

2019

NEW HAMPSHIRE STATEWIDE ENERGY EFFICIENCY PLAN

2019 Update

Jointly Submitted by New Hampshire's Electric and Natural Gas Utilities

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities

New Hampshire Electric Cooperative, Inc.

Public Service Company of New Hampshire d/b/a Eversource Energy

Unitil Energy Systems, Inc.

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities

Northern Utilities, Inc.

NHPUC Docket DE 17-136

September 14, 2018

NHSAVES[®]

EVERSOURCE

 **Liberty Utilities**

 **NEW HAMPSHIRE
Electric Co-op**

 **Unitil**
energy for life

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1.0 Introduction

The New Hampshire electric and natural gas utilities are pleased to submit our 2019 Statewide Energy Efficiency Plan Update (“2019 Update”) for approval by the New Hampshire Public Utilities Commission (the “Commission”). The 2019 Update is being filed jointly by Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities, New Hampshire Electric Cooperative, Inc. (“NHEC”), Public Service Company of New Hampshire d/b/a Eversource Energy, and Unitil Energy Systems, Inc. (“UES”) (referred to throughout the remainder of this document as the “NH Electric Utilities”) and Liberty Utilities (EnergyNorth Natural Gas) d/b/a Liberty Utilities and Northern Utilities, Inc. (“Northern”) (referred to as the “NH Natural Gas Utilities”) or collectively as the “NH Utilities”. The NH Utilities appreciate the opportunity to build upon our long history of providing energy efficiency programs in New Hampshire. We look forward to working with our customers¹ and all of the energy efficiency stakeholders to increase energy savings and achieve the significant economic and environmental benefits that energy efficiency delivers to New Hampshire.

2019 is the second year of New Hampshire’s first 3-year, Energy Efficiency Plan under the Energy Efficiency Resource Standard (“EERS”). The 2018-2020 Statewide Energy Efficiency Plan (“2018-2020 Plan”) was approved by the Commission on January 2, 2018 in Order no. 26,095. The 2019 Update provides information regarding changes or adjustments from the information provided for 2019 in the 2018-2020 Plan. The information contained in the original 2018-2020 Plan that is not updated in the 2019 Update, remains in its original form as approved by the Commission.

Direct Energy Savings, Demand and Emissions Reductions

Since 2002, New Hampshire natural gas and electric customers have installed energy efficiency measures that have or will save more than 14 billion electric kilowatt-hours (“kWh”) and 30 million natural gas million British Thermal Units (“MMBtus”), resulting in cumulative customer savings in excess of \$2.4 billion.

The 2019 Update will lead to savings of more than 1.3 billion electric kilowatt-hours and 2.8 million natural gas MMBtus over the lifetime of the measures. In addition, the program will save 1.7 million MMBtus from other fuels.

The measures implemented as part of the 2019 Update will reduce summer peak demand by 12 MW and winter peak demand by 15.4 MW, which in turn will reduce costs for all electric

¹ Hereinafter, the word “customer” will be understood to mean both customers and New Hampshire Electric Cooperative members.

customers.

The 2019 Update energy savings will result in customer energy cost savings of more than \$282 million over the lifetime of the measures. In addition, the 2019 Update will support 652 full time equivalents (“FTEs”) or 1.4 million work hours (using 2,080 hours for each FTE).² Efficiency investments support the New Hampshire economy in other ways. When energy bills are lowered, residents and businesses have more money to spend on operations, materials, labor and other productive investments. The lower energy costs that result from efficiency projects in municipal buildings lead to a more efficient use of taxpayer dollars in the community.

The 2019 Update will also lead to a lifetime reduction of more than 900 thousand tons of greenhouse gas emissions, the equivalent of taking 259,594³ passenger vehicles off the road for one year.

2019 Overview

Table 1.1: Comparison to 2018

ELECTRIC PROGRAMS	2018	2019 Update
Lifetime MWh Savings	1,046,970	1,297,939
Annual MWh Savings	86,589	107,830
Annual Savings as a % of 2014 Delivery Sales	0.80%	1.0%
Program Budget	\$36,623,566	\$44,943,559
Program Cost per Lifetime kWh Savings	\$0.035	\$0.035
NATURAL GAS PROGRAMS	2018	2019 Update
Lifetime MMBtu Savings	2,306,693	2,841,037
Annual MMBtu Savings	163,616	174,787
Annual Savings as a % of 2014 Delivery Sales	0.70%	0.75%
Program Funding	\$9,157,813	\$9,896,499
Program Cost per Lifetime MMBTU Savings	\$3.97	\$3.48

²According to a study from the Political Economy Research Institute (PERI) of the University of Massachusetts at Amherst (2012), every million dollars spent on energy-efficient measures, such as building retrofits, supports 7 direct jobs and 4.9 indirect jobs.

Burr, A., Majerski, C., Stellberg, S., Garrett-Peltier, H. (2012, March). “Analysis of Job Creation and Energy Cost Savings”. Retrieved from http://www.peri.umass.edu/fileadmin/pdf/other_publication_types/PERI-IMT-2012-Analysis_Job_Creation.pdf

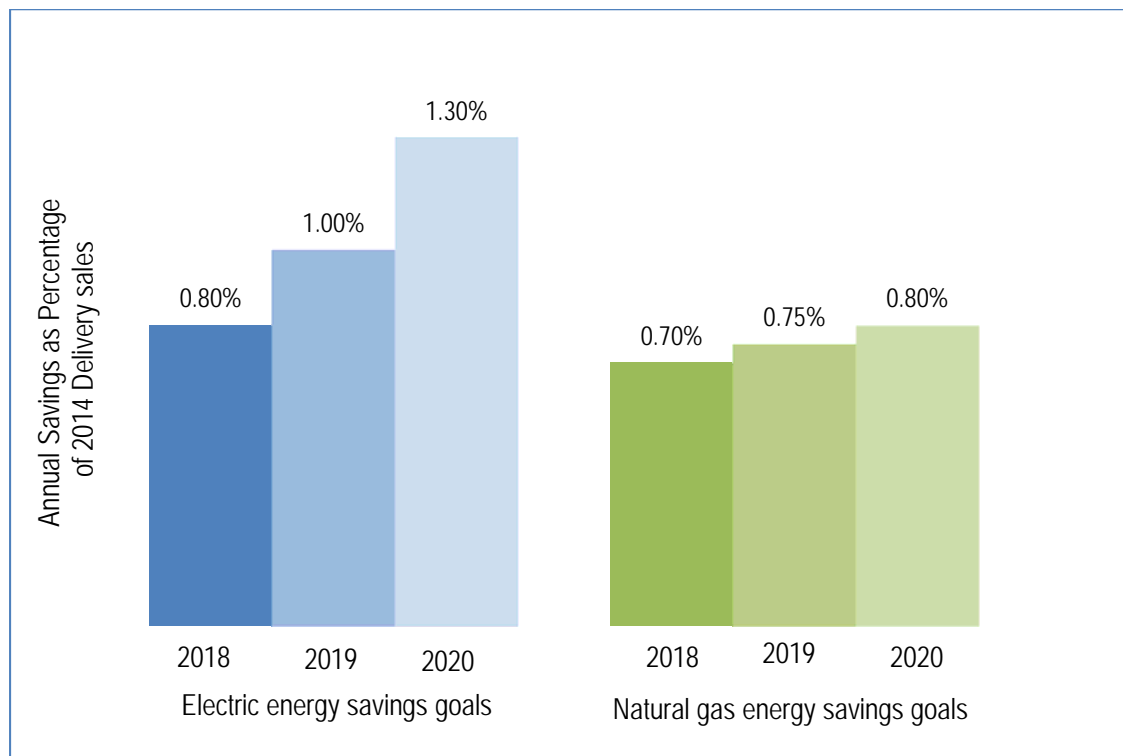
³ Utilizing EPA Greenhouse Gas Equivalencies Calculator. Retrieved from <http://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

2.0 2019 Program Goals

Commission Order No. 25,932⁴ set statewide energy savings goals for the 2018-2020 NHSaves Programs based on a percentage of the NH Utilities' 2014 delivery sales. For 2019, the NH Utilities propose energy efficiency measures, tools, and programs designed to achieve energy savings of 1.0 percent of retail electric sales and 0.75 percent of retail natural gas sales, relative to the 2014 delivery sales baseline.

FIGURE 2.1: Energy savings goals as a percentage of 2014 retail sales

The annual energy savings goals increase incrementally between 2018 and 2020.



⁴ New Hampshire Public Utilities Commission (2016, August 8), Order No. 25,932, "Energy Efficiency Resource Standard – Order Approving Settlement Agreement". Retrieved from <http://www.puc.state.nh.us/Regulatory/Orders/2016orders/25932e.pdf>

Tables 2.2 and 2.3 summarize the specific statewide energy savings goals for the 2019 NHSaves Electric and Natural Gas Programs.

Table 2.2: Electric Program Annual Statewide Savings Goal

Electric Annual Statewide Goal (MWH)	
2014 Delivery Sales (MWH)	2019
10,782,973	107,830

Table 2.3: Natural Gas Program Annual Statewide Savings Goal

Natural Gas Annual Statewide Goal (MMBtu)	
2014 Delivery Sales (MMBtu)	2019
23,352,672	174,787

2.1 2019 Annual Energy Savings Targets

Tables 2.4 and 2.5, summarize the energy savings targets for the NHSaves electric program. Tables 2.6 and 2.7 summarize the energy savings targets for the NHSaves natural gas programs.

Table 2.4: 2019 Electric Program Annual Savings, by Utility

Company	Electric Annual Savings (MWH)	Percentage of 2019 Statewide Savings
Eversource	83,483	77%
Liberty Utilities	9,083	8%
NHEC	5,177	5%
Unitil	10,087	9%
Total	107,830	100%

Table 2.5: 2019 Electric Program Annual Savings, by Sector

Sector	Electric Annual Savings (MWH)	Percentage of 2019 Statewide Savings
C&I and Municipal	83,633	78%
Residential	22,824	21%
Income Eligible	1,373	1%
Total	107,830	100%

Table 2.6: 2019 Natural Gas Program Annual Savings, by Utility

Company	Natural Gas Annual Savings (MMBtu)	Percentage of 2019 Statewide Savings
Liberty	138,080	79%
Unitil	36,707	21%
Total	174,787	100%

Table 2.7: 2019 Natural Gas Program Annual Savings, by Sector

Sector	Natural Gas Annual Savings (MMBtu)	Percentage of 2019 Statewide Savings
C&I and Municipal	122,047	70%
Residential	43,156	25%
Income Eligible	9,584	5%
Total	174,787	100%

Additional Fuel Neutral Savings

The NH Electric Utilities programs also generate energy savings from other fuels including oil, propane, kerosene and wood. These energy savings are in addition to the statewide EERS electric and natural gas savings goals and are an important part of the comprehensive energy savings programs, contributing significant benefits to NH customers and reducing greenhouse gas emissions. These savings are particularly important to reduce the energy cost burden of residential customers, especially those who qualify for the income-eligible programs, as well as municipal customers whose costs are borne by local taxpayers. These savings also contribute to the programs' cost-effectiveness and are reflected in Table 2.8 by customer sector in MMBtu's.

Table 2.8:2019 Expected Savings from Other Fuels, by Sector

Annual Savings From Other Fuel Sources, by Sector (MMBtu)		
Sector	MMBtu	Percentage of 2019 MMBtu savings
Income Eligible	25,939	30%
Residential	55,319	65%
Municipal	3,964	5%
Total	85,222	100%

2.2 Program Funding

Electric Energy Efficiency Funding

The NHSaves programs offered by the NH Electric Utilities are funded through three main sources: 1) a portion of the System Benefits Charge (SBC) that is applied to the electric bills of all customers receiving delivery service through one of the NH Electric Utilities; 2) a portion of the Regional Greenhouse Gas Initiative (RGGI) auction proceeds; and 3) proceeds earned by each of the NH Electric Utilities from ISO-NE for participation in ISO-NE's Forward Capacity Market (FCM). All electric utility FCM revenues are derived from demand reductions from the energy efficiency programs and support the NHSaves Electric Programs.

Additionally, the balance of funds from prior program years is carried forward to future years, including interest applied on the monthly balance at the prime rate.

The 2019 SBC revenues are estimated based on a forecast of each utility's 2019 sales and a proposed SBC energy efficiency program rate of \$0.00352 per kilowatt-hour. The proposed SBC rate is a \$0.00077 increase from the 2018 SBC energy efficiency program rate of \$0.00275 per kilowatt-hour. The proposed SBC rate is 17 percent lower than the estimated 2019 SBC energy

efficiency program rate of \$0.00425 that was included in the Settlement Agreement that led to the Commission's Order No. 25, 932⁵ in the EERS proceeding.

The estimated RGGI revenues to be made available to the NHSaves programs are provided to the NH Electric Utilities by the Commission's staff. The FCM revenues are estimated based on forecasted prices for the energy efficiency on-peak summer and winter demand resources. These differ by electric company and are subject to adjustment based on future performance.

Tables 2.9 – 2.11 summarize the original 2018-2020 Plan estimated electric program funding for 2019, the updated estimated program funding for 2019 and the difference between the 2019 Update and original by source and utility. The overall estimated level of funding for 2019 decreased by \$1.4 million from the estimated funding included in the 2018-2020 Plan. The decrease consists primarily of reduced funding from the System Benefits Charge and a small reduction in estimated RGGI revenues.

