis.

CHP projects tend to have a large portion of total spending used to purchase cogeneration equipment that is produced outside of the region and has no local economic impact.

To account for the fact that CHP equipment is likely purchased outside Rhode Island, the previous National Grid macroeconomic study included 60% of the CHP project spending benefits as an increase in final demand in the construction industry within REMI. This is the portion of total CHP spending used to install cogeneration equipment at C&I facilities, based on an existing sampling of CHP data. The remaining 40% of spending is assumed to be used to purchase equipment from outside of the region, and was not included in the analysis.

We find that this assumption is reasonable for future determination of economic multipliers for CHP projects.

National Grid's previous CHP economic multiplier was based off the costs and benefits from a sampling of representative CHP projects. This multiplier was then used in cost-effectiveness screening for CHP projects. It is appropriate for National Grid to develop a CHP multiplier based off a sampling of CHP projects using the methodology outlined in this report for use in screening future CHP projects below 3 MW in size. However, larger CHP projects above 3 MW in size should use project-specific inputs to the REMI model.

C. Demand Response

Demand Response (DR) programs are a new offering in 2019 and therefore the Company did not develop an economic benefit multiplier in its previous REMI analysis. To develop net incremental economic benefit measures for demand response programs, the same basic principles apply as with EE programs. As with EE, DR programs involve program and customer costs as well as incentives. Benefits from DR programs consist primarily of a combination of reduced electricity (or gas) consumption (although the majority of benefits likely come from shifting of demand to lower cost periods rather than a reduction in demand) and the purchase of electricity/gas at lower prices (at least from the wholesale market perspective). Hence, the benefits from DR programs can be estimated as the combined effect of lower consumption at lower cost, again expressed in aggregate savings per year. These savings are partially offset by DR related costs, both program and customer costs (administration, marketing, but also potentially hardware such as smart thermostats, stand-by equipment, etc.). One potential difference with EE programs concerns the treatment of "incentives". With EE programs, incentives (rebates) are generally designed to compensate for the difference between what a consumer would otherwise spend on some piece of equipment (say a normal refrigerator) and its energy efficient equivalent. With DR, incentive payments may be compensating for such incremental costs (like a smart versus a non-smart thermostat), but more often they may simply represent a participation incentive to entice participation (and essentially compensate for inconvenience). In that case, incentive payments do not represent (net) program expenditures, since they represent only a transfer from all ratepayers to participating ratepayers

(via National Grid), with no incremental spending by DR program participants related to the incentives. As a consequence, DR incentive payments should not be included in the REMI model as additional spending. As with EE and CHP, any cost will have to be allocated to appropriate REMI sectors. The monetary savings (in the form of lower electricity purchase costs) represent reductions on spending for the electricity sector (as with EE and CHP). The net savings (total savings from DR programs minus National Grid and participant costs) still represent incremental disposable income, (some of) which is spent. Hence, with the potential exception of the treatment of "incentives", the economic test for DR programs is conceptually identical to the economic benefit tests for EE and CHP.[21]

D. Practical Process of Implementing Program Level Economic Impact Test

National Grid already collects all or almost all the information necessary to assess the economic impact at the program level for EE DR programs and CHP projects by estimating program benefits and costs including program costs at that level.

To estimate economic impacts for each program and CHP project therefore requires primarily an "allocation" of both monetary benefits and costs at the program or CHP project level to various REMI sectors. The estimation of economic benefits should exclude from consideration non-monetary benefits such as emissions related benefits not captured with current environmental markets such as RGGI and various non-energy benefits listed above).[22]

There are 3 categories of benefits and costs to be considered:

Estimated benefits = avoided costs: The benefits **to be included** in the economic impact test include:

- Electricity sector avoided costs
  - Energy [EE, CHP, minimally for DR]
  - Capacity [EE, CHP, DR]
  - Transmission and distribution [EE, CHP, DR]
  - Energy DRIPE [EE, CHP, DR]
  - Capacity DRIPE [EE, CHP, DR]

- Oil and gas fuel savings [EE]

[21] There are of course differences in the macroeconomic sectors to which savings and costs need to be allocated and the distribution of increased and reduced spending across these sectors.

[22] This does not mean that such benefits will no longer be part of the B/C test. It only means that they are not included in the estimation of the economic impacts of the evaluated programs since only monetary savings will have the kinds of economic impacts that can be evaluated within REMI.

National Grid already calculates these benefits on an annual basis. Once an allocation to REMI sectors for each benefits category is made, assumed spending in those sectors would be assumed to be REDUCED by the amount of annual savings.

Estimated costs: The costs to be included consist of National Grid and customer costs. The sum of National Grid Program costs gets recovered from all customers via an EE charge. National Grid and customer costs include:

- National Grid Program Costs
  - Program Planning and Administration [EE, CHP, DR]
  - Marketing [EE, CHP, DR]
  - Sales and Technical Assistance and Training [EE, CHP, DR]
  - Evaluation and Market Research [EE, CHP, DR]
  - Regulatory Costs [EE, CHP, DR]
  - Rebates and Other Incentives [EE, CHP, likely not DR unless offsetting participant costs]
  - Shareholder Incentives [does not result in additional spending in REMI, but impacts customer/ratepayer net monetary savings]
- Participant Costs
  - Costs not covered by rebates [EE, CHP, DR]

Finally, the economic benefit analysis should consider the **net monetary savings** to National Grid's Rhode Island customers/ratepayers, i.e. the increase in disposable income attributable to the evaluated program(s). This net increase in disposable income equals all monetary benefits listed above, minus the sum of program and participant costs, also as listed above. Note that, as shown in Figure 1 above, rebates and incentives appear as both benefits and costs and thus cancel out at the aggregate level of all National Grid Rhode Island customers/ratepayers even though they do affect program participants and non-participants asymmetrically.

Each of these three categories of benefits and costs have to be allocated to various REMI sectors.

The allocation category captures how increased discretionary income from savings should be spent by consumers. For example, will households spend this money on new appliances, food, entertainment, recreation etc? These spending decisions will influence different sectors of the economy. To simplify this allocation, increased spending is generally spread proportionately on existing spending allocations built in to REMI. These allocations are based on typical household spending patterns[23].

The allocation of spending and savings by REMI sector must be done carefully, but since REMI is limited to 70 sectors, the allocation cannot be very precise. In addition, the specifics of spending, particularly on energy efficiency investments are difficult to determine. Consequently, most studies using REMI or other macroeconomic models choose to rely on only a modest number of

[23] Based on discussion with REMI economist and technician.

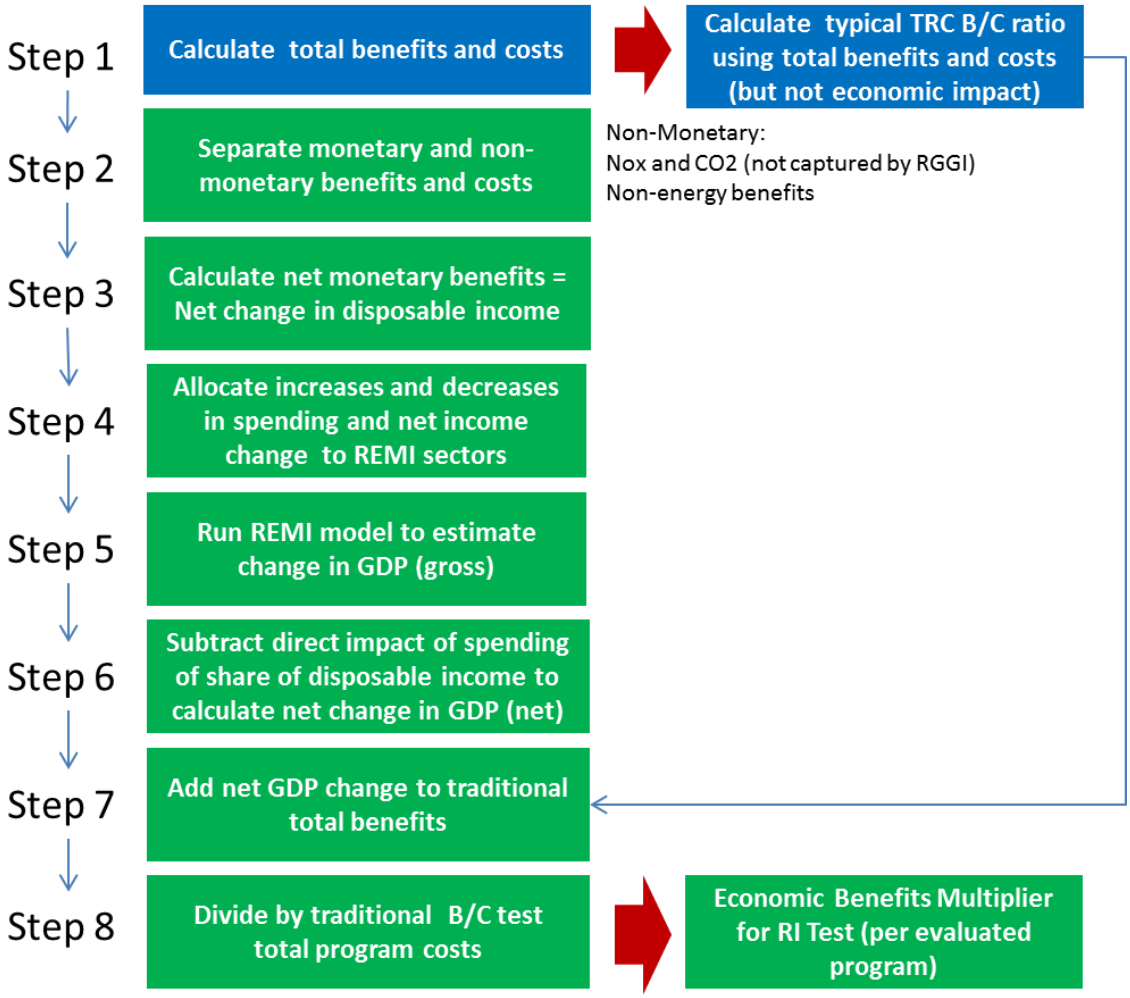
sectors. National Grid's previous sector allocation appears reasonable, but may be more specific than the data really allows. Limited spending to no more than 3 to 5 sectors including the construction, professional services sectors should be adequate. Consumer spending attributable savings is typically allocated to households assuming that spending in non-energy sectors goes up proportionately. Spending from savings by non-residential customers is generally treated in the same way. Less energy savings results in more spending on labor and capital.

Specifically, we recommend the following methodology to provide both dollar impacts and economic multipliers for future use in the RI Test:

1. Allocate spending and savings by program to consumers (household and commercial sectors. This requires assignment to REMI sectors informed by prior research and other studies. National Grid's previous assignments in 2014 appear reasonable. Further research may be necessary to determining what shares of net savings are spent and invested for both households and commercial sectors.
2. Run REMI for each evaluated program with both increases and decreases of spending across sectors to estimate the gross GDP impact of each evaluated program.
3. Subtract the direct impact of the portion of net monetary savings assumed to be spent from the evaluated program to derive a net GDP impact for each evaluated program (in absolute $ terms).
4. To calculate a multiplier for each evaluated program, add the net economic impact to the total benefits measure under the existing B/C test and divide the resulting total by the total cost under the existing B/C test.
5. This approach can be used for all of National Grid's EE and DR programs together or for individual programs as well as for CHP projects. Even though measure level impacts within each program likely differ somewhat from program level impacts, the practicalities and cost of attempting to estimate measure level impacts make such an effort likely generally uneconomical (given that the additional precision likely requires assumptions for information only available at the program level). As a result, in general we propose to use the program level multipliers to evaluate measure level impacts.
6. In addition, we propose, as an ongoing R&T task, to calculate, independent of regular annual filings, economic impacts at a grouped measure level, for example for all lighting measures, to better understand any potential bias involved in applying program level multipliers at the measure level.
7. Update the full analysis and all individual EE program multipliers every 3-5 years unless the previous step indicates the need for an update. Also use the insights gained from the previous step to decide whether updates should be made more or less frequently. Implement the next update for the evaluation of the next 3-year plan, i.e., in 2020.

The steps in the recommended methodology are summarized in Figure 3. Note that the key differences in this approach from the current one are: 1)the reliance on net benefits and costs and 2) the inclusion of GDP contributions from spending related to changes in aggregate disposable income to both participant and non particpant ratepayers.

Figure 3: Summary of proposed Methodology



VI. Economy-wide Impacts

In this review, we have laid out a framework and methodology for reliably estimating the economic impact component of the RI Test that is free of double counting. This component consists of (1) the economic impact of program and participant spending, net of the negative economic impact of avoided energy and capacity demand induced by the programs; and (2) the indirect and induced economic impact of program costs and benefits. These impacts should be included in the RI Test because they are not otherwise captured by the cost-benefit analysis used to screen National Grid's energy efficiency programs.

However, net economy-wide impacts also include the direct economic impact of programs costs and benefits. The table below summarizes the economy-wide impacts of National Grid's energy efficiency programs, including these direct impacts.

These are net economic impacts for the State of Rhode Island, after the negative economic impact of all costs and decreased energy demand have been considered. National Grid's 2019 EEPP is projected to create 2,778 jobs years during the life of the programs. In addition, the EEPP is expected to raise Rhode Island GDP by $301 million, Rhode Island real personal income by $496 million and state tax revenue by $30 million. On an average annual basis, the EEPP is expected to support 198 jobs per year, $21 million in annual GDP, $35 million additional income to Rhode Island residents and $2.2 million in additional state tax revenues.

Table 1: 2019 EE Program Plan Net Economics Impacts - State of Rhode Island

Program Lifetime Impact (2019-2032)	Electric	Natural Gas	Total
Job Years	2,370	408	2,778
GDP (2018 $ million)	$256	$44	$301
Personal Income (2018 $ million)	$443	$54	$496
State Tax Revenue (2018 $ million)	$27	$3	$30
Average Annual Impact (2019-2032)	**Electric**	**Natural Gas**	**Total**
Jobs	169	29	198
GDP (2018 $ million)	$18.3	$3.2	$21
Personal Income (2018 $ million)	$31.6	$3.8	$35
State Tax Revenue (2018 $ million)	$1.9	$0.2	$2.2

Note: Includes Demand Response programs.

A. Comparison to Prior Studies

The table below compares the economic impact results for the current 2019 EE Program Plan Study with those of prior studies, specifically, the 2014 EE Program Plan Study prepared by National Grid, "Macroeconomic Impacts of Rhode Island Energy Efficiency Investments;" and the 2009 EE Program Plan Study prepared by Environment Northeast (ENE), "Energy Efficiency: Engine of Economic Growth." To assist in the comparison, "2019 EE Program Plan Benchmark" results are also included. This is a preliminary run on the 2019 EE Program Plan in which the methodology used is the same as in the 2009 and 2014 studies.

The table shows estimated net job years and GDP created per $ million in program spending; and net job years and GDP created per $ million in program and participant spending. Separate results are shown for the electric and gas EE programs. Demand Response and CHP is not included.

Table 2: Comparison of Results to 2009 ENE Study

Study	Job Years / $ Million			GDP / $		
	Electric	Gas	Total	Electric	Gas	Total
2019 EE Program Plan Study						
Program Spending / Budget	22.2	12.9	20.0	2.4	1.4	2.2
Program and Part Spending / Program Cost	18.1	9.6	16.0	2.0	1.0	1.7
2019 EE Program Plan Benchmark						
Program Spending / Budget	33.1	19.5	29.9	3.6	2.1	3.2
Program and Part Spending / Program Cost	27.0	14.5	23.8	2.9	1.6	2.6
2014 EE Program Plan Study						
Program Spending / Budget	45.1	23.0	39.7	4.2	1.9	3.6
Program and Part Spending / Program Cost	36.5	18.5	32.1	3.4	1.6	2.9
2009 ENE Study						
Program Spending / Budget	36.2	38.5	37.4	4.0	4.4	4.2
Program and Part Spending / Program Cost	27.0	25.5	26.3	3.0	2.9	3.0

Notes:
Job Year and GDP multipliers include impact of program and participant spending, lifetime program savings, and program and customer costs.
ENE Study multipliers are for the RI "Separate" case, that is, they do not include spillover effects from EE programs in other New England states.

In general, economic impact results per dollar of EE spending are less in the 2019 EEPP Benchmark and the final 2019 EEPP Study than in prior studies. There are several reasons for this including changes in in the mix of programs, the split between residential and commercial costs, cost benefit ratios and underlying changes in the Rhode Island economy and customer mix. The latter are reflected in updated REMI model data and updates to its supply and demand function model coefficients, which are estimated using the latest empirical data.

Changes in the mix of EE programs can impact economic development impacts because commercial and industrial EE programs tend to have larger economic impacts than residential. For example, energy cost savings to businesses tend to result in more local job creation than residential energy cost savings, according to REMI data. This is one explanation for the lower 2019 multipliers compared to the 2014 study. The 2019 EE Program Plan has a lower share of commercial and industrial programs than the 2014 EE Program Plan. For electric, commercial and industrial program spending accounts for 52% of the 2014 electric EEPP but only 46% of the 2019 electric EEPP. For gas, commercial and industrial program accounted for 37% of 2014 gas EEPP spending but only 32% of 2019 gas EEPP spending.

Another reason that the 2019 EE Program Plan Benchmark results are lower than prior studies is that both electric and gas benefit/cost ratios are lower than in the 2014 EEPP. Finally, the share to commercial and industrial customers in total load has decreased for both electric and gas. This implies that less of the ratepayer burden of the 2019 EEPP falls on C&I customers compared to the 2014 EEPP, implying less of a negative overall economic impact, which mitigates the downward revision from the 2014 study to the 2019 study.

Differences between the 2019 EE Program Plan Benchmark and the final 2019 EE Program Plan results are due to methodological changes designed to avoid double counting and improve accuracy. First, program and participant spending were allocated to sectors in REMI based on the breakdown found in the program spending budgets and discussions with the program managers. Program Planning and Administration (PP&A), Marketing, and Sales, Technical Training and Assistance (STAT) budgets were allocated to appropriate Professional Services industries in REMI. For Energy Wise, Residential and Commercial Pilots, Income Eligible Programs and Large Commercial Retrofit and Small Business Direct Install programs, Rebate and Incentives budgets were allocated to the construction industry in REMI. Rebates and Incentives for Residential Lighting, Home Energy Reports, HVAC, Residential Products, Residential New Construction (RNC) and Large Commercial New Construction were left out of the REMI analysis. For these programs, the money is used purely to provide rebates and incentives for customers to purchase more efficient versions of equipment they were already going to purchase. For example, rebates on efficient light bulbs, manufactured outside of Rhode Island, to replace worn out bulbs in the home. This has no significant impact on Rhode Island economic activity. Not including this spending in the construction spending reduced the 2019 economic multipliers compared to the prior studies.

Second, the 2019 EE Program Plan study includes the negative economic impacts of decreased energy demand resulting from the programs. This is responsible for most of the difference between the 2010 EE Program Plan Benchmark and the final plan studies which failed to include these impacts.

Finally, the REMI analysis was carried out on a program-by-program basis. This did not have the effect of raising or lowering the overall results significantly in one direction or the other but does allow more accurate program multipliers for use in planning future EEPPs.

B. Economic Multipliers

This section presents the economic multipliers derived from REMI outputs for each of the individual EE programs in contrast to the more aggregate values presented above. These multipliers are presented in Table 3. Like the aggregate values, they are derived from the REMI analysis. REMI is run accounting for the adjustments presented in Figure 2 and specified in the 7 steps outlined on page 16 above. Thus, the REMI results present the dollars of GDP generated for each dollar of program spending accounting for participant spending and netting any expected decreases in spending in various sectors resulting from reduced energy spending created by the programs. In other words, the multipliers are net of the necessary adjustments discussed above. As a result, multiplying program-specific spending by a program multiplier presents the incremental GDP impact of that program.

We worked closely with National Grid staff to make these program-specific adjustments including, for example, the offsetting losses of economic activity attributable to reduced transmission and distribution investments attributable to lower energy demand, along with the revenue losses

attributable to reduced demand, and the appropriate assumptions regarding consumer behavior related to energy savings.

As discussed above, we recommend that the full analysis and all individual EE program multipliers be updated every 3-5 years. We also suggest, as an ongoing R&T task, to calculate, independent of regular annual filings, economic impacts at a grouped measure level, for example for all lighting measures, to better understand any potential bias involved in applying program level multipliers at the measure level and to potentially update multipliers as a result of such analyses.

Table 3: Multipliers by Energy Efficiency Program Type

Program Type	GDP/$ Program Spending
Electric Program	
Residential	
Residential New Construction (RNC)	$1.40
HVAC	$1.42
EnergyWise	$0.93
EnergyWise Multifamily	$1.34
Residential Lighting	$1.59
Residential Products	$1.52
Home Energy Reports	$1.00
Single Family - Income Eligible Services	$0.86
Income Eligible Multifamily	$1.19
Commercial and Industrial	
Large Commercial New Construction	$3.11
Large Commercial Retrofit	$5.80
Small Business Direct Install	$1.97
Total Electric Portfolio	**$2.14**
Gas Program	
Residential	
ENERGY STAR® HVAC	$0.83
EnergyWise	$1.01
EnergyWise Multifamily	$1.63
Home Energy Reports	$1.06
Residential New Construction	$0.22
Single Family - Income Eligible Services	$0.99
Income Eligible Multifamily	$1.55
Commercial and Industrial	
Large Commercial New Construction	$1.42
Large Commercial Retrofit	$2.53
Small Business Direct Install	$1.75
Commercial & Industrial Multifamily	$1.89
Total Gas Portfolio	**$1.26**
Combined Heat and Power (CHP)	
Total CHP Project <3 MW	**$2.13**
Demand Response	
Residential Connected Solutions	$0.83
Commercial Connected Solutions	$2.19
Total Demand Response Portfolio	**$2.02**

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MADRID
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THE Brattle GROUP

Implementation of The Brattle Group Methodology

Documentation of REMI Inputs and Results

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April 16, 2019

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I. Introduction

This document provides a detailed summary of the steps National Grid took to implement the recommended methodology for estimating the economic impacts of Rhode Island's energy efficiency programs for use in cost-benefit assessments included in the "Review of RI Test and Proposed Methodology", prepared by the Brattle Group for National Grid, January 2019.

The Brattle Group recommended the following key changes to the previous methodology used in "Macroeconomic Impacts of Rhode Island Energy Efficiency Investments, REMI Analysis of National Grid's Energy Efficiency Programs," National Grid Customer Department, November 2014, which developed the prior economic impact benefit multipliers for use in the RI Test:

1. The allocation of spending, benefits, and costs to sectors in REMI based on the breakdowns found in each program spending budget and projected benefits instead of the use of total overall Plan values. This provides for a program specific economic impact that more accurately reflects how the implementation of each program impacts the RI economy.
2. Changing the allocation of energy efficiency program spending to sectors in the REMI model from using a generic study to using actual electric and gas program budget data that more accurately reflects where money gets spent in the economy.
3. The exclusion of rebates and incentives for Residential Lighting, Home Energy Reports, HVAC, Residential Products, Residential New Construction (RNC) and Large Commercial New Construction from the REMI analysis.
4. Accounting for the negative impacts that reduced energy consumption has on transmission, distribution, and generation spending in Rhode Island.
5. Avoiding double counting of ratepayer benefits and costs in the RI Test by only counting their indirect and induced economic impacts.

These changes provide for more accurate accounting of the net-incremental benefits of Rhode Island's energy efficiency programs beyond what is already claimed in the RI Test.

As recommended by the Brattle Group, the analysis detailed in this document continues to use the REMI regional economic model of Rhode Island to estimate these economic impacts.

A. Energy Efficiency Program Economic Impacts

The REMI analysis of Rhode Island's energy efficiency programs to determine the economic development component of the RI Test involved estimating the following economic impacts, on a program-by-program basis:

- Program and participant spending

- Customer benefits
- Reduced energy demand
- Program and participant costs
- Net economic development benefits to the State of Rhode Island
- Economic impact component of the RI Test

While the economic impact of program and participant spending and customer benefits is positive, the impact of reduced energy demand and program and participant costs is negative. The net economic impact to the State of Rhode Island is sum of these positive and negative impacts. This is the net economic development benefit of the energy efficiency programs to Rhode Island after all costs have been accounted for.

The economic development component of the RI Test is the sum of all energy efficiency program economic impacts not already included in the RI Test, namely:

- Positive economic impact of program and participant spending
- Negative economic impact of reduced energy demand
- Indirect and induced economic impact of program costs and benefits. While the direct economic impact of these costs and benefits are already included in the RI Test, their indirect and induced impacts are not.

These economic impacts are expressed in absolute terms and as multipliers on program spending, which are used to calculate the economic development component of the RI Test as described in the Brattle report. The document details the steps National Grid took to follow the Brattle Group methodology using inputs from National Grid's 2019 Energy Efficiency Program Plan (EEPP) to develop economic impact multipliers for use in the RI Test for future EEPPs.

Program and participant spending is used for planning, marketing, implementing and evaluating the EEPP programs; for purchasing materials and equipment; and installing the measures. This generates jobs, income and economic activity in construction and professional services, as well as related industries.

EEPP benefits are participant energy and other cost savings related to lower energy use and equipment operating costs; lower market energy and capacity prices that reduce energy costs for all Rhode Island customers; and improved electric reliability. All put more money in consumer's pockets and lower costs for Rhode Island businesses. Consumers typically spend a portion of their savings on local goods and services, which boosts Rhode Island economic activity. For businesses, lower costs increase regional competitiveness, allowing Rhode Island firms to sell more into competitive markets, leading to increased output and hiring.

Reduced energy consumption and spending due to the EEPP has negative economic impacts also. National Grid's revenue decoupling mechanism (RDM) maintains local electric and gas distribution industry revenue; but revenue falls for electric and gas commodity suppliers. The amount is equal to total customer bill savings, including savings due to market energy price

reductions from the EEPP. Moreover, reduced energy consumption lowers distribution and transmission infrastructure capacity spending needs. These savings equal reduced spending in the local gas and power line construction industry, which has negative economic impacts.

The economic impact of program and participant costs is negative. The programs are funded by an energy efficiency charge on all customer bills. This ratepayer impact and participant costs reduce local purchasing power and the competitiveness of local firms.

B. Direct, Indirect and Induced Impacts

Each of these EEPP economic impacts has three components, direct, indirect and induced. Direct economic impacts are tied directly to EEPP spending, benefits, reduced energy demand or costs. For example, the number of contractors hired to install efficiency measures in businesses and homes is a direct economic impact of EEPP program and participant spending. Customer cost savings are the direct economic impact of EEPP benefits. Ratepayer impacts and participant costs are the direct economic impact of EEPP costs.

Indirect economic impacts are felt in the local supply chain, for example, industries providing goods and services for the programs. Examples are increased demand for local materials such as wood, insulation and other construction materials, and tools and rental equipment to install measures.

Induced economic impacts are felt mainly in the local service sector, for example, increased retail activity and hiring. Induced economic impacts result from the spending of the direct and indirect EEPP workers; from customers spending a portion of their bill savings on local goods and services; from businesses expanding output because of lower energy costs; and from customers and firms reducing their spending on local goods and services because of energy efficiency charges and participant costs. The total or net economic impact of EEPP program and participant spending, customer benefits, reduced energy demand and program and participant costs is the sum of their direct, indirect and induced impacts.

C. REMI Model

National Grid used the REMI regional economic model of Rhode Island to estimate these economic impacts using inputs form the 2019 EEPP. REMI is a dynamic equilibrium economic model based on public data and peer-reviewed methodology. REMI has been used in the industry for 40 years to estimate the local economic impact of various programs, policies and investment proposals, including energy efficiency programs. REMI has over 150 US and international clients, including the Rhode Island Department of Revenue; other local, state and federal government planning agencies; non-profit research organizations; energy consultants; universities and utilities. REMI is owned by Regional Economic Models, Incorporated and leased to its clients. National Grid leases a 169-sector version of REMI's Rhode Island model.

The REMI model is a complete representation of the macroeconomic structure of the Rhode Island economy. By entering assumptions about the amount, timing and type of energy efficiency investment, customer benefit or cost, REMI predicts their economic impact in Rhode Island in terms of jobs, incomes, gross domestic product (GDP) and other economic variables. These impacts are measured as differences from a base case in which no EEPP investments are made and the case in which the 2019 EEPP investments are made.

The REMI model estimates total economic impacts, including their direct, indirect and induced components. REMI economic impacts are estimated using an input-output model that captures the industry structure of Rhode Island and measures how a change in demand in one industry of the economy changes demand in other industries related to it. The REMI model also includes residential demand functions and Cobb-Douglass production functions that estimate how households and businesses adjust to changes in energy and other costs.

The REMI model structure consists of five major sectors or blocks:

1. Output and Demand
2. Labor and Capital Demand
3. Population and Labor Supply
4. Compensation, Prices and Costs
5. Market Shares

Because REMI is a general equilibrium model, all blocks are interrelated. As EEPP-induced changes in energy demand and costs impact customers and participants, these sectors adjust until equilibrium is re-established in all markets.

The REMI model also includes regional purchase coefficients (RPCs) that measure the portion of Rhode Island demand for goods and services that is met by local firms versus suppliers from out of state. For example, the construction industry RPC is approximately 94%, meaning that 94% of the Rhode Island demand for construction services is met by local firms and 6% is met by out-of-state firms. The professional services RPC is 55%. If EEPP spending on professional services is input to REMI as increased final demand for professional services, then REMI uses this RPC to determine how much of the demand will be met locally. If it is known that all spending on professional services will be to local firms, this spending can be input to REMI as increased professional services "sales." When input as sales, REMI assumes 100% of the demand is met by local firms.

A complete description of the REMI model, methodology, data sources, studies and client lists is available at www.remi.com.

The remainder of this report documents how the Brattle recommendations were followed to develop REMI model inputs to develop economic benefit multipliers for use in the RI Test.

II. Economic Impact of Program and Participant Spending

Program spending inputs to the REMI model were taken from the electric and gas program budgets shown in Appendix Tables E-2 and G-2 of the EEPP. Participant spending inputs were taken from the "Customer Cost" tables in the same Appendix. EEPP program and participant spending totals $171.3 million for the 2019 EEPP, with $128.7 million for electric and $42.6 million for gas. This is a large amount of spending which is expected to significantly impact the Rhode Island economy.

A. Allocation of Spending to REMI Industries

For each program, the budget Tables E-2 and G-2 show the breakdown of spending into Program Planning and Administration (PPA); Marketing; Rebates and Other Customer Incentives; Sales, Technical Assistance and Training (STAT); and Evaluation, Measurement and Verification (EM&V). The budget tables also show spending on the shareholder incentive, finance costs and regulatory oversight.

Brattle met with National Grid energy efficiency personnel to review this data and assess its appropriateness as REMI inputs. Based on these discussions, it was agreed that the PPA, Marketing, STAT and EM&V budgets for all programs should be input into REMI as increased Rhode Island demand for professional services. These services include engineering, planning, advertising, public relations, marketing and other professional, scientific or technical services. The REMI model estimates the percent of the increased demand for these services that will be met by local firms and what the Rhode Island economic impact will be, including the direct, indirect and induced impacts of the spending.

It was also agreed that spending on rebates and customer incentives should be left out of the REMI analysis for Residential Lighting, Home Energy Reports, HVAC, Residential Products, Residential New Construction and Large Commercial New Construction. For these programs, the money is used purely to provide rebates and incentives for customers to purchase more energy efficient versions of equipment they were already going to purchase. For example, rebate spending on efficient electrical equipment, manufactured outside of Rhode Island, has no local economic impact.

For other programs, rebates and customer incentives are spent locally on installation and implementation of measures. This includes EnergyWise Programs, Residential and Commercial Pilot Programs, Community Based Initiatives, Income Eligible Programs, Large Commercial Retrofit and Small Business Direct Install. Rebate and incentive spending for these programs was entered in REMI as increased demand for construction services.