Table 2.9: Annual Funding Source, Electric Original 2019 Estimate

Source	Original 2019 Estimated Electric Funding (\$)				Total
	Eversource	Liberty	NHEC	Unitil	
System Benefits Charge (SBC)	29,331,571	3,424,682	2,812,856	4,427,087	39,996,196
Carry forward & Interest		-	-		
Regional Greenhouse Gas Initiative (RGGI)	1,876,246	215,538	198,535	282,414	2,572,733
ISO-NE Forward Capacity Market (FCM)	5,777,224	577,009	65,000	500,000	6,919,233
Total	36,985,041	4,217,229	3,076,391	5,209,501	49,488,162

⁵ New Hampshire Public Utilities Commission (2016, August 8), Order No. 25,932, "Energy Efficiency Resource Standard – Order Approving Settlement Agreement". Retrieved from <http://www.puc.state.nh.us/Regulatory/Orders/2016orders/25932e.pdf>

Table 2.10: Annual Funding Source, Electric Updated 2019 Estimate

Source	Updated 2019 Estimated Electric Funding (\$)				Total
	Eversource	Liberty	NHEC	Unitil	
System Benefits Charge (SBC)	27,639,135	3,231,872	2,667,017	4,228,275	37,766,299
Carry forward & Interest	(385,554)	163,024	56,949	751,289	585,708
Regional Greenhouse Gas Initiative (RGGI)	1,867,533	213,985	201,249	284,017	2,566,784
ISO-NE Forward Capacity Market (FCM)	5,777,224	632,524	75,000	650,000	7,134,748
Total	34,898,338	4,241,405	3,000,215	5,913,581	48,053,539

Table 2.11: Annual Funding Source, Difference between Update and Original

Source	2019 Estimated Electric Funding Difference (\$)				Total
	Eversource	Liberty	NHEC	Unitil	
System Benefits Charge (SBC)	(1,692,436)	(192,810)	(145,839)	(198,812)	(2,229,897)
Carry forward & Interest	(385,554)	163,024	56,949	751,289	585,708
Regional Greenhouse Gas Initiative (RGGI)	(8,713)	(1,553)	2,714	1,603	(5,949)
ISO-NE Forward Capacity Market (FCM)	-	55,515	10,000	150,000	215,515
Total	(2,086,703)	24,176	(76,176)	704,080	(1,434,623)

Liberty carried forward \$163,024 from 2017 and will utilize \$150,000 as capital for additional commercial on-bill financing. These funds will be allocated to the revolving loan pool and tracked within the revolving loan section of the Quarterly Reports. The remaining \$13,024 of carry forward is included in the 2019 Program Budget. Please see section 6.0 for more details about the NH Utilities on-bill finance offerings.

Unitil carried forward \$751,289 from 2017. Of that, \$375,000 will be transferred to the existing revolving loan fund as capital for commercial on-bill financing offerings. These funds will be tracked within the revolving loan section of the Quarterly Reports. \$206,071 will be utilized for programs in 2019, and the remaining \$116,218 will be held until 2020 and utilized during that program year. Because the energy efficiency portion of the SBC rate is identical for each of the

utilities, and due to the fact that Unitil anticipates starting 2019 with a significant over-collection, the Company does not anticipate expending all revenues carry forward during the 2019 program year.

At the end of 2017, NHEC had a carry forward balance of \$171,532. Seventeen percent was allocated to the HEA program to be spent on additional projects during 2018. The remaining balance was split between the residential and commercial sectors by sales allocation. The residential portion of \$85,423 was allocated to be utilized for HPwES projects during 2018, in response to a high demand for the program. The remaining \$56,949 was included as carry forward, shown in Table 2.10, and will be utilized for the 2019 commercial program budgets.

Table 2.12: 2019 Funding and Budget Detail

	2019 Funding and Budget Details (\$)				Total
	Eversource	Liberty	NHEC	Unitil	
Total Funding As detailed in Table 2.10	34,898,338	4,241,405	3,000,215	5,913,581	48,053,539
Carryover Utilized for OBF or held As discussed above		150,000		491,218	641,218
Funding for 2019 Including programs and Performance Incentive	34,898,338	4,091,405	3,000,215	5,422,363	47,412,321
2019 Estimated Performance Incentive Additional Detail in Attachments E1, F1, G1 and H1	1,816,634	213,296	156,149	282,682	2,468,761
2019 Program Budget Additional Detail in Section 2.3	33,081,704	3,878,109	2,844,066	5,139,681	44,943,559

Natural Gas Energy Efficiency Funding

The NHSaves programs offered by the NH Natural Gas Utilities are funded by a portion of the Local Distribution Adjustment Charge (LDAC), which is applied to bills of natural gas customers in New Hampshire [Table 2.14]. As with the electric programs, the balance of funds from prior program years is carried forward to future years, including interest earned on monthly balances applied at the prime rate.

The NH Natural Gas Utilities determine the overall budget requirements to meet the required energy savings targets. LDAC rates are then set by sector by each of the gas utilities based on a forecast of sales. Energy efficiency rates for 2019 can be found in Attachments I3 and J3 for the NH Natural Gas Utilities.

Liberty has a carry forward and interest balance of \$2,448,333 from 2017 and will utilize \$875,000 as capital for a residential and commercial on-bill financing offering. These funds for

on-bill financing will be tracked within the revolving loan section of the Quarterly Reports. The remaining \$1,573,333 of carry forward and interest is included in the 2019 Program Budget.

Table 2.13: 2019 Original Annual Funding Source, Natural Gas

Source	Original 2019 Natural Gas Funding (\$)		
	Liberty	Northern	Total
Local Distribution Adjustment Charge (LDAC)	8,258,955	2,321,158	10,580,113
Carry forward & Interest	0	(72,256)	(72,256)
Total	8,258,955	2,248,902	10,507,857

Table 2.14: 2019 Updated Annual Funding Source, Natural Gas

Source	2019 Updated Natural Gas Funding (\$)		
	Liberty	Northern	Total
Local Distribution Adjustment Charge (LDAC)	6,558,495	2,446,480	9,004,975
Carry forward & Interest	2,448,333	15,889	2,464,222
Total	9,006,828	2,462,369	11,469,197

Table 2.15: Natural Gas Annual Funding Source, Difference between Update and Original

Source	Estimated Funding Difference (\$)		
	Liberty	Northern	Total
Local Distribution Adjustment Charge (LDAC)	(1,700,460)	125,322	(1,575,138)
Carry forward & Interest	2,448,333	88,145	2,536,478
Total	747,873	213,467	961,340

2.3 Annual Program Budgets

Table 2.16: Annual Electric Budget, by Utility

Company	Original 2019 Electric Budget	Updated 2019 Electric Budget	Difference	Percentage of 2019 Updated Budget
Eversource	35,059,623	33,081,704	(1,977,919)	74%
Liberty	3,997,374	3,878,109	(119,265)	9%
NHEC	2,916,271	2,844,066	(72,205)	6%
Unitil	4,937,916	5,139,680	201,764	11%
Total	46,911,184	44,943,559	(1,967,625)	100%

Figure 2.17: Electric Budget, by Sector

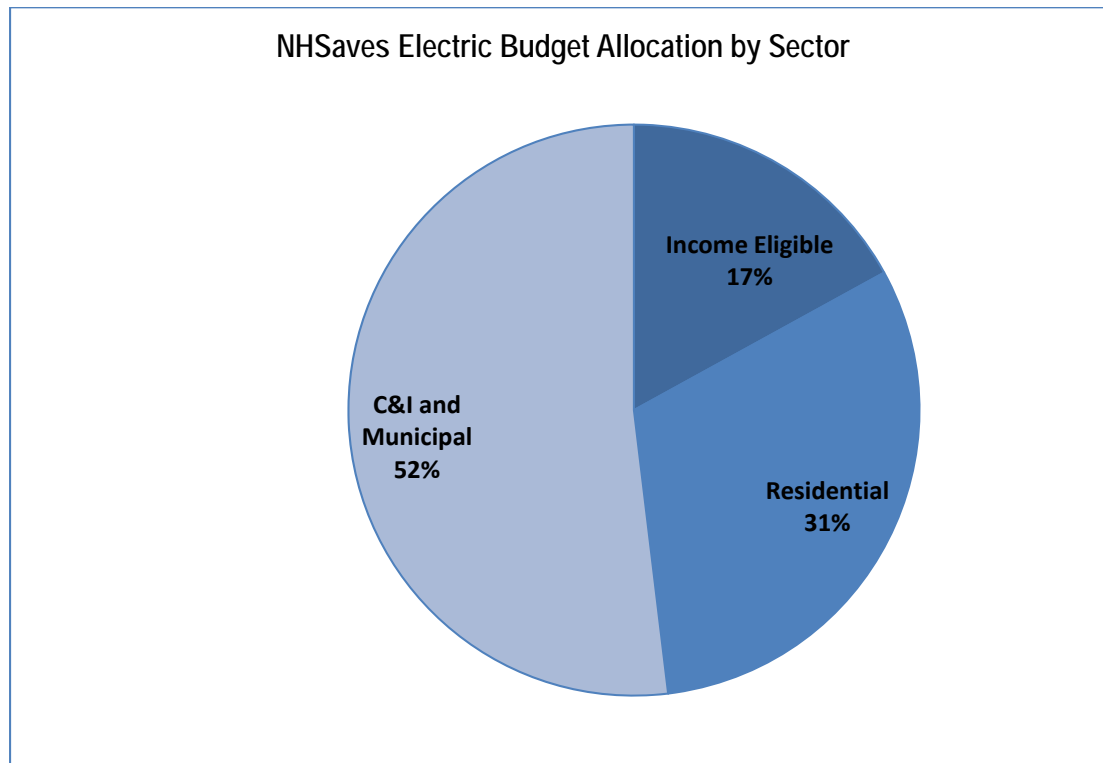
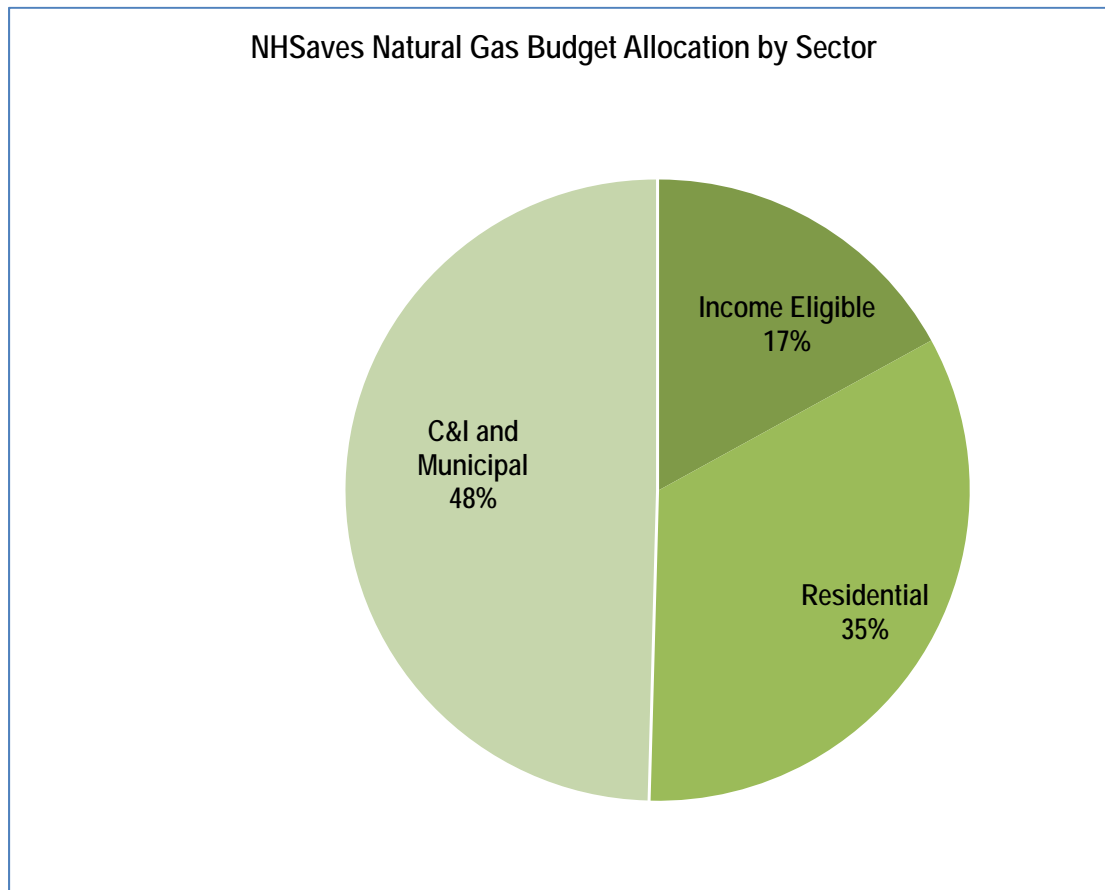


Table 2.18: Annual Natural Gas Budget, by Utility

Company	Original 2019 Natural Gas Budget	Updated 2019 Natural Gas Budget	Difference	Percentage of Updated 2019 Budget
Liberty	7,828,394	7,707,894	(120,500)	78%
Unitil	2,200,150	2,188,606	(11,544)	22%
Total	10,028,543	9,896,499	(132,044)	100%

Figure 2.19: Natural Gas Budget, by Sector



Budget allocations by sector are informed by the source of the funds, and each utility’s forecasted delivery sales to each sector. The income-eligible Home Energy Assistance (“HEA”) program budget is not less than 17 percent of each utility’s total portfolio budget.



There are several factors that may impact budget levels. Any difference between the actual spending in each program year and the actual energy efficiency funds received based on customer usage, is carried forward into future year program budgets. This value may be positive or negative. Monthly interest at the prime rate is applied to fund balances. Funding estimates from the SBC and LDAC are based on each company's sales projections. Actual sales may differ, resulting in more or less SBC or LDAC revenue available for energy efficiency programs. In addition, RGGI and FCM proceeds are estimated and are also subject to change.

3.0 Residential Program Changes

3.1 Home Energy Assistance (“HEA”)

Program Changes

In implementing the Home Energy Assistance program, the NH utilities remain focused on working with the Community Action Agencies (“CAAs”) to provide comprehensive weatherization services to income-eligible customers. The program design remains as described in the 2018-2020 Plan.