Shareholder incentives and finance costs were left out of the spending analysis as the vast majority of this money flows out of the Rhode Island economy and has no local economic impact (however,

this money is included in the economic analysis of program costs, described below). Spending on regulatory (OER and EERMC) was input into REMI as increased demand for professional services. Participant spending was allocated to REMI industries based on the allocation of program spending. Table 1 (electric) and Table 2 (gas) show the final allocation of EEPP program and participant spending to REMI industries. For electric programs, 49% of spending was allocated to the construction industry, 22% to professional services and 29% was excluded from the REMI analysis. For gas, 49% of spending was allocated to construction, 28% to professional services and 23% was excluded from the REMI analysis.

Table 1

Allocation of Electric Program and Participant Spending to REMI Industries ($2018 ths.)						
2019 Electric Program	Construction	Arc, Eng &Related Services	Adv, Pub &Related Services	Other Prof &Related Services	Excluded from REMI Analysis	Total
Residential New Construction (RNC)	$0.00	$166.85	$3.93	$477.58	$712.09	$1,360.44
HVAC	$0.00	$175.68	$168.39	$864.24	$3,021.52	$4,229.82
EnergyWise	$15,576.13	$644.60	$481.40	$1,617.26	$0.00	$18,319.39
EnergyWise Multifamily	$2,381.49	$166.20	$48.53	$798.65	$0.00	$3,394.87
Residential Lighting	$0.00	$598.79	$636.46	$787.65	$16,445.32	$18,468.22
Residential Products	$0.00	$143.09	$745.91	$931.59	$967.90	$2,788.49
Home Energy Reports	$0.00	$118.84	$10.92	$10.24	$2,501.20	$2,641.20
Energy Efficiency Education	$0.00	$0.00	$40.00	$0.00	$0.00	$40.00
Residential Pilots	$104.10	$43.37	$24.50	$50.75	$0.00	$222.72
Community Based Initiatives - Res	$59.06	$6.20	$56.25	$0.00	$0.00	$121.51
Comprehensive Marketing - Res	$0.00	$5.72	$550.82	$0.00	$0.00	$556.55
Single Family - Income Eligible	$9,184.84	$560.22	$129.12	$1,820.54	$0.00	$11,694.73
Income Eligible Multifamily	$2,682.28	$165.91	$9.46	$525.26	$0.00	$3,382.90
Large Commercial New Construction	$0.00	$447.23	$405.24	$1,407.26	$3,146.37	$5,406.09
Large Commercial Retrofit	$24,012.35	$2,388.11	$446.63	$6,073.91	$0.00	$32,921.01
Small Business Direct Install	$9,267.50	$946.65	$461.31	$594.03	$0.00	$11,269.49
Commercial Pilots	$87.50	$19.43	$30.00	$61.00	$0.00	$197.93
Community Based Initiatives - C&I	$19.69	$1.70	$18.75	$0.00	$0.00	$40.14
Regulatory	$0.00	$1,773.42	$0.00	$0.00	$0.00	$1,773.42
Finance Costs	$0.00	$0.00	$0.00	$0.00	$5,000.00	$5,000.00
Shareholder Incentive	$0.00	$0.00	$0.00	$0.00	$4,905.01	$4,905.01
Total Program and Participant Budget	**$63,374.95**	**$8,372.01**	**$4,267.60**	**$16,019.96**	**$36,699.40**	**$128,733.92**
Share of Electric Grand Total	**49%**	**7%**	**3%**	**12%**	**29%**	**100%**

Table 2

Allocation of Gas Program and Participant Spending to REMI Industries ($2018 ths.)						
2019 Gas Program	Construction	Arc, Eng &Related Services	Adv, Pub &Related Services	Other Prof &Related Services	Excluded from REMI Analysis	Total
ENERGY STAR® HVAC	$0.00	$174.42	$294.42	$606.41	$4,234.51	$5,309.76
EnergyWise	$8,320.11	$326.87	$98.76	$1,935.51	$0.00	$10,681.25
EnergyWise Multifamily	$1,463.91	$86.02	$40.96	$428.63	$0.00	$2,019.52
Home Energy Reports	$0.00	$26.98	$0.86	$5.12	$414.95	$447.90
Residential New Construction	$0.00	$76.45	$6.19	$362.66	$987.50	$1,432.81
Comprehensive Marketing - Residential	$0.00	$0.50	$73.17	$0.00	$0.00	$73.68
Community Based Initiatives - Resident	$19.69	$0.52	$18.75	$0.00	$0.00	$38.95
Single Family - Income Eligible Services	$3,778.00	$190.15	$14.87	$1,029.82	$0.00	$5,012.84
Income Eligible Multifamily	$2,474.50	$99.03	$10.30	$348.87	$0.00	$2,932.69
Large Commercial New Construction	$0.00	$396.31	$430.66	$1,653.10	$2,833.16	$5,313.23
Large Commercial Retrofit	$3,616.75	$551.81	$402.67	$1,220.01	$0.00	$5,791.25
Small Business Direct Install	$57.16	$11.40	$30.71	$43.01	$0.00	$142.28
Commercial & Industrial Multifamily	$816.92	$39.19	$17.68	$118.58	$0.00	$992.37
Commercial Pilots	$241.10	$40.58	$9.52	$89.93	$0.00	$381.13
Community Based Initiatives - C&I	$6.56	$0.20	$6.25	$0.00	$0.00	$13.01
Regulatory	$0.00	$539.69	$0.00	$0.00	$0.00	$539.69
Shareholder Incentive	$0.00	$0.00	$0.00	$0.00	$1,460.57	$1,460.57
Total Program and Participant Budget	**$20,795**	**$2,560**	**$1,456**	**$7,842**	**$9,931**	**$42,583**
Share of Gas Grand Total	**49%**	**6%**	**3%**	**18%**	**23%**	**100%**

B. REMI Results for Program and Participant Spending

Table 3 (electric) and Table 4 (gas) show REMI results for program and participant spending. Impacts are for the State of Rhode Island and include the direct, indirect and induced impacts of this spending. Electric spending is expected to create 873 annual jobs and $74.5 million in Rhode Island gross domestic product (GDP). Gas spending is expected to create 302 annual jobs and $25.8 million in GDP. This is before the economic impact of customer benefits, reduced energy demand and costs have been considered.

Tables 3 and 4 include annual job and GDP multipliers on program and participant spending (EEPP spending). On average, every $1.0 million in electric EEPP spending creates 6.8 annual jobs and $0.58 million in RI GDP. Every $1.0 million in gas EEPP spending creates 7.1 annual jobs and $0.61 million in GDP.

Note the larger multipliers for the EnergyWise, Residential and Commercial Pilots, Community Based Initiatives, Income Eligible, Large Commercial Retrofit and Small Business Direct Install programs. As discussed above, rebate and incentive spending was allocated to construction for these programs. Rebate and incentive spending for Residential Lighting, Home Energy Reports, HVAC, Residential Products, Residential New Construction and Large Commercial New Construction was left out of the REMI analysis. Thus, EEPP spending multipliers are lower for those programs.

Table 3 - Economic Impact of Program and Participant Spending

ELECTRIC	Pgm&Part Spending ($2018 ths.)	% of Total	Jobs	Jobs/$m Spending	GDP ($2018 ths.)	GDP/$ Program Spending
Res New Construction	$1,360	1.1%	5	3.4	$399	$0.29
HVAC	$4,230	3.3%	8	1.9	$690	$0.16
EnergyWise	$18,319	14.2%	185	10.1	$15,693	$0.86
EnergyWise MF	$3,395	2.6%	32	9.5	$2,751	$0.81
Residential Lighting	$18,468	14.3%	13	0.7	$1,165	$0.06
Residential Products	$2,788	2.2%	10	3.6	$935	$0.34
Home Energy Reports	$2,641	2.1%	1	0.4	$103	$0.04
EE Education	$40	0.0%	0	0.3	$1	$0.02
Residential Pilots	$223	0.2%	2	8.6	$166	$0.75
Community Based - Res	$122	0.1%	1	7.2	$81	$0.67
Comp Mkting - Res	$557	0.4%	2	3.5	$227	$0.41
SF Income Eligible	$11,695	9.1%	116	9.9	$9,818	$0.84
MF Income Eligible	$3,383	2.6%	34	10.0	$2,854	$0.84
Large Commercial NC	$5,406	4.2%	15	2.7	$1,301	$0.24
Large Comm Retrofit	$32,921	25.6%	320	9.7	$27,166	$0.83
Small Bus. Direct Install	$11,269	8.8%	113	10.0	$9,639	$0.86
Commercial Pilots	$198	0.2%	2	8.1	$141	$0.71
Community Based - C&I	$40	0.0%	0	7.2	$27	$0.67
Regulatory	$1,773	1.4%	16	8.9	$1,378	$0.78
Finance Costs	$5,000	3.9%	0	0.0	$0	$0.00
Shareholder Incentive	$4,905	3.8%	0	0.0	$0	$0.00
Total	**$128,734**	**100.0%**	**873**	**6.8**	**$74,534**	**$0.58**

Table 4 - Economic Impact of Program and Participant Spending

GAS	Pgm&Part Spending ($2018 ths.)	% of Total	Jobs	Jobs/$m Pgm&Part Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending
ENERGY STAR® HVAC	$5,310	12.5%	7	1.2	$595	$0.11
EnergyWise	$10,681	25.1%	105	9.8	$8,906	$0.83
EnergyWise MF	$2,020	4.7%	19	9.6	$1,648	$0.82
Home Energy Reports	$448	1.1%	0	0.6	$24	$0.05
Res New Construction	$1,433	3.4%	3	2.2	$265	$0.19
Comp Mkting - Res	$74	0.2%	0.253	3.4	$30	$0.41
Community Based -Res	$39	0.1%	0	7.2	$26	$0.66
SF Income Eligible	$5,013	11.8%	49	9.8	$4,149	$0.83
MF Income Eligible	$2,933	6.9%	30	10.1	$2,515	$0.86
Large Commercial NC	$5,313	12.5%	16	3.0	$1,410	$0.27
Large Comm Retrofit	$5,791	13.6%	53	9.2	$4,548	$0.79
Small Bus Direct Install	$142	0.3%	1	7.7	$97	$0.68
C&I Multifamily	$992	2.3%	10	10.0	$843	$0.85
Commercial Pilots	$381	0.9%	4	9.4	$304	$0.80
Community Based - C&I	$13	0.0%	0	7.1	$9	$0.66
Regulatory	$540	1.3%	5	8.9	$419	$0.78
Shareholder Incentive	$1,461	3.4%	0	0.0	$0	$0.00
Total	**$42,583**	**100.0%**	**302**	**7.1**	**$25,789**	**$0.61**

C. Comparison to Prior Studies

Two prior economic impact studies of RI energy efficiency programs relied on a different allocation of program and participant spending to REMI industries. These studies are, "Macroeconomic Impacts of Rhode Island Energy Efficiency Investments, REMI Analysis of National Grid's Energy Efficiency Programs," National Grid Customer Department, November 2014; and "Energy Efficiency: Engine of Economic Growth, A Macroeconomic Modelling Assessment," Environment Northeast (ENE), October 2009. These studies relied on a generic allocation of energy efficiency program and participant spending based on separate ENE research. Table 5 (electric) and Table 6 (gas) below compare the spending allocation from the prior studies to the current allocation.

The prior allocation put approximately 30% of spending in various manufacturing industries (white boxes in Tables 5 and 6) that produce materials typically demanded for energy efficiency products and services. REMI estimates that this spending has a relatively small impact on Rhode Island economic activity because of low RPCs for these manufacturers. However, as described above, we have identified spending on products that we know are not produced in Rhode Island and so we excluded this spending from the REMI analysis altogether. Thus, while only 7.7% of electric EEPP spending was excluded from the REMI analysis under the prior allocation, 28.5% is now excluded. For gas, only 3.4% of EEPP spending was excluded under the prior allocation but

23.3% is excluded now. This lowers estimated economic impacts on of EEPP spending compared to prior studies. The prior allocation only excluded spending on shareholder incentives and finance costs.

Table 5 - Electric comparison of spending allocation to prior studies.

2009/2014 Study Allocation	2019	% of Total
Wood products	$672.208	0.5%
Glass product mfg	$1,085.517	0.8%
Paper products	$1,344.417	1.0%
Machinery mfg	$7,048.396	5.5%
Computer, electronic product mfg	$2,222.116	1.7%
Electrical equip and appliance mfg	$7,202.805	5.6%
Plastics, rubber prod mfg	$2,171.034	1.7%
Wholesale trade	$1,705.480	1.3%
Retail trade	$10,263.997	8.0%
Utilities	$5,713.485	4.4%
Construction	**$70,333.461**	**54.6%**
Prof. Services	**$9,121.510**	**7.1%**
Excluded from REMI Analysis	**$9,849.496**	**7.7%**
Total	**$128,733.923**	**100.0%**

2019 Study Allocation		
Construction	**$63,374.950**	**49.2%**
Arc., engineering and related services	**$8,372.010**	**6.5%**
Advertising, marketing, public relations	**$4,267.604**	**3.3%**
Other Professional and technical ervices	**$16,019.964**	**12.4%**
Excluded from the REMI Analysis	**$36,699.395**	**28.5%**
Total	**$128,733.923**	**100.0%**

Table 6 - Gas comparison of spending allocation to prior studies

2009/2014 Study Allocation	2019	% of Total
Wood products	$288.494	0.7%
Glass product mfg	$384.878	0.9%
Paper products	$558.988	1.3%
Machinery mfg	$2,131.858	5.0%
Computer, electronic product mfg	$674.683	1.6%
Electrical equip and appliance mfg	$2,063.131	4.8%
Plastics, rubber prod mfg	$769.756	1.8%
Wholesale trade	$542.953	1.3%
Retail trade	$4,320.353	10.1%
Utilities	$1,807.934	4.2%
Construction	**$25,019.830**	**58.8%**
Professional Services	**$2,568.516**	**6.0%**
Excluded from REMI Analysis	**$1,451.570**	**3.4%**
Total	**$42,582.945**	**100.0%**

2019 Study Allocation		
Construction	**$20,794.705**	**48.8%**
Arc., engineering and related services	**$2,560.119**	**6.0%**
Advertising, marketing, public relations	**$1,455.775**	**3.4%**
Other Professional and technical ervices	**$7,841.648**	**18.4%**
Excluded from REMI Analysis	**$9,930.698**	**23.3%**
Total	**$42,582.945**	**100.0%**

Also, spending on construction is significantly lower under the current allocation. The prior method allocated 54.6% of electric and 58.8% of gas EEPP spending to construction. The current allocation puts 49.2% of electric and 48.8% of gas spending in construction, based on the actual budget data. This also reduces estimated economic impacts compared to the prior studies because construction has high RPCs.

Finally, the prior method allocated only 7.1% of electric spending to the professional services whereas the current study allocates 22.2%. For gas, the prior study estimated only 6.0% of spending on professional services versus 27.8% under the current allocation. Current allocations for professional services are defined exactly by the electric and gas budgets.

The net effect of the new allocation is to reduce the estimated economic impact of EEPP program and participant spending. Under the prior allocation, each $1.0 million in EEPP spending was estimated to create 9.2 annual jobs and $0.64 million in GDP. Under the current allocation, every $1.0 million of spending creates only 6.8 annual jobs and $0.58 million in GDP. For gas, the reduction is from 9.3 annual jobs and $0.67 million in GDP per $1.0 million EEPP spending to 7.1 annual jobs and $0.61 million in GDP.

III. Economic Impact of Customer Benefits, Reduced Energy Demand and Costs

EEPP customer benefit inputs to the REMI model were taken from the electric and gas program benefits in the 2019 Rhode Island EEPP, specifically Appendix Tables E-6 and G-6. These tables show the different types of benefits for each electric and gas program. Table 7 below summarizes these benefits for all electric and gas programs. Total EEPP benefits are $400.6 million, with $335.6 million for electric and $65.0 million for gas. The value of emissions reductions is not included.

Table 7 - Summary of 2019 Benefits and Savings ($2018 ths.)

	Capacity					Energy					Non Electric				
Total Benefits	Summer Generation	Capacity DRIPE	Trans	Dist	Reli-ability	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Electric DRIPE	Natural Gas	Gas DRIPE	Oil	Other Resource	Non Resource
Electric															
$335,581	$20,254	$37,580	$26,751	$23,260	$132	$38,472	$27,898	$20,503	$12,686	$81,620	-$2,833	$0	$12,907	-$150	$36,502
100%	6%	11%	8%	7%	0%	11%	8%	6%	4%	24%	-1%	0%	4%	0%	11%
Gas															
$64,976	$136	$1,107	$191	$166	$10	$20	$30	$25	$16	$43	$36,798	$921	$0	$502	$25,011
100%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	57%	1%	0%	1%	38%
Total															
$400,557	$20,390	$38,686	$26,941	$23,426	$143	$38,492	$27,928	$20,528	$12,702	$81,662	$33,965	$921	$12,907	$352	$61,513
100%	5%	10%	7%	6%	0%	10%	7%	5%	3%	20%	8%	0%	3%	0%	15%

Notes: From 2019 EEPP Appendix, Tables E-6 and G-6. Excludes Emissions Benefits and some amenities. CHP and Demand Response Programs also excluded.

Table 7 breaks customer benefits down into "Capacity," "Energy" and "Non Electric." Grouped under Capacity are Summer Generation, Capacity DRIPE, Transmission, Distribution and Reliability. Summer generation and capacity DRIPE savings are market electric price reductions due to the EEPP. These make up 17% of total electric benefits. Transmission and Distribution savings are electric infrastructure costs avoided because of the EEPP. These make up 15% of total electric benefits. Reliability benefits consists of reduced outage costs to businesses due to improved electric reliability. These are small, less than 1%, of total electric benefits.

Grouped under Energy in Table 7 are Winter and Summer, Peak and Off Peak energy savings; and Electric DRIPE savings. The Winter and Summer energy savings are electric bill reductions due to reduced energy usage caused by the measures. These total 29% of total electric program benefits. Electric DRIPE are customer bill savings due to market electricity price reductions caused by lower electricity demand because of the EEPP. These make up 24% of total electric program benefits.

Gas program benefits include a small amount of these electricity cost savings. This is because gas program measures may lead to reduced electricity use as a spillover effect. Examples are lower summer air conditioning use because of improved insulation associated with a gas program; and lower auxiliary electricity requirements from more efficient furnaces.

Grouped under Non Electric benefits in Table 7 are Natural Gas, Gas DRIPE, Oil, Other Resource and Non Resource benefits. Natural Gas benefits are bill savings from reduced energy use, market price reductions and reduced gas infrastructure capacity costs. These make up 57% of total gas program benefits. Gas DRIPE, which consists of market commodity cost decreases due to reduced gas use, is small, only 1% of total gas program savings.

Oil consists of oil heating customer cost reductions, a spillover effect of the electric programs, for example, more insulation. Oil benefits are zero for the gas programs.

Other Resource benefits are general cost savings to participants due to the measures, for example, reduced operating and maintenance costs for new equipment. These benefits are slightly negative for the electric programs, i.e., some measures involve more equipment and operation costs.

Non-Resource benefits are primarily amenities associated with the measures, such as reduced noise. However, they make up 38% of total gas program benefits. Brattle reviewed EEPP amenities with National Grid and advised removing many of them from the REMI analysis.

A. Customer Benefit Inputs to REMI

In table 7, Summer Generation, Capacity DRIPE, Electric DRIPE and Gas DRIPE (green boxes); Transmission and Distribution (blue boxes); and Reliability (purple boxes) benefit all customers. These energy cost savings were entered in REMI, on a program-by-program basis, as energy cost decreases, with the split between residential and C&I based on their share in total load. Electricity savings were entered as a decrease in the price of electricity, gas savings as a decrease in the price of natural gas.

Winter and Summer Energy, Natural Gas, Oil, Other Resource and Non-Resource savings are all participant benefits. These were entered in REMI as residential or C&I energy cost savings, depending on the program. Electric energy savings were entered as a decrease in the price of electricity, natural gas savings as a decrease in the price of natural gas and oil savings as a decrease in the cost of heating oil.

Other Resource savings were entered as a general cost decrease to residential and C&I customers. Other Non-Resource benefits were entered in REMI as an amenity. This has no immediate economic impact but can lead to increased net migration to Rhode Island over time and ultimately more Rhode Island economic activity.

B. Reduced Energy Demand

REMI inputs for estimating the economic impact of reduced energy demand were taken from the same benefits tables described above, specifically Appendix Tables E-6 and G-6 of the EEPP.

EEPP customer benefits reduce both energy sector and construction activity. Reduced spending on energy due to lower usage and lower prices (the green and orange boxes in Table 7 above) is reduced revenue to the electric generation and natural gas supply industries -- the “commodity” suppliers. Rhode Island accounts for approximately 7% of New England electric generation, per 2017 data from the US Energy Information Administration (EIA). Therefore, 7% of these electric savings were input to REMI as reduced sales to Rhode Island electric generators. On the gas side, there are no suppliers in Rhode Island so no adjustment was made.

Transmission and distribution capacity savings (blue boxes in Table 7 above) are reduced spending in the electric power line construction industry. Typically, 75% of Rhode Island electric infrastructure spending is for construction/installation while 25% is for materials and equipment purchased outside of Rhode Island. Therefore, 75% of electric transmission and distribution benefits were entered in REMI as decreased demand for power line and structures construction.

The EEPP does not break out natural gas transmission and distribution capacity savings from the natural gas benefits. Any gas transmission capacity savings would occur outside of Rhode Island and was not considered for the REMI analysis. For gas distribution capacity savings, the analysis assumed that 16% of Natural Gas benefits were avoided gas distribution infrastructure capacity. This is the same percent that distribution makes up of electric energy, transmission and distribution benefits.

C. Energy Efficiency Program Costs

Energy efficiency program costs consist of participant costs plus energy efficiency charges on customer bills used to fund program spending. The energy efficiency charge on electric and gas bills is calculated as the total program budget, including shareholder incentives and finance costs, divided by total energy sales. This per unit energy efficiency charge was multiplied by total residential and C&I energy sales to determine the portion of the budget funded by residential and C&I customers.

For electric, the total program funding requirement was $105.1 million. The residential portion was $61.1 million and the C&I portion was $44.0 million. These amounts were entered in REMI as electric price increases for residential and commercial customers, respectively. REMI results, annual jobs and GDP impacts, were allocated to programs based on their share in total program cost.

For gas, the total program funding requirement was $31.6 million. The residential portion was $22.6 million and the C&I portion was $9.0 million. These amounts were entered in REMI as gas prices increases for residential and C&I customers, respectively. REMI results were then allocated to programs based on their share in total program cost.

Participant costs were taken from the Customer Cost tables of the EEPP Appendix. These total $23.7 million for electric and $11.0 million for gas. These costs were entered in REMI as general cost increases to businesses and households. Specifically, residential program participant costs were entered as a real income decrease wile C&I program costs were entered as a production cost increase. REMI then estimated the economic impact of participant costs on a program-by-program basis.

D. REMI Results for EEPP Benefits, Reduced Energy Demand and Costs

Table 8 (electric) and Table 9 (gas) below show the net economic impact of customer benefits, reduced energy demand and program and participant costs for each EEPP program. Impacts are for the State of Rhode Island and include the direct, indirect and induced impacts. These impacts are in addition to the program and participant spending impacts shown earlier in Tables 3 and 4.

Net electric program benefits are expected to create 1,487 job years and $136 million of GDP in Rhode Island (a "job year" is one job for a period of one year). Net gas program benefits are expected to create 106 job years and $15 million in Rhode Island GDP.

Net benefit impacts are negative for some programs, such as electric and gas EnergyWise programs. This is because the programs have relatively high costs compared to their benefits. However, when the economic impact of program and participant spending is added, these programs have a positive economic impact in Rhode Island.

Table 8 - Impact of Electric EEPP Benefits, Reduced Energy Consumption and Costs

ELECTRIC Program/Spending Category	Total Benefits ($2018 ths.)	% of Total	Job Years Created	Jobs/$m Pgm&Part Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending
Residential New Construction (RNC)	$2,740	0.8%	7	2.6	$989	$0.36
HVAC	$8,663	2.6%	24	2.7	$3,992	$0.46
EnergyWise	$18,726	5.6%	-19	-1.0	-$250	-$0.01
EnergyWise Multifamily	$5,123	1.5%	10	1.9	$1,771	$0.35
Residential Lighting	$46,434	13.8%	182	3.9	$27,412	$0.59
Residential Products	$5,881	1.8%	18	3.0	$2,827	$0.48
Home Energy Reports	$5,962	1.8%	20	3.4	$3,100	$0.52
Energy Efficiency Education	$0	0.0%	0	0.0	-$27	$0.00
Residential Pilots	$0	0.0%	-2	0.0	-$149	$0.00
Community Based Initiatives - Residential	$0	0.0%	-1	0.0	-$81	$0.00
Comprehensive Marketing - Residential	$0	0.0%	-4	0.0	-$371	$0.00
Single Family - Income Eligible Services	$13,603	4.1%	-6	-0.4	$982	$0.07
Income Eligible Multifamily	$5,068	1.5%	8	1.6	$1,595	$0.31
Large Commercial New Construction	$26,145	7.8%	123	4.7	$16,625	$0.64
Large Commercial Retrofit	$177,062	52.8%	1,042	5.9	$109,441	$0.62
Small Business Direct Install	$20,174	6.0%	55	2.7	$9,104	$0.45
Commercial Pilots	$0	0.0%	-1	0.0	-$133	$0.00
Community Based Initiatives - C&I	$0	0.0%	0	0.0	-$27	$0.00
Regulatory	$0	0.0%	0	0.0	$0	$0.00
Finance Costs	$0	0.0%	0	0.0	$0	$0.00
Shareholder Incentive	$0	0.0%	0	0.0	$0	$0.00
Total Spending Budget and Customer Cost	**$335,581**	**100.0%**	**1,456**	**4.3**	**$176,801**	**$0.53**

Table 9 - Impact of Gas EEPP Benefits, Reduced Energy Consumption and Cost

GAS Program/Spending Category	Total Benefits ($2018 ths.)	% of Total	Job Years Created	Jobs/$m Pgm&Part Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending
ENERGY STAR® HVAC	$5,850	9.0%	6	1.0	$1,671	$0.29
EnergyWise	$9,898	15.2%	-11	-1.1	$328	$0.03
EnergyWise Multifamily	$3,802	5.9%	8	2.2	$1,417	$0.37
Home Energy Reports	$880	1.4%	3	3.7	$548	$0.62
Residential New Construction	$902	1.4%	-2	-2.7	-$30	-$0.03
Comprehensive Marketing - Residential	$0	0.0%	-0.5	0.0	-$47	$0.00
Community Based Initiatives - Residential	$0	0.0%	0	0.0	-$25	$0.00
Single Family - Income Eligible Services	$10,392	16.0%	12	1.1	$1,425	$0.14
Income Eligible Multifamily	$7,685	11.8%	19	2.5	$2,653	$0.35
Large Commercial New Construction	$8,131	12.5%	15	1.8	$2,494	$0.31
Large Commercial Retrofit	$14,213	21.9%	50	3.5	$7,132	$0.50
Small Business Direct Install	$240	0.4%	1	4.3	$136	$0.57
Commercial & Industrial Multifamily	$2,983	4.6%	9	2.9	$1,094	$0.37
Commercial Pilots	$0	0.0%	-2	0.0	-$241	$0.00
Community Based Initiatives - C&I	$0	0.0%	0	0.0	-$8	$0.00
Regulatory	$0	0.0%	0	0.0	$0	$0.00
Shareholder Incentive	$0	0.0%	0	0.0	$0	$0.00
Total Spending Budget and Customer Cost	**$64,976**	**100.0%**	**106**	**1.6**	**$18,548**	**$0.29**

IV. Net Economic Development Impact to State of Rhode Island

The net economic development impact of the 2019 EEPP to the State of Rhode Island is the sum of program and participant spending, customer benefit, reduced energy demand, ratepayer cost and participant cost economic impacts. This is shown in Table 10 for the electric programs and in Table 11 for the gas programs. Note that these tables do not include the economic impact of demand response and combined heat and power programs. These programs are treated separately in Sections VI and VII below.

Electric EEPPs are expected to create 2,328 job years and $251 million in GDP over the 14-year life of the programs. Gas EEPPs are expected to create 408 jobs years and $44 million in GDP over their program life. This includes all economic costs and benefits.

Table 10 - Net Rhode Island Impacts ELECTRIC

Program/Spending Category	Total Program Spending ($2018 ths.)	% of Total	Job Years Created	Jobs/$m Pgm&Part Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending
Residential New Construction (RNC)	$859	0.8%	12	13.6	$1,388	$1.62
HVAC	$2,724	2.6%	31	11.5	$4,681	$1.72
EnergyWise	$15,778	15.0%	166	10.5	$15,444	$0.98
EnergyWise Multifamily	$3,065	2.9%	42	13.7	$4,523	$1.48
Residential Lighting	$14,968	14.2%	195	13.0	$28,577	$1.91
Residential Products	$2,124	2.0%	28	13.0	$3,762	$1.77
Home Energy Reports	$2,641	2.5%	21	8.1	$3,203	$1.21
Energy Efficiency Education	$40	0.0%	0	-6.6	-$26	-$0.64
Residential Pilots	$223	0.2%	0	1.7	$18	$0.08
Community Based Initiatives - Residential	$122	0.1%	0	0.4	$0	$0.00
Comprehensive Marketing - Residential	$557	0.5%	-2	-3.4	-$144	-$0.26
Single Family - Income Eligible Services	$11,695	11.1%	110	9.4	$10,800	$0.92
Income Eligible Multifamily	$3,383	3.2%	42	12.3	$4,449	$1.32
Large Commercial New Construction	$5,036	4.8%	137	27.3	$17,926	$3.56
Large Commercial Retrofit	$21,232	20.2%	1,362	64.2	$136,607	$6.43
Small Business Direct Install	$8,713	8.3%	168	19.3	$18,743	$2.15
Commercial Pilots	$198	0.2%	0	1.2	$8	$0.04
Community Based Initiatives - C&I	$40	0.0%	0	0.3	$0	-$0.01
Regulatory	$1,773	1.7%	16	8.9	$1,378	$0.78
Finance Costs	$5,000	4.8%	0	0.0	$0	$0.00
Shareholder Incentive	$4,905	4.7%	0	0.0	$0	$0.00
Total Spending Budget and Customer Cost	**$105,074**	**100.0%**	**2,328**	**22.2**	**$251,335**	**$2.39**

Table 11 - Net Rhode Island Impacts GAS

Program/Spending Category	Total Program Spending ($2018 ths.)	% of Total	Job Years Created	Jobs/$m Pgm&Part Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending
ENERGY STAR® HVAC	$2,165	6.9%	13	5.8	$2,266	$1.05
EnergyWise	$8,466	26.8%	94	11.1	$9,235	$1.09
EnergyWise Multifamily	$1,678	5.3%	28	16.6	$3,065	$1.83
Home Energy Reports	$448	1.4%	4	7.8	$572	$1.28
Residential New Construction	$738	2.3%	1	0.9	$235	$0.32
Comprehensive Marketing - Residential	$74	0.2%	-0.2	-2.8	-$17	-$0.23
Community Based Initiatives - Residential	$39	0.1%	0	1.0	$1	$0.03
Single Family - Income Eligible Services	$5,013	15.9%	61	12.1	$5,575	$1.11
Income Eligible Multifamily	$2,933	9.3%	49	16.6	$5,168	$1.76
Large Commercial New Construction	$2,389	7.6%	30	12.7	$3,903	$1.63
Large Commercial Retrofit	$4,214	13.3%	103	24.4	$11,680	$2.77
Small Business Direct Install	$124	0.4%	2	17.2	$233	$1.87
Commercial & Industrial Multifamily	$918	2.9%	19	20.2	$1,938	$2.11
Commercial Pilots	$381	1.2%	1	3.2	$63	$0.17
Community Based Initiatives - C&I	$13	0.0%	0	1.0	$0	$0.03
Regulatory	$540	1.7%	5	8.9	$419	$0.78
Shareholder Incentive	$1,461	4.6%	0	0.0	$0	$0.00
Total Spending Budget and Customer Cost	**$31,593**	**100.0%**	**408**	**12.9**	**$44,337**	**$1.40**

V. Economic Development Component of the RI Test

The economic development component of the RI Test is calculated based on program and participant spending and reduced energy demand economic impacts; and the indirect and induced economic impacts of EEPP benefits and costs. This is shown in Table 12 for electric and Table 13 for gas below. The GDP multipliers are applied to proposed program spending to estimate that program's economic development benefit for the RI Test.

Table 12 - Economic Benefits for the Rhode Island Test, Electric

Program	Total Program Spending ($2018 ths.)	% of Total	Net Job Years	Jobs/$m Program Spending	GDP Created $2018 ths.	GDP/$ Program Spending
Residential New Construction (RNC)	$859	0.8%	10	11.8	$1,203	$1.40
HVAC	$2,724	2.6%	25	9.3	$3,875	$1.42
EnergyWise	$15,778	15.0%	159	10.1	$14,607	$0.93
EnergyWise Multifamily	$3,065	2.9%	39	12.7	$4,103	$1.34
Residential Lighting	$14,968	14.2%	160	10.7	$23,789	$1.59
Residential Products	$2,124	2.0%	24	11.2	$3,224	$1.52
Home Energy Reports	$2,641	2.5%	17	6.5	$2,647	$1.00
Energy Efficiency Education	$40	0.0%	0	-6.3	-$24	-$0.61
Residential Pilots	$223	0.2%	0	2.0	$25	$0.11
Community Based Initiatives - Residential	$122	0.1%	0	0.7	$4	$0.03
Comprehensive Marketing - Residential	$557	0.5%	-2	-3.1	-$127	-$0.23
Single Family - Income Eligible Services	$11,695	11.1%	104	8.9	$10,028	$0.86
Income Eligible Multifamily	$3,383	3.2%	39	11.4	$4,032	$1.19
Large Commercial New Construction	$5,036	4.8%	120	23.9	$15,671	$3.11
Large Commercial Retrofit	$21,232	20.2%	1,235	58.2	$123,053	$5.80
Small Business Direct Install	$8,713	8.3%	157	18.0	$17,171	$1.97
Commercial Pilots	$198	0.2%	0	1.5	$14	$0.07
Community Based Initiatives - C&I	$40	0.0%	0.0	0.6	$1	$0.03
Regulatory	$1,773	1.7%	16	8.9	$1,378	$0.78
Finance Costs	$5,000	4.8%	0.0	0.0	$0	$0.00
Shareholder Incentive	$4,905	4.7%	0.0	0.0	$0	$0.00
Total Program Spending Budget	**$105,074**	**100.0%**	**2,104**	**20.0**	**$224,673**	**$2.14**

Table 13 - Economic Benefits for the Rhode Island Test, Gas

Program	Total Program Spending ($2018 ths.)	% of Total	Net Jobs Created	Jobs/$m Program Spending	GDP Created $2018 ths.	GDP/$ Program Spending
ENERGY STAR® HVAC	$2,165	6.9%	9	4.2	$1,789	$0.83
EnergyWise	$8,466	26.8%	89	10.5	$8,515	$1.01
EnergyWise Multifamily	$1,678	5.3%	25	15.1	$2,735	$1.63
Home Energy Reports	$448	1.4%	3	6.3	$476	$1.06
Residential New Construction	$738	2.3%	0	0.2	$164	$0.22
Comprehensive Marketing - Residential	$74	0.2%	0	-2.5	-$15	-$0.20
Community Based Initiatives - Residential	$39	0.1%	0	1.2	$2	$0.06
Single Family - Income Eligible Services	$5,013	15.9%	55	10.9	$4,951	$0.99
Income Eligible Multifamily	$2,933	9.3%	44	14.9	$4,555	$1.55
Large Commercial New Construction	$2,389	7.6%	27	11.1	$3,397	$1.42
Large Commercial Retrofit	$4,214	13.3%	95	22.6	$10,674	$2.53
Small Business Direct Install	$124	0.4%	2	16.2	$218	$1.75
Commercial & Industrial Multifamily	$918	2.9%	17	18.4	$1,740	$1.89
Commercial Pilots	$381	1.2%	1	3.5	$74	$0.19
Community Based Initiatives - C&I	$13	0.0%	0	1.2	$1	$0.06
Regulatory	$540	1.7%	5	8.9	$419	$0.78
Shareholder Incentive	$1,461	4.6%	0.0	0.0	$0	$0.00
Total Program Budget	**$31,593**	**100.0%**	**371**	**11.7**	**$39,697**	**$1.26**

VI. Economic Impact of Demand Response Programs

Demand Response (DR) programs use rebates and incentives to pay customers to reduce electric use during periods of high demand. This spending does not increase or decrease economic activity and is excluded from the REMI analysis. Other DR program spending is used for planning and administration, marketing, sales and technical assistance, evaluation and market research. This is increased demand for professional services. There is no DR participant spending. The only cost to customers is the cost of reducing load. Besides rebates, DR participants realize some bill savings but the overwhelming majority of DR benefits are avoided transmission and distribution capacity requirements, lower summer capacity costs and lower market electricity prices that benefit all customers.

REMI input data for the DR program was taken from the electric budget, benefit and cost tables in the EEPP Appendix and entered in REMI as follows:

- DR program spending, excluding rebates and other customer incentives, were entered as increased demand for professional services.
- No participant spending.

- DR customer benefits input to REMI as decreased residential and C&I electricity cost.
- Reduced energy demand and DRIPE impacts due to DR entered in REMI as decreased sales to electric generation industry.
- Avoided transmission and distribution capacity entered in REMI as decreased construction demand.
- DR ratepayer costs entered in REMI as increased residential and C&I electric rates.

Table 14 summarizes estimated economic impacts for the DR program. "Net RI Impacts" are the Rhode Island State economic impacts after all CHP costs have been considered. They are the sum of program spending economic impacts, the negative economic impact of reduced energy demand, the positive impact of program benefits and the negative economic impact of program costs.

"Economic Impacts for the RI Test" are the sum of program spending impacts; reduced energy consumption impacts; and the indirect and induced economic impacts of program benefits and costs.

Table 14
DEMAND RESPONSE PROGRAM

2019 RI DR PGM SPENDING			Program Spending Impacts				Net Benefits Impact *					
Program	Total Program Spending ($2018 ths.)	% of Total	Jobs Created	Jobs/$m Program Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending	Total Benefits ($2018 ths)	% of Total	Jobs Created	Jobs/$m Program Spending	GDP Created ($2018 ths.)	GDP/$ Program Spending
Residential	$283.1	12.3%	0.8	2.8	$68.452	$0.24	$918	5.2%	1.3	4.7	$186	$0.66
Commercial	$2,024.1	87.7%	1.4	0.7	$121.767	$0.06	$16,840	94.8%	38	19.0	$4,745	$2.34
Total	**$2,307.244**	**100.0%**	**2.2**	**1.0**	**$190.219**	**$0.08**	**$17,758**	**100.0%**	**40**	**17.2**	**$4,931**	**$2.14**

* Impact of benefits, costs and reduced energy consumption.

2019 RI DR PGM SPENDING			Net RI Impacts				ECONOMIC IMPACTS FOR RI TEST			
Program	Total Program Spending ($2018 ths.)	% of Total	Net Jobs Created	Jobs/$m Program Spending	Net GDP Created ($2018 ths.)	GDP/$ Program Spending	Net Jobs Created	Jobs/$m Program Spending	GDP Created $2018 ths.	GDP/$ Program Spending
Residential	$283.1	12.3%	2.1	7.5	$254.387	$0.90	2	6.9	$236	$0.83
Commercial	$2,024.1	87.7%	39.8	19.7	$4,866.721	$2.40	35	17.5	$4,426	$2.19
Total	**$2,307.244**	**100.0%**	**41.9**	**18.2**	**$5,121.108**	**$2.22**	**37**	**16.2**	**$4,662**	**$2.02**

VII. Economic Impact of Combined Heat and Power Programs (CHP)

CHP involves the installation of equipment to generate electricity from gas and capture waste heat for productive uses such as facility heating and cooling. CHP programs have similar economic impacts as energy efficiency programs. CHP program and participant spending includes the purchase and installation of the systems, providing jobs for local electrical contractors and other construction workers. CHP benefits are substantial, consisting of energy costs savings to participants and customers over a 20-year life time versus a 14-year life time for other energy

efficiency measures. These savings have positive impacts on the local economy. CHP reductions in utility electricity use have negative economic impacts. CHP program costs to ratepayers also have negative economic impacts, as do participant costs. The net economic impact to the state of Rhode Island is the sum of all these positive and negative economic impacts. The CHP component of the Rhode Island is the sum of economic impacts from program and participant spending; reduced energy demand; and the indirect and induced impact of CHP benefits and costs.

Table 15 summarizes the REMI analysis of CHP programs. The analysis is based on generic project data from previous National Grid CHP projects. This assumes a typical CHP project with a 20-year lifetime and 500,000 annual kWh capacity. Total project cost is $210,000 with $125,000 as program cost (incentive) and $85,500 as participant costs. Total customer and participant benefits are $611,228, yielding a benefit/cost ration of 2.9.

The REMI analysis assumes 60% of CHP program and participant spending is to construct and install the system and 40% is to purchase CHP components and equipment from outside of Rhode Island. Thus, 60% of spending was input to REMI as increased demand for construction services and 40% of the spending was excluded from the analysis.

Benefits were entered in REMI as decreased electricity costs to C&I customers. Avoided transmission and distribution spending was entered in REMI as decreased demand for power line construction services. As with the energy efficiency programs, 25% of this reduced demand was left out of the REMI analysis as this is the amount typically used for purchasing materials and equipment from outside of Rhode Island.

CHP program costs were allocated to residential and commercial customers based on their share in total kWh deliveries and entered as am electricity price increase. CHP participant costs were input to REMI as a production cost increase to C&I customers.

As the Brattle Group recommends, National Grid will utilize the below economic multipliers for screening CHP projects less than 3 MW in size. For larger projects the Company will input project-specific values in the REMI model using the same methodology described above.

Table 15
Typical Combined Heat Power Project -- Statewide Model

CHP Project Spending, Costs, Benefits,					
Category	**$2018**	**Job Yrs**	**Job Yrs/$m**	**RI GDP**	**RI GDP/$**
Construction Spending	$210,500	1.4	6.4	$114,251	$0.54
Total Cost	$210,500	-1.2	-5.8	-$116,462	-$0.55
Total Benefits	$611,228	6.1	29.2	$648,776	$1.06
Avoided T&D Spend	$185,087	-1.3	-6.3	-$130,445	-$0.70
Avoided Capacity and Energy	$544,403	-0.3	-1.5	-$67,149	-$0.12
Total CHP Spending	$210,500	4.6	22.1	$448,971	**$2.13**

Based on these inputs, REMI estimates that CHP construction creates 6.4 job years and $0.54 million in GDP for every $1.0 million in program and participant spending. Ratepayer and participant cost economic impacts are negative while the impact of benefits is positive. The impact of avoided transmission, capacity and energy spending is negative.

For total costs and total benefits, Table 7 shows indirect and induced impacts only. Thus, summing all the impacts in Table 7 yield the CHP economic development component of the RI Test., $2.13 in GDP for every $1.0 million in CHP program spending.

Division 2-5
Economic Development Benefits

Request:

For each of the four categories of programs (electric, gas, CHP, and demand response), please provide the following information separately for the direct, indirect, and induced impacts. a. GDP, in dollars. b. Number of jobs created, in jobs. c. Number of jobs created, in job-years. d. Personal income, in dollars. e. State tax revenue, in dollars.

Response:

There is no CHP program spending in the Provisional Plan. Therefore, there are no Economic Development benefits for that program.

The table below shows the economic development benefits for the other three program types.

	Total	Direct	Indirect	Induced
Total Electric Portfolio				
GDP	$278,491,150	$48,067,300	$46,061,153	$184,362,696
Jobs	184.3	38.8	30.3	115.2
Job-Years	2,580.0	543.0	424.7	1,612.3
Income	$449,226,946	$59,284,460	$75,304,647	$314,637,838
Tax Rev	$27,402,844	$3,616,352	$4,593,583	$19,192,908
Total Gas Portfolio				
GDP	$51,536,738	$20,519,304	$7,715,700	$23,301,735
Jobs	33.9	16.1	5.0	12.8
Job-Years	474.1	224.9	69.6	179.6
Income	$44,038,902	$16,538,248	$6,067,945	$21,432,708
Tax Rev	$2,686,373	$1,008,833	$370,145	$1,307,395
Total Demand Response Portfolio				
GDP	$13,757,124	($6,618,153)	$2,388,991	$17,986,286
Jobs	8,049.1	(5,731.3)	1,478.0	12,302.3
Job-Years	112,687.3	(80,237.6)	20,692.3	172,232.6
Income	$49,802,065	($2,321,026)	$7,738,212	$44,384,879
Tax Rev	$3,037,926	($141,583)	$472,031	$2,707,478

Prepared by or under the supervision of: Jessica Darling and Alfred P. Morrissey, Jr.

Division 2-6
Economic Development Benefits

Request:

When was the last time that the Company re-ran the REMI model to reflect changes to the energy efficiency program designs?

Response:

The Company has not re-run the REMI model to reflect energy efficiency program design changes since 2019. The Company intends to follow the Brattle Group's recommendation to update the analysis every three to five years to reflect such changes.

Prepared by or under the supervision of: Alfred P. Morrissey, Jr.

Division 2-7
Economic Development Benefits

Request:

Please explain why the Company uses GDP as the indicator of economic development benefits.

Response:

The Company uses GDP, as recommended by the Brattle Group, because it best captures the value to the State of Rhode Island of net increases in economic activity and regional competitiveness due to energy efficiency programs. Please see the Company's response to Division 1-2 in RIPUC Docket No. 4888 for an explanation of why the Company chose GDP over other macroeconomic indicators to measure the monetary value of economic development benefits of energy efficiency programs.

Prepared by or under the supervision of: Jessica Darling and Alfred P. Morriessey, Jr.

Division 2-8
Economic Development Benefits

Request:

Regarding the CRNM study referred to in the footnote on Bates Page 392, does the Company agree with the study's conclusion that the monetary values of economic development benefits should not be added to the other monetary values in the benefit-cost analysis? Please explain in detail why the Company agrees or why it does not.

Response:

Yes, the Company agrees and believes that the projected monetary values of economic development benefits should be considered qualitatively or as a sensitivity in the benefit-cost analysis (BCA), not as an adder to bill savings or other measures of cost-effectiveness. The reasons are as follows.

First, Docket 4600 does not require these economic development benefits be added to other monetary values in the BCA, just that they be accounted for. Moreover, Docket 4600 does not require or imply that these benefits – which the Company measures as the net impact of the proposed investments on Rhode Island gross domestic product (GDP) – should be weighted the same as net bill savings, but this is implicitly the case when the GDP impacts are added to these values in the BCA. The fact is that the Commission and stakeholders may wish to weight the value of economic development benefits differently than net bill savings, emissions reductions and other monetized benefits in the BCA.

Docket 4600 also states that other macroeconomic impacts besides GDP should be considered, for example, employment and tax revenues. Providing these other economic indicators in addition to GDP would better inform the Commission and stakeholders about the potential value of the proposed investments.

Finally, the Company agrees with the Division that, for a variety of reasons, there is little consensus among researchers and policymakers regarding the appropriateness of including economic development benefits directly in the calculation of benefit-cost ratios.

Prepared by or under the supervision of: Jessica Darling and Alfred P. Morriessey, Jr.

Division 2-9
CHP Budget Reallocation

Request:

Which programs and measures within each program was the CHP budget and lifetime savings reallocated to and how much was reallocated to each program and measure?

Response:

The following tables show the measures and programs to which the budget and lifetime savings was reallocated from the RI Grows CHP project.

Large C&I New Construction

BCR Measure ID	Net Lifetime MWh	Incentive Cost
D2 CAIR	818	$36,000
D2 HVAC Prescriptive	2,743	$103,660
Upstream Heat Pump - Ductless	154	$49,372
Upstream Heat Pump - Packaged	241	$107,579
Upstream HVAC Air Conditioners	1,906	$183,800
Upstream HVAC Controls	82	$3,984
Upstream HVAC ECM Pump	164	$10,867
Upstream HVAC VRF	1,477	$140,151
D2 Lights	0	$17,000
Motors and VFD	374	$25,550
Upstream HVAC Refrigeration	23	$6,228
Compressed Air - Custom	3,537	$399,370
HVAC - Custom	8,475	$1,301,369
Motors & VFD - Custom	715	$44,413
Process - Custom	3,254	$301,242
Refrigeration - Custom	932	$122,080
Other - Custom	268	$37,880
Total Large C&I New Construction	**25,162**	**$2,890,547**

Prepared by or under the supervision of: Joshua Kessler

Division 2-9, page 2

CHP Budget Reallocation

Large C&I Retrofit

BCR Measure ID	Net Lifetime MWh	Incentive Cost
EI HVAC	2,289	$255,851
EI Light: Prescriptive	16,124	$2,457,845
Motors and VFD	6,269	$488,000
Compressed Air - Custom	395	$71,613
HVAC - Custom	0	$247,446
Lighting - Custom	4,174	$155,000
Motors & VFD - Custom	462	$57,095
Process- Custom	1,063	$100,988
Refrigeration - Custom	1,523	$266,749
Other - Custom	234	$34,452
Total Large C&I Retrofit	**32,534**	**$4,135,040**

Small Business Direction Install

BCR Measure ID	Net Lifetime MWh	Incentive Cost
Heat Pumps	1,548	$512,500
Lighting	498	$153,670
Non-Lighting	300	$85,252
Total Small Business Direct Install	**2,345**	**$751,422**

Sales, Technical Assistance, and Training

Program	Budget
Large C&I New Construction	$396,114
Large C&I Retrofit	$790,972
Small Business Direct Install	$2,691
Total Incremental STAT	**$1,189,777**

Prepared by or under the supervision of: Joshua Kessler

Division 2-10
CHP Budget Reallocation

Request:

Please explain why these programs and measures were selected for additional funding.

Response:

Overall - The Company believes the proposed measure mix offers the ideal reallocation of funds. In general, the Company sought to plan for incremental savings and benefits in programs where it anticipated incremental savings would be achievable on the basis of additional budget made available through the reallocation of funds originally allocated to the RI Grows, LLC project, with a goal of maximizing customer net benefits.

HVAC Accelerated Retirements (Large C&I Retrofit) – This effort is likely to produce a moderate level of incremental savings in 2022, with increased savings in future years. Note that in its Memo providing comments on the 2022 Plan, the EERMC's Consultant Team recommended the Company consider HVAC "custom retrofit projects and/or early replacement measures." The initiative includes budget for both incentives and Sales, Technical Assistance, and Training (STAT). The STAT costs are to cover a fixed-price vendor administration contract. Because it is a fixed-price contract, unit costs are likely to decline in future years as program volume increases. Because this is an extension of the Upstream HVAC initiative, the benefits will be distributed across an above-average number of customers.

Heat Pumps displacing electric resistance (Small Business Direct Install) – Electric resistance-to-heat pump conversions offer significant savings and attractive payback periods. Funding these projects through the Small Business Direct Install (SBDI) program will help kickstart this market and enable the SBDI vendor to develop in-house expertise with this measure. If the effort is successful, the Company anticipates that the initiative will be scaled over time. Furthermore, although switching from fossil fuels to heat pumps cannot be funded through the energy efficiency programs, this effort will contribute to development of the C&I heat pump market and workforce.

Non-Lighting (Large C&I New Construction and Large C&I Retrofit) – The largest portion of RI Grows, LLC funding was reallocated to non-lighting incentives because, as lighting opportunities continue to decline, the Company is shifting its resources toward scaling non-lighting activities. Larger non-lighting incentive budgets will enable the Company to fund more projects. Higher incentives also have the potential to create a virtual cycle by attracting additional vendors not currently participating in the C&I programs. These vendors will in turn leverage program incentives to install additional non-lighting energy efficiency measures

Division 2-10, page 2
CHP Budget Reallocation

(HVAC, controls, refrigeration, compressed air, etc.) that would not have been identified through the Company's current implementation infrastructure.

In addition to the aforementioned HVAC Accelerated Retirements initiative, the proposed increase in STAT budget will be necessary to support the customer engagement, recruitment, and project validation efforts associated with the proposed increase in project volumes and levels of customer participation.

Large C&I Lighting
Though the Company believes that C&I lighting opportunities are declining, particularly among larger customers, additional opportunities do remain. Customers that have not fully converted to LED lighting have constraints in many cases, such as inflexible budgeting processes, inability to leverage financing, or agency issues where owners have limited financial incentive to implement energy-saving measures. Increased incentives can overcome these barriers.

Small Business Direct Install
In addition to the heat pump effort mentioned above, the Company has reallocated funding to both lighting and non-lighting measures in the SBDI program to generate additional savings from this sector and position the programs to maximize opportunities for equitable participation.

Division 2-11
CHP Budget Reallocation

Request:

Please explain why the Company chose to reallocate the RI Grows, LLC budget to only the Commercial and Industrial programs.

Response:

Given that the planned RI Grows, LLC incentive budget would be funded from the Commercial and Industrial ("C&I") sector budgets, the Company felt that budgeting and planning for incremental energy efficiency opportunities within this segment would be the most appropriate use of this budget were it to be re-allocated.

The Company also believed that at currently planned budget levels, the C&I sector represented the best available opportunity to realize additional customer savings and net benefits, and, thus, any incremental budget should be allocated to that sector.

Prepared by or under the supervision of: Christopher Porter

Division 2-12
CHP Budget Reallocation

Request:

Did the Company consider reallocating the RI Grows budget to the Residential or Income-Eligible programs? Please explain why or why not.

Response:

The Company did consider re-allocating a portion of the planned RI Grows budget to the residential sector. Ultimately, however, for the reasons enumerated in the Company's response to Division 2-11, the Company felt that re-allocating the entirety of the budget for planned pursuit of savings and benefits within the C&I sector was the most appropriate course of action.

Prepared by or under the supervision of: Christopher Porter

Division 2-13
CHP Budget Reallocation

Request:

Did the Company consider the Performance Incentive Mechanism (PIM) as part of its determination of the reallocation of the RI Grows, LLC budget? Please explain why or why not.

Response:

As conveyed in the Company's response to Division 2-11, the proposed re-allocation of planned RI Grows, LLC budget within the C&I sector was primarily driven by the Company's perspective on where incremental savings opportunities existed that aligned with the Company's mandate to drive savings and associated benefits for the customers funding energy efficiency programs.

An implication of this decision was that the Company increased planned savings, and corresponding net benefits, of the form most directly incentivized through the current PIM structure, relative to scenarios where the RI Grows budget would have been re-allocated to programs in the market rate residential or income eligible sectors. The Company believes this to be consistent with the intent of the PIM design implemented for calendar year 2021 and anticipated to be in place for calendar year 2022.

Prepared by or under the supervision of: Christopher Porter

Division 2-14
CHP Budget Reallocation

Request:

Referring to Figure 3. 2021 Graphical representation of Attachment 5 Table E-1 and total Electric Savings by Sector, Cumulative on Bates Page 102, did the Company consider the percentage of electric budget and savings by sector in making its determination of how to reallocate the RI Grows Budget? Please explain why or why not.

Response:

While it was not a primary determinant of how to re-allocate RI Grows budget, the Company did consider the percentage of total electric portfolio budget and savings by sector as an input into re-allocating planned RI Grows budget. The Company believed that the relative allocations in the original (inclusive of RI Grows budget) planned budget represented an equitable and prudent allocation of spend and savings, and so sought to preserve these allocations to the extent possible by re-deploying planned RI Grows budget within the C&I sector in the provisional filing.

Prepared by or under the supervision of: Christopher Porter

Division 2-15
3rd Party Support for CAPs

Request:

Please describe how the Company is currently determining when to enlist 3rd party support for CAPs.

Response:

The third-party vendor service was established to help CAP Agencies complete weatherization jobs in the IES Program. Use of the third-party vendor is available on a voluntary basis for all CAP Agencies. The CAPs use their discretion to use the third-party vendor services for weatherization jobs that cannot be completed by the CAP in a reasonable amount of time and/or if the Agency forecasts a large pipeline and desires to prevent long wait times for customers wishing to receive these services.

During the monthly Key Performance Indicator (KPI) meetings with the CAP's Weatherization Directors, the Lead Vendor reinforces the availability – and use – of the third-party services to help meet the Agencies' relative goals and deadlines. Additionally, during the monthly Exec Director meetings and quarterly best practices meetings, the Company and Lead Vendor reinforce the availability of the third-party vendor and communicate pertinent information, including the number of jobs that have been referred by each Agency and the status and resolution of referred jobs.

Prepared by or under the supervision of: Laura Rodormer

Division 2-16
3rd Party Support for CAPs

Request:

Please describe any thresholds that are currently in place to support this determination.

Response:

There is not a codified threshold that requires a CAP Agency to utilize the third-party vendor services. Rather, the Company meets monthly with the Weatherization Directors to determine each CAP agency's ability to complete their pipeline of Weatherization jobs and encourages the use of the third-party vendor in those situations where a CAP has concerns about their capacity to meet anticipated demand.

In addition, at the CAP Executive Director monthly meetings, full transparency around each Agency's status toward achieving weatherization goals is shared with all Agencies to provide an opportunity for Agency-provided support and/or encouragement to utilize the third-party vendor resources when needed.

Prepared by or under the supervision of: Laura Rodormer

Division 2-17
3rd Party Support for CAPs

Request:

Are the thresholds consistent across CAPs? If not, please explain why not.

Response:

There no codified or mandated threshold for any of the CAPs to utilize the third-party vendor. Rather, the Lead Vendor discusses weatherization pipeline capacity and timeline with each Weatherization Director monthly and, if necessary, helps the CAP refer any appropriate or relevant projects to the third-party vendor.

Prepared by or under the supervision of: Laura Rodormer

Division 2-18
Non-Lighting Savings

Request:

Please provide the planned and actual budget and lifetime savings for lighting and non-lighting measures by electric program and sector for the past five years (2016-2020).

Response:

Please see Attachment DIV 2-18-1 through DIV 2-18-5 for data from 2016-2020. Information for this response has been gathered from planned and actual measure-level reports. Incentive dollars and/or savings may not match to what was filed in annual plans or year-end reports due to a difference in tracking measure-level incentive dollars when distinguishing between lighting and non-lighting.

Gaps are present in incentive actuals for the Company's multiple residential programs between 2016 and 2020 when distinguishing lighting vs. non-lighting shares. The following steps outline the chronological procedure used to leverage previous plans and post-evaluation records to reflect a lighting/non-lighting budget actual breakdown most accurately:

1. **Incentive via Planned $/unit.** If a measure's budgeted $/unit incentive value can be traced back to the respective year's BCR model, that value is brought in and is simply multiplied by the actual number of units (quantity) associated with that measure. Depending on the measure's program and lighting/non-lighting categorization, it is bucketed as such. If the quantity was not recorded, this method cannot be performed.

2. **Incentive via Average Incentive/Lifetime MWh Savings (Program-/Income-Level)**. In some instances, a measure cannot be traced back effectively to attribute a budgeted $/unit incentive value, or the $/unit incentive value can be traced back effectively but the quantity for the measure was not recorded. In such cases, the second method was employed to use an approximated average incentive/lifetime MWh savings for lighting/non-lighting measures and multiply this value by the total lifetime MWh savings associated with a measure. This approximated incentive/lifetime MWh value is calculated in several steps.

Prepared by or under the supervision of: Jessica Darling

Division 2-18, page 2
Non-Lighting Savings

a. If the "Incentive via Planned $/unit" method was successful, that measure's calculated incentive is divided by its total lifetime MWh savings to obtain an actual incentive/lifetime MWh value.

b. In cases where the "Incentive via Planned $/unit" method was not successful due to a missing quantity value, the $/unit value is divided by the planned lifetime MWh/unit instead to obtain a "planned" incentive/lifetime MWh. This planned lifetime MWh/unit value was obtained by tracing back to the respective year's BCR model and dividing the total planned lifetime MWh benefit by the planned quantity for the respective measure.

c. These values are then combined into a "blended" incentive/lifetime MWh with the actual incentive/lifetime MWh value taking precedent over the planned incentive/lifetime MWh and the planned incentive/lifetime MWh value taking the place of an actual incentive/lifetime MWh when it cannot be calculated.

d. For each program, a lighting and non-lighting average $/lifetime MWh is calculated. There are instances where this value produced a null set and therefore could not be used. Income type, however, can traverse multiple programs and therefore produce a value that a program-specific average could not.

e. For each income type, the lighting and non-lighting average $/lifetime MWh is calculated. There are instances where this value produced a null set and therefore could not be used.

3. **Final Incentive Value.** The final incentive value for a measure is selected among the three calculated values in order of whichever method produces a value first. For example, if the "Incentive via Planned $/unit" and "Incentive via Average Incentive/Lifetime MWh Savings (Program-Level)" methods do not produce a value, but the "Incentive via Average Incentive/Lifetime MWh Savings (Income-Level)" does, it is chosen as the final incentive value for that measure and is bucketed within its program as a lighting/non-lighting incentive accordingly. Likewise, if the "Incentive via Planned $/unit" method produces a value, there is no need to calculate the incentive through an average incentive/lifetime MWh value. Once this incentive value is selected, unrealized measures are weeded out in two ways:

Division 2-18, page 3
Non-Lighting Savings

a. If a measure has a quantity, but no lifetime MWh savings, then its final incentive value is set to 0. Only measures with savings are assumed to have been actualized.

b. If a measure has no quantity or lifetime MWh savings, then its final incentive value is set to 0. No quantity or lifetime MWh savings signifies that the measure was not actualized.

4. The only measures where all methods above could not produce a value, but there were quantity and total lifetime MWh savings values was Energy Star Lighting. Given that this program is intrinsically a lighting program, there was no need to determine the portion of measures/incentives that are lighting vs. non-lighting. Instead, the total program-level incentive cost is recorded as a single value.

For two programs, Small Business Direct Install and Income Eligible Multifamily, measure-level incentive costs were not available. Lighting vs. non-lighting incentives are calculated by taking the total program incentive spend and multiplying by the ratio of lighting vs. non-lighting lifetime MWh.