As the NH Utilities, the CAAs, and the Office of Strategic Initiatives (“OSI”) work together to serve income-eligible customers, utilizing a combination of utility, federal and other funding sources, we are reviewing workforce training needs. Knowledgeable and capable workers who can perform energy audits and safely install energy efficiency measures are a key element to effectively delivering the HEA program. The NH Utilities will coordinate with the CAAs and OSI to identify training needs and provide workforce training opportunities during 2019.

Program Budget and Goals

Table 3.1: Home Energy Assistance Energy Savings and Budget

Annual Home Energy Assistance Program		
	2019 Original	2019 Update
Electric		
Budget	7,974,902	7,821,904
kWh savings	1,036,792	1,372,753
kW reduction	148	151
MMBtu savings	25,622	25,939
Electric participants	1,004	1,025
Natural gas		
Budget	1,704,868	1,684,368
MMBtu savings	9,679	9,584
Gas participants	339	307
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBtu = million British thermal units		

The NH Utilities work with the CAAs to estimate the number of income-eligible participants to be served each quarter and by county to ensure the services are being delivered throughout the state. Tables 3.2 and 3.3 display the 2019 HEA Quarterly Project Schedule and the 2019 HEA Project Distribution by county. Quarterly targets are considered benchmarks and typically vary in practice.

Table 3.2: 2019 HEA Quarterly Project Schedule

The project schedule reflects the expected number of homes served (“Jobs”) by the HEA Program by quarter.

Utility	Total Jobs	1st. Qtr.	2nd. Qtr.	3rd. Qtr.	4th. Qtr.
		22%	29%	29%	19%
LU-Electric	56	10	17	20	9
NHEC	59	8	18	22	11
Eversource	800	199	231	228	142
Unitil	110	25	27	33	25
LU-Gas	245	46	79	68	52
Unitil-Gas	62	11	17	20	14
TOTAL Electric	1,025	242	293	303	187
TOTAL Gas	307	57	96	88	66
Cumulative TOTAL		299	688	1,079	1,332

Table 3.3: 2018 HEA Project Distribution

The project distribution table outlines how projects will be allocated by county.

BY COUNTY	LU-Electric	NHEC	Eversource	Unitil	LU-Gas	Unitil-Gas	Grand Total
Belknap		9	55		24		88
Carroll		8	59				67
Cheshire	3		27				30
Coos		3	69		0		72
Grafton	23	21	26				70
Hillsborough	9		344		193		546
Merrimack		6	47	41	24		118
Rockingham	16	3	90	69	4	39	221
Strafford		3	63			23	89
Sullivan	5	6	20				31
Program Totals	56	59	800	110	245	62	1,332

Recent or Planned Evaluations

A process and impact evaluation for the HEA Program began in 2018. Opinion Dynamics Corporation (“ODC”) is the third party evaluation consultant conducting the evaluation under the direction of the NH EM&V Working Group. Initial results are expected in spring 2019 and will follow the review and finalization process described in the 2018-2020 Plan, Section 10, Evaluation, Measurement & Verification. An additional scope of work regarding specific Non-Energy Impacts (“NEIs”) for the HEA programs is also underway and results are expected to be incorporated into the 2020 Update Plan.

3.2 Home Performance with ENERGY STAR® (“HPwES”)

Program Changes

The program design remains as described in the 2018-2020 Plan.

In 2019, the NH Utilities will explore the feasibility of offering a package of energy saving measures for electric customers who do not meet the Home Heating Index (“HHI”) threshold. This offering will be informed by the experience from the natural gas visual audit offering and will allow the program to capture electric savings in homes where full weatherization services would not be cost effective. As with the natural gas visual audit, if the contractor indicates that there is an opportunity for additional energy savings while on site, auditing software can be used to test for cost-effectiveness. If sufficient opportunity exists, the customer will have the opportunity to receive HPwES weatherization measures.

The Natural Gas Utilities will offer a new opportunity for on-bill financing of up to \$4,000 to customers participating in the HPwES program. Additional details are included in Section 6.1. Additionally, as described in Section 6.1, NHEC and Unitil Electric have increased the on-bill loan offering from a maximum of \$2,000 to a maximum of \$4,000 to help cover the customer’s portion of the weatherization job. By increasing the maximum loan amount, NHEC and Unitil expect to increase the number of customers assisted in overcoming the upfront cost barrier, including customers of more moderate income levels.

Program Budget and Goals

Table 3.4: Home Performance with ENERGY STAR Energy Savings and Budget

Annual Home Performance with ENERGY STAR		
	2019 Original	2019 Update
Electric		
Budget	5,157,513	5,044,054
kWh savings	821,233	909,107
kW reduction	147	162
MMBtu savings	37,747	38,890
Electric participants	1,290	1,348
Natural gas		
Budget	1,025,088	1,239,988
MMBtu savings	9,799	12,480
Gas participants	615	792
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBtu = million British thermal units		

Recent or Planned Evaluations

A process and impact evaluation for the HPwES Program began in 2018. As with the review of the HEA program, ODC is performing the evaluation of HPwES. Initial results are expected in spring 2019 and will follow the review and finalization process described in the 2018-2020 Plan, Section 10, Evaluation, Measurement & Verification.

3.3 ENERGY STAR Homes

Program Changes

The program design remains as described in the 2018-2020 Plan. The NH Utilities are developing an incentive structure for ENERGY STAR manufactured homes in order to reach an additional subset of the new home construction market.

Certification for HVAC contractors is an important element of the ENERGY STAR program and was identified as a barrier to increasing the number of ENERGY STAR certified homes in a recent evaluation of the program.⁶ In 2018 the NH Utilities initiated the 'Drive to ENERGY STAR' offering as a pathway into the program for new builders and HVAC contractors. In 2019 the NH Utilities will continue to enhance this pathway by providing training and certification assistance

⁶ERS, New Hampshire ENERGY STAR Homes Program Impact Evaluation (2014–2015) Final Report, December 7, 2017. See http://www.puc.state.nh.us/Electric/Monitoring%20and%20Evaluation%20Reports/NH_ESHomes_Report_Final_v4-2017.pdf

to facilitate certification of HVAC contractors that are currently installing systems properly but have not yet gone through the credentialing process.

Program Budget and Goals

Table 3.5: ENERGY STAR Homes Energy Savings and Budget

Annual ENERGY STAR Homes		
	2019 Original	2019 Update
Electric		
Budget	2,805,646	2,637,699
kWh savings	1,194,124	1,428,079
kW reduction	267	323
MMBtu savings	12,871	12,954
Electric participants	945	956
Natural gas		
Budget	434,751	612,751
MMBtu savings	3,305	4,017
Gas participants	121	164
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBTu = million British thermal units		

Recent or Planned Evaluations

Energy & Resource Solutions, Inc. (“ERS”), working on behalf of the EM&V Working Group completed a process and impact evaluation study of the ENERGY STAR Homes program in December 2017.⁷ The evaluation study found “a program that is well run from an administrative standpoint and is valued by stakeholders and participants, with those surveyed giving the program high marks.”

The study also found some reluctance among HVAC contractors to go through the ENERGY STAR v3.0 certification requirements for administrative and design tasks. Further, the study identified spillover effects indicating that contractors participating in the program utilized high efficiency practices in all new homes that they build, not just those that are participating in the program and receiving an incentive. As a result of the study, the NH Utilities made several changes to the program in 2018, including updating the baseline home against which savings are claimed and adding an incentive tier for homes that are built to the higher expectations of ENERGY STAR v3.1. The full list of recommendations and responses from the NH Utilities are

⁷ ERS, New Hampshire ENERGY STAR Homes Program Impact Evaluation (2014–2015) Final Report, December 7, 2017. See http://www.puc.state.nh.us/Electric/Monitoring%20and%20Evaluation%20Reports/NH_ESHomes_Report_Final_v4-2017.pdf

tracked on the EM&V Working Group's webpage.⁸

2018 Awards

Chinburg Properties of Newmarket, NH received EPA's 2018 ENERGY STAR Partner of the Year—Sustained Excellence recognition for its dedication to the ENERGY STAR Certified Homes program and its longstanding partnership with Home Energy Raters and utilities that also collaborate with the Certified Homes program in New Hampshire. The NH Utilities are extremely proud to see a New Hampshire homebuilder receive this special recognition.

The NH Utilities were also recognized by the EPA in 2018, receiving the ENERGY STAR Partner of the Year—Sustained Excellence recognition for the successful implementation of the ENERGY STAR Certified Homes program. The New Hampshire Utilities were specifically recognized for their collaboration and partnerships with Homebuilders, Home Energy Raters and trade associations to successfully implement the ENERGY STAR Certified Homes program across the state. 2018 was the 6th consecutive year that the NH Utilities have been recognized by the EPA as an ENERGY STAR Partner of the Year Award recipient.

3.4 ENERGY STAR Products (“ESProducts”)

Program Changes

The program design remains as described in the 2018-2020 Plan.

The NH Utilities continue to focus on ways to make the ENERGY STAR Products program easily accessible to our customers. In 2019 we will work with our vendor partners to develop and test a point of sale e-rebates platform that will allow eligible customers to access rebates for appliances applied at the time of purchase. This type of offering allows the vendor to confirm customer and product eligibility via the customer's smart phone. The mail-in and on-line rebate application forms will remain available for customers who prefer those options to e-rebates. The NH Utilities may also utilize special promotions and short-term appliance markdowns as an enhancement to the appliance offering.

Due to the low avoided cost of natural gas and expense of high efficiency water heaters, the gas companies are de-emphasizing or eliminating incentives for certain water heating products in 2019.

⁸ See https://www.puc.nh.gov/EESE%20Board/EERS_Working_Groups.html#em&v and https://www.puc.nh.gov/EESE%20Board/EERS_WG/nh-emv-eval-of-recommendations-tracker-060018.pdf.

Program Budget and Goals

Table 3.6: ENERGY STAR Products Energy Savings and Budget

Annual ENERGY STAR Products		
	2019 Original	2019 Update
Electric		
Budget	4,921,565	4,695,263
kWh savings	12,598,436	12,968,469
kW reduction	1,584	1,585
MMBtu savings	3,515	3,475
Electric participants	175,569	183,891
Natural gas		
Budget	1,501,137	1,240,237
MMBtu savings	19,100	16,022
Gas participants	2,327	1,972
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBTu = million British thermal units		

Recent or Planned Evaluations

The Cadmus process and impact evaluation of the ENERGY STAR Products program began in December 2017 but was not complete in time for incorporation into the 2019 Update Plan. Final results are expected in the Fall of 2018. As noted in the 2018-2020 Plan, final evaluations must be completed two months prior to the date the Plan filing is due in order for results to be incorporated. Given this, the EM&V Working Group reached consensus on continuing with the savings assumptions included in the original 2018-2020 Plan for 2019 and considering the study results for incorporation in the 2020 Plan Update.

3.5 Home Energy Report (“HER”) Program

Program Changes

Eversource plans to leverage the results of tests conducted in its MA and CT territories to optimize its HER programs in New Hampshire. Randomized control trials gauged the impacts of modifying report language (e.g., using the term “similar homes” instead of “neighbors”), and alternative representation of comparison data in order to educate and motivate customers to take action.

The Liberty Home Energy Report program remains as described in the 2018-2020 Plan.

Due to unforeseen delays in launching its behavioral program, Unitil expects to send out the first paper HER reports to customers in the fourth quarter of 2018. Costs and savings for 2019 have been updated to reflect the number and usage of participants in the treatment pool, as well as the later than anticipated start of the program.

Program Budget and Goals

Table 3.7: Home Energy Reports Energy Savings and Budget

Annual Home Energy Reports		
	2019 Original	2019 Update
Electric		
Budget	1,190,617	1,143,866
kWh savings	7,486,587	7,518,600
kW reduction	609	619
MMBtu savings	0	0
Electric participants	147,000	142,800
Natural gas		
Budget	351,064	352,520
MMBtu savings	10,270	10,636
Gas participants	48,000	49,600
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBtu = million British thermal units		

3.6 Customer Engagement Platform

Program Changes

Eversource's Customer Engagement Platform ("CEP") has a number of enhancements scheduled for 2019 including:

- Incorporation of kW demand data (Commercial and Enterprise)
- Incorporation of interval data for Commercial customers wherever applicable (currently interval data is only available in the Enterprise module)
- Solar production interval data integration with CEP
- Additional integration with the behavior program

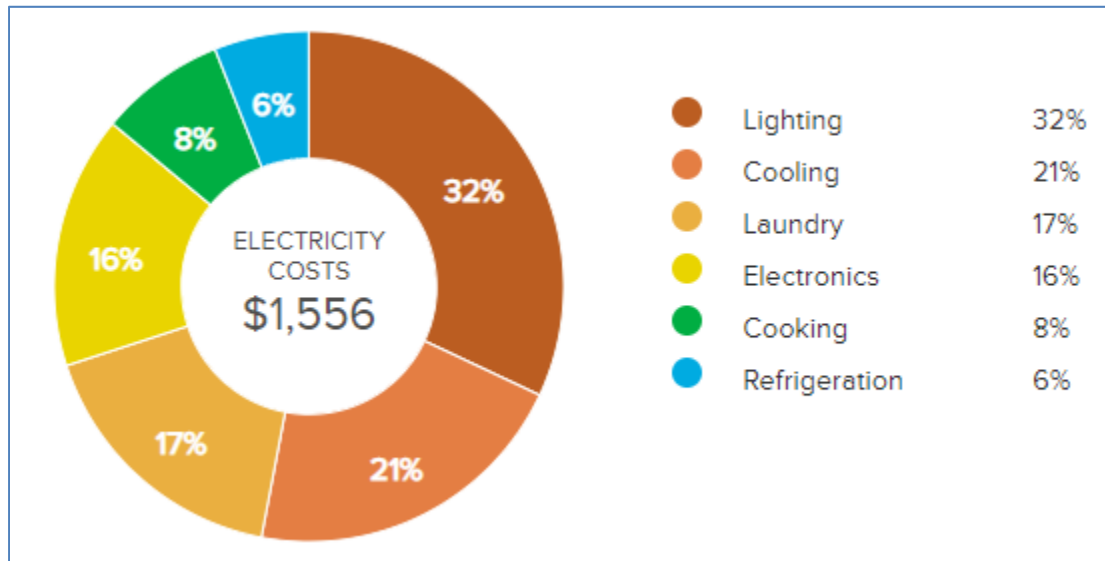
Marketing & Outreach Updates

The following items are in process to increase marketing and usage of CEP:

- Implementation of Ex Machina, a machine learning tool that helps Eversource to determine the most appropriate message for targeted customers and further increase energy efficiency program participation. This tool is currently available in a testing environment and will be implemented in late 2018.

- In order to track customers' footprint within CEP, a tool called Google Tag Manager ("GTM") is currently in testing and will be available in late 2018.
- Additionally, to increase usage of CEP, Eversource is working to embed various CEP charts and graphs directly into the customers' account page on Eversource.com. For example, the CEP disaggregation wheel, which is a tool within CEP for analyzing and displaying customer's usage break-down, will be integrated with Eversource.com in 2018. This integration is intended to drive more traffic to CEP.

Figure 3.8: Customer Engagement Platform – Disaggregation Wheel Example



Budget

Table 3.9: EVERSOURCE Customer Engagement Platform Budget

Customer Engagement Platform		
	2019 Original (\$)	2019 Update (\$)
Total	616,720	529,692

4.0 NHTSaves Commercial and Industrial Program Changes

4.1 Large Business, Small Business and Municipal Programs

Program Changes

The Large Business, Small Business and Municipal Programs have similar structures that provide prescriptive incentives (i.e., applied based on average costs and savings) and custom incentives (based on the specific site conditions). These incentives reduce the customers' up-front costs for high-efficiency equipment for retrofit and new construction projects. The program design for all three customer segments remains as detailed in the 2018-2020 Plan.

The utilities began exploring a point-of-sale approach at the distributor level for LED lighting in 2018. The distributor point-of-sale approach allows lighting distributors to sell LED products to Large, Small and Municipal customers with the incentive applied to the price. The point of sale approach streamlines the rebate transaction for customers, as they receive the rebate through discounted pricing without the need to fill out paperwork or submit a rebate application to the utility or vendor. The electric utilities will continue exploring this model with other technologies in 2019. The gas utilities deployed this approach in 2017 for water heaters and will explore adding heating equipment in 2019.

The NH Utilities continue to pursue avenues to motivate business and municipal customers to undertake more comprehensive energy efficiency projects, including those with longer pay-back periods. The utilities are encouraging energy efficiency contractors to expand their portfolio of measures. One effort includes having direct install vendors streamline the installation of more comprehensive measures for midsize business customers, those that do not qualify for the Small Business program due to their average monthly peak demand being higher than 200 kW but are not the highest users. The utilities continue to work with distributors, installation contractors and direct install vendors to recommend and install comprehensive energy efficiency projects.

Program Budget and Goals

TABLE 4.1: Large Business Energy Solutions Energy Savings and Budgets

Annual Large Business Energy Solutions		
	2019 Original	2019 Update
Electric		
Budget	12,271,495	11,844,120
kWh savings	54,717,623	54,536,857
kW reduction	5,998	5,982
Electric participants	694	750
Natural gas		
Budget	2,798,338	2,923,338
MMBTu savings	75,197	82,013
Gas participants	181	166
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBTu = million British thermal units		

TABLE 4.2: Small Business Energy Solutions Energy Savings and Budgets

Annual Small Business Energy Solutions		
	2019 Original	2019 Update
Electric		
Budget	7,805,041	7,251,749
kWh savings	21,283,705	20,463,593
kW reduction	3,018	2,317
Electric participants	1,014	1,008
Natural gas		
Budget	2,112,527	1,742,527
MMBTu savings	47,437	40,033
Gas participants	1,154	1,088
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBTu = million British thermal units		

TABLE 4.3: Municipal Energy Solutions Energy Saving and Budgets

Annual Municipal Energy Solutions		
	2019 Original	2019 Update
Electric		
Budget	2,000,000	2,000,271
kWh savings	4,486,133	4,426,911
kW reduction	346	235
MMBtu savings	3,904	3,964
Electric participants	133	107
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBtu = million British thermal units		

Recent or Planned Evaluations

An Impact Evaluation for the lighting measures within the Small Business and Municipal Programs was completed by the third-party evaluator DNV-GL in June 2018. Updated realization rates and coincidence factors from the study results have been incorporated into the benefit cost model for 2019. A Non-Lighting Measure Impact and Process Evaluation for the Small Business and Municipal Programs began in 2018 with the third-party evaluator Cadmus, which is scheduled for completion in the third quarter of 2019.

4.2 Energy Rewards Request for Proposals (“RFP”)

Program Objective

The program design for the Eversource Energy Rewards RFP remains as described in the 2018-2020 Plan.

Program Budget and Goals

Table 4.4: Energy Rewards Energy Savings and Budgets

Annual Energy Rewards RFP Program		
	2019 Original	2019 Update
Electric		
Budget	1,263,185	1,195,561
kWh savings	4,205,420	4,205,420
kW reduction	714	714
Electric participants	44	44
Note: kWh = kilowatt-hours; kW = kilowatt, reflecting reduction during ISO-NE summer on-peak hours; MMBtu = million British thermal units		

5.0 Marketing

The overall strategy and objectives for Marketing remain as outlined in the 2018-2020 Plan. During 2018, the NHSaves website was redesigned with improvements to navigation that makes it easier for customers and partners to find the information that they are looking for. The website was re-launched in April. Development of phase one of the fully integrated umbrella marketing campaign began during the third quarter of 2018. Overarching objectives include:

- Increasing customer awareness of energy efficiency
- Encouraging and facilitating participation in energy efficiency programs
- Fostering behavior changes
- Identifying customer values related to energy efficiency and developing tactics to bridge the gap between awareness and action
- Outlining the benefits of energy efficiency and the value of going beyond simple actions to deeper savings
- Create a more streamlined customer experience and build trust

The campaign will launch during the fourth quarter of 2018 and continue into 2019. The campaign will focus on deploying engaging content through traditional, digital and social activities. As part of the campaign, the NHSaves logo will be updated.

A market assessment evaluation study was launched in 2018 and is being conducted by Navigant Consulting. The primary goal of the study is to gather information to better understand and characterize New Hampshire residents, businesses and municipalities in regards to energy efficiency, which will help inform the development, implementation and marketing of the New Hampshire energy efficiency programs.

Specific study objectives include:

- 1) Assess overall knowledge and awareness of energy efficiency
- 2) Identify general attitudes, perceptions and behaviors concerning energy efficiency
- 3) Develop a deeper understanding of the drivers of energy efficiency participation and the barriers that impede or prevent participation
- 4) Identify the means for most effectively communicating with customers and different customer segments
- 5) Establish a benchmark awareness level of the New Hampshire utilities' statewide energy efficiency program brand, NHSaves®.

The final report should be completed by the end of 2018 and the utilities will leverage this research to inform its specific marketing campaign strategies in 2019.

6.0 NHTSaves Financing

6.1 Residential Financing Changes

On-Bill Offerings

In 2018 NHEC and Unitil Electric increased their on-bill offerings for residential financing from a maximum of \$2,000 to a maximum of \$4,000. The new level will remain in effect in 2019.

Liberty Gas and Unitil Gas will offer a new on-bill financing option for natural gas customers in 2019. On-bill loans will be available for Home Performance program customers to help cover their portion of a weatherization project up to \$4,000. Loans larger than \$4,000 will continue to be available through the third-party financing option as described in the 2018-2020 Plan.

Expanded Accessibility for Moderate Income Customers

The NH Utilities have explored options for expanding accessibility to financing for moderate income customers during 2018. These options include: an approach based on the VT Heat Saver Loan as described in the 2018-2020 Plan, a partnership with the Capital Good Fund utilized by National Grid in MA and RI as well as utilities in NY, and a rebate-focused Moderate Income program offering utilized in MA. Based on this review, the NH Utilities intend to re-focus on creating a 0% Moderate Income offering with existing third-party lenders as described in the 2018-2020 Plan. Items to be finalized in the fall of 2018 and early 2019 include lender interest rates, underwriting standards, process for income verification by the lenders and whether to utilize a virtual loan loss reserve mechanism.

The expansion of 0% on-bill loans for NHEC, Unitil Electric, Liberty Gas and Unitil Gas will also provide additional loan access to moderate income customers. While the utilities do not request or verify income levels, (on-bill approval for these four utilities is based on bill payment history), it is logical to assume that some moderate income customers have and will continue to utilize the on-bill offering. The utilities will survey customers in 2020 to determine income level distribution of loans initiated in 2019 in order to determine at what level moderate income customers are participating.

6.2 Commercial and Municipal Financing Changes

On-Bill Financing for Municipal Customers

The NH Electric Utilities will continue to offer loan options for municipal customers as described in the 2018-2020 Plan, including on-bill offerings for Liberty and Unitil and Smart Start for

Eversource and NHEC.

The Natural Gas Utilities will create a new on-bill offering for municipal customers, matching their existing offerings for electric customers.

On-Bill Financing for Commercial Customers

The NH Utilities will expand the on-bill offerings for commercial and industrial customers in 2019. Eversource, Liberty Gas and Unitil Gas will create a new on-bill mechanism for business customers. Liberty Electric and Unitil Electric will utilize their existing on-bill offerings for business customers. NHEC will continue to offer Smart Start to its commercial members during 2019.

Depending on program and market needs, the utilities may focus the on-bill offering on those customers that are pursuing comprehensive efficiency measures, or otherwise focus the offering to meet customer needs. Availability of this offering and maximum loan amounts will depend upon available capital for the on-bill loans and may differ between utilities.

Capital for On-Bill Loan Offerings

Eversource: For the Commercial on-bill offering Eversource will utilize its existing RGGI Revolving Loan Fund. Originally capitalized at \$690,000, the RGGI Revolving Loan Fund is currently utilized for residential loans of \$2,000 or less. As of the 2018 Second Quarter Report⁹ the Fund has an available balance of \$482,400. Utilizing the RGGI Revolving Loan Fund for commercial loans as well as residential will allow Eversource to create a new option for commercial customers while maintaining the existing residential offering.

Liberty Electric: Liberty will utilize \$150,000 of its \$163,024 carry forward funds from 2017 to add to its balance for the On-Bill Financing program. As of the 2018 Second Quarter Report, the program has an available balance of \$132,421. Adding \$150,000 for loans will allow Liberty to serve more municipal and small commercial customers through the program.

Liberty Gas: Liberty will utilize \$875,000 of its \$2,448,333 carry forward funds to introduce an On-Bill Financing program offering for residential, municipal and commercial customers. Program terms for the On-Bill Financing offering will parallel that of the existing On-Bill Financing offerings for Liberty Electric customers, helping to create consistency between customer fuel types.

⁹ <http://www.puc.state.nh.us/Electric/NH%20EnergyEfficiencyPrograms/17-136/17-136-CORE-Energy-Efficiency-Programs-2nd-Quarter-Report.pdf>

Unitil Electric: In order to serve the increasing demand for low cost financing from our commercial customers, and drive interest in energy efficiency programs to meet the increased energy saving goals under the EERS, Unitil will be adding \$375,000 to its existing commercial and industrial on-bill financing program in 2019. This will raise the total pool of funding in the Commercial On-Bill financing program to approximately \$832k. The current balance of available funds, before the injection of an additional \$375,000, is approximately \$160,000. The focus of activity will be on small and medium businesses without access to low-cost capital, for which a zero-percent interest rate loan can overcome the upfront cost barrier that the installation of high efficiency equipment or controls might present. The commercial loans will be made available to those customers needing smaller loans that are not available from the CDFA Clean Energy Fund.

Unitil Gas: Unitil will seed its on-bill financing program for the first time in 2019 with \$30,000 for residential customers undertaking weatherization and \$53,000 for commercial and industrial customers investing in energy efficiency projects. Residential loans will be offered up to \$4,000 to offset the customer costs associated with weatherization. This will provide a similar offering and experience for gas customers that our electric customers have had access to through the electric on-bill financing offer, providing a seamless experience for our customers as well as the weatherization contractors that serve them. The commercial loans will be made available to those customers needing smaller loans that are not available from the CDFA Clean Energy Fund.

Table 6.1: 2019 Capital for On-Bill Financing

Company	Source of 2019 Funding	2019 new funding (\$), or change	Total Capital Pool for On-Bill Financing (\$)
Electric			
Eversource	RGGI Revolving Loan Fund	Adjust fund for use in Residential or C&I	690,000
Liberty	2017 Carry Forward	150,000	431,345
Unitil	2017 Carry Forward	375,000	832,000
Total		525,000	1,953,345
Natural Gas			
Liberty	2017 Carry Forward	875,000	875,000
Northern	2019 LDAC	83,000	83,000
Total		958,000	958,000

Community Development Finance Authority Partnership

The NH Utilities will continue to partner with the Community Development Finance Authority (“CDFA”) to make loan offerings available for business, non-profit, and municipal customers. CDFA, through its Clean Energy Fund, offers loans to business, non-profit and municipal customers at low interest rates. There is natural alignment between the goals of the NHSaves programs and the goals of the CDFA Clean Energy Fund with regard to facilitating energy efficiency projects in the state. Typically, the smallest loan amount offered by CDFA is \$30,000. If there is a gap between the maximum utility on-bill loan offering and CDFA’s typical loan offering, the NH Utilities and CDFA will work to develop a partnership to fill that gap and create a loan option for customers.

For loans greater than \$30,000, municipal, commercial and industrial customers can access the existing CDFA Clean Energy Fund loan products. The NH Utilities will work with CDFA to ensure customers and contractors are aware of the loan options. In addition to covering the customer co-pays for NHSaves projects, loans from CDFA can also help to finance additional measures, such as fuel neutral weatherization, renewable energy systems, and health and safety measures related to the energy project.