Prepared by or under the supervision of: Jessica Darling

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-18-1
Summary of Planned and Actual Incentives and Lifetime Savings for Lighting and Non-Lighting Measures - 2020

2020		Planned		Actual	
		Incentives ($)	Lifetime Savings (MWh)	Incentives ($)	Lifetime Savings (MWh)
Electric Portfolio	Lighting	$ 36,060,171	1,059,130	$ 30,627,091	826,227
	Non-lighting	$ 45,626,887	468,695	$ 34,784,372	472,446
Commercial & Industrial Total	Lighting	$ 20,364,876	831,694	$ 20,813,669	617,631
	Non-lighting	$ 13,521,319	266,113	$ 14,172,218	311,143
Large Commercial New Construction	Lighting	$ 505,988	37,259	$ 815,371	62,190
	Non-lighting	$ 2,630,927	110,654	$ 3,930,991	195,974
Large Commercial Retrofit	Lighting	$ 14,158,888	674,513	$ 13,662,079	438,087
	Non-lighting	$ 3,330,601	149,314	$ 2,347,954	106,130
Small Business Direct Install	Lighting	$ 5,700,000	119,922	$ 6,336,218	117,353
	Non-lighting	$ 600,000	6,144	$ 488,046	9,039
Commercial ConnectedSolutions	Lighting	$ -	-		-
	Non-lighting	$ 1,715,000	-	$ 2,187,960	-
Commercial Pilots	Lighting	$ -	-	$ -	-
	Non-lighting	$ -	-	$ -	-
Community Based Initiatives - C&I	Lighting	$ -	-	$ -	-
	Non-lighting	$ 28,125	-	$ 600	-
Finance Costs	Lighting	$ -	-	$ -	-
	Non-lighting	$ 5,216,666	-	$ 5,216,666	-
Income Eligible Residential Total	Lighting	$ 392,700	13,209	$ 484,814	4,842
	Non-lighting	$ 12,696,316	64,413	$ 4,547,101	22,326
Single Family - Income Eligible Services	Lighting	$ 392,700	4,158	$ 359,448	3,806
	Non-lighting	$ 9,773,116	41,565	$ 3,770,790	15,908
Income Eligible Multifamily	Lighting	$ -	9,051	$ 125,366	1,037
	Non-lighting	$ 2,923,200	22,848	$ 776,311	6,419
Non-Income Eligible Residential Total	Lighting	$ 15,302,595	214,227	$ 9,328,609	203,754
	Non-lighting	$ 19,409,252	138,169	$ 16,065,053	138,977
Residential New Construction	Lighting	$ -	424	$ 18,958	406
	Non-lighting	$ 537,188	15,422	$ 391,981	13,693
ENERGY STAR® HVAC	Lighting	$ -	-	$ -	-
	Non-lighting	$ 1,614,625	33,961	$ 4,566,102	52,272
EnergyWise	Lighting	$ 1,384,750	10,277	$ 1,112,472	8,774
	Non-lighting	$ 11,003,400	12,033	$ 6,497,161	10,690
EnergyWise Multifamily	Lighting	$ -	7,880	$ 351,170	7,517
	Non-lighting	$ 2,124,000	21,464	$ 482,045	6,524
Home Energy Reports	Lighting	$ -	-	$ -	-
	Non-lighting	$ 2,540,729	23,239	$ 2,107,345	26,345
ENERGY STAR® Lighting	Lighting	$ 13,917,845	195,647	$ 7,846,010	187,057
	Non-lighting	$ -	-	$ -	-
Residential Consumer Products	Lighting	$ -	-	$ -	-
	Non-lighting	$ 1,093,915	32,041	$ 1,631,915	29,452
Residential ConnectedSolutions	Lighting	$ -	-	$ -	-
	Non-lighting	$ 221,020	8	$ 383,104	-
Residential Pilots	Lighting	$ -	-	$ -	-
	Non-lighting	$ 190,000	-	$ -	-
Community Based Initiatives - Residential	Lighting	$ -	-	$ -	-
	Non-lighting	$ 84,375	-	$ 5,400	-

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-18-2
Summary of Planned and Actual Incentives and Lifetime Savings for Lighting and Non-Lighting Measures - 2019

2019		Planned		Actual	
		Incentives ($)	Lifetime Savings (MWh)	Incentives ($)	Lifetime Savings (MWh)
Electric Portfolio	Lighting	$ 34,434,970	1,237,775	$ 40,579,019	904,644
	Non-lighting	$ 39,546,171	455,488	$ 46,617,718	432,362
Commercial & Industrial Total	Lighting	$ 20,566,281	933,082	$ 27,664,976	864,812
	Non-lighting	$ 11,422,086	257,617	$ 15,088,825	239,865
Large Commercial New Construction	Lighting	$ 485,000	29,763	$ 732,875	45,153
	Non-lighting	$ 2,371,058	141,093	$ 4,873,541	153,574
Large Commercial Retrofit	Lighting	$ 13,477,281	757,366	$ 20,098,309	673,111
	Non-lighting	$ 2,133,841	116,524	$ 3,282,805	79,742
Small Business Direct Install	Lighting	$ 6,604,000	145,953	$ 6,833,793	146,548
	Non-lighting	$ -	-	$ 305,410	6,549
Commercial ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ 1,810,000	-	$ 1,615,750	
Commercial Pilots	Lighting	$ -	-		
	Non-lighting	$ 87,500	-	$ (0)	
Community Based Initiatives - C&I	Lighting	$ -	-		
	Non-lighting	$ 19,688	-	$ 11,319	
Finance Costs	Lighting	$ -	-		
	Non-lighting	$ 5,000,000	-	$ 5,000,000	
Income Eligible Residential Total	Lighting	$ 540,000	15,636	$ 607,487	6,288
	Non-lighting	$ 10,394,841	56,955	$ 9,179,324	55,017
Single Family - Income Eligible Services	Lighting	$ 540,000	5,400	$ 375,534	3,755
	Non-lighting	$ 8,644,841	36,601	$ 6,944,669	30,622
Income Eligible Multifamily	Lighting	$ -	10,236	$ 231,953	2,532
	Non-lighting	$ 1,750,000	20,354	$ 2,234,655	24,396
Non-Income Eligible Residential Total	Lighting	$ 13,328,688	289,057	$ 12,306,556	33,544
	Non-lighting	$ 17,729,243	140,916	$ 22,349,569	137,479
Residential New Construction	Lighting	$ -	389	$ -	1,806
	Non-lighting	$ 449,429	12,545	$ 446,303	13,834
ENERGY STAR® HVAC	Lighting	$ -	-	$ -	-
	Non-lighting	$ 1,905,825	39,365	$ 9,657,663	36,526
EnergyWise	Lighting	$ -	20,420	$ -	27,510
	Non-lighting	$ 10,464,205	18,681	$ 7,599,508	20,362
EnergyWise Multifamily	Lighting	$ -	11,332	$ -	4,228
	Non-lighting	$ 1,320,000	17,375	$ 283,584	5,708
Home Energy Reports	Lighting	$ -	-	$ -	-
	Non-lighting	$ 2,527,173	24,130	$ 2,420,027	24,938
ENERGY STAR® Lighting	Lighting	$ 13,328,688	256,916	$ 12,306,556	
	Non-lighting	$ -	-	$ -	-
Residential Consumer Products	Lighting	$ -	-	$ -	-
	Non-lighting	$ 737,423	28,812	$ 1,835,936	36,110
Residential ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ 162,025	8	$ 57,616	
Residential Pilots	Lighting	$ -	-		
	Non-lighting	$ 104,100	-	$ -	
Community Based Initiatives - Residential	Lighting	$ -	-		
	Non-lighting	$ 59,063	-	$ 48,931	

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-18-3
Summary of Planned and Actual Incentives and Lifetime Savings for Lighting and Non-Lighting Measures - 2018

2018		Planned		Actual	
		Incentives ($)	Lifetime Savings (MWh)	Incentives ($)	Lifetime Savings (MWh)
Electric Portfolio	Lighting	$ 26,725,670	1,111,225	$ 36,686,369	1,101,854
	Non-lighting	$ 41,243,661	624,248	$ 36,606,978	423,480
Commercial & Industrial Total	Lighting	$ 20,023,970	833,626	$ 22,210,322	1,021,194
	Non-lighting	$ 14,682,575	480,629	$ 13,685,316	256,864
Large Commercial New Construction	Lighting	$ 891,506	45,250	$ 885,306	76,245
	Non-lighting	$ 3,301,939	162,941	$ 2,046,310	122,860
Large Commercial Retrofit	Lighting	$ 13,507,065	669,090	$ 16,599,265	824,713
	Non-lighting	$ 5,845,685	317,688	$ 5,713,374	127,716
Small Business Direct Install	Lighting	$ 5,625,400	119,286	$ 4,725,751	120,237
	Non-lighting	$ -	-	$ 247,109	6,287
Commercial ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ -	-		
Commercial Pilots	Lighting	$ -	-		
	Non-lighting	$ 515,750	-	$ 678,522	
Community Based Initiatives - C&I	Lighting	$ -	-		
	Non-lighting	$ 19,200	-		
Finance Costs	Lighting	$ -	-		
	Non-lighting	$ 5,000,000	-	$ 5,000,000	
Income Eligible Residential Total	Lighting	$ 759,000	25,172	$ 1,433,395	29,885
	Non-lighting	$ 8,007,855	34,763	$ 9,788,516	44,112
Single Family - Income Eligible Services	Lighting	$ 759,000	12,251	$ 577,236	16,723
	Non-lighting	$ 6,327,855	23,508	$ 8,764,674	28,371
Income Eligible Multifamily	Lighting	$ -	12,921	$ 856,159	13,163
	Non-lighting	$ 1,680,000	11,255	$ 1,023,841	15,741
Non-Income Eligible Residential Total	Lighting	$ 5,942,700	252,427	$ 13,042,652	50,774
	Non-lighting	$ 18,553,231	108,856	$ 13,133,147	122,504
Residential New Construction	Lighting	$ 100,000	1,476	$ 51,653	1,293
	Non-lighting	$ 357,800	5,919	$ 1,599,131	13,668
ENERGY STAR® HVAC	Lighting	$ -	-	$ -	-
	Non-lighting	$ 1,588,900	26,324	$ 1,446,327	27,709
EnergyWise	Lighting	$ -	25,928	$ 2,427,990	28,002
	Non-lighting	$ 11,122,278	13,311	$ 5,228,284	18,497
EnergyWise Multifamily	Lighting	$ -	14,735	$ 857,754	21,479
	Non-lighting	$ 1,980,000	16,163	$ 968,320	8,309
Home Energy Reports	Lighting	$ -	-	$ -	-
	Non-lighting	$ 2,466,213	25,054	$ 2,295,932	23,527
ENERGY STAR® Lighting	Lighting	$ 5,842,700	210,289	$ 9,705,254	
	Non-lighting	$ -	-	$ -	-
Residential Consumer Products	Lighting	$ -	-	$ -	-
	Non-lighting	$ 523,440	22,085	$ 1,448,367	30,794
Residential ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ -	-		
Residential Pilots	Lighting	$ -	-		
	Non-lighting	$ 437,800	-	$ 122,787	
Community Based Initiatives - Residential	Lighting	$ -	-		
	Non-lighting	$ 76,800	-	$ 24,000	

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-18-4
Summary of Planned and Actual Incentives and Lifetime Savings for Lighting and Non-Lighting Measures - 2017

2017		Planned		Actual	
		Incentives ($)	Lifetime Savings (MWh)	Incentives ($)	Lifetime Savings (MWh)
Electric Portfolio	Lighting	$ 29,480,407	1,330,025	$ 38,908,485	1,046,396
	Non-lighting	$ 34,950,100	735,707	$ 34,809,628	738,414
Commercial & Industrial Total	Lighting	$ 20,182,126	803,444	$ 24,693,025	928,637
	Non-lighting	$ 12,708,615	596,289	$ 16,120,548	576,732
Large Commercial New Construction	Lighting	$ 895,705	37,888	$ 769,772	41,250
	Non-lighting	$ 2,040,723	196,069	$ 1,595,848	180,547
Large Commercial Retrofit	Lighting	$ 12,615,339	619,920	$ 17,577,391	738,648
	Non-lighting	$ 5,402,892	400,220	$ 8,939,528	385,950
Small Business Direct Install	Lighting	$ 6,671,082	145,636	$ 6,345,862	148,739
	Non-lighting	$ -	-	$ 436,715	10,236
Commercial ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ -	-		
Commercial Pilots	Lighting	$ -	-		
	Non-lighting	$ 365,000	-	$ 248,457	
Community Based Initiatives - C&I	Lighting	$ -	-		
	Non-lighting	$ -	-		
Finance Costs	Lighting	$ -	-		
	Non-lighting	$ 4,900,000	-	$ 4,900,000	
Income Eligible Residential Total	Lighting	$ 910,462	48,042	$ 2,514,406	49,416
	Non-lighting	$ 8,079,692	26,132	$ 8,381,682	26,731
Single Family - Income Eligible Services	Lighting	$ 910,462	24,926	$ 746,919	24,246
	Non-lighting	$ 6,056,281	21,413	$ 8,125,759	23,086
Income Eligible Multifamily	Lighting	$ -	23,116	$ 1,767,487	25,170
	Non-lighting	$ 2,023,411	4,719	$ 255,923	3,644
Non-Income Eligible Residential Total	Lighting	$ 8,387,819	478,539	$ 11,701,055	68,343
	Non-lighting	$ 14,161,794	113,286	$ 10,307,398	134,951
Residential New Construction	Lighting	$ 164,000	2,258	$ 65,210	2,286
	Non-lighting	$ 269,600	13,853	$ 2,379,757	21,154
ENERGY STAR® HVAC	Lighting	$ -	-	$ -	-
	Non-lighting	$ 1,017,950	18,018	$ 847,245	22,613
EnergyWise	Lighting	$ -	59,710	$ 3,442,859	48,798
	Non-lighting	$ 7,150,020	10,176	$ 2,929,993	17,325
EnergyWise Multifamily	Lighting	$ -	24,809	$ 492,287	17,258
	Non-lighting	$ 2,412,079	11,106	$ 1,083,227	9,629
Home Energy Reports	Lighting	$ -	-	$ -	-
	Non-lighting	$ 2,198,185	26,184	$ 2,202,024	30,451
ENERGY STAR® Lighting	Lighting	$ 8,223,819	391,763	$ 7,700,699	
	Non-lighting	$ -	-		
Residential Consumer Products	Lighting	$ -	-	$ -	-
	Non-lighting	$ 735,010	33,949	$ 797,287	33,780
Residential ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ -	-		
Residential Pilots	Lighting	$ -	-		
	Non-lighting	$ 335,450	-	$ 43,465	
Community Based Initiatives - Residential	Lighting	$ -	-		
	Non-lighting	$ 43,500	-	$ 24,400	

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-18-5
Summary of Planned and Actual Incentives and Lifetime Savings for Lighting and Non-Lighting Measures - 2016

2016		Planned		Actual	
		Incentives ($)	Lifetime Savings (MWh)	Incentives ($)	Lifetime Savings (MWh)
Electric Portfolio	Lighting	$ 25,985,683	1,207,340	$ 33,235,751	956,708
	Non-lighting	$ 33,982,281	585,091	$ 20,268,336	512,419
Commercial & Industrial Total	Lighting	$ 19,039,833	655,621	$ 21,975,359	759,841
	Non-lighting	$ 12,754,294	435,145	$ 6,119,547	357,963
Large Commercial New Construction	Lighting	$ 1,502,727	84,206	$ 1,017,551	48,431
	Non-lighting	$ 2,236,273	150,775	$ 1,709,408	143,450
Large Commercial Retrofit	Lighting	$ 10,912,106	437,599	$ 15,211,224	582,198
	Non-lighting	$ 5,910,394	284,370	$ 3,982,605	204,900
Small Business Direct Install	Lighting	$ 6,625,000	133,816	$ 5,746,584	129,211
	Non-lighting	$ -	-	$ 427,533	9,613
Commercial ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ -	-		
Commercial Pilots	Lighting	$ -	-		
	Non-lighting	$ 156,000	-		
Community Based Initiatives - C&I	Lighting	$ -	-		
	Non-lighting	$ 10,152	-		
Finance Costs	Lighting	$ -	-		
	Non-lighting	$ 4,441,475	-	-	
Income Eligible Residential Total	Lighting	$ 819,500	40,328	$ 2,382,750	56,627
	Non-lighting	$ 7,607,647	25,955	$ 5,956,499	26,086
Single Family - Income Eligible Services	Lighting	$ 819,500	20,067	$ 1,062,041	34,660
	Non-lighting	$ 5,669,647	20,612	$ 5,658,746	21,134
Income Eligible Multifamily	Lighting	$ -	20,261	$ 1,320,709	21,967
	Non-lighting	$ 1,938,000	5,344	$ 297,754	4,952
Non-Income Eligible Residential Total	Lighting	$ 6,126,350	511,391	$ 8,877,642	140,240
	Non-lighting	$ 13,620,340	123,990	$ 8,192,290	128,370
Residential New Construction	Lighting	$ 120,000	2,522	$ 31,614	2,157
	Non-lighting	$ 112,280	13,643	$ 348,173	19,044
ENERGY STAR® HVAC	Lighting	$ -	-	$ -	-
	Non-lighting	$ 723,300	12,304	$ 1,483,010	13,317
EnergyWise	Lighting	$ -	77,116	$ 1,592,394	107,505
	Non-lighting	$ 7,763,709	29,248	$ 1,225,658	30,144
EnergyWise Multifamily	Lighting	$ -	32,984	$ 448,146	30,578
	Non-lighting	$ 1,302,400	2,513	$ 194,908	10,661
Home Energy Reports	Lighting	$ -	-	$ -	-
	Non-lighting	$ 2,667,000	32,186	$ 2,451,509	28,792
ENERGY STAR® Lighting	Lighting	$ 6,006,350	398,769	$ 6,805,489	
	Non-lighting	$ -	-		
Residential Consumer Products	Lighting	$ -	-	$ -	-
	Non-lighting	$ 738,510	34,097	$ 2,369,719	26,411
Residential ConnectedSolutions	Lighting	$ -	-		
	Non-lighting	$ -	-		
Residential Pilots	Lighting	$ -	-		
	Non-lighting	$ 268,900	-	$ 119,315	
Community Based Initiatives - Residential	Lighting	$ -	-		
	Non-lighting	$ 44,241	-		

Division 2-19
Non-Lighting Savings

Request:

Please provide the number of measures, budgets, and lifetime savings by fuel type associated with natural gas, oil, and propane heating system replacements by program and sector in the 2022 Provisional Plan. Please use the measure names from the 2022 Provisional Plan BCA model provided in response to DIV 1-1 to label the measures.

Response:

Please see Attachment DIV 2-19. The attachment is organized by Portfolio and Program. The response provides total incentive cost by Program for the budget. Incentive cost and net lifetime savings are not available at the measure level.

Please note that the "AMPHEATSYSTEM" measure in the electric Single Family – Income Eligible Services program would encompass any emergency heating system replacements, including oil and propane systems. Because planning is done at a high level, the information in the 2022 Provisional Plan BCA model is not broken out by the number of proposed oil or propane replacement systems. Therefore, the Company does not claim propane savings in the BCA model for any potential propane heating system replacements. For tracking and year end reporting of actuals, the Company does capture and report any oil or propane savings relating to those heating replacements.

Prepared by or under the supervision of: Jessica Darling

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-19
Summary of Savings Associated with National Gas, Oil, and Propane Heat System Replacements

Sector	Portfolio	BCR Activity	BCR Activity Name2	Measure	BCR Measure ID	Incentive Cost ($000)	Net Lifetime Gas Savings (MMBTU)	Net Lifetime Oil Savings (MMBTU)	Net Lifetime Propane Savings (MMBTU)
A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler95	A02b Energy Star Heating SystemBoiler95	$ 1,302.5	67,598.75	0	0
A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING 95	A02b Energy Star Heating SystemCOMBO CONDENSING 95	$ 3,863.7	204,876.95	0	0
A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Combo Furnace	A02b Energy Star Heating SystemCombo Furnace	$ 15.2	3,917.24	0	0
B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER Commercial_LI	Income Eligible MultifamilyBOILER Commercial_LI	$ -	104,220.00	0	0
B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER_LI	Income Eligible MultifamilyBOILER_LI	$ -	5,820.00	0	0
C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Boilers	Large Commercial New ConstructionBoilers	$ 180.2	57,180.00	0	0
C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Combo Boiler/DHW	Large Commercial New ConstructionCombo Boiler/DHW	$ 103.4	17,280.00	0	0
C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Non Boiler Heating	Large Commercial New ConstructionNon Boiler Heating	$ 33.9	9,522.00	0	0
B - Low Income	Gas	B03a Single Family - Appliance Management	Single Family - Income Eligible Services	HEATSYSTEM	B03a Single Family - Appliance ManagementHEATSYSTEM	$ 1,400.0	44,240.00	0	0
C - Commercial & Industrial	Electric	C03a Large C&I Retrofit	Commercial Retrofit	EI HVAC	C03a Energy InitiativeEI HVAC	$ 682.3	47,237.94	0	0
B - Low Income	Electric	B03a Low Income Retrofit 1-4	Single Family - Income Eligible Services	AMPHEATSYSTEM	HEATSYSTEM	$ 2,149.7	0	61,910.96	0

Division 2-20
Non-Lighting Savings

Request:

Please provide the number of measures, budgets, and lifetime savings by fuel type associated with natural gas, oil, and propane heating system replacements by program and sector for the past five years (2016-2020). Please use the measure names from the 2022 Provisional Plan BCA model provided in response to DIV 1-1 to label the measures.

Response:

Please see Attachment DIV 2-20-1 through DIV 2-20-5. The attachments are organized by Portfolio and Program. The response provides total incentive cost by Program for the budget. Incentive cost and net lifetime savings are not available at the measure level.

Please note that the "AMPHEATSYSTEM" measure in the electric Single Family – Income Eligible Services program would encompass any emergency heating system replacements, including oil and propane systems. Because planning is done at a high level, the information in the BC models are not broken out by the number of proposed oil or propane replacement systems. Therefore, the Company does not claim propane savings in the BCA model for any potential propane heating system replacements. For tracking and year end reporting of actuals, the Company does capture and report any oil or propane savings relating to those heating replacements.

Prepared by or under the supervision of: Jessica Darling

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-20-1
Summary of Savings Associated with National Gas, Oil, and Propane Heat System Replacements - 2020

Year	Sector	Portfolio	BCR Activity	BCR Activity Name2	Measure	2022 BCR Measure ID	Incentive Cost ($000)	Net Lifetime Gas Savings (MMBTU)	Net Lifetime Oil Savings (MMBTU)	Net Lifetime Propane Savings (MMBTU)
2020	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler90	A02b Energy Star Heating SystemBoiler90	29	10,537	-	-
2020	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler95	A02b Energy Star Heating SystemBoiler95	220	58,201	-	-
2020	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING	A02b Energy Star Heating SystemCOMBO CONDENSING	21	4,889	-	-
2020	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING 95	A02b Energy Star Heating SystemCOMBO CONDENSING 95	1320	189,094	-	-
2020	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Combo Furnace	A02b Energy Star Heating SystemCombo Furnace	7	3,522	-	-
2020	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER Commercial_LI	Income Eligible MultifamilyBOILER Commercial_LI	0	111,168	-	-
2020	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER_LI	Income Eligible MultifamilyBOILER_LI	0	11,640	-	-
2020	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Boilers	Large Commercial New ConstructionBoilers	250	134,963	-	-
2020	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Combo Boiler/DHW	Large Commercial New ConstructionCombo Boiler/DHW	140	31,860	-	-
2020	B - Low Income	Gas	B03a Single Family - Appliance Management	Low Income Single Family	HEATSYSTEM	B03a Single Family - Appliance ManagementHEATSYSTEM	1210	38,236	-	-
2020	B - Low Income	Electric	B03a Low Income Retrofit 1-4	Low Income Single Family	AMPHEATSYSTEM	HEATSYSTEM	1980	-	57,024	-
2020	C - Commercial & Industrial	Electric	C03a Large C&I Retrofit	Commercial Retrofit	EI HVAC	C03a Energy InitiativeEI HVAC	700	68,793	-	-

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-20-2
Summary of Savings Associated with National Gas, Oil, and Propane Heat System Replacements - 2019

Year	Sector	Portfolio	BCR Activity	BCR Activity Name2	Measure	2022 BCR Measure ID	Incentive Cost ($000)	Net Lifetime Gas Savings (MMBTU)	Net Lifetime Oil Savings (MMBTU)	Net Lifetime Propane Savings (MMBTU)
2019	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler90	A02b Energy Star Heating SystemBoiler90	90	32,422	-	-
2019	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler95	A02b Energy Star Heating SystemBoiler95	260	68,783	-	-
2019	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING	A02b Energy Star Heating SystemCOMBO CONDENSING	51	11,872	-	-
2019	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING 95	A02b Energy Star Heating SystemCOMBO CONDENSING 95	840	120,333	-	-
2019	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Combo Furnace	A02b Energy Star Heating SystemCombo Furnace	63	31,702	-	-
2019	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER Commercial_LI	Income Eligible MultifamilyBOILER Commercial_LI	0	111,168	-	-
2019	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER_LI	Income Eligible MultifamilyBOILER_LI	0	5,820	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Boiler95	Large Commercial New ConstructionBoilers	60	24,603	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COMBO COND BOIL/WTR HTR 90+	Large Commercial New ConstructionCOMBO COND BOIL/WTR HTR 90+	45	13,063	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COND UNIT HEATER 151-400 MBH	*not found*	4	3,258	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler <= 300 mbh	*not found*	8	1,626	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1000-1700 mbh	*not found*	58	16,169	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1701+ mbh	*not found*	100.0	36,572.63	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 300-499 mbh	*not found*	20.0	6,195.00	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 500-999 mbh	*not found*	76.0	21,607.28	-	-
2019	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COMBO COND BOIL/WTR HTR 95+	Large Commercial New ConstructionCombo Boiler/DHW	44.2	78,864.00	-	-
2019	B - Low Income	Gas	B03a Single Family - Appliance Management	Low Income Single Family	HEATSYSTEM	B03a Single Family - Appliance ManagementHEATSYSTEM	1078.0	34,760.00	-	-
2019	B - Low Income	Electric	B03a Low Income Retrofit 1-4	Low Income Single Family	AMPHEATSYSTEM	HEATSYSTEM	1800.0	-	51,840.00	-
2019	C - Commercial & Industrial	Electric	C03a Large C&I Retrofit	Commercial Retrofit	EI HVAC	C03a Energy InitiativeEI HVAC	425.0	17,663.10	-	-

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-20-3
Summary of Savings Associated with National Gas, Oil, and Propane Heat System Replacements - 2018

Year	Sector	Portfolio	BCR Activity	BCR Activity Name2	Measure	2022 BCR Measure ID	Incentive Cost ($000)	Net Lifetime Gas Savings (MMBTU)	Net Lifetime Oil Savings (MMBTU)	Net Lifetime Propane Savings (MMBTU)
2018	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler90	A02b Energy Star Heating SystemBoiler90	113	38,988	-	-
2018	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler95	A02b Energy Star Heating SystemBoiler95	280	71,261	-	-
2018	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING	A02b Energy Star Heating SystemCOMBO CONDENSING	65	13,083	-	-
2018	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING 95	A02b Energy Star Heating SystemCOMBO CONDENSING 95	450	60,384	-	-
2018	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Combo Furnace	A02b Energy Star Heating SystemCombo Furnace	135	105,672	-	-
2018	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER Commercial_LI	Income Eligible MultifamilyBOILER Commercial_LI	896	114,642	-	-
2018	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER_LI	Income Eligible MultifamilyBOILER_LI	80	5,936	-	-
2018	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	FURNACE_LI	Income Eligible MultifamilyFURNACE_LI	70	8,416	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Boiler95	Large Commercial New ConstructionBoilers	105	43,055	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COND UNIT HEATER 151-400 MBH	*not found*	15	13,031	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler <= 300 mbh	*not found*	30	6,505	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1000-1700 mbh	*not found*	75	20,908	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1701+ mbh	*not found*	200.0	73,145.25	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 300-499 mbh	*not found*	40.0	12,390.00	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 500-999 mbh	*not found*	80.0	22,744.50	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Water Heating Boiler - 85% TE	*not found*	30.0	774.60	-	-
2018	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Water Heating Boiler - 92% TE	*not found*	30.0	1,859.03	-	-
2018	B - Low Income	Gas	B03a Single Family - Appliance Management	Low Income Single Family	HEATSYSTEM	B03a Single Family - Appliance ManagementHEATSYSTEM	787.5	64,400.00	-	-
2018	B - Low Income	Electric	B03a Low Income Retrofit 1-4	Low Income Single Family	HEATSYSTEM	HEATSYSTEM	1215.0	-	89,424.00	-
2018	C - Commercial & Industrial	Electric	C03a Large C&I Retrofit	Commercial Retrofit	EI HVAC	C03a Energy InitiativeEI HVAC	414.0	16,994.00	33,190.52	-

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-20-4
Summary of Savings Associated with National Gas, Oil, and Propane Heat System Replacements - 2017

Year	Sector	Portfolio	BCR Activity	BCR Activity Name2	Measure	2022 BCR Measure ID	Incentive Cost ($000)	Net Lifetime Gas Savings (MMBTU)	Net Lifetime Oil Savings (MMBTU)	Net Lifetime Propane Savings (MMBTU)
2017	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler90	A02b Energy Star Heating SystemBoiler90	158	54,583	-	-
2017	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler95	A02b Energy Star Heating SystemBoiler95	270	78,388	-	-
2017	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING	A02b Energy Star Heating SystemCOMBO CONDENSING	93	24,204	-	-
2017	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING 95	A02b Energy Star Heating SystemCOMBO CONDENSING 95	500	80,512	-	-
2017	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER Commercial_LI	Income Eligible MultifamilyBOILER Commercial_LI	869	111,168	-	-
2017	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	BOILER_LI	Income Eligible MultifamilyBOILER_LI	78	5,820	-	-
2017	B - Low Income	Gas	B03b Low Income Retrofit Multifamily	Low Income Multi Family	FURNACE_LI	Income Eligible MultifamilyFURNACE_LI	69	8,251	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Boiler95	Large Commercial New ConstructionBoilers	75	21,823	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COMBO COND BOIL/WTR HTR 90+	Large Commercial New ConstructionCombo Boiler/DHW	30	6,180	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COND UNIT HEATER 151-400 MBH	*not found*	4	2,312	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler <= 300 mbh	*not found*	20	6,245	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1000-1700 mbh	*not found*	38	15,480	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1701+ mbh	*not found*	50.0	27,090.35	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 300-499 mbh	*not found*	28.0	12,836.32	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 500-999 mbh	*not found*	56.0	23,584.54	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	INFRARED HEATER - LOW INT	*not found*	18.8	3,202.80	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Water Heating Boiler - 85% TE	*not found*	35.3	425.07	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Water Heating Boiler - 92% TE	*not found*	35.7	1,033.36	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COMBO COND BOIL/WTR HTR 95+	*not found*	35.6	93,461.47	-	-
2017	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COND WATER HEATER 90%MIN 75-800	*not found*	35.6	50,808.65	-	-
2017	C - Commercial & Industrial	Gas	C03a Large C&I Retrofit	Commercial Retrofit	BOILER RESET MULTI-STAGE	*not found*	0.5	1,003.23	-	-
2017	B - Low Income	Gas	B03a Single Family - Appliance Management	Low Income Single Family	HEATSYSTEM	B03a Single Family - Appliance ManagementHEATSYSTEM	675.0	55,200.00	-	-
2017	B - Low Income	Electric	B03a Low Income Retrofit 1-4	Low Income Single Family	HEATSYSTEM	HEATSYSTEM	1224.1	-	81,475.20	-
2017	C - Commercial & Industrial	Electric	C03a Large C&I Retrofit	Commercial Retrofit	EI HVAC	C03a Energy InitiativeEI HVAC	309.0	9,029.05	17634.85	-

The Narragansett Electric Company
d/b/a National Grid
RIPUC Docket No. 5189
Attachment Division 2-20-5
Summary of Savings Associated with National Gas, Oil, and Propane Heat System Replacements - 2016

Year	Sector	Portfolio	BCR Activity	BCR Activity Name2	Measure	2022 BCR Measure ID	Incentive Cost ($000)	Net Lifetime Gas Savings (MMBTU)	Net Lifetime Oil Savings (MMBTU)	Net Lifetime Propane Savings (MMBTU)
2016	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	Boiler95	A02b Energy Star Heating SystemBoiler95	350	101,802	-	-
2016	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING	A02b Energy Star Heating SystemCOMBO CONDENSING	250	65,416	-	-
2016	A - Residential	Gas	A02b Residential HVAC	Energy Star® HVAC	COMBO CONDENSING 95	A02b Energy Star Heating SystemCOMBO CONDENSING 95	245	39,451	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COMBO COND BOIL/WTR HTR 90+	Large Commercial New ConstructionCombo Boiler/DHW	28	6,797	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1000-1700 mbh	*not found*	45	18,576	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 1701+ mbh	*not found*	70	37,926	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 300-499 mbh	*not found*	26	11,919	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler <= 300 mbh	*not found*	10	4,804	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	Condensing boiler 500-999 mbh	*not found*	108	45,484	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	COND UNIT HEATER 151-400 MBH	*not found*	4	2,312	-	-
2016	C - Commercial & Industrial	Gas	C02a C&I Lost Opportunity	Commercial New Construction	INFRARED HEATER - LOW INT	*not found*	6	1,025	-	-
2016	B - Low Income	Gas	B03a Low-Income Retrofit 1-5	Low Income Single Family	HEATSYSTEM	B03a Single Family - Appliance ManagementHEATSYSTEM	400	29,440	-	-
2016	A - Residential	Electric	B03a Low Income Retrofit 1-4	Low Income Single Family	Heat System Replacement	HEATSYSTEM	1105.9	-	81,394.39	-
2016	C - Commercial & Industrial	Electric	C03a Energy Initiative	Commercial Retrofit	EI HVAC	C03a Energy InitiativeEI HVAC	480.0	11,833.61	23,112.52	-

Division 2-21
Budget Development Process and Precision

Request:

For each of the last five years (2016-2020), please provide a table in excel readable format that compares the filed budget for each program as broken out in Tables E-2 and G-2 of the Company's EE Plans to the actual expenditures for that year.