6.3 Additional Program Funding Sources

NHSaves Partnership Initiative

As described in the 2018-2020 Plan, the NH Utilities have a track record of accessing additional funding to supplement or enhance the NHSaves energy efficiency programs. This funding has typically come from state or federal funding sources, which the NH Utilities will continue to pursue when it is available. In addition, the NH Utilities will develop the NHSaves Partnership Initiative in order to pursue and access untapped foundation funding for energy efficiency.

The NH Utilities will work in 2019 to identify potential foundation funding sources that align with the goals of the energy efficiency programs, and also to identify non-profit partner(s) whose mission(s) align with one or more of the goals of the energy efficiency programs. Once potential resources and partners have been identified, the NH Utilities will form the initial partnership(s) and work with the non-profit partner(s) to apply for identified foundation or grant funding.



The partnership(s) will focus on particular areas of need and interest as determined by the NH Utilities and the non-profit partner(s). The chosen area of focus will ideally have strong alignment with potential foundation funding sources, support the mission of the non-profit partner and further the energy efficiency goals of the NHSaves programs. The NH Utilities intend to hire a consultant to assist with identifying funding sources, identifying areas of alignment with potential non-profit partners and submitting grant applications. Successful NHSaves Partnerships will supplement, rather than replace, existing NHSaves programs and funding.

7.0 Planning Elements

7.1 Benefit – Cost Testing

The NH Utilities use a Total Resource Cost (“TRC”) test to screen programs for cost-effectiveness. The TRC test estimates benefits via the net present value of energy and non-energy impacts over the life of program measures (numerator) and compares that to the total costs, defined as the net present value of program costs plus out-of-pocket added costs that customers pay to install energy efficiency measures versus a standard efficiency measure (denominator). Thus, a program or measure with a benefit/cost ratio of 1.0 or greater is cost effective, which is to say that there are more benefits than costs over the life of the measure(s). Further, the use of a common set of avoided energy supply costs by the NH Utilities ensures that the value of programs and services are considered on an equal basis for all New Hampshire customers, preserving equity throughout the state.

The NH Utilities strive to ensure each individual program exceeds a benefit cost ratio of 1.0, with exceptions for income-eligible, education or start-up programs such as the initial years of a new program. Each sector (Residential and Commercial) is designed to meet a benefit cost ratio of 1.0 or greater.

For the 2019 Update, the New Hampshire TRC test uses a nominal discount rate of 4.75 percent¹⁰ and a general inflation rate of 1.86 percent¹¹ within the TRC test to estimate future benefits resulting in a real discount rate of 2.84 percent¹² used for benefit calculations.

For the purposes of estimating the benefits resulting from the energy efficiency programs, the New England utilities reference a regional avoided energy supply cost study in benefit-cost modelling. The *Avoided Energy Supply Components in New England: 2018 Report* (“AESC 2018”) was completed in June 2018¹³ and includes avoided costs associated with electricity, natural gas, other fossil fuels and wood for each of the New England states. In addition, the report provides estimates of Demand Reduction Induced Price Effect (“DRIPE”), embedded and non-embedded environmental costs associated with emissions of CO₂ and NO_x, avoided costs of

¹⁰Based on the June 2018 Prime Rate in accordance with the Final Energy Efficiency Group Report, dated July 6, 1999 in DR 96-150. Retrieved from <http://www.moneycafe.com/personal-finance/prime-rate/>

¹¹Based on the inflation rate from Q1 2017 to Q1 2018, Retrieved from <https://fred.stlouisfed.org/data/GDPDEF.txt>

¹² Real Discount Rate = $[(1 + \text{Nominal Discount Rate}) / (1 + \text{Inflation Rate})] - 1$

¹³Synapse Energy Economics, Resource Insight, Les Deman Consulting, North Side Energy, Sustainable Energy Advantage. (2018, June 1). “Avoided Energy Supply Components in New England: 2018 Report.” Retrieved from <http://www.synapse-energy.com/sites/default/files/AESC-2018-17-080-June-Release.pdf>

transmission and the value of reliability. The AESC study is undertaken by a competitively procured, independent consultant whose work is supervised by a Study Group comprised of regulators, utility staff and energy efficiency consultants from throughout New England. The final work product serves as the source of most avoided costs for the calculation of energy efficiency program benefits for New England states.

Updates to Current Assumptions

The benefit cost model for the New Hampshire energy efficiency programs in 2019 includes updated values from AESC 2018 for the avoided energy supply costs that were included in the 2018-2020 Plan. Notable changes compared to the AESC 2015 estimated avoided costs, which were utilized in the original NH Energy Efficiency 2018-2020 Plan, include a decrease in the value of electric capacity benefits, a non-zero estimate of capacity DRIPE, as well as decreases in the value of winter and summer peak and off-peak electricity benefits. AESC 2018 updates include an increase in estimated benefits for both electric and natural gas DRIPE as well as increased value of fuel oil, propane and wood.

In addition to updating previous values, AESC 2018 included several new elements that are incorporated into the benefit cost model for 2019 and are briefly described below. A full discussion of these benefits is included in the study itself, which can be referenced on the [Synapse website¹⁴](#).

Pooled Transmission Facilities (PTF)

AESC 2018 includes calculation of benefits related to avoided costs for Pool Transmission Facilities (“PTF”) which all electric load in New England pays for. AESC 2018 estimated this value to be \$94/Kw-year. Because summer peak load dominates ISO New England’s transmission planning, this value is applied to the reduction in summer peak load.

In addition to avoided PTF costs, AESC 2018 explains that local distribution companies may also have avoided costs related to *local* transmission investments. Prior to 2019, the NH Utilities have included in the TRC an estimate of avoided transmission benefits originally calculated in 2014. That earlier calculation likely included some elements of PTF and some elements related to local transmission. Because AESC 2018 includes a much more recent analysis of PTF, the NH Utilities have applied this value instead of the previous estimate of transmission benefits. At this time the NH Utilities do not have additional benefits related to avoided local transmission in the benefit cost model. If benefits specifically related to avoided local transmission are developed at a future date, they may be included in future Plan updates.

¹⁴Synapse Energy Economics, AESC 2018 Materials. Retrieved from <http://www.synapse-energy.com/project/aesc-2018-materials>

Non-Embedded Environmental Benefits for Fossil Fuel

As described in the AESC 2018, some environmental costs are “embedded” in the price of the energy due to regulations that require expenditures by generators or other energy suppliers to reduce emissions (e.g., the Regional Greenhouse Gas Initiative or (“RGGI”). “Non-embedded” environmental costs are externalities associated with energy production and supply that are not directly reflected in energy prices. AESC 2018 electric energy avoided costs include embedded avoided emissions costs. However, there are not comparable embedded emissions values associated with fossil fuels. In order to treat electric and fossil fuel emissions consistently in benefit-cost screening, the NH 2019 Update incorporates comparable fossil fuel avoided emissions with a conservative calculation based on the AESC 2018 forecast of RGGI values and standard emissions output factors for those fuels.¹⁵

Oil DRIPE

AESC 2018 for the first time calculated a value for Oil DRIPE, which has been included in the New Hampshire benefit cost model for 2019. The New Hampshire intrastate (“zone-on-zone”) value for Oil DRIPE is approximately \$0.01 per MMBtu which translate to a negligible increase in the avoided cost of oil.

7.2 Low Income Non-Energy Impacts (NEI)

Based on input from multiple stakeholders, discussions within the Benefit-Cost Working Group and the preponderance of evidence from other states, the NH Utilities increased the NEI adder for the Home Energy Assistance program for income-eligible customers from 10 percent to 20 percent, to more fully reflect the substantial benefits to participants and utilities resulting from low-income programs. This adder will be applied to the value of all electric, gas, and other fuel benefits for HEA. Historically, New Hampshire’s TRC test has included all energy efficiency program and participant costs, but not all benefits.¹⁶ This adder will help ensure balanced, symmetrical treatment of costs and benefits of low-income programs, and is a reasonable proxy to reflect the significant benefits unique to these programs for 2019 while New Hampshire-specific non-energy impacts are being studied by third party evaluators.

There is substantial evidence from research both nationally and in neighboring states regarding the substantial non-energy benefits low-income energy efficiency programs provide to customers as well as the utilities themselves, above and beyond those provided by other efficiency programs. The average low-income household spends three times more of its income

¹⁵ AESC 2018, Table 149, page 369.

¹⁶ The proposed low-income adder would be in addition to the portfolio-wide 10 percent NEI adder adopted in the 2018-2020 Plan in DE 17-136.

on energy bills than non-low-income households,¹⁷ and these high energy burdens are due in part to inefficient housing stock, appliances, and heating and cooling systems.¹⁸ High home energy costs result in a variety of negative impacts for low-income households. For example, according to the National Energy Assistance Survey, unaffordable energy costs resulted in nearly a quarter of households surveyed going without food for at least one day, and about a third of households using their kitchen stove or oven to provide heat.¹⁹ The survey also found that nearly a quarter of respondents were unable to use their main source of heat in the prior year because, for example, they could not pay for fuel delivery, or their heating system was broken and they could not afford to fix it. The greater the energy burdens that these customers face, the greater the potential benefits associated with the low-income energy efficiency programs that serve them.

Over 20 states plus Washington D.C. recognize the additional benefits of low-income programs in their cost effectiveness tests. For example, Massachusetts, Connecticut, and Rhode Island use measured NEI values from evaluations²⁰, and states including Colorado, Idaho, New Mexico, and Vermont, as well as Washington, D.C. use low-income NEI adders to account for participant benefits associated with these programs.²¹ In states using measured NEIs, the values for particular NEIs are greater for low-income participants than for non-low-income participants. For example, Massachusetts' current NEI values for improved health, safety, comfort, and other

¹⁷Census Bureau, *American Housing Survey 2011 Public Use File*, www.census.gov/programs-surveys/ahs/data/2011/ahs-national-and-metropolitan-pufmicrodata.html, and *American Housing Survey 2013 Metropolitan Public Use File*, www.census.gov/programssurveys/ahs/data/2013/ahs-2013-public-use-file--puf-/2013-ahs-metropolitan-puf-microdata.html; Dreho, A., and L. Ross. 2016. *Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low-Income and Underserved Communities*. Washington, DC: ACEEE.

¹⁸Cluett, R., J. Amann, and S. Ou. 2016. *Building Better Energy Efficiency Programs for Low-Income Households*. Washington, DC: ACEEE.

¹⁹National Energy Assistance Directors' Association, *2011 National Energy Assistance Survey, Final Report*, November 2011. Findings were based on 1,768 interviews of Low-Income Home Energy Assistance Program recipients across 13 states, with a response rate of 56 percent. <http://www.appriseinc.org/reports/Final%20NEADA%202011%20Report.pdf>.

²⁰ See, for example, Three³ and NMR, *Massachusetts Special & Cross-cutting Research: Low-Income Single Family Health & Safety Related Non Energy Impacts (NEIs) Study*, August 2016, available at <http://ma-eeac.org/wordpress/wp-content/uploads/Low-Income-Single-Family-Health-and-Safety-Related-NonEnergy-Impacts-Study.pdf>; NMR, *Project R4 HES/HES-IE Process Evaluation and R31 Real-time Research*, April 2016, available at https://www.energizect.com/sites/default/files/R4_HES-HESIE%20Process%20Evaluation,%20Final%20Report_4.13.16.pdf.

²¹ACEEE, *Guidelines for Low Income Energy Efficiency Programs*, June 2017. <https://database.aceee.org/state/guidelines-low-income-programs>.

benefits from single-family weatherization measures are \$67 for non-low-income participants and \$558 for low-income participants.

In addition to participant NEIs, there is substantial evidence of benefits from reduced gas and electric utility costs associated with low-income programs. For example, the Maryland Public Service Commission reviewed ten studies of utility arrearages, focusing on the most comprehensive and recent studies potentially applicable to Maryland.²² Based on this review, the Commission determined that an NEI of 2 percent of kWh savings should be applied to low-income programs to reflect lower utility costs associated with reduced arrearages. Similarly, Massachusetts applies NEI values of over \$7.00 per low-income participant to account for reduced arrearages, bad debt write-offs, terminations and reconnections, customer notices, calls and collections.

The low-income NEI values from neighboring states provide points of comparison with the NH Utilities' proposed 10 percent adder:

- Vermont's cost effectiveness test includes a 15 percent low-income NEI adder, which the Public Service Board determined was a conservative estimate of the unique benefits of low-income programs.²³
- Based on Massachusetts-specific evaluations, Massachusetts utilities reported total NEIs associated with low-income residential programs in 2016 equivalent to 80.6 percent of the programs' electric, gas, and other fuel benefits.
- Based on Connecticut-specific evaluations, Connecticut utilities reported total NEIs associated with low-income residential programs in 2017 equivalent to 88.2 percent of the programs' electric, gas, and other fuel benefits.

The New Hampshire EM&V Working Group initiated an evaluation of the Home Energy Assistance program in 2018 that will include primary research on low-income NEIs associated with the New Hampshire programs. When complete, this evaluation will provide quantified, New Hampshire-specific values for low-income NEIs that will inform the 2020 Plan Update. The NEIs being considered for this study include, but are not limited to, improvements in health and safety, changes in hardship faced by participants due to bill savings, reduced missed days of employment and school, reduced arrearages, reduced bad-debt write-offs and reduced reliance

²²Itron, Inc. *Development and Application of Select Non-Energy Benefits for the EmPOWER Maryland Energy Efficiency Programs*, August 2014, available at https://rpsec.energy.gov/sites/default/files/publication/OC-1411_NonEnergyBenefitsReport-Itron-022415.pdf.

²³This adder is in addition to a 15 percent portfolio-wide adder incorporated in Vermont's cost effectiveness test to account for the hard-to-quantify benefits that factor into participant decision-making.

on utility assistance programs. The study is planned for completion in Spring of 2019

7.3 Benefit Cost Tables

The following tables depict overall benefit cost ratios for each program from the original Plan and the 2019 Update.

Table 7.1: Commercial Benefit-Cost Ratios

Commercial Programs Benefit-Cost Results		
	2019 Original	2019 Update
Electric		
Large Business Energy Solutions	2.36	2.23
Small Business Energy Solutions	1.81	1.61
Municipal Energy Solutions	1.43	1.20
Energy Rewards RFP Program	1.77	1.78
Natural gas		
Large Business Energy Solutions	1.72	1.80
Small Business Energy Solutions	1.74	1.72

Table 7.2: Residential Benefit-Cost Ratios

Residential Programs Benefit-Cost Results		
	2019 Original	2019 Update
Electric		
Home Energy Assistance Program	1.43	1.80
ENERGY STAR Homes	2.09	2.79
Home Performance with ENERGY STAR	1.82	2.21
ENERGY STAR Products	1.77	1.80
Home Energy Reports	1.44	1.64
Natural gas		
Home Energy Assistance Program	1.16	1.15
ENERGY STAR Homes	1.42	1.21
Home Performance with ENERGY STAR	1.31	1.34
ENERGY STAR Products	1.15	1.15
Home Energy Reports	1.20	1.03

7.4 Lost Base Revenue (“LBR”) Calculation

In accordance with Commission Order No. 26,095 in Docket DE 17-136, the LBR Working Group worked throughout 2018 to consider the general impact of customer peak and the general impact of demand charge ratchets on the kW values to be used in calculating LBR for the Commercial and Industrial sectors for upgrades installed in 2019 and thereafter. This process included several iterations and revisions to LBR calculations based on input from Commission Staff, the NH Office of Consumer Advocate, and other stakeholders, and resulted in a final report reflecting a largely consensus document.²⁴ The NH Utilities will calculate LBR as described in the Working Group report, including the derivation of kWh savings as detailed in Section III, the derivation of kW savings as detailed in Section IV, and the 2019-2020 LBR savings calculation templates for each utility included in Appendix A of the report.

7.5 Capacity Demand Management

In New Hampshire, the measures included in the energy efficiency programs achieve significant reductions in demand (kW), as well as achieving reductions in kWh. The 2019 measures will result in reduction of 12.1 MW during the ISO-NE summer on-peak hours and 15.5 MW during the ISO-NE winter on-peak hours. Demand reductions achieved through traditional energy efficiency measures are sometimes referred to as “passive” demand reduction.

“Active” demand reduction more typically refers to measures or initiatives that are designed specifically to reduce kW, rather than kWh. The NH Utilities have been monitoring and participating in a number of activities and discussions related to active demand management during 2018 including; review of energy efficiency program demonstration projects in other New England states and project proposals submitted outside of the energy efficiency programs. Even in those states, such as Massachusetts, that are pursuing active demand reduction initiatives, the overwhelming majority of kW reduction achieved still comes as passive demand reduction from traditional energy efficiency measures.

Demonstrations in other States: There are several active demand reduction technologies being tested as part of energy efficiency program demonstrations that the NH Utilities have been closely monitoring. The following list includes demonstrations that the NH Utilities have been reviewing and their current status:

- Wireless Thermostats for Small Business Customers:

²⁴ See https://www.puc.nh.gov/EESE%20Board/EERS_WG/2018-08-29-2018wg-report-on-lbr.doc for the August 29, 2018 working group report, and https://www.puc.nh.gov/EESE%20Board/EERS_Working_Groups.html#lostbaserevenues for agendas and other supporting documents developed and reviewed by the Working Group.

- The Massachusetts Program Administrators (“PA’s”) are working with a vendor to install Wi-Fi thermostats at small businesses. Customers under certain load conditions will have their thermostat temperatures raised or turned off for several hours (2-4 hours per event). The goal of the Wi-Fi thermostat project is to reduce monthly demand peaks and reduce load on the grid which would lower customer’s bills, help the distribution system, as well as help manage the customer’s ICAP tag.
- Control System Software:
 - The PA’s are working with an energy management platform vendor to test the ability to manage multiple demand response and demand management vendors under one utility driven software/web-based program. The goal is to have one vendor control the dispatching of customers from all of the various demand resources. Multiple different resources are currently being controlled by the software system.
- Software and controls:
 - The PA’s are working with two vendors that provide different approaches. The software has been installed at two sites and another fourteen sites are in the sales pipeline. The aim of these projects is to reduce monthly demand peaks that would lower customer’s bills, as well as help manage the ICAP tag for the following year.
- Demand Response:
 - The PA’s are working with a large Demand Response vendor to bring customers that currently are enrolled in an ISO-NE DR program into a demonstration project that would provide customers an added revenue stream by enrolling in our program that would include additional hours to respond to a called event, as well as trigger events for ICAP notification and Winter price responsive curtailment.
- Battery Storage (Lithium Ion):
 - The MA battery storage demonstration includes behind-the-meter batteries at commercial and industrial customer facilities. Eversource is working with two battery storage vendors that will provide different dispatch approaches: Daily Dispatch and Targeted Dispatch. Eversource has two sites installed and another ten sites in the sales pipeline. The daily dispatch strategy will cost-effectively reduce year-round peak loads. In comparison, the targeted dispatch strategy will focus on reducing four specific types of demand peaks: Summer ICAP, Summer Utility, Winter Price, and Monthly Customer Peaks.
- Thermal Energy Storage:
 - There are two separate technologies being evaluated via two, separate vendor contracts.
 - Air conditioning ice storage systems with energy management software to create ice at night that will then draw on that thermal mass during the day to reduce AC peak loads. Nineteen (19) target sites have been identified with equipment installed at one facility to date. The goal of

this measure is to cost-effectively reduce Summer air conditioning peak loads.

- Phase change material installed in refrigerated/freezer spaces with controls on a facility's HVAC system in order to cost-effectively reduce year-round peak loads in accordance with a peak demand reduction schedule. Eleven (11) customer sites have been targeted with equipment installed at one facility to date.

In addition to learning from the demonstrations happening in other states, the electric utilities have the opportunity to leverage vendor relationships that deliver demand reduction services. Eversource has recently issued a multi-state RFP to bring together a set of vendors that can provide a holistic set of services for demand management. These include C&I curtailment service providers, residential demand response management systems, electric vehicle load management and Distributed Energy Resource Management Systems ("DERMS"). With this vendor pool in place, the New Hampshire programs will be well positioned to begin implementing demand reduction efforts when ready.

The demand reduction activities that the NH Utilities are monitoring in other states are included as part of the energy efficiency programs in those states. While each state has its own unique policy directives in this area, there are a number of overarching elements that can be part of the decision to include demand reduction efforts with energy efficiency. Demand reduction aligns with energy efficiency goals related to helping customers to reduce their energy costs. It also aligns with the structure of measure and service offerings provided by EE, using existing outreach methods and channels. Additionally, demand reduction aligns with the broader goal of energy efficiency to use funds in a way that reduces costs to all customers, and it is administratively efficient to include the two efforts together in a single docket and suite of program offerings. Conversely, demand reduction efforts could reduce the amount of funding available for traditional energy efficiency efforts.

- **Additional Demand Reduction Activity in NH:** Several of the NH Utilities have demand reduction proposals currently under discussion in New Hampshire outside of energy efficiency.

Liberty Utilities has a proposal for a battery storage offering in DE 17-189, which is currently an open docket at the Commission. The program is designed to use behind-the-meter battery storage to reduce peak usage each month.

Eversource has included an alternative load control pilot as part of its Time of Use Rate Pilot proposal in DE 16-576. The proposal for that pilot program is still under discussion

with stakeholders and Commission Staff. Unitil has also made a Time of Use Rate program proposal to stakeholders and Commission Staff.

NHEC currently offers the Peak Days program which is designed to engage members in voluntarily reducing energy usage during periods of high electric demand. In April 2018, NHEC introduced an electric vehicle time of day rate, and is also conducting a limited residential battery storage pilot. NHEC also continues to operate its legacy space heat and water heater control programs.

During 2019 the NH Utilities will continue to learn from the demand reduction initiatives being conducted in other states and will also engage in the demand reduction discussions and activities that are ongoing in NH. The NH Utilities will work with colleagues, Commission Staff, and stakeholders to determine whether a demand reduction initiative will be included in the 2020 Update Plan and what form it will take if included.

7.6 DE 17-136 Working Groups

The Settlement Agreement in DE 17-136 created four Working Groups on specific topics.

- (1) A Performance Incentive (“PI”) Working Group to review potential performance incentive methodologies with the goal of promoting achievement of NH’s EERS goals, and making recommendations for implementation in the 2020 Plan update.
- (2) A Financing and Funding Working Group to research potential funding and financing mechanisms. If viable options are found, the Working Group shall work with the utilities to test procurement strategies and will make recommendations for incorporation in annual Plan Update filings and in the 2021-2023 Plan.
- (3) A Benefit/Cost Working Group to discuss elements and issues related to NH’s Benefit/Cost test as well as results from the 2018 Avoided Energy Supply Cost study, and will make recommendations for adjustments in future annual Plan Updates or three-year plans. The BC Working Group and the EM&V Working Group shall share information, especially with regard to NEIs and DRIPE.
- (4) A Lost Base Revenue Working Group to determine the appropriate kW values to be used for calculating Lost Base Revenues, and make recommendations for the 2019 Plan Update.

The four Working Groups have met a combined total of 27 times from January to July 2018. During these meetings the Working Groups have made progress, providing a forum for discussion and education on the identified topics. During the course of the 2018 meetings, it became clear that some areas of conversation cut across multiple Working Groups resulting in overlapping conversations in different meetings with slightly different attendees. Moving

forward and in 2019, the existing DE 17-136 Quarterly Meetings should serve as a venue to discuss cross-cutting topics.

Performance Incentive Working Group

Meetings focused on the review of PI methodologies and approaches used in NH and other jurisdictions through presentations and discussions. The utilities have developed a draft proposal for the consideration of the Working Group, which can serve as the basis for the remainder of the discussions. The Working Group should complete its review by the end of the first quarter of 2019, providing enough time for any recommendations to be considered for the 2020 plan.

Funding and Finance Working Group

Meetings focused on reviewing funding and finance mechanisms, existing utility offerings, goals for financing and funding within the EERS, loan offerings in other jurisdictions and by other state funding institutions. Lending partners and contractors were invited to provide additional perspective.

The utilities have incorporated modifications or expanded loan offerings and initiatives, which are discussed in more detail in Section 6 of the 2019 Update. These include on-bill small business and municipal loans, a moderate income offering and a partnership with CDFA. Contractor training and marketing materials will be developed and distributed. The utilities are also exploring a NHSaves Partnership Initiative in order to identify and pursue untapped foundation funding for energy efficiency.

Going forward, a quarterly meeting of this working group will be appropriate, to allow time for implementation and to review progress of the initiatives.

Benefit Cost Working Group

The scope of the discussions of the Working Group as determined at the first meeting included:

- Which Non-Energy Impacts (NEIs) to study, and when and how to include New Hampshire-specific, evidence-based NEIs into the annual update for 2020 and future plans.
- Adoption of an income-eligible adder separate from the 10% NEI adder.
- Whether a separate, evidence-based, income-eligible NEI study should be undertaken
- Should any adder adopted in this proceeding be extended through the 2020 program year until such time as the NEI studies are complete and the New Hampshire-specific NEI has been adopted or rejected by the Commission.
- Review Rest of Pool DRIPE to determine if any adjustments should be made to the benefit/cost test assumptions.

- Review results from the 2018 AESC study to determine if any adjustments should be made to the benefit/cost test assumptions.

The Working Group vetted the items in the scope over the six months through presentations by the utilities and other experts and through discussions. As an outcome of the working group meetings, the utilities received formal feedback from staff and parties that was incorporated into the 2019 update plan.

Two evaluation studies are currently in process that are addressing NEIs, a Crosscutting NEI evaluation and an evaluation of the HEA program that includes a Low Income NEI component. The Benefit Cost Working Group has provided input into the scope of the study. The 2018 Strategic Evaluation Plan (developed to guide the work of the EM&V Working group) was designed to incorporate a formalized process for input to evaluations, through the independent expert hired and supervised by the Commission and the representative of the EESE Board, who both represent the interests of stakeholders and the settling parties as members of the working group. It is specified that subsequent year plans will be developed collaboratively incorporating feedback from stakeholders. Final evaluation results will be presented in public meetings open to all stakeholders. In addition, it was agreed that the EM&V Working Group would provide regular updates at Quarterly Meetings and also to the EESE Board. Now that this process has been finalized, the EM&V working group is well positioned to effectively manage any remaining items while also minimizing duplication of effort. A final meeting will be held in September 2018.

Lost Base Revenue Working Group

The activity of the LBR Working Group was discussed in Section 7.4. This Working Group has completed its mission for the 2019 Plan Update and does not need to continue in 2019.

7.7 Stakeholder Process for 2021-2023 Plan

The NH Utilities will participate in a stakeholder process regarding the 2021-2023 Plan starting in the fall of 2019, as anticipated by the DE 17-136 Settlement Agreement. This process will include attending meetings of the EERS Committee of the EESE Board, and discussion with other stakeholders and the independent planning expert when hired by the Commission. During the fall of 2019 the stakeholder process should focus on setting goals for the 2021-2023 Plan, so that development of that Plan can begin in 2020. The NH Utilities look forward to the opportunity for continued discussion on moving the energy efficiency programs forward into the second Three-Year Plan under EERS.