Response:

Please see Attachments DIV 2-21-1 through DIV 2-21-10. There is an attachment for each program year and fuel type. Each attachment is organized by Sector and Program.

Prepared by or under the supervision of: John Richards

Division Attachment 2-21-1

2016 Electric Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
Residential New Construction	$115.0	$70.7	$23.4	$0.8	$232.3	$471.0	$323.8	$106.5	$42.5	$7.7			$736.9	$656.8
ENERGY STAR® HVAC	$80.4	$48.5	$100.4	$105.4	$723.3	$894.3	$271.4	$93.4	$43.4	$28.2			$1,219.0	$1,169.8
Energy*Wise*	$355.0	$214.4	$345.4	$320.8	$8,727.5	$8,079.5	$467.8	$152.6	$112.0	$139.1			$10,007.7	$8,906.4
Energy*Wise* Multifamily	$106.0	$66.3	$54.8	$53.7	$2,398.0	$1,980.8	$730.5	$540.3	$29.8	$25.3			$3,319.1	$2,666.3
ENERGY STAR® Lighting	$303.5	$179.8	$479.0	$381.9	$6,233.8	$6,805.5	$319.6	$331.8	$26.1	$7.0			$7,362.1	$7,705.9
Residential Consumer Products	$103.7	$69.8	$512.9	$476.0	$738.5	$816.1	$705.9	$338.0	$24.1	$6.5			$2,085.0	$1,706.4
Home Energy Reports	$83.5	$55.2	$13.8	$3.4	$2,667.0	$2,651.8	$22.1	$9.2	$10.3	$2.8			$2,796.7	$2,722.4
Energy Efficiency Education Programs	$0.0	$0.0	$0.0	$58.4	$0.0	$0.0	$40.1	$1.6	$0.0	$0.0			$40.1	$60.0
Residential Demonstration and R&D	$14.4	$14.8	$23.4	$9.7	$268.9	$119.3	$121.0	$17.6	$60.4	$74.7			$488.1	$236.0
Community Based Initiatives - Residential	$10.6	$1.0	$41.3	$28.9	$44.2	$0.0	$148.0	$165.0	$40.2	$0.0			$284.4	$194.8
Comprehensive Marketing - Residential	$14.6	$12.3	$518.0	$522.4	$0.0	$0.0	$1.0	$0.0	$0.4	$0.1			$534.0	$534.8
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$1,393.7	$1,741.2	$1,393.7	$1,741.2
Subtotal - Non-Income Eligible Residential	**$1,186.7**	**$732.8**	**$2,112.5**	**$1,961.5**	**$22,033.5**	**$21,818.2**	**$3,151.0**	**$1,756.0**	**$389.4**	**$291.4**	**$1,393.7**	**$1,741.2**	**$30,266.8**	**$28,301.0**
Income Eligible Residential:														
Single Family - Income Eligible Services	$328.6	$201.9	$111.0	$99.1	$6,489.1	$5,812.5	$1,680.1	$1,300.2	$47.3	$12.7			$8,656.1	$7,426.4
Income Eligible Multifamily	$99.4	$60.0	$12.0	$0.4	$1,938.0	$1,618.5	$453.6	$375.4	$28.4	$12.4			$2,531.3	$2,066.7
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$559.4	$699.2	$559.4	$699.2
Subtotal - Income Eligible Residential	**$428.0**	**$261.9**	**$123.0**	**$99.4**	**$8,427.1**	**$7,431.0**	**$2,133.7**	**$1,675.7**	**$75.6**	**$25.1**	**$559.4**	**$699.2**	**$11,746.8**	**$10,192.3**
Commercial & Industrial														
Large Commercial New Construction	$471.1	$329.7	$323.1	$322.7	$3,787.0	$2,949.7	$2,032.7	$1,348.5	$250.2	$466.5			$6,864.1	$5,417.1
Large Commercial Retrofit	$978.6	$776.2	$308.7	$241.7	$16,822.5	$15,603.1	$4,182.6	$2,864.9	$253.1	$233.3			$22,545.5	$19,719.3
Small Business Direct Install	$502.4	$338.0	$350.6	$252.9	$6,625.0	$6,174.1	$1,238.5	$220.8	$29.4	$8.7			$8,745.9	$6,994.4
Community Based Initiatives - C&I	$1.7	$0.0	$0.2	$0.0	$10.2	$0.0	$37.4	$27.0	$0.0	$0.0			$49.6	$27.0
Commercial Demonstration and R&D	$19.0	$0.0	$16.2	$0.0	$156.0	$23.8	$104.8	$25.9	$0.2	$0.0			$296.2	$49.7
Comprehensive Marketing - C&I	$0.0		$0.0		$0.0		$0.0		$0.0				$0.0	$0.0
Finance Costs	$0.0		$0.0		$3,000.0	$3,000.0	$0.0		$0.0				$3,000.0	$3,000.0
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$1,925.1	$1,687.6	$1,925.1	$1,687.6
Subtotal - Commercial & Industrial	**$1,972.6**	**$1,443.9**	**$998.9**	**$817.3**	**$30,400.7**	**$27,750.7**	**$7,596.0**	**$4,487.1**	**$533.1**	**$708.5**	**$1,925.1**	**$1,687.6**	**$43,426.3**	**$36,895.1**
Regulatory														
OER	$793.1	$790.6	$0.0		$0.0		$0.0		$0.0				$793.1	$790.6
EERMC	$793.1	$781.6	$0.0		$0.0		$0.0		$0.0				$793.1	$781.6
RI Infrastructure Bank	$0.0		$0.0		$1,441.5	$1,441.5	$0.0		$0.0				$1,441.5	$1,441.5
Subtotal - Regulatory	**$1,586.2**	**$1,572.1**	**$0.0**	**$0.0**	**$1,441.5**	**$1,441.5**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$3,027.7**	**$3,013.6**
Grand Total	**$5,173.5**	**$4,010.7**	**$3,234.4**	**$2,878.2**	**$62,302.8**	**$58,441.3**	**$12,880.7**	**$7,918.8**	**$998.1**	**$1,025.1**	**$3,878.1**	**$4,128.0**	**$88,467.5**	**$78,402.1**

Division Attachment 2-21-2

2016 Gas Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
ENERGY STAR® HVAC	$54.4	$34.5	$110.1	$91.7	$1,174.3	$977.4	$235.8	$141.5	$44.5	$7.5	$0.0	$0.0	$1,619.2	$1,252.6
EnergyWise	$225.6	$139.1	$81.3	$66.5	$6,029.8	$6,424.3	$552.3	$156.6	$40.6	$37.5	$0.0	$0.0	$6,929.5	$6,824.1
EnergyWise Multifamily	$71.3	$44.9	$39.2	$28.2	$1,470.0	$1,078.7	$382.2	$215.3	$15.8	$5.3	$0.0	$0.0	$1,978.6	$1,372.4
Home Energy Reports	$16.7	$14.3	$2.2	$0.9	$403.2	$424.1	$13.1	$14.1	$1.5	$0.2	$0.0	$0.0	$436.6	$453.6
Residential Demonstration and R&D	$11.6	$0.0	$19.6	$0.0	$20.0	$0.0	$5.1	$0.2	$25.0	$0.0	$0.0	$0.0	$81.3	$0.2
Residential New Construction	$25.7	$20.2	$3.1	$0.1	$461.6	$588.6	$344.9	$234.0	$1.7	$4.0	$0.0	$0.0	$836.9	$847.0
Comprehensive Marketing - Residential	$1.4	$1.3	$68.2	$49.8	$0.0	$0.0	$0.1	$0.0	$0.1	$0.0	$0.0	$0.0	$69.8	$51.2
Community Based Initiatives - Residential	$0.5	$0.2	$6.7	$1.8	$4.3	$0.0	$14.3	$17.1	$0.0	$0.0	$0.0	$0.0	$25.8	$19.1
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$598.9	$700.5	$598.9	$700.5
Subtotal - Non-Income Eligible Residential	**$407.2**	**$254.5**	**$330.3**	**$239.1**	**$9,563.1**	**$9,493.1**	**$1,548.0**	**$778.9**	**$129.2**	**$54.6**	**$598.9**	**$700.5**	**$12,576.6**	**$11,520.7**
Income Eligible Residential:														
Single Family - Income Eligible Services	$121.3	$77.3	$13.7	$10.0	$2,290.0	$2,772.0	$851.0	$741.3	$9.5	$1.6	$0.0	$0.0	$3,285.5	$3,602.1
Income Eligible Multifamily	$72.0	$45.2	$8.9	$0.3	$1,560.0	$931.2	$406.4	$189.7	$16.0	$2.7	$0.0	$0.0	$2,063.3	$1,169.1
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$267.4	$314.7	$267.4	$314.7
Subtotal - Income Eligible Residential	**$193.4**	**$122.5**	**$22.6**	**$10.3**	**$3,850.0**	**$3,703.2**	**$1,257.4**	**$931.0**	**$25.4**	**$4.3**	**$267.4**	**$314.7**	**$5,616.2**	**$5,085.9**
Commercial & Industrial														
Large Commercial New Construction	$107.5	$91.4	$150.1	$143.6	$735.7	$878.8	$567.1	$444.4	$134.2	$105.8	$0.0	$0.0	$1,694.7	$1,664.1
Large Commercial Retrofit	$249.5	$201.1	$276.8	$247.1	$3,011.2	$2,142.4	$1,196.1	$1,036.9	$137.5	$112.1	$0.0	$0.0	$4,871.1	$3,739.7
Small Business Direct Install	$44.6	$33.1	$25.0	$17.9	$70.0	$63.5	$142.3	$19.3	$0.4	$0.1	$0.0	$0.0	$282.4	$133.8
Commercial & Industrial Multifamily	$33.6	$25.4	$23.4	$14.7	$524.1	$445.3	$171.5	$94.4	$2.0	$0.3	$0.0	$0.0	$754.7	$580.1
Commercial Demonstration and R&D	$36.7	$1.7	$0.8	$0.0	$0.0	$0.0	$44.7	$14.7	$15.1	$0.0	$0.0	$0.0	$97.3	$16.4
Finance Costs	$0.0		$0.0		$500.0	$500.0	$0.0		$0.0		$0.0	$0.0	$500.0	$500.0
Community Based Initiatives - C&I	$0.2	$0.0	$0.0	$0.0	$4.4	$0.0	$1.8	$3.4	$0.0	$0.0	$0.0	$0.0	$6.4	$3.4
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$385.3	$481.7	$385.3	$481.7
Subtotal - Commercial & Industrial	**$472.1**	**$352.8**	**$476.2**	**$423.2**	**$4,845.4**	**$4,030.1**	**$2,123.6**	**$1,613.0**	**$289.3**	**$218.3**	**$385.3**	**$481.7**	**$8,591.9**	**$7,119.2**
Regulatory														
EERMC	$233.3	$246.8	$0.0		$0.0		$0.0		$0.0		$0.0		$233.3	$246.8
OER	$233.3	$230.8	$0.0		$0.0		$0.0		$0.0		$0.0		$233.3	$230.8
RI Infrastructure Bank	$0.0		$0.0		$429.0	$429.0	$0.0		$0.0		$0.0		$429.0	$429.0
Subtotal - Regulatory	**$466.5**	**$477.7**	**$0.0**	**$0.0**	**$429.0**	**$429.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$895.5**	**$906.6**
Grand Total	**$1,539.1**	**$1,207.4**	**$829.2**	**$672.6**	**$18,687.5**	**$17,655.3**	**$4,928.9**	**$3,322.9**	**$443.9**	**$277.2**	**$1,251.7**	**$1,496.9**	**$27,680.2**	**$24,632.4**

Division Attachment 2-21-3

2017 Electric Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
Residential New Construction	$136.1	$93.04	$5.86	$2.19	$433.60	$529.40	$230.57	$231.33	$239.16	$286.28			$1,045.31	$1,142.23
ENERGY STAR® HVAC	$107.3	$69.98	$123.68	$94.46	$1,017.95	$1,141.74	$406.23	$278.95	$14.40	$1.93			$1,669.52	$1,587.06
EnergyWise	$387.9	$275.8	$410.0	$473.0	$8,650.0	$8,384.2	$35.1	$159.5	$146.9	$78.6			$9,630.0	$9,371.2
EnergyWise Multifamily	$123.9	$86.8	$45.8	$53.1	$2,442.1	$1,437.1	$730.3	$394.0	$101.4	$68.2			$3,443.5	$2,039.2
ENERGY STAR® Lighting	$299.5	$197.9	$507.7	$504.9	$8,223.8	$7,700.7	$267.1	$283.0	$114.4	$279.3			$9,412.4	$8,965.9
Residential Consumer Products	$154.5	$117.5	$551.4	$649.1	$735.0	$872.7	$671.5	$665.1	$12.7	$3.1			$2,125.0	$2,307.4
Home Energy Reports	$113.2	$70.5	$13.5	$4.6	$2,198.2	$2,200.9	$18.1	$3.1	$104.0	$110.7			$2,447.0	$2,389.8
Energy Efficiency Education Programs	$0.0	$0.0	$40.0	$49.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$40.0	$49.8
Residential Demonstration and R&D	$54.6	$15.1	$60.9	$77.4	$335.5	$43.5	$357.0	$302.1	$371.5	$280.9			$1,179.5	$719.0
Community Based Initiatives - Residential	$10.2	$0.0	$42.9	$6.7	$43.5	$24.4	$173.8	$168.6	$0.5	$0.0			$270.8	$199.7
Comprehensive Marketing - Residential	$14.1	$8.3	$518.0	$468.2	$0.0	$0.0	$2.4	$0.0	$0.9	$0.2			$535.4	$476.7
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$1,589.9	$1,825.0	$1,589.9	$1,825.0
Subtotal - Non-Income Eligible Residential	**$1,401.1**	**$934.9**	**$2,319.7**	**$2,383.3**	**$24,079.6**	**$22,334.7**	**$2,892.0**	**$2,485.8**	**$1,105.9**	**$1,109.3**	**$1,589.9**	**$1,825.0**	**$33,388.4**	**$31,072.9**
Income Eligible Residential:														
Single Family - Income Eligible Services	$362.5	$238.0	$155.2	$122.3	$6,966.7	$6,291.5	$1,615.2	$1,496.6	$168.4	$62.2			$9,268.1	$8,210.7
Income Eligible Multifamily	$116.6	$81.6	$12.9	$4.4	$2,023.4	$2,290.7	$488.0	$443.5	$67.5	$38.4			$2,708.4	$2,858.6
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$598.8	$738.6	$598.8	$738.6
Subtotal - Income Eligible Residential	**$479.1**	**$319.6**	**$168.1**	**$126.7**	**$8,990.2**	**$8,582.3**	**$2,103.2**	**$1,940.1**	**$235.9**	**$100.6**	**$598.8**	**$738.6**	**$12,575.4**	**$11,807.9**
Commercial & Industrial														
Large Commercial New Construction	$457.4	$339.0	$362.1	$423.2	$2,936.4	$2,825.8	$1,240.9	$1,237.2	$124.5	$358.0			$5,121.4	$5,183.2
Large Commercial Retrofit	$907.2	$695.5	$312.7	$349.1	$18,218.2	$20,719.8	$3,962.8	$2,750.5	$307.5	$449.7			$23,708.4	$24,964.6
Small Business Direct Install	$498.1	$297.2	$356.9	$431.5	$6,671.1	$6,782.6	$932.5	$222.2	$372.9	$451.2			$8,831.4	$8,184.6
Commercial Demonstration and R&D	$6.9	$29.2	$20.6		$365.0	$248.5	$481.4	$20.9	$0.5				$874.4	$298.6
Comprehensive Marketing - C&I	$0.0		$0.0		$0.0		$0.0		$0.0				$0.0	$0.0
Finance Costs	$0.0		$0.0		$1,300.0	$4,500.0	$0.0		$0.0				$1,300.0	$4,500.0
RI Infrastructure Bank	$0.0		$0.0		$4,900.0	$4,900.0	$0.0		$0.0				$4,900.0	$4,900.0
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$2,236.8	$2,266.3	$2,236.8	$2,266.3
Subtotal - Commercial & Industrial	**$1,869.6**	**$1,360.8**	**$1,052.3**	**$1,203.8**	**$34,390.7**	**$39,976.6**	**$6,617.5**	**$4,230.9**	**$805.4**	**$1,258.9**	**$2,236.8**	**$2,266.3**	**$46,972.4**	**$50,297.3**
Regulatory														
EERMC	$816.3	$816.2	$0.0		$0.0		$0.0		$0.0				$816.3	$816.2
OER	$816.3	$847.3	$0.0		$0.0		$0.0		$0.0				$816.3	$847.3
Subtotal - Regulatory	**$1,632.5**	**$1,663.5**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$1,632.5**	**$1,663.5**
Grand Total	**$5,382.4**	**$4,278.9**	**$3,540.2**	**$3,713.9**	**$67,460.5**	**$70,893.5**	**$11,612.8**	**$8,656.7**	**$2,147.3**	**$2,468.7**	**$4,425.5**	**$4,829.8**	**$94,568.6**	**$94,841.6**

Division Attachment 2-21-4

2017 Gas Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
ENERGY STAR® HVAC	$61.1	$48.8	$118.8	$212.8	$1,360.3	$1,110.7	$258.3	$210.3	$5.0	$1.7	$0.0		$1,803.5	$1,584.3
EnergyWise	$262.1	$182.2	$81.8	$148.8	$6,087.2	$7,278.2	$456.1	$113.0	$29.9	$20.6	$0.0		$6,917.2	$7,742.8
EnergyWise Multifamily	$83.7	$61.6	$35.6	$59.2	$1,312.3	$841.7	$370.5	$165.2	$21.4	$17.8	$0.0		$1,823.6	$1,145.5
Home Energy Reports	$30.3	$20.7	$1.8	$2.1	$436.8	$416.2	$8.9	$2.7	$19.2	$63.1	$0.0		$497.0	$504.7
Residential Demonstration and R&D	$1.2	$0.0	$19.6	$0.0	$75.0	$0.0	$168.5	$32.3	$0.1	$0.0	$0.0		$264.4	$32.3
Residential New Construction	$31.2	$24.7	$4.4	$4.8	$573.8	$692.4	$172.0	$111.4	$59.4	$86.9	$0.0		$840.7	$920.2
Comprehensive Marketing - Residential	$1.3	$0.8	$68.1	$99.1	$0.0	$0.0	$0.3	$0.0	$0.1	$0.0	$0.0		$69.8	$99.9
Community Based Initiatives - Residential	$0.5	$0.0	$6.9	$0.0	$14.5	$5.6	$57.6	$49.1	$0.0	$0.0	$0.0		$79.6	$54.7
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$614.8	$768.5	$614.8	$768.5
Subtotal - Non-Income Eligible Residential	**$471.3**	**$338.8**	**$337.1**	**$526.9**	**$9,859.9**	**$10,344.8**	**$1,492.2**	**$683.8**	**$135.2**	**$190.1**	**$614.8**	**$768.5**	**$12,910.5**	**$12,852.9**
Income Eligible Residential:														
Single Family - Income Eligible Services	$155.2	$111.6	$19.3	$24.7	$2,655.0	$3,027.7	$775.1	$744.1	$36.0	$17.2	$0.0		$3,640.6	$3,925.3
Income Eligible Multifamily	$94.9	$68.1	$12.8	$14.0	$1,698.4	$1,585.1	$395.4	$238.5	$15.1	$10.4	$0.0		$2,216.6	$1,916.1
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$292.9	$351.8	$292.9	$351.8
Subtotal - Income Eligible Residential	**$250.1**	**$179.7**	**$32.1**	**$38.7**	**$4,353.4**	**$4,612.7**	**$1,170.5**	**$982.6**	**$51.1**	**$27.6**	**$292.9**	**$351.8**	**$6,150.0**	**$6,193.1**
Commercial & Industrial														
Large Commercial New Construction	$132.0	$102.5	$179.0	$226.3	$1,182.5	$1,037.6	$556.7	$653.5	$36.2	$62.6	$0.0		$2,086.3	$2,082.5
Large Commercial Retrofit	$245.9	$200.6	$296.1	$366.4	$3,852.7	$2,873.4	$1,403.2	$1,137.2	$32.6	$30.5	$0.0		$5,830.5	$4,608.2
Small Business Direct Install	$9.8	$6.5	$23.7	$16.7	$70.0	$41.3	$134.3	$18.0	$30.9	$42.6	$0.0		$268.7	$125.0
Commercial & Industrial Multifamily	$33.1	$26.1	$17.1	$32.4	$528.4	$618.9	$152.2	$115.3	$8.1	$2.1	$0.0		$738.9	$794.8
Commercial Demonstration and R&D	$5.4	$0.0	$0.2	$0.0	$25.0	$0.0	$42.9	$1.0	$0.2	$1.6	$0.0		$73.8	$2.6
Finance Costs	$0.0		$0.0		$500.0	$1,291.7	$0.0		$0.0		$0.0		$500.0	$1,291.7
RI Infrastructure Bank	$0.0		$0.0		$100.0	$100.0	$0.0		$0.0		$0.0		$100.0	$100.0
Community Based Initiatives - C&I	$0.0		$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0	$0.0
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$479.9	$513.3	$479.9	$513.3
Subtotal - Commercial & Industrial	**$426.1**	**$335.7**	**$516.2**	**$641.8**	**$6,258.5**	**$5,962.9**	**$2,289.3**	**$1,924.9**	**$108.0**	**$139.4**	**$479.9**	**$513.3**	**$10,078.0**	**$9,518.0**
Regulatory														
EERMC	$304.3	$304.2	$0.0		$0.0		$0.0		$0.0		$0.0		$304.3	$304.2
OER	$304.3	$278.7	$0.0		$0.0		$0.0		$0.0		$0.0		$304.3	$278.7
Subtotal - Regulatory	**$608.5**	**$582.9**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$608.5**	**$582.9**
Grand Total	**$1,756.1**	**$1,437.2**	**$885.4**	**$1,207.4**	**$20,471.7**	**$20,920.4**	**$4,952.1**	**$3,591.4**	**$294.3**	**$357.1**	**$1,387.5**	**$1,633.5**	**$29,747.1**	**$29,147.0**

Division Attachment 2-21-5

2018 Electric Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
Residential New Construction	$63.9	$81.5	$2.5	$2.0	$407.0	$393.9	$238.0	$273.7	$52.1	$16.0			$763.4	$767.0
ENERGY STAR® HVAC	$70.2	$78.3	$108.5	$152.5	$1,494.9	$1,332.0	$512.3	$288.3	$18.8	$6.0			$2,204.7	$1,857.1
EnergyWise	$338.3	$348.3	$414.9	$385.3	$12,422.3	$12,300.7	$1,453.9	$254.4	$271.5	$118.0			$14,900.8	$13,406.7
EnergyWise Multifamily	$91.3	$97.7	$43.8	$118.5	$2,130.0	$1,634.7	$711.0	$322.3	$81.5	$22.7			$3,057.7	$2,195.9
ENERGY STAR® Lighting	$218.4	$224.2	$516.2	$450.2	$5,572.7	$9,705.3	$269.6	$264.7	$175.1	$60.4			$6,768.6	$10,704.8
Residential Consumer Products	$84.3	$100.7	$568.7	$500.6	$523.4	$808.0	$642.0	$494.1	$11.2	$3.2			$1,831.1	$1,906.5
Home Energy Reports	$84.7	$82.7	$10.9	$8.8	$2,466.2	$2,466.2	$10.2	$3.5	$52.3	$7.4			$2,629.3	$2,568.6
Energy Efficiency Education Programs	$0.0		$40.0		$0.0		$0.0		$0.0				$40.0	$0.0
Residential Demonstration and R&D	$11.3	$55.9	$63.5	$10.1	$437.8	$122.8	$235.0	$406.2	$175.0	$3.2			$922.6	$598.2
Community Based Initiatives - Residential	$6.2	$0.0	$80.0	$46.6	$76.8	$24.0	$0.0	$0.0	$0.0	$0.0			$163.0	$70.6
Comprehensive Marketing - Residential	$5.7	$5.4	$550.8	$451.1	$0.0	$0.0	$0.0	$0.0	$0.1	$0.0			$556.7	$456.5
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$1,690.7	$1,965.1	$1,690.7	$1,965.1
Subtotal - Non-Income Eligible Residential	**$974.4**	**$1,074.8**	**$2,399.9**	**$2,125.7**	**$25,531.1**	**$28,787.5**	**$4,072.0**	**$2,307.2**	**$837.6**	**$236.8**	**$1,690.7**	**$1,965.1**	**$35,505.7**	**$36,497.1**
Income Eligible Residential:														
Single Family - Income Eligible Services	$272.5	$283.7	$129.2	$118.6	$7,087.4	$7,698.0	$1,596.8	$1,673.3	$229.1	$98.3			$9,315.0	$9,871.9
Income Eligible Multifamily	$85.5	$91.5	$9.5	$23.2	$1,880.0	$2,114.6	$515.3	$344.6	$63.0	$16.7			$2,553.2	$2,590.5
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$593.4	$529.3	$593.4	$529.3
Subtotal - Income Eligible Residential	**$358.0**	**$375.2**	**$138.7**	**$141.7**	**$8,967.4**	**$9,812.6**	**$2,112.1**	**$2,017.8**	**$292.1**	**$115.1**	**$593.4**	**$529.3**	**$12,461.7**	**$12,991.7**
Commercial & Industrial														
Large Commercial New Construction	$239.9	$361.9	$367.7	$294.3	$4,193.4	$3,292.9	$1,182.6	$1,143.3	$122.0	$84.7			$6,105.7	$5,177.0
Large Commercial Retrofit	$659.4	$1,147.1	$276.2	$244.4	$19,352.8	$17,707.7	$3,241.6	$3,236.5	$456.7	$321.5			$23,986.6	$22,657.2
Small Business Direct Install	$288.1	$392.8	$336.9	$340.1	$5,625.4	$4,972.9	$463.2	$151.0	$196.6	$125.6			$6,910.2	$5,982.3
Commercial Demonstration and R&D	$19.4	$119.3	$58.0	$4.8	$515.8	$678.5	$360.6	$132.2	$40.0	$3.2			$993.8	$938.0
Community Based Initiatives - C&I	$1.7	$0.2	$20.0	$1.8	$19.2		$0.0		$0.0	$0.0			$40.9	$2.0
Comprehensive Marketing - C&I	$0.0	$0.0	$0.0		$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$0.0	$0.0
Finance Costs	$0.0		$0.0		$0.0		$0.0		$0.0				$0.0	$0.0
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$2,151.9	$2,446.0	$2,151.9	$2,446.0
RI Infrastructure Bank					$5,000.0	$5,000.0							$5,000.0	$5,000.0
Subtotal - Commercial & Industrial	**$1,208.5**	**$2,021.2**	**$1,058.8**	**$885.3**	**$34,706.5**	**$26,652.0**	**$5,248.0**	**$4,663.0**	**$815.3**	**$534.9**	**$2,151.9**	**$2,446.0**	**$45,189.1**	**$37,202.4**
Regulatory														
OER	$706.1	$686.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$706.1	$686.0
EERMC	$706.1	$686.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$706.1	$686.1
Subtotal - Regulatory	**$1,412.1**	**$1,372.1**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$1,412.1**	**$1,372.1**
Grand Total	**$3,953.0**	**$4,843.2**	**$3,597.4**	**$3,152.8**	**$69,205.1**	**$65,252.1**	**$11,432.1**	**$8,988.0**	**$1,945.0**	**$886.8**	**$4,436.0**	**$4,940.4**	**$94,568.6**	**$88,063.3**

Division Attachment 2-21-6

2018 Gas Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
ENERGY STAR® HVAC	$51.7	$74.5	$119.7	$135.4	$1,309.3	$1,580.2	$243.7	$180.2	$2.5	$10.2	$0.0		$1,727.0	$1,980.5
EnergyWise	$202.3	$218.9	$80.7	$84.7	$6,726.1	$7,374.1	$1,338.8	$165.2	$18.9	$17.2	$0.0		$8,366.8	$7,859.9
EnergyWise Multifamily	$51.8	$60.4	$33.6	$51.0	$797.5	$789.3	$356.0	$123.3	$11.7	$12.1	$0.0		$1,250.6	$1,036.0
Home Energy Reports	$18.9	$20.4	$1.0	$0.9	$397.9	$397.9	$5.1	$2.3	$4.7	-$4.5	$0.0		$427.5	$417.1
Residential Demonstration and R&D	$0.1		$19.5		$0.0		$0.0		$0.0		$0.0		$19.6	$0.0
Residential New Construction	$18.8	$30.6	$3.1	$2.9	$368.5	$486.1	$181.3	$111.3	$14.3	$9.3	$0.0		$585.9	$640.3
Comprehensive Marketing - Residential	$0.5		$73.2	$72.9	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$73.7	$72.9
Community Based Initiatives - Residential	$0.0	$0.0	$20.0	$4.6	$19.2	$6.0	$0.0		$0.0	$0.0	$0.0		$39.2	$10.6
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$624.5	$781.1	$624.5	$781.1
Subtotal - Non-Income Eligible Residential	**$344.1**	**$404.9**	**$350.7**	**$352.2**	**$9,618.4**	**$10,633.6**	**$2,125.0**	**$582.2**	**$52.1**	**$44.2**	**$624.5**	**$781.1**	**$13,114.7**	**$12,798.3**
Income Eligible Residential:														
Single Family - Income Eligible Services	$116.8	$135.8	$14.6	$14.1	$3,037.5	$3,232.3	$812.3	$782.8	$47.7	$59.6	$0.0		$4,028.8	$4,224.6
Income Eligible Multifamily	$70.1	$77.7	$9.9	$25.4	$1,885.8	$2,021.6	$348.9	$280.9	$31.2	$14.4	$0.0		$2,345.8	$2,420.1
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$318.7	$398.9	$318.7	$398.9
Subtotal - Income Eligible Residential	**$186.8**	**$213.5**	**$24.4**	**$39.6**	**$4,923.3**	**$5,253.9**	**$1,161.2**	**$1,063.8**	**$78.9**	**$73.9**	**$318.7**	**$398.9**	**$6,693.3**	**$7,043.6**
Commercial & Industrial														
Large Commercial New Construction	$79.2	$144.9	$194.7	$165.6	$1,601.4	$1,074.9	$658.4	$382.1	$118.0	$106.8	$0.0		$2,651.7	$1,874.3
Large Commercial Retrofit	$140.6	$385.5	$291.8	$246.0	$1,644.2	$3,168.8	$1,452.3	$1,216.7	$103.2	$153.7	$0.0		$3,632.1	$5,170.8
Small Business Direct Install	$5.1	$9.1	$26.9	$48.7	$57.0	$70.3	$40.0	$13.7	$3.4	$1.3	$0.0		$132.3	$143.0
Commercial & Industrial Multifamily	$18.0	$34.0	$15.6	$38.0	$264.5	$627.3	$109.6	$114.7	$0.9	$0.9	$0.0		$408.6	$814.9
Commercial Demonstration and R&D	$0.1	$5.3	$18.5		$331.1		$106.4		$26.0		$0.0		$482.1	$5.3
Finance Costs	$0.0		$0.0		$0.0		$0.0		$0.0		$0.0		$0.0	$0.0
Community Based Initiatives - C&I	$0.0	$0.1	$5.0		$4.8		$0.0		$0.0		$0.0		$9.8	$0.1
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$365.8	$361.3	$365.8	$361.3
Subtotal - Commercial & Industrial	**$243.0**	**$578.9**	**$552.6**	**$498.2**	**$3,903.0**	**$4,941.3**	**$2,366.7**	**$1,727.2**	**$251.4**	**$262.6**	**$365.8**	**$361.3**	**$7,682.5**	**$8,369.5**
Regulatory														
EERMC	$295.2	$280.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$295.2	$280.2
OER	$295.2	$279.9	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0		$295.2	$279.9
Subtotal - Regulatory	**$590.3**	**$560.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$590.3**	**$560.0**
Grand Total	**$1,364.2**	**$1,757.3**	**$927.6**	**$890.1**	**$18,444.7**	**$20,828.9**	**$5,652.9**	**$3,373.2**	**$382.4**	**$380.8**	**$1,309.1**	**$1,541.3**	**$28,080.9**	**$28,771.4**