8.0 Evaluation, Measurement and Verification (EM&V)

Evaluation, Measurement and Verification (“EM&V”) has been an integral component of the efficiency programs in New Hampshire since their inception. EM&V has many objectives, including verifying portfolio energy savings, estimating future energy savings of specific measures and behaviors, and identifying ways to improve program delivery and results. The 2018-2020 Plan established a formalized NH EM&V Working Group, consisting of Commission Staff members, independent EM&V consultants hired and supervised by the Commission, representatives of the Utilities, and a representative of the EESE Board. As agreed by the settling parties for the 2018-2020 Plan, the EM&V Working Group has worked expeditiously to build upon ongoing evaluation work and has transitioned to the new accelerated framework for 2018 as described in the Plan.²⁵

As the first task under this framework, the EM&V Working Group developed a multi-year Strategic Evaluation Plan (“SEP”) to identify evaluation work currently in process and the studies to be initiated in the coming program years. The SEP identified five priority studies to begin in early 2018, and three others to begin in later 2018 and 2019. Studies were prioritized based on several criteria, including the length of time since the most recent evaluation of a program, the relative contribution of program savings to the portfolio, the degree of innovation within the program or shifts in markets or technologies, and regulatory requirements or stakeholder interest. For example, two priority studies that include analysis of non-energy impacts (NEI) were prioritized in part to address stakeholder and regulatory interest in developing evidence-based, New Hampshire-specific NEIs to be applied to the TRC for the 2020 Plan Year.

The EM&V Working Group issued competitive solicitations and awarded contracts for five priority studies as follows:

Evaluation	Vendor	Estimated Date for Final Report
Home Energy Assistance Impact, Process, and Low-Income NEI Evaluation	Opinion Dynamics Corporation	Q1 2019
Home Performance with Energy Star Impact and Process Evaluation	Opinion Dynamics Corporation	Q1 2019

²⁵EM&V Working Group agendas, the evaluation recommendations tracking spreadsheet, and the 2018 Strategic Evaluation Plan are posted at https://www.puc.nh.gov/EESE%20Board/EERS_Working_Groups.html#em&v.

Non-Lighting Impact and Process Evaluation for Multiple C&I Programs	Cadmus	Q2 2019
Crosscutting Non-Energy Impacts Study (phase 1)	DNV-GL	Q4 2018
Energy Efficiency Market Assessment	Navigant	Q4 2018

In addition, the Strategic Evaluation Plan identified the following three efforts, to begin in late 2018—early 2019:

- Energy Efficiency Potential Study, to be conducted Q4 2018–Q4 2019
- Technical Reference Manual, to be developed in Q1 2019–Q1 2020
- Large Business Impact and Process Evaluation, to be conducted Q2 2019–Q2 2020

The Strategic Evaluation Plan will be updated in Q1 2019 to include scopes of work for these three efforts, scopes of work for primary research on NEIs as part of phase 2 of the Crosscutting Non-Energy Impacts Study, and other planned studies and activities to be determined by the EM&V Working Group.

In 2017 and 2018, independent third-party evaluators working on behalf of the EM&V Working Group completed evaluations of the ENERGY STAR Homes program, Small Business and Municipal lighting measures, and the ENERGY STAR Products program. In coordination with EM&V Working Group members, the utilities reviewed and implemented the studies’ recommendations as described in chapters 3.3 ENERGY STAR Homes, 3.4 ENERGY STAR Products, and 4.1 Large Business, Small Business, and Municipal Programs. The full list of specific recommendations and responses from the NH Utilities are tracked on the EM&V Working Group’s webpage.²⁶ In addition, all completed evaluation studies are posted on the PUC website at http://www.puc.state.nh.us/Electric/Monitoring_Evaluation_Report_List.htm.

²⁶See https://www.puc.nh.gov/EESE%20Board/EERS_WG/nh-emv-eval-of-recommendations-tracker-060018.pdf.

Attachment A: Summary of Material Changes

Topic	Description of Change
Program Design Changes	
ENERGY STAR Products Program (Lighting, Appliances and Electric Heating/Cooling and Hot Water Systems)	<ul style="list-style-type: none"> ▪ Develop a point of sale e-rebates platform
ENERGY STAR Homes	<ul style="list-style-type: none"> ▪ Developing an incentive structure for ENERGY STAR Manufactured Homes ▪ Training and certification assistance to facilitate certification of HBAC contractors.
Home Performance with ENERGY STAR	<ul style="list-style-type: none"> ▪ Explore an offering for a package of energy saving measures for electric customers who do not meet the Home Heating Index threshold.
Commercial, Industrial and Municipal Programs	<ul style="list-style-type: none"> ▪ Explore a distributor point-of-sale approach for lighting and other technologies.
Changes in Savings Assumptions	
Small Business and Municipal Lighting	<ul style="list-style-type: none"> ▪ Updated Realization Rates, Summer and Winter Peak Coincident Factors and kW Realization Rates based on 2018 DNV-GL Impact Evaluation.
Other Changes	
Avoided Energy Supply Costs	<ul style="list-style-type: none"> ▪ Incorporated changes from the 2018 AESC Study completed in June 2018. ▪ Included Pool Transmission Facilities value from AESC 2018 and removed prior transmission benefit ▪ Included Non-Embedded Environmental Benefits for Fossil Fuel based on AESC forecast of RGGI values. ▪ Increased the nominal discount rate from 4.0 to 4.75 percent. ▪ Increased inflation from 1.56 to 1.86 percent.

Topic	Description of Change
Low-Income Non-Energy Impacts	<ul style="list-style-type: none">▪ Incorporated an additional 10% adder to all energy related benefits (all benefits excluding water) within the Home Energy Assistance Program to reflect non-energy impacts.
Lost Base Revenue Calculation	<ul style="list-style-type: none">▪ Updated calculation of Lost Base Revenue for 2019 and forward.

NHSAVES PROGRAMS
2019 Statewide Goals
Statewide & Company-Specific Programs

Description	Program Budget ⁽¹⁾	kWh Savings		kW Savings		MMBtu Savings		Customers Count
		Annual	Lifetime	Winter kW	Summer kW	Annual	Lifetime	
<u>Electric Utilities</u>								
Statewide Programs	\$ 39,294,789	91,678,857	1,163,472,430	13,224	10,519	81,258	1,678,262	188,978
Municipal Program	\$ 2,000,271	4,426,911	61,936,963	716	235	3,964	59,746	107
All Other Statewide Programs								
Sub-total	\$ 41,295,061	96,105,768	1,225,409,393	13,940	10,755	85,222	1,738,009	189,085
Company Specific Programs ⁽²⁾	\$ 3,648,498	11,724,020	72,529,723	1,422	1,333	-	-	142,844
Total Electric	\$ 44,943,559	107,829,788	1,297,939,117	15,363	12,088	85,222	1,738,009	331,930
<u>Gas Utilities</u>								
Statewide Programs	\$ 9,443,209	379,619	4,807,453	104	44	164,151	2,804,935	4,488
Company Specific Programs ⁽²⁾	\$ 453,290	-	-			10,636	36,102	49,600
Total Gas	\$ 9,896,499	379,619	4,807,453	104	44	174,787	2,841,037	54,088
Grand Total	\$ 54,840,057	108,209,407	1,302,746,570	15,467	12,132	260,009	4,579,045	386,018

Notes:

(1) Program budgets shown in this report exclude the performance incentive (PI).

(2) Company-specific includes company-specific programs, education, forward capacity market administration and loan program administration.

NHSAVES PROGRAMS
2019 Statewide Goals
Statewide Programs ⁽¹⁾

Description	Program Budget	kWh Savings		kW Savings		MMBtu Savings		Customers Count
		Annual	Lifetime	Winter kW	Summer kW	Annual	Lifetime	
<u>Electric Utilities</u>								
Residential								
Home Energy Assistance	\$ 7,821,904	1,372,753	15,744,385	120.7	151.2	25,939	538,426	1,025
NH Home Performance w/Energy Star	\$ 5,044,054	909,107	13,834,702	115.2	161.0	38,890	782,010	1,348
EnergyStar® Homes	\$ 2,637,699	1,428,079	31,670,257	160.4	322.6	12,954	307,500	956
EnergyStar® Products	\$ 4,695,263	12,968,469	92,843,345	3,489.6	1,585.2	3,475	50,326	183,891
Sub-total	\$ 20,198,920	16,678,407	154,092,688	3,885.8	2,220.0	81,258	1,678,262	187,220
Commercial & Industrial								
Large Business Energy Solutions	\$ 11,844,120	54,536,857	738,634,447	7,208.3	5,982.1	-	-	750
Small Business Energy Solutions	\$ 7,251,749	20,463,593	270,745,295	2,129.8	2,317.2	-	-	1,008
Municipal Program	\$ 2,000,271	4,426,911	61,936,963	716.4	235.4	3,964	59,746	107
Sub-total	\$ 21,096,141	79,427,360	1,071,316,705	10,054.5	8,534.7	3,964	59,746	1,865
Total Electric	\$ 41,295,061	96,105,768	1,225,409,393	13,940.3	10,754.8	85,222	1,738,009	189,085
<u>Gas Utilities</u>								
Residential								
Home Energy Assistance	\$ 1,684,368	59,368	1,082,433	25.3	0.9	9,584	194,976	307
NH Home Performance w/Energy Star	\$ 1,239,988	202,339	1,426,785	40.2	30.7	12,480	230,303	792
EnergyStar® Homes	\$ 612,751	53,144	1,230,059	6.6	12.4	4,017	99,679	164
EnergyStar® Products	\$ 1,240,237	63,256	1,040,960	32.0	-	16,022	270,018	1,972
Sub-total	\$ 4,777,344	378,107	4,780,237	104.0	44.1	42,104	794,976	3,235
Commercial & Industrial								
Large Business Energy Solutions	\$ 2,923,338	-	-	-	-	82,013	1,392,613	166
Small Business Energy Solutions	\$ 1,742,527	1,512	27,216	0.1	-	40,033	617,345	1,088
Sub-total	\$ 4,665,865	1,512	27,216	0.1	-	122,047	2,009,959	1,253
Total Gas	\$ 9,443,209	379,619	4,807,453	104.1	44.1	164,151	2,804,935	4,488
Grand Total	\$ 50,738,270	96,485,387	1,230,216,846	14,044.5	10,798.8	249,373	4,542,944	193,573

Notes:

(1) Amounts shown above pertain only to the Statewide programs. The amounts pertaining to the Company-Specific programs are shown on Attachment B, page 3.

NHSAVES PROGRAMS
2019 Statewide Goals
Company-Specific Programs ⁽¹⁾

Description	Program	kWh Savings		kW Savings		MMBtu Savings		Customers
	Budget	Annual	Lifetime	Winter kW	Summer kW	Annual	Lifetime	Count
<u>Electric Utilities</u>								
Residential								
Home Energy Reports	\$ 1,143,866	7,518,600	20,689,072	854.1	618.5	-	-	142,800
Customer Engagement Platform	\$ 211,877	-	-			-	-	-
Forward Capacity Market Expenses ⁽²⁾	\$ 87,000	-	-			-	-	-
Sub-total	\$ 1,442,743	7,518,600	20,689,072	854.1	618.5	-	-	142,800
Commercial & Industrial								
Smart Start	\$ 57,000	-	-			-	-	-
C&I Customer Partnerships	\$ 25,360	-	-			-	-	-
C&I RFP Program	\$ 1,195,561	4,205,420	51,840,651	568.1	714.3	-	-	44
Customer Engagement Platform	\$ 317,815	-	-			-	-	-
Education	\$ 418,530	-	-			-	-	-
Forward Capacity Market Expenses ⁽²⁾	\$ 191,490	-	-			-	-	-
Sub-total	\$ 2,205,756	4,205,420	51,840,651	568.1	714.3	-	-	44
Total Residential and C&I	\$ 3,648,498	11,724,020	72,529,723	1,422.2	1,332.8	-	-	142,844
<u>Gas Utilities</u>								
Residential								
Home Energy Reports	\$ 352,520	-	-			10,636	36,102	49,600
Education	\$ -	-	-			-	-	-
Sub-total	\$ 352,520	-	-			10,636	36,102	49,600
Commercial & Industrial								
Education	\$ 100,770	-	-			-	-	-
Sub-total	\$ 100,770	-	-			-	-	-
Total Residential and C&I	\$ 453,290	-	-			10,636	36,102	49,600
Grand Total	\$ 4,101,788	11,724,020	72,529,723	1,422.2	1,332.8	10,636	36,102	192,444

Notes:

(1) Amounts shown above pertain only to the Company-Specific programs. The amounts pertaining to the Statewide programs are shown on Attachment B, page 2.

Company-specific includes company-specific programs, education, forward capacity market administration and loan program administration.

(2) Amounts shown are budgeted expenses related to the electric utilities' participation in ISO-NE's Forward Capacity Market.