Division Attachment 2-21-7

2019 Electric Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
Residential New Construction	$67.0	$68.2	$2.5	$0.1	$449.4	$592.0	$301.4	$205.6	$38.3	$14.6			$858.6	$880.5
ENERGY STAR® HVAC	$86.6	$74.0	$108.4	$131.1	$1,945.8	$3,649.0	$556.6	$401.5	$26.6	$7.8			$2,724.0	$4,263.5
EnergyWise	$415.7	$300.3	$414.6	$297.3	$13,414.9	$13,822.5	$1,392.9	$1,605.3	$139.5	$37.3			$15,777.5	$16,062.8
EnergyWise Multifamily	$103.3	$82.3	$43.8	$83.2	$2,150.0	$850.6	$721.0	$178.1	$46.8	$18.9			$3,064.9	$1,213.2
ENERGY STAR® Lighting	$401.4	$285.9	$515.8	$549.5	$13,328.7	$12,306.6	$638.4	$363.0	$83.9	$102.7			$14,968.2	$13,607.7
Residential Consumer Products	$91.4	$88.3	$568.3	$444.4	$737.4	$1,440.1	$709.8	$500.0	$17.6	$13.5			$2,124.5	$2,486.3
Home Energy Reports	$99.1	$68.7	$10.9	$0.5	$2,501.2	$2,484.1	$10.2	$5.5	$19.7	$3.6			$2,641.2	$2,562.5
Residential ConnectedSolutions	$8.7	$6.8	$8.7	$5.0	$162.0	$57.6	$103.8	$101.4	$0.0	$0.0			$283.1	$170.8
Energy Efficiency Education Programs	$0.0	$0.0	$40.0	$40.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$40.0	$40.0
Residential Pilots	$43.4	$2.1	$24.5	$0.0	$104.1	$0.0	$50.8	$0.0	$0.0	$0.0			$222.7	$2.1
Community Based Initiatives - Residential	$6.2	$9.3	$56.3	$60.1	$59.1	$48.9	$0.0	$0.0	$0.0	$0.0			$121.5	$118.3
Comprehensive Marketing - Residential	$5.7	$3.8	$550.8	$193.4	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$556.5	$197.3
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$2,143.8	$2,224.9	$2,143.8	$2,224.9
Subtotal - Non-Income Eligible Residential	**$1,328.4**	**$989.8**	**$2,344.6**	**$1,804.8**	**$34,852.6**	**$35,251.4**	**$4,484.8**	**$3,360.4**	**$372.4**	**$198.5**	**$2,143.8**	**$2,224.9**	**$45,526.6**	**$43,829.8**
Income Eligible Residential:														
Single Family - Income Eligible Services	$353.0	$257.4	$129.1	$24.7	$9,184.8	$7,829.1	$1,820.5	$1,407.2	$207.2	$111.3			$11,694.7	$9,629.6
Income Eligible Multifamily	$111.7	$87.8	$9.5	$0.9	$2,682.3	$2,466.6	$525.3	$373.6	$54.2	$36.6			$3,382.9	$2,965.5
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$753.9	$282.7	$753.9	$282.7
Subtotal - Income Eligible Residential	**$464.7**	**$345.2**	**$138.6**	**$25.5**	**$11,867.1**	**$10,295.7**	**$2,345.8**	**$1,780.8**	**$261.4**	**$147.9**	**$753.9**	**$282.7**	**$15,831.5**	**$12,877.9**
Commercial & Industrial														
Large Commercial New Construction	$281.8	$239.3	$377.5	$232.0	$2,931.1	$4,727.4	$1,311.0	$1,166.5	$134.8	$122.7			$5,036.1	$6,487.9
Large Commercial Retrofit	$851.9	$1,062.0	$288.0	$209.0	$15,611.1	$22,147.7	$3,917.2	$3,478.6	$688.3	$412.9			$21,356.5	$27,310.2
Small Business Direct Install	$356.9	$300.4	$356.7	$261.6	$7,165.0	$7,139.2	$459.3	$144.1	$375.0	$84.3			$8,712.8	$7,929.6
Commercial ConnectedSolutions	$12.2	$13.4	$6.5	$2.7	$1,810.0	$1,615.8	$195.5	$231.0	$0.0	$0.0			$2,024.1	$1,862.8
Commercial Pilots	$19.4	$0.0	$30.0	$1.1	$87.5	$0.0	$61.0	$39.0	$0.0	$0.0			$197.9	$40.1
Community Based Initiatives - C&I	$1.7	$0.0	$18.8	$4.4	$19.7	$11.3	$0.0	$0.0	$0.0	$0.0			$40.1	$15.7
Finance Costs	$0.0	$0.0	$0.0	$0.0	$5,000.0	$5,000.0	$0.0	$0.0	$0.0	$0.0			$5,000.0	$5,000.0
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$2,007.3	$782.7	$2,007.3	$782.7
Subtotal - Commercial & Industrial	**$1,523.9**	**$1,615.1**	**$1,077.4**	**$711.0**	**$32,624.4**	**$40,641.3**	**$5,943.9**	**$5,059.2**	**$1,198.1**	**$619.9**	**$2,007.3**	**$782.7**	**$44,374.9**	**$49,429.0**
Regulatory														
OER	$783.6	$783.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$206.3	$206.2	$0.0		$989.8	$990.1
EERMC	$783.6	$783.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$783.6	$783.8
Subtotal - Regulatory	**$1,567.2**	**$1,567.5**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.2**	**$206.3**	**$206.2**	**$0.0**	**$0.0**	**$1,773.4**	**$1,773.9**
Grand Total	**$4,884.2**	**$4,517.5**	**$3,560.6**	**$2,541.3**	**$79,344.1**	**$86,188.5**	**$12,774.5**	**$10,200.6**	**$2,038.1**	**$1,172.5**	**$4,905.0**	**$3,290.2**	**$107,506.5**	**$107,910.6**

Division Attachment 2-21-8

2019 Gas Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
ENERGY STAR® HVAC	$67.4	$77.5	$120.0	$112.2	$1,726.5	$2,096.5	$247.2	$109.4	$3.8	$2.2			$2,164.9	$2,397.8
EnergyWise	$239.5	$169.7	$78.3	$75.3	$6,594.8	$7,779.2	$1,534.1	$1,260.1	$19.6	$7.5			$8,466.3	$9,291.8
EnergyWise Multifamily	$64.5	$53.7	$34.0	$24.2	$1,216.0	$800.0	$356.0	$137.2	$7.0	$7.0			$1,677.5	$1,022.1
Home Energy Reports	$21.5	$16.2	$0.9	$0.1	$415.0	$399.7	$5.1	$1.9	$5.5	$2.1			$447.9	$420.1
Residential Pilots	$0.0		$0.0		$0.0		$0.0		$0.0				$0.0	$0.0
Residential New Construction	$23.6	$31.5	$3.2	$0.3	$508.4	$403.5	$186.7	$165.1	$15.8	$9.3			$737.6	$609.8
Comprehensive Marketing - Residential	$0.5	$0.3	$73.2	$43.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$73.7	$43.9
Community Based Initiatives - Residential	$0.5	$3.7	$18.8	$18.3	$19.7	$13.5	$0.0	$0.0	$0.0				$39.0	$35.5
Residential Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$680.3	$699.7	$680.3	$699.7
Subtotal - Non-Income Eligible Residential	**$417.4**	**$352.6**	**$328.3**	**$274.0**	**$10,480.3**	**$11,492.4**	**$2,329.3**	**$1,673.9**	**$51.6**	**$28.1**	**$680.3**	**$699.7**	**$14,287.2**	**$14,520.6**
Income Eligible Residential:														
Single Family - Income Eligible Services	$148.7	$114.2	$14.9	$11.4	$3,778.0	$2,889.3	$1,029.8	$709.4	$41.5	$40.5			$5,012.8	$3,765.0
Income Eligible Multifamily	$92.3	$70.5	$10.3	$1.5	$2,474.5	$2,665.2	$348.9	$411.4	$6.7	$6.4			$2,932.7	$3,154.9
Income Eligible Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$397.3	$475.6	$397.3	$475.6
Subtotal - Income Eligible Residential	**$241.0**	**$184.7**	**$25.2**	**$12.9**	**$6,252.5**	**$5,554.5**	**$1,378.7**	**$1,120.9**	**$48.2**	**$46.9**	**$397.3**	**$475.6**	**$8,342.8**	**$7,395.5**
Commercial & Industrial														
Large Commercial New Construction	$82.4	$89.5	$193.7	$119.9	$1,274.0	$1,227.7	$743.4	$407.3	$95.8	$210.9			$2,389.2	$2,055.3
Large Commercial Retrofit	$194.7	$358.8	$293.0	$242.4	$2,631.7	$3,286.6	$887.7	$1,415.0	$206.9	$301.3			$4,214.0	$5,604.1
Small Business Direct Install	$5.3	$6.4	$26.9	$19.5	$50.0	$47.4	$37.6	$15.1	$4.7	$5.4			$124.4	$93.7
Commercial & Industrial Multifamily	$28.9	$29.3	$16.4	$8.8	$756.0	$799.2	$109.7	$157.2	$7.3	$2.5			$918.4	$997.0
Commercial Pilots	$10.6	$0.0	$9.5		$241.1	$52.3	$89.9	$54.5	$30.0				$381.1	$106.7
Finance Costs	$0.0		$0.0		$0.0	$3.8	$0.0		$0.0				$0.0	$3.8
Community Based Initiatives - C&I	$0.2	$0.0	$6.3		$6.6		$0.0		$0.0				$13.0	$0.0
Commercial & Industrial Shareholder Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$383.0	$404.8	$383.0	$404.8
Subtotal - Commercial & Industrial	**$322.0**	**$483.9**	**$545.7**	**$390.7**	**$4,959.4**	**$5,416.9**	**$1,868.4**	**$2,049.1**	**$344.7**	**$520.1**	**$383.0**	**$404.8**	**$8,423.1**	**$9,265.4**
Regulatory														
EERMC	$235.5	$235.5	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$235.5	$235.5
OER	$235.5	$235.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$68.8	$68.8			$304.2	$304.6
Subtotal - Regulatory	**$470.9**	**$471.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.2**	**$68.8**	**$68.8**	**$0.0**	**$0.0**	**$539.7**	**$540.0**
Grand Total	**$1,451.3**	**$1,492.2**	**$899.1**	**$677.5**	**$21,692.1**	**$22,463.8**	**$5,576.3**	**$4,844.0**	**$513.3**	**$663.9**	**$1,460.6**	**$1,580.1**	**$31,592.8**	**$31,721.6**

Division Attachment 2-21-9

2020 Electric Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Shareholder Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
Residential New Construction	$57.9	$73.2	$2.2	$0.0	$537.2	$643.8	$326.0	$204.9	$50.1	$27.5			$973.5	$949.5
ENERGY STAR® HVAC	$70.0	$67.5	$252.0	$278.2	$1,845.9	$2,204.4	$335.5	$769.2	$21.7	$44.8			$2,525.1	$3,364.1
EnergyWise	$345.9	$287.5	$393.5	$312.4	$13,758.8	$13,250.4	$1,023.7	$1,458.5	$170.3	$175.4			$15,692.2	$15,484.1
EnergyWise Multifamily	$79.1	$76.2	$43.1	$37.8	$2,174.0	$1,047.3	$405.1	$219.3	$103.0	$170.6			$2,804.3	$1,551.2
ENERGY STAR® Lighting	$338.3	$317.7	$577.4	$514.9	$13,917.8	$7,846.0	$418.7	$339.6	$123.5	$51.1			$15,375.8	$9,069.2
Residential Consumer Products	$62.5	$64.6	$519.1	$390.4	$1,093.9	$1,207.9	$519.4	$577.7	$4.2	$0.6			$2,199.2	$2,241.1
Home Energy Reports	$73.8	$62.3	$10.6	$0.0	$2,540.7	$2,033.3	$10.1	$8.7	$92.9	$91.8			$2,728.1	$2,196.1
Residential ConnectedSolutions	$11.0	$64.6	$0.2	$0.0	$315.5	$383.1	$134.9	$129.8	$0.0	$0.0			$461.6	$577.5
Energy Efficiency Education Programs	$0.0	$0.0	$40.0	$32.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$40.0	$32.0
Residential Pilots	$10.8	$0.0	$26.0	$0.0	$190.0	$0.0	$44.0	$193.5	$17.0	$0.0			$287.8	$193.5
Community Based Initiatives - Residential	$29.5	$6.3	$90.0	$95.2	$84.4	$5.4	$0.0	$0.0	$0.0	$0.0			$203.9	$106.9
Comprehensive Marketing - Residential	$2.4	$1.9	$379.9	$401.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$382.3	$403.6
Residential Performance Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$2,142.5	$2,582.4	$2,142.5	$2,582.4
Subtotal - Non-Income Eligible Residential	**$1,081.4**	**$1,021.8**	**$2,334.0**	**$2,062.5**	**$36,458.2**	**$28,621.5**	**$3,217.4**	**$3,901.1**	**$582.7**	**$561.9**	**$2,142.5**	**$2,582.4**	**$45,816.3**	**$38,751.2**
Income Eligible Residential:														
Single Family - Income Eligible Services	$288.3	$246.1	$143.4	$141.1	$10,165.8	$4,415.6	$2,133.5	$1,043.8	$115.1	$115.2			$12,846.1	$5,961.8
Income Eligible Multifamily	$92.0	$86.0	$9.1	$7.9	$2,923.2	$901.7	$403.8	$128.4	$120.9	$118.2			$3,549.0	$1,242.2
Income Eligible Performance Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$819.8	$0.0	$819.8	$0.0
Subtotal - Income Eligible Residential	**$380.3**	**$332.1**	**$152.5**	**$149.1**	**$13,089.0**	**$5,317.3**	**$2,537.3**	**$1,172.2**	**$236.0**	**$233.3**	**$819.8**	**$0.0**	**$17,214.9**	**$7,204.0**
Commercial & Industrial														
Large Commercial New Construction	$184.6	$193.5	$315.6	$290.2	$3,136.9	$4,551.8	$1,237.1	$1,128.2	$461.5	$185.2			$5,335.7	$6,348.9
Large Commercial Retrofit	$703.1	$771.5	$244.7	$250.5	$17,612.8	$15,776.6	$4,394.0	$4,263.0	$846.7	$595.4			$23,801.3	$21,657.0
Small Business Direct Install	$258.8	$252.9	$297.2	$201.5	$6,507.9	$6,824.3	$322.9	$142.9	$181.9	$86.7			$7,568.6	$7,508.4
Commercial ConnectedSolutions	$32.3	$79.1	$2.1	$0.0	$1,715.0	$2,188.0	$329.1	$67.1	$0.0	$0.0			$2,078.5	$2,334.2
Commercial Pilots	$16.3	$0.0	$22.0	$0.0	$0.0	$0.0	$48.0	$4.6	$20.0	$0.0			$106.3	$4.6
Community Based Initiatives - C&I	$9.8	$0.0	$28.1	$0.0	$28.1	$0.6	$0.0	$0.0	$0.0	$0.0			$66.1	$0.6
Finance Costs	$0.0	$0.0	$0.0	$0.0	$5,216.7	$5,216.7	$0.0	$0.0	$0.0				$5,216.7	$5,216.7
Commercial & Industrial Performance Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$2,092.2	$660.3	$2,092.2	$660.3
Subtotal - Commercial & Industrial	**$1,204.8**	**$1,297.0**	**$909.7**	**$742.3**	**$34,217.4**	**$34,557.9**	**$6,331.2**	**$5,605.8**	**$1,510.1**	**$867.3**	**$2,092.2**	**$660.3**	**$46,265.4**	**$43,730.6**
Regulatory														
OER	$893.7	$893.7	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$893.7	$893.7
EERMC	$893.7	$894.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0			$893.7	$894.3
Subtotal - Regulatory	**$1,787.4**	**$1,788.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$1,787.4**	**$1,788.0**
Grand Total	**$4,453.9**	**$4,439.0**	**$3,396.2**	**$2,953.9**	**$83,764.7**	**$68,496.7**	**$12,085.8**	**$10,679.1**	**$2,328.8**	**$1,662.5**	**$5,054.4**	**$3,242.7**	**$111,083.9**	**$91,473.8**

Division Attachment 2-21-10

2020 Gas Energy Efficiency Program Budget ($000)

	Program Planning and Administration		Marketing		Rebates and Other Customer Incentives		Sales, Technical Assistance and Training		Evaluation & Market Research		Performance Incentive		Grand Total	
	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Non-Income Eligible Residential:														
ENERGY STAR® HVAC	$83.6	$84.2	$172.3	$192.4	$2,126.8	$2,077.0	$273.1	$155.0	$37.3	$12.5	$0.0		$2,693.1	$2,521.1
EnergyWise	$217.7	$158.0	$89.6	$79.2	$6,615.5	$7,486.3	$963.8	$1,109.5	$231.1	$91.6	$0.0		$8,117.6	$8,924.6
EnergyWise Multifamily	$52.3	$47.6	$35.8	$35.3	$1,216.0	$443.4	$152.1	$90.5	$55.9	$42.9	$0.0		$1,512.1	$659.7
Home Energy Reports	$18.2	$15.3	$1.3	$0.0	$423.5	$334.2	$5.0	$1.1	$23.5	$15.9	$0.0		$471.5	$366.5
Residential Pilots	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$0.0	$0.0
Residential New Construction	$32.0	$35.6	$3.6	$0.0	$466.6	$225.4	$109.2	$161.0	$9.1	$14.5	$0.0		$620.5	$436.6
Comprehensive Marketing - Residential	$0.2	$0.1	$79.7	$83.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$79.9	$83.4
Community Based Initiatives - Residential	$9.8	$1.9	$30.9	$31.8	$28.1	$0.7	$0.0	$0.0	$0.0	$0.0	$0.0		$68.9	$34.4
Residential Performance Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$677.7	$347.7	$677.7	$347.7
Subtotal - Non-Income Eligible Residential	**$413.7**	**$342.6**	**$413.3**	**$422.1**	**$10,876.4**	**$10,567.0**	**$1,503.2**	**$1,517.2**	**$356.9**	**$177.4**	**$677.7**	**$347.7**	**$14,241.2**	**$13,374.1**
Income Eligible Residential:														
Single Family - Income Eligible Services	$149.4	$112.6	$36.8	$35.6	$4,510.0	$1,600.3	$1,166.4	$462.1	$89.7	$11.3	$0.0		$5,952.3	$2,221.9
Income Eligible Multifamily	$84.8	$64.8	$13.3	$3.6	$2,474.5	$1,442.2	$309.7	$204.4	$127.3	$91.9	$0.0		$3,009.5	$1,806.8
Income Eligible Performance Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$448.1	$0.0	$448.1	$0.0
Subtotal - Income Eligible Residential	**$234.2**	**$177.4**	**$50.1**	**$39.1**	**$6,984.5**	**$3,042.5**	**$1,476.0**	**$666.4**	**$217.0**	**$103.2**	**$448.1**	**$0.0**	**$9,409.9**	**$4,028.7**
Commercial & Industrial														
Large Commercial New Construction	$70.3	$87.6	$165.3	$160.1	$1,312.8	$1,309.8	$786.6	$986.7	$317.5	$181.8	$0.0		$2,652.6	$2,726.0
Large Commercial Retrofit	$222.7	$352.5	$274.1	$247.7	$2,482.3	$849.6	$1,645.6	$1,331.2	$264.4	$249.8	$0.0		$4,889.1	$3,030.7
Small Business Direct Install	$3.4	$4.0	$37.9	$31.2	$50.0	$70.1	$30.1	$27.3	$3.6	$1.5	$0.0		$125.0	$134.1
Commercial & Industrial Multifamily	$26.2	$30.4	$23.7	$14.5	$756.0	$198.1	$119.2	$50.2	$42.8	$40.3	$0.0		$967.9	$333.5
Commercial Pilots	$54.2	$0.0	$9.5	$0.0	$266.8	$95.0	$35.5	$2.0	$0.0	$0.0	$0.0		$366.0	$96.9
Finance Costs	$0.0	$0.0	$0.0	$0.0	$500.0	$500.0	$0.0	$0.0	$0.0	$0.0	$0.0		$500.0	$500.0
Community Based Initiatives - C&I	$3.3	$0.0	$9.4	$0.0	$9.4	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0		$22.0	$0.0
Commercial & Industrial Performance Incentive	$0.0		$0.0		$0.0		$0.0		$0.0		$452.8	$0.0	$452.8	$0.0
Subtotal - Commercial & Industrial	**$380.2**	**$474.4**	**$520.0**	**$453.4**	**$5,377.3**	**$3,022.6**	**$2,617.0**	**$2,397.4**	**$628.2**	**$473.4**	**$452.8**	**$0.0**	**$9,975.5**	**$6,821.1**
Regulatory														
EERMC	$361.2	$361.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$361.2	$361.2
OER	$361.2	$360.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$361.2	$360.6
Subtotal - Regulatory	**$722.4**	**$721.8**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$722.4**	**$721.8**
Grand Total	**$1,750.5**	**$1,716.2**	**$983.4**	**$914.6**	**$23,238.2**	**$16,632.1**	**$5,596.3**	**$4,581.0**	**$1,202.1**	**$754.1**	**$1,578.6**	**$347.7**	**$34,349.0**	**$24,945.7**

Division 2-22
Budget Development Process and Precision

Request:

For each of the last five years (2016-2020), please provide the planned cost of lifetime saved energy (¢/Lifetime kWh) for each program as broken out in Table E-5 of the Company's Annual EE Plans to the actual cost of lifetime saved energy (¢/Lifetime kWh) achieved in that year.

Response:

Please see Attachments DIV 2-22-1 through DIV 2-22-5. These attachments are organized by Sector and Program. There are five attachments, a separate attachment for each program year.

Prepared by or under the supervision of: John Richards

Division Attachment 2-22-1

2016 Program Year Cost-Effectiveness ($000)

	¢/Lifetime kWh	
	Planned	**Actual**
Non-Income Eligible Residential:		
Residential New Construction	7.1	7.1
ENERGY STAR® HVAC	13.8	13.5
EnergyWise	10.4	8.7
EnergyWise Multifamily	9.5	6.7
Home Energy Reports	8.7	9.5
ENERGY STAR® Lighting	3.0	2.9
Residential Consumer Products	8.0	8.4
Energy Efficiency Education Programs		
Residential Demonstration and R&D		
Community Based Initiatives - Residential		
Comprehensive Marketing - Residential		
Subtotal - Non-Income Eligible Residential	**5.7**	**4.9**
Income Eligible Residential:		
Single Family - Income Eligible Services	21.3	13.3
Income Eligible Multifamily	10.2	7.7
Subtotal - Income Eligible Residential	**17.0**	**11.5**
Commercial & Industrial		
Large Commercial New Construction	3.0	3.1
Large Commercial Retrofit	5.3	4.1
Small Business Direct Install	8.5	6.8
Community Based Initiatives - C&I		
Commercial Demonstration and R&D		
Comprehensive Marketing - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**5.5**	**4.6**
Regulatory		
EERMC		
OER		
RI Infrastructure Bank		
Subtotal - Regulatory		
Grand Total	**6.1**	**5.1**

Division Attachment 2-22-2

2017 Program Year Cost-Effectiveness ($000)

	¢/Lifetime kWh	
	Planned	**Actual**
Non-Income Eligible Residential:		
Residential New Construction	6.6	5.1
ENERGY STAR® HVAC	12.4	10.3
EnergyWise	16.6	18.9
EnergyWise Multifamily	11.1	8.3
Home Energy Reports	9.3	7.8
ENERGY STAR® Lighting	3.8	3.2
Residential Consumer Products	8.1	9.2
Energy Efficiency Education Programs		
Residential Demonstration and R&D		
Community Based Initiatives - Residential		
Comprehensive Marketing - Residential		
Subtotal - Non-Income Eligible Residential	**7.0**	**5.7**
Income Eligible Residential:		
Single Family - Income Eligible Services	20.0	17.3
Income Eligible Multifamily	9.7	9.9
Subtotal - Income Eligible Residential	**16.1**	**14.5**
Commercial & Industrial		
Large Commercial New Construction	2.2	2.6
Large Commercial Retrofit	4.1	3.9
Small Business Direct Install	7.6	7.0
Commercial Demonstration and R&D		
Finance Costs		
RI Infrastructure Bank		
Subtotal - Commercial & Industrial	**4.6**	**4.7**
Regulatory		
OER		
EERMC		
Subtotal - Regulatory		
Grand Total	**5.8**	**5.4**

Division Attachment 2-22-3

2018 Program Year Cost-Effectiveness ($000)

	¢/Lifetime kWh	
	Planned	**Actual**
Non-Income Eligible Residential:		
Residential New Construction	11.7	5.8
ENERGY STAR® HVAC	13.6	11.0
EnergyWise	46.2	33.4
EnergyWise Multifamily	11.5	8.1
Home Energy Reports	10.5	10.9
ENERGY STAR® Lighting	4.2	6.1
Residential Consumer Products	10.2	8.6
Energy Efficiency Education Programs		
Residential Demonstration and R&D		
Community Based Initiatives - Residential		
Comprehensive Marketing - Residential		
Subtotal - Non-Income Eligible Residential	**11.5**	**9.8**
Income Eligible Residential:		
Single Family - Income Eligible Services	26.0	21.9
Income Eligible Multifamily	10.6	9.0
Subtotal - Income Eligible Residential	**19.8**	**16.8**
Commercial & Industrial		
Large Commercial New Construction	3.1	2.8
Large Commercial Retrofit	4.0	3.9
Small Business Direct Install	7.6	6.9
Commercial Demonstration and R&D		
Comprehensive Marketing - C&I		
Community Based Initiatives - C&I		
Finance Costs		
RI Infrastructure Bank		
Subtotal - Commercial & Industrial	**4.7**	**4.5**
Regulatory		
OER		
EERMC		
Subtotal - Regulatory		
Grand Total	**6.7**	**6.4**

Division Attachment 2-22-4

2019 Program Year Cost-Effectiveness ($000)

	¢/Lifetime kWh	
	Planned	**Actual**
Non-Income Eligible Residential:		
Residential New Construction	10.5	9.9
ENERGY STAR® HVAC	10.7	23.9
EnergyWise	46.9	38.1
EnergyWise Multifamily	11.8	13.2
Home Energy Reports	10.9	10.3
ENERGY STAR® Lighting	5.3	7.2
Residential Consumer Products	9.7	10.8
Residential ConnectedSolutions		
Energy Efficiency Education Programs		
Residential Pilots		
Community Based Initiatives - Residential		
Comprehensive Marketing - Residential		
Subtotal - Non-Income Eligible Residential	**11.1**	**12.6**
Income Eligible Residential:		
Single Family - Income Eligible Services	27.2	28.0
Income Eligible Multifamily	11.1	11.0
Subtotal - Income Eligible Residential	**20.5**	**20.5**
Commercial & Industrial		
Large Commercial New Construction	3.2	4.1
Large Commercial Retrofit	3.8	5.6
Small Business Direct Install	7.7	6.8
Commercial ConnectedSolutions		
Commercial Pilots		
Comprehensive Marketing - C&I		
Community Based Initiatives - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**4.8**	**6.1**
Regulatory		
OER		
EERMC		
Subtotal - Regulatory		
Grand Total	**7.2**	**8.6**

Division Attachment 2-22-5

2020 Program Year Cost-Effectiveness ($000)

	¢/Lifetime kWh	
	Planned	**Actual**
Non-Income Eligible Residential:		
Residential New Construction	11.2	13.6
ENERGY STAR® HVAC	10.1	11.1
EnergyWise	77.8	82.8
EnergyWise Multifamily	11.4	11.6
Home Energy Reports	11.7	8.3
ENERGY STAR® Lighting	5.3	6.3
Residential Consumer Products	10.5	10.1
Residential ConnectedSolutions		
Energy Efficiency Education Programs		
Residential Pilots		
Community Based Initiatives - Residential		
Comprehensive Marketing - Residential		
Subtotal - Non-Income Eligible Residential	**12.4**	**12.7**
Income Eligible Residential:		
Single Family - Income Eligible Services	28.1	30.2
Income Eligible Multifamily	11.1	19.0
Subtotal - Income Eligible Residential	**21.1**	**27.2**
Commercial & Industrial		
Large Commercial New Construction	4.2	3.0
Large Commercial Retrofit	4.6	5.7
Small Business Direct Install	7.9	8.0
Commercial ConnectedSolutions		
Commercial Pilots		
Comprehensive Marketing - C&I		
Community Based Initiatives - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**5.6**	**6.0**
Regulatory		
OER		
EERMC		
Subtotal - Regulatory		
Grand Total	**8.1**	**8.4**

Division 2-23
Budget Development Process and Precision

Request:

For each of the last five years (2016-2020), please provide the planned cost of lifetime saved MMBtu ($/Lifetime MMBtu) for each program as broken out in Table G-5 of the Company's Annual EE Plans to the actual cost of lifetime saved MMBtu ($/Lifetime MMBtu) achieved in that year.

Response:

Please see Attachments DIV 2-23-1 through DIV 2-23-5. These attachments are organized by Sector and Program. There are five attachments, a separate attachment for each program year.

Prepared by or under the supervision of: John Richards

Division Attachment 2-23-1

2016 Program Year Cost-Effectiveness ($000)

	$/Lifetime MMBtu	
	Planned	**Actual**
Non-Income Eligible Residential:		
Energy Star® HVAC	$ 10.19	$ 10.09
EnergyWise	$ 5.45	$ 5.74
EnergyWise MultiFamily	$ 8.24	$ 6.91
Home Energy Reports	$ 8.09	$ 6.00
Residential New Construction	$ 4.61	$ 4.71
Comprehensive Marketing - Residential		
Community Based Initiatives - Residential		
Residential Demonstration and R&D		
Subtotal - Non-Income Eligible Residential	**$ 6.65**	**$ 6.38**
Income Eligible Residential:		
Single Family - Income Eligible Services	$ 17.54	$ 11.94
Income Eligible Multifamily	$ 5.80	$ 5.18
Subtotal - Income Eligible Residential	**$ 9.85**	**$ 9.04**
Commercial & Industrial		
Large Commercial New Construction	$ 2.99	$ 2.81
Large Commercial Retrofit	$ 6.39	$ 3.63
Small Business Direct Install	$ 8.29	$ 6.08
Commercial & Industrial Multifamily	$ 6.52	$ 3.63
Commercial Demonstration and R&D		
Community Based Initiatives - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**$ 5.32**	**$ 3.57**
Regulatory		
EERMC		
OER		
RI Infrastructure Bank		
Subtotal - Regulatory		
Grand Total	**$ 6.66**	**$ 5.41**

Division Attachment 2-23-2

2017 Program Year Cost-Effectiveness ($000)

	$/Lifetime MMBtu	
	Planned	**Actual**
Non-Income Eligible Residential:		
Energy Star® HVAC	$ 10.82	$ 7.05
EnergyWise	$ 14.63	$ 16.45
EnergyWise MultiFamily	$ 13.22	$ 6.05
Home Energy Reports	$ 8.40	$ 4.90
Residential New Construction	$ 8.30	$ 9.28
Comprehensive Marketing - Residential		
Community Based Initiatives - Residential		
Residential Demonstration and R&D		
Subtotal - Non-Income Eligible Residential	**$ 12.58**	**$ 10.97**
Income Eligible Residential:		
Single Family - Income Eligible Services	$ 16.50	$ 13.41
Income Eligible Multifamily	$ 7.94	$ 7.32
Subtotal - Income Eligible Residential	**$ 11.72**	**$ 10.53**
Commercial & Industrial		
Large Commercial New Construction	$ 3.93	$ 5.82
Large Commercial Retrofit	$ 4.07	$ 3.65
Small Business Direct Install	$ 7.74	$ 4.35
Commercial & Industrial Multifamily	$ 12.82	$ 6.94
Commercial Demonstration and R&D		
Community Based Initiatives - C&I		
Finance Costs		
RI Infrastructure Bank		
Subtotal - Commercial & Industrial	**$ 4.50**	**$ 4.98**
Regulatory		
EERMC		
OER		
Subtotal - Regulatory		
Grand Total	**$ 7.96**	**$ 7.90**

Division Attachment 2-23-3

2018 Program Year Cost-Effectiveness ($000)

	$/Lifetime MMBtu	
	Planned	**Actual**
Non-Income Eligible Residential:		
Energy Star® HVAC	$ 9.89	$ 8.65
EnergyWise	$ 16.37	$ 15.94
EnergyWise MultiFamily	$ 7.31	$ 6.36
Home Energy Reports	$ 5.54	$ 3.15
Residential New Construction	$ 10.30	$ 5.30
Comprehensive Marketing - Residential		
Community Based Initiatives - Residential		
Residential Demonstration and R&D		
Subtotal - Non-Income Eligible Residential	**$ 12.30**	**$ 10.58**
Income Eligible Residential:		
Single Family - Income Eligible Services	$ 15.96	$ 16.00
Income Eligible Multifamily	$ 8.18	$ 6.76
Subtotal - Income Eligible Residential	**$ 11.83**	**$ 10.68**
Commercial & Industrial		
Large Commercial New Construction	$ 5.85	$ 4.96
Large Commercial Retrofit	$ 2.56	$ 2.52
Small Business Direct Install	$ 4.85	$ 6.05
Commercial & Industrial Multifamily	$ 4.70	$ 6.16
Commercial Demonstration and R&D		
Community Based Initiatives - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**$ 3.79**	**$ 3.42**
Regulatory		
EERMC		
OER		
Subtotal - Regulatory		
Grand Total	**$ 7.45**	**$ 6.31**

Division Attachment 2-23-4

2019 Program Year Cost-Effectiveness ($000)

	$/Lifetime MMBtu	
	Planned	**Actual**
Non-Income Eligible Residential:		
Energy Star® HVAC	$ 11.15	$ 9.92
EnergyWise	$ 15.98	$ 14.89
EnergyWise MultiFamily	$ 7.91	$ 4.85
Home Energy Reports	$ 3.88	$ 3.78
Residential New Construction	$ 14.77	$ 17.06
Comprehensive Marketing - Residential		
Community Based Initiatives - Residential		
Residential Pilots		
Subtotal - Non-Income Eligible Residential	**$ 12.41**	**$ 11.33**
Income Eligible Residential:		
Single Family - Income Eligible Services	$ 27.31	$ 26.10
Income Eligible Multifamily	$ 8.16	$ 8.74
Subtotal - Income Eligible Residential	**$ 14.63**	**$ 13.70**
Commercial & Industrial		
Large Commercial New Construction	$ 7.50	$ 8.73
Large Commercial Retrofit	$ 4.18	$ 5.02
Small Business Direct Install	$ 6.72	$ 3.59
Commercial & Industrial Multifamily	$ 6.37	$ 7.49
Commercial Pilots		
Community Based Initiatives - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**$ 5.56**	**$ 6.45**
Regulatory		
EERMC		
OER		
Subtotal - Regulatory		
Grand Total	**$ 9.29**	**$ 9.26**

Division Attachment 2-23-5

2020 Program Year Cost-Effectiveness ($000)

	$/Lifetime MMBtu	
	Planned	**Actual**
Non-Income Eligible Residential:		
Energy Star® HVAC	$ 12.71	$ 13.78
EnergyWise	$ 16.51	$ 17.13
EnergyWise MultiFamily	$ 8.25	$ 8.09
Home Energy Reports	$ 4.08	$ 3.55
Residential New Construction	$ 15.14	$ 13.38
Comprehensive Marketing - Residential		
Community Based Initiatives - Residential		
Residential Pilots		
Subtotal - Non-Income Eligible Residential	**$ 13.14**	**$ 14.11**
Income Eligible Residential:		
Single Family - Income Eligible Services	$ 29.48	$ 35.36
Income Eligible Multifamily	$ 6.72	$ 18.50
Subtotal - Income Eligible Residential	**$ 13.79**	**$ 23.22**
Commercial & Industrial		
Large Commercial New Construction	$ 3.96	$ 3.91
Large Commercial Retrofit	$ 4.19	$ 5.67
Small Business Direct Install	$ 8.23	$ 5.02
Commercial & Industrial Multifamily	$ 6.76	$ 15.09
Commercial Pilots		
Community Based Initiatives - C&I		
Finance Costs		
Subtotal - Commercial & Industrial	**$ 4.64**	**$ 5.27**
Regulatory		
EERMC		
OER		
Subtotal - Regulatory		
Grand Total	**$ 8.72**	**$ 10.48**

Division 2-24
Budget Development Process and Precision

Request:

Please refer to the Company's 2022 Program Planning & Administration (PP&A) budget as included in Tables E-2 and G-2 and answer the following for each table:

a. Please explain how the Company developed its PP&A budget. Please provide specific steps in your response.
b. What factors contributed to a change in the PP&A budget for the 2022 EE Plan compared to the 2021 EE Plan?
c. How did the COVID-19 Pandemic impact the PP&A budget for the 2022 Plan?
d. Did the Company include a contingency budget as part of its 2022 PP&A budget? If yes, what percentage of the total PP&A budget is meant to cover contingencies?

Response:

a. The RI CEM team engaged with other internal teams in order to develop the 2022 Program Planning & Administration (PP&A) budget. The PP&A budget category consists of three primary costs areas: labor and employee expense costs, administrative costs, and regulatory costs. Below, please find a description of the primary drivers behind the proposed 2022 budget in each of those areas.

Labor & Employee Expense Costs

The Company's PP&A budget includes a forecast of PP&A related labor and employee expenses for the 2022 program year. This forecast was based on past actual labor costs and employee expenses including, where necessary, adjustments based on known and identified changes in 2022 labor and employee expense costs.

Administrative Costs

Administrative costs include both external sponsorships and research expenditures incurred in support of program planning activities, as well as planned expenses for support of IT systems that support delivery of EE programs. In some cases, the benefits of this spend, and therefore the expenses, are incurred entirely by the Rhode Island EE programs. In other cases, when such activities support multiple jurisdictions or program areas, a portion of planned total expenses are allocated to the RI programs for budgeting (and, ultimately, expense tracking) purposes.

Prepared by or under the supervision of: John Richards and Christopher Porter

Division 2-24, page 2
Budget Development Process and Precision

For 2022, the administrative costs portion of the PP&A budget was forecasted based on past actual expenses and, where known, adjustments based on known and identified adjustments to 2022 needs.

Regulatory Costs

The third budget area, regulatory costs, was developed based on expected transfers to OER and the EERMC, based on direction provided under R.I. Gen. Laws § 39-2-1.2(i) and (j). (See 2021 R.I. Pub. Laws, Ch. 224, §2, effective July 8, 2021).

b. The overall PP&A budget increased by 31% ($1.93M) from 2021 to 2022. This increase in the overall PP&A budget was due to a 117% increase ($2.37M) in the regulatory PP&A budget from 2021 to 2022. This is specifically driven by increases in funding to the EERMC and OER, resulting from the amendment to the LCP statute passed earlier this year (and discussed in the Company response to Division 3-14).

   The Company's non-regulatory PP&A budget decreased by 11% ($0.44M) from 2021 to 2022, primarily due to reductions in planned spending on IT initiatives related to improvements to systems that support the delivery and administration of the Company's energy efficiency programs.

c. The COVID-19 Pandemic did not impact the PP&A budget for 2022.

d. Yes, a contingency budget of 0.3% is included in the overall PP&A budget. This represents approximately $24K in PP&A expenses that was budgeted for "Innovative Electric" and "Innovative Gas" demonstration projects. Please see Bates 479-481 for further details.

Prepared by or under the supervision of: John Richards and Christopher Porter

Division 2-25
Budget Development Process and Precision

Request:

Please refer to the Company's 2022 Marketing budget as included in Tables E-2 and G-2 and answer the following for each table: Marketing

a. Please explain how the Company developed its Marketing budget. Please provide specific steps in your response.
b. What factors contributed to a change in the Marketing budget for the 2022 EE Plan compared to the 2021 EE Plan?
c. How did the COVID-19 Pandemic impact the Marketing budget for the 2022 Plan?
d. Did the Company include a contingency budget as part of its 2022 marketing budget? If yes, what percent of the total PP&A budget is meant to cover contingencies?

Response:

a. The Company developed its marketing budget by evaluating the 2022 business and savings goals and examining the costs of external marketing expenses for its programs in program year 2022. External marketing expense budgets are based on past budgets, actual costs, and marketing plan adjustments. Then program level budgets are adjusted as needed based on 2022 marketing needs. The Company's marketing budget also includes a forecast of marketing related labor expenses for the 2022 program year. This forecast was based on past actual labor costs and, as needed, adjustments based on 2022 marketing labor needs. The Company also used past actual employee expenses costs for the 2022 budget.

b. The Company's Marketing budget decreased from 2021 to 2022 due to the ending of the EnergyStar Lighting program (and associated marketing costs) and the anticipated closing of the Innovation Hub. This is partly offset by increases in budget to support expanded multicultural and equity marketing and outreach efforts.

c. The COVID-19 Pandemic impacted the Marketing budget for 2022. The Company is relying on more direct marketing and paid media and fewer in-person events.

d. No contingency budget was added to the Marketing category for the 2022 budget.

Prepared by or under the supervision of: John Richards

Division 2-26
Budget Development Process and Precision

Request:

Please refer to the Company's 2022 Cost of Services and Product Rebates/Incentives budget as included in Tables E-2 and G-2 and answer the following for each table:

a. Please explain how the Company developed these budgets. Please provide specific steps in your response.
b. What factors contributed to a change in these budgets for the 2022 EE Plan compared to the 2021 EE Plan?
c. How did the COVID-19 Pandemic impact these budgets for the 2022 Plan?
d. Did the Company include a contingency budget as part of its 2022 Cost of Services and Product Rebates/Incentives budget? If yes, what percent of this budget is meant to cover contingencies?

Response:

a. The Company developed its preliminary Cost of Services and Product Rebates/Incentives budget using estimates of historic cost per unit of saved energy applied to planned amounts of savings in 2022. The Company worked within budget planning guidance provided by the PUC in the proceedings related to the 2021 Energy Efficiency Plan and re-allocated funds from the initial budget across programs to optimize the amount of planned savings and associated benefits against other priorities, including equity and parity across customer segments. Specific programs reviewed historical program performance in order to gauge planned quantities, which were then adjusted to account for activities proposed in the Plan and estimates of available market opportunity. Total Resource Costs and Incentives were then evaluated to determine where costs and incentives needed to be updated. The planned quantities multiplied by incentives was used to build the Incentives budget.

b. The Company's Services/Incentives budget increased from 2021 to 2022 due to higher cost of savings associated with the mix of measures anticipated for 2022.

   Within the residential sector, the budget was impacted by the residential lighting program no longer being offered in 2022, reductions to planned lighting volumes within the direct install programs, and introduction of new measures to the portfolio.

Prepared by or under the supervision of:
John Richards, Angela Li, Joshua Kessler, and Christopher Porter

Division 2-26, page 2
Budget Development Process and Precision

Within the C&I sector, declining lighting opportunities drove a reduction in lighting volume and resulting budget, which was offset by an increased budget for non-lighting measures.

c. The COVID-19 Pandemic impacted the Services/Incentives budget for 2022. Pricing for certain materials has escalated due to lingering supply chain issues. The Company's response to Division 2-29 will provide more details on price increases and their impacts on the 2022 Plan.

d. No contingency budget was added to the Services/Incentives budget category for the 2022 budget.

Division 2-27
Budget Development Process and Precision

Request:

Please refer to the Company's 2022 Evaluation & Market Research budget as included in Tables E-2 and G-2 and answer the following for each table:

a. Please explain how the Company developed its Evaluation & Market Research budget. Please provide specific steps in your response.
b. What factors contributed to a change in the Evaluation & Market Research budget for the 2022 EE Plan compared to the 2021 EE Plan?
c. How did the COVID-19 Pandemic impact the Evaluation & Market Research budget for the 2022 Plan?
d. Did the Company include a contingency budget as part of its 2022 Evaluation & Market Research budget? If yes, what percent of this budget is meant to cover contingencies?

Response:

a. The Company developed its Evaluation budget by first evaluating and prioritizing the roster of potential evaluation studies that could be executed in 2022, and then examining the costs of those studies.

   The total cost of evaluation studies was forecasted by individually projecting the cost of each planned study, the cost of external consultant general support, and a contingency for study needs that arise during the program year.

   Study costs and consultant support were individually allocated to the appropriate sector and program; contingency costs were allocated across all programs based on historical program expenditures.

   The Company's EM&V budget includes a forecast of EM&V related labor expenses for the 2022 program year. This forecast was based on past actual labor costs and, as needed, adjustments based on 2022 EM&V labor needs. The Company also used past actual employee expenses costs for the 2022 budget.

b. The Company's Evaluation budget did not change significantly from 2021 to 2022.

c. The COVID-19 Pandemic did not materially impact the Evaluation budget for 2022.

d. A contingency budget of 3.2% was added to the Evaluation category for the 2022 budget, to account, as noted in part a, for additional study needs that are as of yet unplanned, but can reasonably be expected to arise over the year on the basis of past experience and program history.

Prepared by or under the supervision of: John Richards and Erin Crafts

Division 2-28
Budget Development Process and Precision

Request:

To what extent are any cost increases related to increases in material and labor costs affecting 2021 spending?

Response:

The most significant impact to 2021 Residential program spending has come from the rollover of EnergyWise projects that were committed to in 2020, but neither completed nor billed until 2021. Within this program, customers received 100% incentive on weatherization, which significantly increased 2021 spending relative to planned levels. Outside of this dynamic, which was not a direct function of rising material and labor costs, the Company has not yet experienced significant increases in material and labor costs leading to increased residential program spending in 2021. On the contrary, the primary impact of supply chain challenges has been reduced availability of products (e.g. availability of high efficiency appliances supported through the IES and residential retail programs), which has had a depressing impact on both savings and associated incentive spend.

The Company believes it is probable that the effects of material and labor cost increases have been limited to date in the Commercial and Industrial (C&I) sector for two reasons.

First, few customer incentives are tied directly to project costs. In most cases, incentives are calculated based on other factors, such as achieved savings or equipment performance characteristics. Because C&I incentives have changed little since last year, this has had limited impact on unit incentive costs, though it has likely negatively impacted savings volumes by requiring customers to bear the burden of material and labor cost increases, depressing demand for energy efficiency investments in the C&I sector.

Company internal labor costs have not been materially impacted by rising labor costs because the Company's compensation structure has not been substantially altered in 2021 to account for changes in labor costs.

Likewise, most contracts with program vendors have been in place at least since 2020 and have not been adjusted to account for rising material and labor costs during 2021 outside of those situations where contracts have standard cost adjustment factors that were entered into and agreed to prior to the recent onset of tightened labor and materials markets.

Prepared by or under the supervision of: Joshua Kessler, Benjamin Rivers, and Angela Li

Division 2-29
Budget Development Process and Precision

Request:

To what extent are cost increases related to increases in material and labor costs projected to affect 2022 spending?

a. Are cost increases related to increases in material and labor costs factored into the 2022 Provisional Plan budgets?
b. If so, please provide the amount of the increase and explain how the estimated cost increase was developed.
c. Please also explain how the cost increase is factored into the 2022 Provisional Plan.

Response:

Anecdotally, energy efficiency contractors and distributors have reported cost increases in 2021. While it is difficult to quantify the cost increases, national economic indicators show rapid inflation over the past 12 months, the Producer Price Index has increased 8.4 percent,[1] and the Consumer Price Index increased 5.4 percent.[2] The Company anticipates these prices will be maintained at a minimum and may continue to rise during 2022.

The Company has observed significant increases in material and labor costs, which are only partially factored into the 2022 Plan, as described below. To the extent that sustained inflation drives higher programmatic costs than were budgeted in the plan, the Company will need to identify other areas to realize cost efficiencies, realize lower savings than planned at currently budgeted levels, or review whether it is prudent to increase spending which would include seeking stakeholder input, or some combination of the above. In all of those scenarios, while recovery of prudently incurred incremental costs would be sought, the Company would bear the risk of reduced performance incentive earnings under the current performance incentive mechanism.

[1] Bureau of Labor Statistics. PPI Final Demand-Intermediate Demand Percent Change Report September 2021. Accessed November 3, 2021. https://www.bls.gov/web/ppi/fdidperch.pdf
[2] Bureau of Labor Statistics. Consumer Price Index – September 2021. October 13, 2021. https://www.bls.gov/news.release/pdf/cpi.pdf

Prepared by or under the supervision of: Joshua Kessler, Angela Li, and John Richards

Division 2-29, page 2

Budget Development Process and Precision

Cost increases accounted for in the 2022 Plan include:

- Vendor contract budgets, which are primarily captured in the Sales, Technical Assistance, and Training (STAT) cost category, often include cost accelerators (typically 2-3 percent compared to the previous year). These costs are reflected in the Company's planning tools.

- Within the residential programs, increased labor and material costs for the direct install programs are reflected in the Total Resource Cost column in the BCA model. An average cost from the prior year is updated during the planning process and 2022 planned costs have increased over 2021 planned costs. The Company anticipates increasing price pressure on weatherization materials which will increase the Total Resource Costs.

Prepared by or under the supervision of: Joshua Kessler, Angela Li, and John Richards

Division 2-30
Forward Capacity Market

Request:

For all questions in this section, please refer to the section titled Forward Capacity Market of the Joint Pre-Filed Direct Testimony of Porter, Li, Darling, Richards, and Kessler on Bates Pages 31-36 in the Original Plan.

Please provide a copy of the "Cleared Non-Commercial Capacity" table on the "Obligations Detail" tab available in the Financial Assurance Management system administered by the ISO New England showing all Energy Efficiency resources that are currently Non-Commercial according to the records of the ISO-NE. Please include the following information from the table:

a. Resource ID number
b. Resource Name
c. Commitment Period for which the capacity was cleared in a Forward Capacity Auction
d. Monitored Capacity
e. Terminated Capacity
f. Cleared Capacity
g. Commercial Capacity
h. Non-Commercial FA Capacity
i. MW Adjustment
j. DR Gross-Up Factor
k. MW Subject to Financial Assurance
l. Timeline Factor
m. Rate ($/kW)
n. Obligation amount

Response begins on page 2.

Prepared by or under the supervision of: Rachel Dugan

Division 2-30, page 2
Forward Capacity Market

Response:

Please reference Attachment DIV 2-30 for the Cleared Non-Commercial Capacity report that was generated by the Financial Assurance Management system on October 27, 2021. As seen in Attachment DIV 2-30, the energy efficiency resource financial assurance obligation is currently $367,148.

In the Company's 2022 Energy Efficiency (EE) Plan, the Company estimated that its EE resource FA penalty would be approximately $250,230 across the obligations obtained in the Forward Capacity Auctions 14 and 15. Since filing the EE Plan on October 1, 2021, a new forecast was updated which the Company is now relying on to re-evaluate its estimated penalty. In light of the updated forecast, the Company anticipates that the actual penalty will be closer in monetary value to the current obligation ($367,148), which is an increase from the estimated $250,230 included in the Company's pre-filed testimony accompanying the 2022 EE Plan.

Prepared by or under the supervision of: Rachel Dugan

Cleared Non-Commercial Capacity Details Currently Effective

Customer: The Narragansett Electric Company

Resource ID	Resource Name	Commitment Period	Monitored Capacity	Terminated Capacity	Cleared Capacity	Commercial Capacity	Non-Commercial FA Capacity	MW Adjustment	DR Gross-UP Factor	MW Subject to FA	Timeline Factor	Rate($/kW)	Obligation
12672	ngrid_ri_fca1_eeodr	06/01/2023-06/01/2024	24.673	0	24.673	22.929	1.744		1.08	1.884	2X	$8.19	$30,848.62
12672	ngrid_ri_fca1_eeodr	06/01/2024-06/01/2025	67.493	0	35.763	0	35.763		1.08	38.624	1X	$8.71	$336,299.17

Division 2-31
Forward Capacity Market

Request:

Please describe all activity in all Annual Reconfiguration Auctions or Monthly Reconfiguration Auctions to adjust the amount of Capacity Supply Obligation for the Non-Commercial Resources in the table above. For each resource, list the type of action taken (supply offer or demand bid), when the action was taken, the number of MW bid, and the price. Please also indicate whether the supply offer or demand bid cleared in that auction, and the associated settlement amount, in dollars. If no such actions were taken, please explain why not.

Response:

The Company has not participated in a Monthly or Annual Reconfiguration Auction relevant to FCA14 or FCA15 at this time.

There has not yet been an opportunity to participate in a Monthly Reconfiguration Auction for FCA14 (delivery period beginning June 1, 2023) or FCA15 (delivery period beginning June 1, 2024) because the first Monthly Reconfiguration Auction applicable to capacity commitment period 14 does not begin until April 2023 (six weeks before June 1, 2023).

There has been only one Annual Reconfiguration Auction for FCA14, in June 2021. After careful consideration, the Company chose not to participate in the June 2021 auction. Importantly, as noted in the Company's response to DIV 2-33(a), participation in an annual reconfiguration auction could not have permanently traded away any portion of the capacity supply obligation or its associated financial assurance.

The first Annual Reconfiguration Auction for FCA15 is not until June 2022.

Prepared by or under the supervision of: Rachel Dugan

Division 2-32
Forward Capacity Market

Request:

Please explain the strategy employed to track expected future savings against upcoming Capacity Supply Obligations, including known expiration dates and known expiration amounts from individual energy efficiency measures already installed.

a. As part of your explanation, please provide any memoranda, workbooks, or charts used to track obligation and performance.
b. If no such strategy was employed, please explain why not.

Response:

The Company built an Excel workbook, the "FCM Forecast Tool" which utilized EE measure data from the ISO-NE Energy Efficiency Measures Database to both track delivered MW as well as forecast future cumulative MW, net of expiring measures. The MW estimated in this workbook was then compared against future Capacity Supply Obligations to track the progress on delivering those MW. The MW estimated is also compared against ISO-NE audits and the Financial Assurance Management reports to ensure accuracy.

Attached please find the Company's FCM Forecast Tool v4 as well as the FCM CSO & Non-Commercial Tracker. These are the workbooks used to track expected future savings against Capacity Supply Obligation, as well as the audit and Financial Assurance status, for RI Resource 12672.

Please see both attachments referenced above in the zip file provided as Attachment DIV 2-32 "FCM Forecast Tool & Non-Commercial Tracker.zip

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Division 2-33, page 1
Forward Capacity Market

Request:

Please refer to the final paragraph in this section, which states: "the Company should recover all prudently incurred Financial Assurance expenses from ISO-NE capacity payments generated by the demand savings represented by the Company or the energy efficiency program fund, …".

a. Please indicate if you were aware of the opportunity to adjust your capacity supply obligations using reconfiguration auctions.
b. Please indicate if National Grid was aware that after Capacity Supply Obligations are taken in the Forward Capacity Auction, that there was an opportunity to adjust those obligations in three separate Annual Reconfiguration Auctions that occur 24 months, 10 months, and 3 months in advance of the beginning of each commitment period.
c. Please also indicate any plans to participate in any or all of the 12 monthly reconfiguration auctions that occur during each commitment period.
d. If National Grid made use of reconfiguration auctions to adjust its capacity supply obligation, please indicate the total amount of revenue earned through those actions. Please calculate "revenue earned" as the amount that cleared in a reconfiguration auction at price differential between the Forward Capacity Auction clearing price and the reconfiguration auction clearing price.
e. If no such activity was undertaken, please describe why the Financial Assurance expenses were "prudently incurred"?

Response:

a. Yes, the Company is aware of the opportunity to temporarily trade away Capacity Supply Obligations through ISO-NE's reconfiguration auctions. Unfortunately, there are no opportunities to remove the Financial Assurance obligation through participation in any kind of market activity such as a reconfiguration auction. Those auctions are short-term actions, for either a one-year period in the case of an Annual Reconfiguration Auction (ARA), or a one-month period in the case of a Monthly Reconfiguration Auction (MRA).

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Division 2-33, page 2
Forward Capacity Market

There are no activities that can permanently trade away the Capacity Supply Obligation and the Financial Assurance obligation associated thereto. The Company contacted ISO-NE in the first quarter of 2021 to understand potential options and ISO-NE confirmed that the only way to remove any non-commercial Capacity Supply Obligations is to remove them from Critical Path Schedule monitoring through a formal request to ISO-NE. This action triggers the forfeiture of the Financial Assurance associated with the non-commercial capacity MW, which is the Financial Assurance penalty.

b. Please see the Company's response to subsection(a) above.

c. The Company evaluates and takes action to participate in the Annual and Monthly Reconfiguration Auctions during each applicable window to see if there are any opportunities to take on any additional capacity supply obligations through supply offers. The Company also evaluates if there is any opportunity to temporarily reduce obligations through demand bids. The Company undergoes this evaluation at the time of the monthly auctions, which occur six weeks prior to the obligation month. It is at that time that the Company assesses its position in the market and if there is any opportunity or necessity to take any action.

Below are tables showing the Company's participation in Forward Capacity Auction (FCA), ARA, and MRA from June 2020 through December 2021, the last date a MRA was held.

Division 2-33, page 3
Forward Capacity Market

Commitment Period (FCA)	Obligation Month	CSO (MW)					
		FCA	ARA1	ARA2	ARA3	MRA	Final CSO
Commitment Period 11 (FCA11)	Jun-20	252.449					252.449
	Jul-20	252.449					252.449
	Aug-20	252.449					252.449
	Sep-20	252.449					252.449
	Oct-20	252.449					252.449
	Nov-20	252.449					252.449
	Dec-20	252.449					252.449
	Jan-21	252.449					252.449
	Feb-21	252.449					252.449
	Mar-21	252.449					252.449
	Apr-21	252.449					252.449
	May-21	252.449					252.449
Commitment Period 12 (FCA12)	Jun-21	262.56		32.913	2.329	6.327	304.129
	Jul-21	262.56		32.913	2.329	6.327	304.129
	Aug-21	262.56		32.913	2.329	6.327	304.129
	Sep-21	262.56		32.913	2.329	6.327	304.129
	Oct-21	262.56		32.913	2.329	6.327	304.129
	Nov-21	262.56		32.913	2.329	6.327	304.129
	Dec-21	262.56		32.913	2.329	2.329	300.131

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Division 2-33, page 4
Forward Capacity Market

Commitment Period (FCA)	Obligation Month	Revenue					
		FCA	ARA1	ARA2	ARA3	MRA	Monthly Revenue
Commitment Period 11 (FCA11)	Jun-20	$1,337,222					$1,337,222
	Jul-20	$1,337,222					$1,337,222
	Aug-20	$1,337,222					$1,337,222
	Sep-20	$1,337,222					$1,337,222
	Oct-20	$1,337,222					$1,337,222
	Nov-20	$1,337,222					$1,337,222
	Dec-20	$1,337,222					$1,337,222
	Jan-21	$1,337,222					$1,337,222
	Feb-21	$1,337,222					$1,337,222
	Mar-21	$1,337,222					$1,337,222
	Apr-21	$1,337,222					$1,337,222
	May-21	$1,337,222					$1,337,222
Commitment Period 12 (FCA12)	Jun-21	$1,215,915		$9,874	$3,659	$7,909	$1,237,357
	Jul-21	$1,215,915		$9,874	$3,659	$8,858	$1,238,306
	Aug-21	$1,215,915		$9,874	$3,659	$12,844	$1,242,292
	Sep-21	$1,215,915		$9,874	$3,659	$11,705	$1,241,153
	Oct-21	$1,215,915		$9,874	$3,659	$14,742	$1,244,190
	Nov-21	$1,215,915		$9,874	$3,659	$6,327	$1,235,775
	Dec-21	$1,215,915		$9,874	$3,659	$4,448	$1,233,896
Total		$24,558,069		$ 69,118	$ 25,613	$ 66,833	$ 24,719,633

		FCA	ARA1	ARA2	ARA3	MRA
Pricing	FCA11	$5,297				
	FCA12	$4,631		$300	$1,571	
	Jun-21					$1,250
	Jul-21					$1,400
	Aug-21					$2,030
	Sep-21					$1,850
	Oct-21					$2,330
	Nov-21					$1,000
	Dec-21					$1,910

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Division 2-33, page 5
Forward Capacity Market

d. The total amount of revenue earned by the Company due to its participation in the previous reconfiguration auctions listed above in response to subsection (c) is $161,562.

e. As soon as the Company became aware that it was going to incur a financial assurance penalty, the Company reached out to ISO-NE and considered all available options to mitigate the financial assurance penalty.

Although the Company has previously made use of reconfiguration auctions to adjust capacity supply obligations, as noted in response to subsection (a), ISO-NE confirmed that any participation in the reconfiguration auction does not change a resource's financial assurance obligation. Any activity that the Company has taken thus far in reconfiguration auctions applies to its current obligations and would not impact its future obligations for FCA14 and FCA15. Therefore, reconfiguration auctions cannot be used as a mechanism to reduce a resource's financial assurance obligation.

The Company's financial assurance expenses were prudently incurred because when offering in FCA14 and FCA15, the Company used the same process, strategy and methodology that it had successfully used since it began participating in the FCM in FCA1. Since its participation in FCA1 in 2008, the Company had never incurred a financial assurance penalty. In fact, the Company has earned (and returned to customers through the EE fund) more than $100 million of FCM revenue since its initial participation in the FCM.

For the first time since FCA1 the Company is now expecting to see an increase in expiring measures that are having an impact in the amount of net savings that the Company can claim. Prior to this expected uptick, the programs had been consistently growing and the expirations of installed measures did not have a material impact on the net claimable savings. Therefore, the amount the Company offered in FCA14 and FCA15 was prudent at the time of the auctions.

While a more conservative bidding strategy in the past might have led to a reduced likelihood of a financial assurance penalty, it also would have led to a significant reduction in FCM revenue (and therefore lower EE fund balances and higher surcharges). Even taking the one-time FA penalty into account, on net FCM participation has had a significant depressing impact on EE surcharges. A long-term historical bidding strategy that reduced likelihood of FA penalties would have had an even larger impact on reduced FCM revenues, which would have negatively impacted customers.
For these reasons, the Company believes that the expected FA penalty will have been prudently incurred.

Prepared by or under the supervision of: Rachel Dugan

Division 2-34
Forward Capacity Market

Request:

Please indicate if any of your energy efficiency resources enrolled in the Forward Capacity Market have been fully or partially terminated by the ISO-NE. If so, list the resource number, original commitment period for which the fully or partially terminated resource was intended to be complete, the amount of the termination, the termination date, and the amount of Non-Commercial Financial Assurance that was forfeited.

Response:

To date, no energy efficiency resource in the Company's portfolio has been fully or partially terminated by the ISO-NE.[1]

It is the Lead Market Participant that has the opportunity to request that excess capacity supply obligation (CSO) MW be withdrawn from Critical Path Schedule monitoring, which in effect removes it from the CSO. In January of every year the Multiplier or Timeline Factor in the Financial Assurance obligation calculation increases, which then increases the Financial Assurance obligation for non-commercial MW of CSO.

In December 2021, the Company will request that excess MW of non-commercial capacity be removed from the resource's CSO before Timeline Factor increases the Financial Assurance obligation in January 2022. By doing this, the Company will ensure that it does not incur a greater penalty for the same amount of MW.

[1] This response is based on the Company's review of its records. The Company has submitted an AskISO ticket to confirm. The Company will update this response if ISO-NE has any records of a previous penalty.

Prepared by or under the supervision of: Rachel Dugan

Division 2-35
Forward Capacity Market

Request:

Please supply all communications between National Grid and ISO New England regarding the potential for termination and the ultimate decision to terminate the resource, fully or partially.

Response:

Please see the following attachments which represent the communications between National Grid and ISO New England:

- DIV 2-35-1 – This is an email chain from April 27, 2021 through May 7, 2021 between the Company and ISO-NE about the expected capacity supply obligation (CSO) deficiency for energy efficiency resources, and potential significant financial assurance (FA) loss.
- DIV 2-35-2 – Request for support by the Company to ISO-NE, referenced as Case 50741, initiated on March 24, 2021. The topic is Forward Capacity Market (FCM) Forfeiture of Non-Commercial Financial Assurance.
- DIV 2-35-2 – Request for support by the Company to ISO-NE, referenced as Case 50923, initiated on March 30, 2021. The topic is Removal/Transfer of CSO including Non-Commercial MW.
- DIV 2-35-4 - Request for support by the Company to ISO-NE, referenced as Case 50931, initiated on March 30, 2021. The topic is Ultimate FA Penalty for Non-Commercial CSO: MW Termination.

Please note that the Company's senior analyst who manages the FCM participation for EE searched her email archive for all communications responsive to this request. The responsive documents resulting from her search are the attachments listed above. The employee is not aware of any other Company employee who would have had separate communications with ISO-NE on this topic. Given the time constraints for discovery in this proceeding, the Company did not perform an IT search for potential additional responsive communications.

Prepared by or under the supervision of: Rachel Dugan

From: Rost, Alexander <ARost@iso-ne.com>
Sent: Friday, May 7, 2021 12:17 PM
To: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>; Barrett, Lisa <lisa.barrett@clearesult.com>; Oldfield, Tamara <tamera.oldfield@clearesult.com>
Cc: Shakun, Eli <Eli.Shakun@nationalgrid.com>; Chaudhury, Simmi <SChaudhury@iso-ne.com>; Dewal, Avadhish <adewal@iso-ne.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Hi Rachel

We're available next week for Tuesday 10am-11am, or Wednesday 11am-noon. Hopefully either of these time slots will work for everyone else. If not, let me know.

Attending from ISO RQ will be Simmi Chaudhury and Avadhish Dewal. I've cc'd them on this email so that you can have their contact info.

Thanks, and have a great weekend

Alex

From: Dugan, Rachel <rachel.dugan@nationalgrid.com>
Sent: Thursday, May 06, 2021 10:03 PM
To: Rost, Alexander <ARost@iso-ne.com>; Barrett, Lisa <lisa.barrett@clearesult.com>; Oldfield, Tamara <tamera.oldfield@clearesult.com>
Cc: Shakun, Eli <eli.shakun@nationalgrid.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Hi,

Alex – thanks for the email. No need for our legal to be involved. I only raised it in case ISO legal was expected to be on the call. I have added folks from CLEAResult, Lisa Barrett and Tamera Oldfield, they are National Grid's vendor helping to support our FCM portfolio.

All – I'm happy to send a meeting invite for next week. Eli and I are available during the times listed below. Do any of these work well for you?

- Tue 5/11: 10-11:30a, 1:30-3p
- Wed 5/12: 9a-2p, 4-5p
- Thu 5/13: 10:30a-12p, 3-5p
- Fri 5/14: 11a-12p, 3-5p

Thank you,
Rachel

Rachel Dugan

Grid Services
Distributed Energy Resources
nationalgrid

From: Rost, Alexander <ARost@iso-ne.com>
Sent: Thursday, May 6, 2021 5:43 PM
To: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>
Cc: Shakun, Eli <Eli.Shakun@nationalgrid.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Hi Rachel

I'm sure we can accommodate a call for next week. I am the manager of the Resource Qualification (RQ) group at ISO, so I am not with the ISO legal department. If you plan on having your legal support present, then I can include ours, otherwise we can start with just members from RQ – Let me know what you prefer. Once you let me know, I can provide you a few time slots for a call next week.

Thanks

Alex Rost
Manager | Resource Qualification
(413) 540-4282 (office)
arost@iso-ne.com

ISO New England Inc.
One Sullivan Road | Holyoke, MA 01040-2841
Web | ISO Express | News | Twitter | App

From: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>
Sent: Thursday, May 06, 2021 12:23 PM
To: Ballantine, Joseph <JBallantine@iso-ne.com>; McCarthy, Ryan <RYMccarthy@iso-ne.com>
Cc: Shakun, Eli <eli.shakun@nationalgrid.com>; Rost, Alexander <ARost@iso-ne.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Thanks, Joe.

Alex – we'd like to set up a call to discuss this further. Do you have any availability next week? Also, are you with the legal department as well? If so, we will have folks from our legal/regulatory team on the call as well.

Thanks,
Rachel

Rachel Dugan
Grid Services
Distributed Energy Resources
nationalgrid

From: Ballantine, Joseph <JBallantine@iso-ne.com>
Sent: Monday, May 3, 2021 5:37 PM
To: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>; McCarthy, Ryan <RYMccarthy@iso-ne.com>
Cc: Shakun, Eli <Eli.Shakun@nationalgrid.com>; Rost, Alexander <ARost@iso-ne.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Yes, the matter was reviewed by Al McBride and ISO Legal Department. Alex Rost was designated as the point person (copied on this email) and he will handle it from here.

Joseph T. Ballantine
Principal Analyst | Asset Registration and Auditing
(413) 535-4199 (office) | (203) 605-9265 (mobile)
jballantine@iso-ne.com

ISO New England Inc.
One Sullivan Road | Holyoke, MA 01040-2841
Web | ISO Express | News | Twitter | App

From: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>
Sent: Monday, May 3, 2021 2:04 PM
To: Ballantine, Joseph <JBallantine@iso-ne.com>; McCarthy, Ryan <RYMccarthy@iso-ne.com>
Cc: Shakun, Eli <eli.shakun@nationalgrid.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Joe and Ryan,

Any luck identifying the best folks to speak with at ISONE?

Thanks,
Rachel

Rachel Dugan
Grid Services
Distributed Energy Resources
nationalgrid

From: Dugan, Rachel
Sent: Tuesday, April 27, 2021 12:11 PM
To: Ballantine, Joseph <JBallantine@iso-ne.com>; McCarthy, Ryan <RYMccarthy@iso-ne.com>
Cc: Shakun, Eli <Eli.Shakun@nationalgrid.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Joe – thank you for working together on this.

Rachel

Rachel Dugan
Grid Services
Distributed Energy Resources
nationalgrid

From: Ballantine, Joseph <JBallantine@iso-ne.com>
Sent: Tuesday, April 27, 2021 12:06 PM
To: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>; McCarthy, Ryan <RYMccarthy@iso-ne.com>
Cc: Shakun, Eli <Eli.Shakun@nationalgrid.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Rachel, got your message and will get together with Ryan to direct your request to the proper channels at ISO.

Joseph T. Ballantine
Principal Analyst | Asset Registration and Auditing
(413) 535-4199 (office) | (203) 605-9265 (mobile)
jballantine@iso-ne.com

ISO New England Inc.
One Sullivan Road | Holyoke, MA 01040-2841
Web | ISO Express | News | Twitter | App

From: Dugan, Rachel <rachel.dugan@nationalgrid.com>
Sent: Tuesday, April 27, 2021 12:00 PM
To: McCarthy, Ryan <RYMccarthy@iso-ne.com>; Ballantine, Joseph <JBallantine@iso-ne.com>
Cc: Shakun, Eli <eli.shakun@nationalgrid.com>
Subject: RE: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

*** EXTERNAL email. Please be cautious and evaluate before you click on links, open attachments, or provide credentials. ***

Hi Ryan,

Thanks for the quick response. That timeline works just fine.

Best,
Rachel

Rachel Dugan
Grid Services
Distributed Energy Resources
nationalgrid

From: McCarthy, Ryan <RYMccarthy@iso-ne.com>
Sent: Tuesday, April 27, 2021 11:59 AM
To: Dugan, Rachel <Rachel.Dugan@nationalgrid.com>; Ballantine, Joseph <JBallantine@iso-ne.com>
Cc: Shakun, Eli <Eli.Shakun@nationalgrid.com>
Subject: EXT || RE: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Hi Rachel, thanks for reaching out to Joe and I on this matter. I will discuss internally and get back to you by close of business on Friday – does that work on your end?

Ryan McCarthy
Market Development
ISO New England
Office: 413.535.4071
Cell: 215.982.0375
Rymccarthy@iso-ne.com

——————————— ISO-NE INTERNAL COMMUNICATION ———————————

From: Dugan, Rachel <rachel.dugan@nationalgrid.com>
Sent: Tuesday, April 27, 2021 11:56 AM
To: McCarthy, Ryan <RYMccarthy@iso-ne.com>; Ballantine, Joseph <JBallantine@iso-ne.com>
Cc: Shakun, Eli <eli.shakun@nationalgrid.com>
Subject: [EXT] Expecting CSO Deficiency for EE Resources, and Significant FA Loss

Hi Ryan and Joe,

I am reaching out because we have some questions related to financial assurance for our portfolio of EE resources in the FCM. To be candid, based on our latest internal estimates we expect that we may have a substantial deficiency in meeting the new commercial capacity amounts required to remove our EE resources from CPS monitoring, and we would like to discuss the FA implications with the right people at

ISONE. Current estimates are around **100 MW** of CSOs picked up in FCA14 and FCA15 – this translates to about **$1.5 million** in forfeited FA. We're planning to remove the excess MWs in December 2021 before the Multiplier increase (in the FA calculation). The two main goals of this call are to:

A) Inform the relevant group at ISONE that this is happening.
B) Discuss potential option(s) to avoid this large FA hit (if any).

Can you put us in touch with the right folks?

Thank you,
Rachel

Rachel Dugan
Senior Analyst, Grid Services
Distributed Energy Resources, Product Growth
nationalgrid
40 Sylvan Road
Waltham, MA 02451
o. 781-907-1418
m. 978-821-4750

Case
FCM Forfeiture of Non-Commercial Financial Assurance

+ Follow

Status	Case Owner	Account Name
Resolved	Thomas Woodr…	Massachusetts Electric Company (5007…

DETAILS ATTACHMENTS

Case Number
00050741

Status
Resolved

Case Origin
Web

Category
General Participant Support

Asset Name

Description Information

Subject
FCM Forfeiture of Non-Commercial Financial Assurance

Needed By
3/29/2021 12:00 PM

Description
Hi,

1. I am wondering what the process is for ISONE to obtain/retain FA obligation once an LMP has removed a certain number of MW from CPS (essentially terminating a portion of a CCP CSO) that is non-commercial. I know that ISONE can withdraw money from an LMP's BlackRock account. assuming cash is posted in it. However, in lieu of that, if an LMP only has a Letter of Credit, how it this handled? For example, can ISONE send the LMP an invoice for the forfeited FA amount?

2. Regarding timing, how soon after an LMP removes a certain number of non-commercial MW from CPS monitoring would they need to make a payment to ISONE?

Please note that I have read pages 58-60 of the ISONE FA Policy (Section VII. D) and it still isn't clear to me what the answers to the questions are above.

Thanks,
Rachel

EXHIBIT 1A - ISO NEW ENGLAND FINANCIAL ASSURANCE POLICY
VII. D. Loss of Capacity and Forfeiture of Non-Commercial Capacity Financial Assurance (p. 58-60)
https://www.iso-ne.com/static-assets/documents/2017/09/sect_i_ex_ia.pdf (https://www.iso-ne.com/static-assets/documents/2017/09/sect_i_ex_ia.pdf)

Solution
If you have a blackrock account then they will just take it from there, but if you have an LC, they will invoice you. There is no timeline, it is very much dependent on other market activities

Contact Information

Contact Name
Rachel Dugan (/s/detail/0036A00000csYeQQAU)

Account Name
Massachusetts Electric Company (50075) (/s/detail/0016A00000ZMWbOQAX)

System Information

Created By
Rachel Dugan (/s/profile/0056A000002HHbnQAG), 3/24/2021 10:19 PM

Date/Time Opened
3/24/2021 10:19 PM

Date/Time Closed
3/25/2021 1:01 PM

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Thomas Woodruff (/s/profile/0056A0000023pI8QAI) (ISO New England) updated this record.
March 25, 2021 at 6:11 AM (/s/feed/0D53u000035ZIFvCAO)

Case Owner
Participant Support to Thomas Woodruff

Like Comment

Write a comment...

Rachel Dugan (/s/profile/0056A000002HHbnQAG) (Community Member) updated this record.
March 24, 2021 at 10:19 PM (/s/feed/0D53u000035ZHsLCAW)

Case Owner
Rachel Dugan to Participant Support

1 view

Like Comment

Write a comment...

Rachel Dugan (/s/profile/0056A000002HHbnQAG) (Community Member) created this case.
March 24, 2021 at 10:19 PM (/s/feed/0D53u000035ZHsKCAW)

00050741

View more details

Like Comment

Write a comment...

Case
Removal/Transfer of CSO including Non-Commercial MW

+ Follow

Status	Case Owner	Account Name
Resolved	Casey Dub…	The Narragansett Electric Comp (15…

DETAILS ATTACHMENTS

Case Number
00050923

Status
Resolved

Case Origin
Web

Category
General Participant Support

Asset Name

Description Information

Subject
Removal/Transfer of CSO including Non-Commercial MW

Needed By
3/31/2021 12:00 PM

Description
Two questions:
1. Can a Lead Market Participant remove a certain number of non-commercial MW from CPS monitoring and thus forego that portion of MW from their CSO permanently? This would of course trigger the forfeiture of the associated FA.
2. Are there options to permanently transfer a CSO value that includes non-commercial MW either via a composite offer, or bilateral agreement, or some other means?

Language in the FA Policy for the composite offers seems to touch on this. Composite Offer Transaction section starts at the bottom of page 57, continues on top of page 58 "…each Designated FCM Participant participating in that Composite FCM Transaction will be responsible for providing the financial assurance required…"
https://www.iso-ne.com/static-assets/documents/2017/10/2b2_fa_energy_efficiency_resource_treatment_full_redline_doc.pdf (https://www.iso-ne.com/static-assets/documents/2017/10/2b2_fa_energy_efficiency_resource_treatment_full_redline_doc.pdf)

Solution
You are able to transfer the CSO, however, the non-commercial MW pertain to the resource, and not the CSO that the resource has obtained. Therefore, the Non-Commercial FA requirement will remain with the Resource, even if you transfer the Capacity Supply Obligation. This would mean a forfeiture of the Non-Commercial FA requirement. You can request to withdraw from CPS Monitoring and terminate the MW from CPS Monitoring, but note that if you have obtained a CSO, and the MW never go commercial, the FA will be forfeited. To transfer the obligation you could utilize bilaterals or ARAs/MRAs.
Composite offers is a tool for a resource to partner up in order to maximize their qualified capacity in a Primary Auction, and is not a means of transferring CSO.

Project sponsors can withdraw, or partially withdraw from CPS Monitoring by submitting an Ask ISO Case. By doing so, the ISO terminates the CSO and a transfer of CSO by the participant is no longer necessary. This in Market Rule Section 13.3.6 and Section III.13.3.4A
https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_3/mr1_sec_13_14.pdf (https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_3/mr1_sec_13_14.pdf)

Contact Information

Contact Name
Rachel Dugan (/s/detail/0036A00000csYeQQAU)

Account Name
The Narragansett Electric Comp (156) (/s/detail/0016A00000ZMW7YQAX)

System Information

Created By
Rachel Dugan (/s/profile/0056A000002HHbnQAG), 3/30/2021 2:49 PM

Date/Time Opened
3/30/2021 2:49 PM

Date/Time Closed
3/31/2021 2:06 PM

Search this feed...

Rachel Dugan (/s/profile/0056A000002HHbnQAG) (Community Member) updated this record.
March 30, 2021 at 2:49 PM (/s/feed/0D53u000035aLzvCAE)

Case Owner
Rachel Dugan to Participant Support

Like Comment

Write a comment...

Rachel Dugan (/s/profile/0056A000002HHbnQAG) (Community Member) created this case.
March 30, 2021 at 2:49 PM (/s/feed/0D53u000035aLzuCAE)

00050923

View more details

Like Comment

Write a comment...

Casey Dubin (/s/profile/0056A000002Fw7LQAS) (ISO New England) updated this record.
March 30, 2021 at 2:49 PM (/s/feed/0D53u000035aLYuCAM)

Case Owner
Participant Support to Casey Dubin

Like Comment

Write a comment...

Case
Ultimate FA Penalty for Non-Commercial CSO: MW Termination?

+ Follow

Status	Case Owner	Account Name
Resolved	Sofia Chlasta…	The Narragansett Electric Comp (15…

DETAILS ATTACHMENTS

Case Number
00050931

Status
Resolved

Case Origin
Web

Category
General Participant Support

Asset Name

Description Information

Subject
Ultimate FA Penalty for Non-Commercial CSO: MW Termination?

Needed By
3/31/2021 12:00 PM

Description
Hi,

Page 54 of the ISO FA Policy document seems to indicate that any non-commercial MW associated with a CSO, the FA will increase up and until it "becomes commercial OR the Capacity Supply Obligation is terminated" (emphasis added) - see full except below.

If I am reading this correctly, it means if a portion of the CSO never becomes fully commercial, then the non-MW will be terminated from the resource and the associated FA would not need to be paid?

"In the case of Non-Commercial Capacity that fails to become commercial by the
commencement of the Capacity Commitment Period associated with the Forward
Capacity Auction in which it was awarded a Capacity Supply Obligation, the NonCommercial Capacity Financial Assurance Amount shall be recalculated as follows:... shall increase by one every six months thereafter until the Non-Commercial Capacity becomes commercial or the Capacity Supply Obligation is terminated." (pg. 54 of 87)
https://www.iso-ne.com/static-assets/documents/2017/10/2b2_fa_energy_efficiency_resource_treatment_full_redline_doc.pdf (https://www.iso-ne.com/static-assets/documents/2017/10/2b2_fa_energy_efficiency_resource_treatment_full_redline_doc.pdf)

Thank you,
Rachel

Solution
If commercial status is not achieved, the Resource forfeits its posted collateral.

Contact Information

Contact Name
Rachel Dugan (/s/detail/0036A00000csYeQQAU)

Account Name
The Narragansett Electric Comp (156) (/s/detail/0016A00000ZMW7YQAX)

System Information

Created By
Rachel Dugan (/s/profile/0056A000002HHbnQAG), 3/30/2021 3:51 PM

Date/Time Opened
3/30/2021 3:51 PM

Date/Time Closed
3/31/2021 9:07 AM

Search this feed...

Rachel Dugan (/s/profile/0056A000002HHbnQAG) (Community Member) updated this record.
March 30, 2021 at 3:51 PM (/s/feed/0D53u000035aOH9CAM)

Case Owner
Rachel Dugan to Participant Support

Like Comment

Write a comment...

Rachel Dugan (/s/profile/0056A000002HHbnQAG) (Community Member) created this case.
March 30, 2021 at 3:51 PM (/s/feed/0D53u000035aOH8CAM)

00050931

View more details

Like Comment

Write a comment...

Sofia Chlastawa (/s/profile/0056A000002G7vjQAC) (ISO New England) updated this record.
March 30, 2021 at 3:51 PM (/s/feed/0D53u000035aO6DCAU)

Case Owner
Participant Support to Sofia Chlastawa

Like Comment

Write a comment...

Division 2-36
Forward Capacity Market

Request:

Does the Company bid in the capacity on a program basis or for the entire EE portfolio?

Response:

The Company bids in the capacity for the entire EE portfolio.

Prepared by or under the supervision of: Rachel Dugan

Division 2-37
Forward Capacity Market

Request:

For the 2022 program year, please provide the MW capacity that the Company bid in to the FCM. If the Company bids in the FCM on a program basis, please provide the MW capacity bid in to the FCM for the 2022 program year by EE program.

Response:

The Company enrolls its EE savings in the FCM on a portfolio basis. For the 2022 program year, the Company will have 297.802 MW of demand reduction value enrolled in the FCM during Capacity Commitment Period 12 (from January 1, 2022 to May 31, 2022) and 293.374 MW of demand reduction value during Capacity Commitment Period 13 (from June 1, 2022 to December 31, 2022).

Prepared by or under the supervision of: Rachel Dugan

Division 2-38
Forward Capacity Market

Request:

Please describe which of the Company's EE programs are responsible for leading to the financial assurance penalty.

Response:

As noted in the Company's response to DIV 2-37, the Company enrolls its EE savings in the ISO-NE Forward Capacity Market on a portfolio level. Therefore, generally there is no specific EE program that is responsible for leading to the financial assurance penalty. However, the Company notes that the lighting program has historically been a significant driver of program savings. The maturing of that market, and resulting lower claimable savings attributable to the Company's energy efficiency programs, has resulted in reduced commercial MWs available to the Company to meet previously committed CSO obligations.

Prepared by or under the supervision of: Rachel Dugan

Division 2-39
Forward Capacity Market

Request:

Please explain how the Company's new strategy for bidding in to the FCM will affect the amount of MW that it will be able to bid. For example, what would be the MW bid in to the FCM for the 2022 program year be:

a. under the previous strategy.
b. under the new strategy.

Response:

a. The participation for the calendar year 2022 was decided in Forward Capacity Auction 12 ("FCA12"), which ran in February 2018, and Forward Capacity Auction 13 ("FCA13") which ran in February 2019. The delivery year associated with each is June 1, 2021 - May 31, 2022, and June 1, 2022 - May 31, 2023, respectively. Given the timing of the Forward Capacity Market, the Company has already taken the actions that will determine the amount of participation for the 2022 program year. The previous strategy during that time was to add incremental increases of new capacity onto the current and existing Resource 12672. Annually, during the qualification cycle which concludes every June, the Company would ask ISO-NE for a small amount of MW to be added to the existing resource's Capacity Supply Obligation ("CSO"). ISO-NE would then grant the Company the ability to pick up more MW in that FCA the following February.

   The previous strategy was to have one resource and continually expand it so that the amount of savings delivered matched what the CSO was during that commitment period. This required using more than three years' worth of forecast data every year. For example, the Company is currently preparing for FCA16, which will have a commitment period of June 1, 2025 through May 31, 2026. The Company had to start making decisions about how many MW of CSO commitment would be entered into in early 2021 for a delivery period that went through mid-2026.

   The Company notes two important items regarding this process:

   First, the energy efficiency portfolio had been growing every year and the Company did not see a large impact from the decrease in net claimable savings from measures that had reached their useful life and could no longer be claimed as having a demand reduction value. We are now seeing an uptick in the number of measures that are expiring which were installed approximately ten years ago.

Prepared by or under the supervision of: Rachel Dugan

Division 2-39, page 2
Forward Capacity Market

Second, 2021 marks the end of the Company's previous strategy, through which the Company will no longer expand the existing Resource 12672. Instead, that particular resource will become a legacy resource that will continue to earn revenue for customers until the last measure expires.

b. Under the Company's new strategy, the Company will create a new resource every year, based upon a review of a shorter-term outlook for availability of demand reducing energy efficiency measures. To adapt to the new ISO-NE rule[1], the Company's new strategy will be to select a period of 12 months from the most recent plan year, on which to base the appropriate bid size attainable for each resource. The oldest measures eligible for a new FCM demand resource must have a commercial operation date after the Existing Capacity Qualification deadline prior to the applicable FCA, generally in June before the February auction. Using this timing to plan for the Company's bid will enable the Company to use actual installation data from July through December, combined with January through June forecasted installed measures' savings, to determine the capacity bid amount. The January through June performance forecasts are based on historic demand reductions and future planned savings targets. Bids will be sized to maximize market revenue while ensuring that the CSO can be met by just one year of installations instead of three, which reduces the risk of underperformance.

[1] *See* Section III.13.1.4.1.1.1 ("A New Demand Capacity Resource Show of Interest Form for a resource composed of Energy Efficiency measures must represent a resource with a new and unique resource identification number.") https://www.iso-ne.com/static-assets/documents/regulatory/tariff/sect_3/mr1_sec_13_14.pdf.

Division 2-40
IES Emergency Heating System Replacements

Request:

IES Emergency Heating System Replacements. For all questions in this section, please refer to the sections related to IES Emergency Heating System Replacements on Bates Pages 171 and 173 in the Original Plan. 2-40. How many IES oil/propane heating system emergency replacements were implemented in each of the past five years (2016-2020)? Please break out the results separately for oil and propane.

Response:

For reference, Emergency Heating System Replacements are defined as a heating system that is replaced during the LIHEAP Emergency Program period, which runs from January 1–March 31and November 1–December 31 of each calendar year.

Over the five-year period from 2016-2020, 49% of oil/propane heating system replacements were installed during the Emergency Heating System Replacement periods. See Table 1 below for a break-out of this information by year and fuel type.

Table 1

Calendar Year	Emergency Heating System Replacement (Jan 1– Mar 31 and Nov 1 – Dec 31of the calendar year)		Non-Emergency Heating System Replacement (Apr 1 – Oct 31of the calendar year)		Total Heating System Replacements		% of Emergency Heating System Replacements (a)+(b)/(e)+(f)
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Oil	Propane	Oil	Propane	Oil	Propane	Oil/Propane
2016	133	5	110	0	243	5	56%
2017	107	2	157	2	264	4	41%
2018	128	6	168	4	296	10	44%
2019	122	2	135	2	257	4	48%
2020	105	5	59	0	164	5	65%
Cumulative	595	20	629	8	1224	28	49%
2021* (Jan- Sept)	53	2	108	3	161	5	33%

*2021: Included for reference only. 33% was not included in above average due to incomplete year.

Prepared by or under the supervision of: Laura Rodormer

Division 2-41
IES Emergency Heating System Replacements

Request:

How many oil/propane heating system emergency replacements are proposed in the 2022 Provisional Plan? Please indicate the number and percent of the replacements that are oil, propane, and electric heat pump.

Response:

During the period from 2016-2020, 49% of oil/propane heating system replacements were installed during the Emergency Heating System period. (Please see Division 2–40 for the detailed breakdown behind this number).

For 2022 planning purposes, the IES Program does not separate the proposed oil/propane heating system replacements by oil or propane but rather as a combined total. In 2022, the following Income Eligible Services heating system replacements have been planned:

	2022 Proposed IES Oil/Propane Heating System Replacements (Total) (a)	2022 Proposed IES Oil/Propane Emergency Heating System Replacements (Historic Percentage per DIV 2 - 40) (b)	2022 Estimated Emergency Heating System Replacements (a) *(b) = (c) (c)
Oil/Propane (combined count)	430	49%	211
Electric Heat Pump	48	49%	24

Prepared by or under the supervision of: Laura Rodormer

Division 2-42
IES Emergency Heating System Replacements

Request:

What is the total budget for these measures? Please break out the budget by oil, propane, and electric heat pump.

Response:

	2022 Proposed IES Oil/Propane Heating System Replacements (Total) (a)	2022 Proposed IES Oil/Propane Emergency Heating System Replacements (Historic Percentage per DIV 2 - 40) (b)	2022 Estimated Emergency Heating System Replacements (a) *(b) = (c) (c)	2022 IES Cost of Heating System Replacement (per heating system) (d)	2022 IES Estimated Budget for Emergency Heating System Replacements (c) * (d)
Oil/Propane (combined count)	430	49%	211	$5,000	$1,055,000
Electric Heat Pump	48	49%	24	$15,000	$360,000

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Division 2-43
IES Emergency Heating System Replacements

Request:

At the time of these emergency replacements, is the Company proposing to address any pre-weatherization barriers addressed and offer/provide weatherization? If so, how many households will be provided these measures in the 2022 Provisional Plan and what is the budget for these measures?

Response:

The Company offers pre-weatherization barrier measures/services and weatherization measures/services to all income-eligible customers where the opportunities exist to improve the energy efficiency of the home and health and safety of the customer.

The number of customers receiving these measures/services in combination with emergency heating system replacement as defined in Division 2–40 depends on the need. Therefore, the number of pre-weatherization barrier mitigation measures/services and weatherization measures/services for emergency heating system replacements could be as high as 100% of the anticipated emergency heating system replacements. This would represent 211 customers receiving oil/propane replacements and 24 customers receiving electric heat pump installations, if all of the planned heating system replacements done in the emergency heating season (Jan – Mar, and Nov – Dec) require these pre-weatherization barrier mitigation and weatherization services.

* Pre-weatherization measures/services are generally paid for through Rhode Island Department of Human Services funding, and in some case leveraged with IES funding. In 2022, $210,000 is budgeted for pre-weatherization services to cover barrier mitigation. This being said, the alignment of budgeted pre-weatherization barrier mitigation jobs does not represent a 1:1 correlation with homes receiving an emergency heating system replacement. Therefore, identifying a deemed dollar amount per pre-weatherization job in combination with emergency heating system replacement is not possible.

** The Weatherization budget also does not represent a 1:1 correlation with planned homes receiving an emergency heating system replacement. If any of the 235 homes need weatherization services, the cost of the weatherization services is on average $5,000 per job.

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IES Emergency Heating System Replacements

	2022 Proposed IES Oil/Propane Heating System Replacements (Total) (a)	2022 Proposed IES Oil/Propane Emergency Heating System Replacements (Historic Percentage per DIV 2 - 40) (b)	2022 Estimated Emergency Heating System Replacements (a) *(b) = (c) (c)	2022 IES Cost of Heating System Replacement (avg. per heating system) (d)	2022 IES Estimated Budget for Emergency Heating System Replacements (c) * (d)	Pre-Weatherization Budget (Major Repairs) for Emergency Heating System Replacement (e)	Weatherization Budget for Emergency Heating System Replacements (f)
Oil/Propane (combined count)	430	49%	211	$ 5,000	$1,055,000	*	**
Electric Heat Pump	48	49%	24	$15,000	$ 360,000		

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