NHSAVES ENERGY EFFICIENCY PROGRAM - 2019 UTILITY BUDGETS BY ACTIVITY
Residential Programs

Description		Electric Utilities					Gas Utilities			Grand Total
		Liberty	NHEC	Eversource	Unitil	Sub-total Electric	Liberty	Unitil	Sub-total Gas	
Home Energy Assistance	Internal Admin	\$ 22,062	\$ 22,125	\$ 100,100	\$ 37,296	\$ 181,583	\$ 36,635	\$ 21,612	\$ 58,247	\$ 239,829
	External Admin	\$ 1,013	\$ 14,693	\$ 9,350	\$ 1,772	\$ 26,827	\$ 2,676	\$ 748	\$ 3,424	\$ 30,251
	Rebate/Services	\$ 491,163	\$ 363,388	\$ 4,987,978	\$ 742,547	\$ 6,585,075	\$ 1,061,377	\$ 283,498	\$ 1,344,875	\$ 7,929,950
	Implementation Services	\$ 85,706	\$ 48,092	\$ 202,065	\$ 97,530	\$ 433,393	\$ 85,172	\$ 43,668	\$ 128,840	\$ 562,233
	Marketing	\$ 26,371	\$ 8,407	\$ 168,717	\$ 24,119	\$ 227,614	\$ 58,965	\$ 4,500	\$ 63,465	\$ 291,080
	EM&V	\$ 32,964	\$ 17,072	\$ 281,195	\$ 36,182	\$ 367,412	\$ 65,517	\$ 20,000	\$ 85,517	\$ 452,929
	Total	\$ 659,279	\$ 473,777	\$ 5,749,403	\$ 939,446	\$ 7,821,904	\$ 1,310,342	\$ 374,026	\$ 1,684,368	\$ 9,506,273
HP w/EnergyStar®	Internal Admin	\$ 10,636	\$ 22,125	\$ 66,869	\$ 27,500	\$ 127,130	\$ 28,958	\$ 13,532	\$ 42,489	\$ 169,620
	External Admin	\$ 488	\$ 14,693	\$ 6,246	\$ -	\$ 21,427	\$ 2,115	\$ 176	\$ 2,291	\$ 23,718
	Rebate/Services	\$ 236,786	\$ 362,438	\$ 3,078,113	\$ 474,795	\$ 4,152,132	\$ 833,780	\$ 138,608	\$ 972,388	\$ 5,124,520
	Implementation Services	\$ 41,318	\$ 48,092	\$ 179,613	\$ 66,224	\$ 335,247	\$ 67,324	\$ 33,573	\$ 100,897	\$ 436,144
	Marketing	\$ 12,713	\$ 8,407	\$ 112,707	\$ 22,767	\$ 156,595	\$ 51,788	\$ 7,898	\$ 59,686	\$ 216,280
	EM&V	\$ 15,892	\$ 17,072	\$ 187,845	\$ 30,714	\$ 251,523	\$ 51,788	\$ 10,450	\$ 62,238	\$ 313,760
	Total	\$ 317,833	\$ 472,827	\$ 3,631,394	\$ 622,000	\$ 5,044,054	\$ 1,035,751	\$ 204,237	\$ 1,239,988	\$ 6,284,042
EnergyStar® Homes	Internal Admin	\$ 6,195	\$ 26,525	\$ 35,778	\$ 12,000	\$ 80,498	\$ 11,780	\$ 11,330	\$ 23,110	\$ 103,608
	External Admin	\$ 284	\$ 14,070	\$ 3,342	\$ 3,500	\$ 21,196	\$ 860	\$ 396	\$ 1,256	\$ 22,453
	Rebate/Services	\$ 137,928	\$ 131,219	\$ 1,690,433	\$ 140,276	\$ 2,099,856	\$ 341,294	\$ 132,171	\$ 473,465	\$ 2,573,321
	Implementation Services	\$ 24,068	\$ 39,382	\$ 119,742	\$ 27,847	\$ 211,039	\$ 27,388	\$ 32,543	\$ 59,931	\$ 270,970
	Marketing	\$ 7,406	\$ 8,407	\$ 60,303	\$ 9,420	\$ 85,536	\$ 18,961	\$ 6,600	\$ 25,561	\$ 111,097
	EM&V	\$ 9,257	\$ 17,072	\$ 100,505	\$ 12,740	\$ 139,574	\$ 21,068	\$ 8,360	\$ 29,428	\$ 169,002
	Total	\$ 185,138	\$ 236,675	\$ 2,010,103	\$ 205,783	\$ 2,637,699	\$ 421,351	\$ 191,400	\$ 612,751	\$ 3,250,450
Energy Star® Products	Internal Admin	\$ 9,759	\$ 45,218	\$ 57,454	\$ 28,870	\$ 141,301	\$ 25,861	\$ 17,189	\$ 43,050	\$ 184,351
	External Admin	\$ 448	\$ 23,925	\$ 5,367	\$ 450	\$ 30,189	\$ 1,889	\$ 575	\$ 2,464	\$ 32,653
	Rebate/Services	\$ 217,251	\$ 381,137	\$ 2,769,485	\$ 456,629	\$ 3,824,502	\$ 749,251	\$ 222,118	\$ 971,369	\$ 4,795,871
	Implementation Services	\$ 37,910	\$ 90,543	\$ 112,258	\$ 60,894	\$ 301,605	\$ 60,125	\$ 42,186	\$ 102,311	\$ 403,916
	Marketing	\$ 11,664	\$ 25,000	\$ 96,839	\$ 33,628	\$ 167,131	\$ 41,625	\$ 14,168	\$ 55,793	\$ 222,924
	EM&V	\$ 14,581	\$ 17,072	\$ 161,398	\$ 37,485	\$ 230,535	\$ 46,250	\$ 19,000	\$ 65,250	\$ 295,785
	Total	\$ 291,612	\$ 582,895	\$ 3,202,801	\$ 617,955	\$ 4,695,263	\$ 925,001	\$ 315,236	\$ 1,240,237	\$ 5,935,499

NHSAVES ENERGY EFFICIENCY PROGRAM - 2019 UTILITY BUDGETS BY ACTIVITY
Residential Programs (Continued)

Description		Electric Utilities					Gas Utilities			Grand Total
		Liberty	NHEC	Eversource	Unitil	Sub-total Electric	Liberty	Unitil	Sub-total Gas	
Other*	Internal Admin	\$ 1,550	\$ -	\$ 18,943	\$ 12,500	\$ 32,993	\$ 7,581	\$ 2,000	\$ 9,581	\$ 42,575
	External Admin	\$ 250	\$ -	\$ 1,769	\$ -	\$ 2,019	\$ 542	\$ -	\$ 542	\$ 2,561
	Rebate/Services	\$ 117,500	\$ -	\$ 965,639	\$ 171,828	\$ 1,254,967	\$ 235,565	\$ 77,256	\$ 312,821	\$ 1,567,788
	Implementation Services	\$ 5,300	\$ 2,190	\$ 17,961	\$ 5,114	\$ 30,565	\$ 10,831	\$ 1,500	\$ 12,331	\$ 42,895
	Marketing	\$ 2,150	\$ -	\$ 31,929	\$ -	\$ 34,079	\$ 2,708	\$ -	\$ 2,708	\$ 36,787
	EM&V	\$ 22,050	\$ 3,810	\$ 53,215	\$ 9,043	\$ 88,119	\$ 13,538	\$ 1,000	\$ 14,538	\$ 102,657
	Total	\$ 148,800	\$ 6,000	\$ 1,089,458	\$ 198,485	\$ 1,442,743	\$ 270,764	\$ 81,756	\$ 352,520	\$ 1,795,263
Total Residential	Internal Admin	\$ 50,202	\$ 115,993	\$ 279,144	\$ 118,166	\$ 563,505	\$ 110,815	\$ 65,662	\$ 176,477	\$ 739,983
	External Admin	\$ 2,483	\$ 67,380	\$ 26,074	\$ 5,722	\$ 101,659	\$ 8,081	\$ 1,895	\$ 9,976	\$ 111,636
	Rebate/Services	\$ 1,200,627	\$ 1,238,182	\$ 13,491,648	\$ 1,986,075	\$ 17,916,532	\$ 3,221,267	\$ 853,651	\$ 4,074,918	\$ 21,991,450
	Implementation Services	\$ 194,302	\$ 228,299	\$ 631,639	\$ 257,609	\$ 1,311,849	\$ 250,840	\$ 153,470	\$ 404,310	\$ 1,716,159
	Marketing	\$ 60,304	\$ 50,221	\$ 470,495	\$ 89,934	\$ 670,954	\$ 174,046	\$ 33,166	\$ 207,212	\$ 878,167
	EM&V	\$ 94,743	\$ 72,098	\$ 784,158	\$ 126,163	\$ 1,077,163	\$ 198,160	\$ 58,810	\$ 256,970	\$ 1,334,133
	Total	\$ 1,602,661	\$ 1,772,173	\$ 15,683,159	\$ 2,583,669	\$ 21,641,663	\$ 3,963,210	\$ 1,166,655	\$ 5,129,864	\$ 26,771,527
Total %	Internal Admin	3.1%	6.5%	1.8%	4.6%	2.6%	2.8%	5.6%	3.4%	2.8%
	External Admin	0.2%	3.8%	0.2%	0.2%	0.5%	0.2%	0.2%	0.2%	0.4%
	Rebate/Services	74.9%	69.9%	86.0%	76.9%	82.8%	81.3%	73.2%	79.4%	82.1%
	Implementation Services	12.1%	12.9%	4.0%	10.0%	6.1%	6.3%	13.2%	7.9%	6.4%
	Marketing	3.8%	2.8%	3.0%	3.5%	3.1%	4.4%	2.8%	4.0%	3.3%
	EM&V	5.9%	4.1%	5.0%	4.9%	5.0%	5.0%	5.0%	5.0%	5.0%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

* Other includes company-specific programs, education, forward capacity market administration and loan program administration.

NHSAVES ENERGY EFFICIENCY PROGRAM - 2019 UTILITY BUDGETS BY ACTIVITY
C&I and Municipal Programs

		Electric Utilities					Gas Utilities			Grand Total
		Liberty	NHEC	Eversource	Unitil	Sub-total Electric	Liberty	Unitil	Sub-total Gas	
Large Business Energy Solutions	Internal Admin	\$ 39,694	\$ 22,125	\$ 158,754	\$ 67,467	\$ 288,040	\$ 64,312	\$ 31,690	\$ 96,002	\$ 384,042
	External Admin	\$ 1,822	\$ 11,646	\$ 14,829	\$ 2,250	\$ 30,547	\$ 4,697	\$ 1,600	\$ 6,297	\$ 36,844
	Rebate/Services	\$ 883,695	\$ 240,201	\$ 7,518,307	\$ 901,128	\$ 9,543,330	\$ 1,851,744	\$ 486,763	\$ 2,338,507	\$ 11,881,837
	Implementation Services	\$ 154,202	\$ 64,924	\$ 628,826	\$ 191,464	\$ 1,039,415	\$ 149,520	\$ 60,500	\$ 210,020	\$ 1,249,435
	Marketing	\$ 47,447	\$ 8,370	\$ 267,578	\$ 35,078	\$ 358,472	\$ 115,015	\$ 12,870	\$ 127,885	\$ 486,358
	EM&V	\$ 59,308	\$ 17,072	\$ 445,963	\$ 61,972	\$ 584,315	\$ 115,015	\$ 29,612	\$ 144,627	\$ 728,942
	Total	\$ 1,186,168	\$ 364,338	\$ 9,034,255	\$ 1,259,359	\$ 11,844,120	\$ 2,300,303	\$ 623,035	\$ 2,923,338	\$ 14,767,458
Small Business Energy Solutions	Internal Admin	\$ 27,958	\$ 22,125	\$ 89,556	\$ 50,809	\$ 190,448	\$ 38,078	\$ 19,800	\$ 57,878	\$ 248,326
	External Admin	\$ 1,283	\$ 11,646	\$ 8,365	\$ 1,710	\$ 23,005	\$ 2,781	\$ 704	\$ 3,485	\$ 26,490
	Rebate/Services	\$ 622,429	\$ 350,528	\$ 3,972,822	\$ 748,165	\$ 5,693,943	\$ 1,096,395	\$ 286,716	\$ 1,383,111	\$ 7,077,054
	Implementation Services	\$ 108,612	\$ 73,040	\$ 452,026	\$ 125,410	\$ 759,088	\$ 88,529	\$ 38,896	\$ 127,425	\$ 886,513
	Marketing	\$ 33,419	\$ 8,370	\$ 150,945	\$ 30,791	\$ 223,525	\$ 68,099	\$ 14,520	\$ 82,619	\$ 306,144
	EM&V	\$ 41,774	\$ 17,072	\$ 251,576	\$ 51,318	\$ 361,740	\$ 68,099	\$ 19,910	\$ 88,009	\$ 449,749
	Total	\$ 835,475	\$ 482,781	\$ 4,925,290	\$ 1,008,203	\$ 7,251,749	\$ 1,361,981	\$ 380,546	\$ 1,742,527	\$ 8,994,276
Municipal	Internal Admin	\$ 5,590	\$ 11,062	\$ 25,865	\$ 13,283	\$ 55,800	\$ -	\$ -	\$ -	\$ 55,800
	External Admin	\$ 257	\$ 5,554	\$ 2,416	\$ -	\$ 8,226	\$ -	\$ -	\$ -	\$ 8,226
	Rebate/Services	\$ 124,451	\$ 92,998	\$ 1,211,353	\$ 164,131	\$ 1,592,932	\$ -	\$ -	\$ -	\$ 1,592,932
	Implementation Services	\$ 21,716	\$ 24,347	\$ 97,290	\$ 25,598	\$ 168,952	\$ -	\$ -	\$ -	\$ 168,952
	Marketing	\$ 6,682	\$ 8,370	\$ 43,595	\$ 6,611	\$ 65,258	\$ -	\$ -	\$ -	\$ 65,258
	EM&V	\$ 8,352	\$ 17,072	\$ 72,659	\$ 11,019	\$ 109,102	\$ -	\$ -	\$ -	\$ 109,102
	Total	\$ 167,048	\$ 159,403	\$ 1,453,179	\$ 220,642	\$ 2,000,271	\$ -	\$ -	\$ -	\$ 2,000,271
Other*	Internal Admin	\$ 1,381	\$ -	\$ 35,502	\$ 12,500	\$ 49,382	\$ 2,304	\$ 2,750	\$ 5,054	\$ 54,436
	External Admin	\$ 63	\$ -	\$ 3,316	\$ -	\$ 3,379	\$ 168	\$ -	\$ 168	\$ 3,548
	Rebate/Services	\$ 30,737	\$ 20,000	\$ 1,689,845	\$ 35,000	\$ 1,775,583	\$ 66,332	\$ 11,000	\$ 77,332	\$ 1,852,915
	Implementation Services	\$ 5,364	\$ 28,109	\$ 97,590	\$ -	\$ 131,062	\$ 5,356	\$ -	\$ 5,356	\$ 136,418
	Marketing	\$ 1,650	\$ 8,370	\$ 59,838	\$ 4,000	\$ 73,858	\$ 4,120	\$ 3,300	\$ 7,420	\$ 81,278
	EM&V	\$ 47,563	\$ 8,891	\$ 99,730	\$ 16,307	\$ 172,491	\$ 4,120	\$ 1,320	\$ 5,440	\$ 177,931
	Total	\$ 86,758	\$ 65,370	\$ 1,985,821	\$ 67,807	\$ 2,205,756	\$ 82,400	\$ 18,370	\$ 100,770	\$ 2,306,526

* Other includes company-specific programs, education, forward capacity market administration and loan program administration.

NHSAVES ENERGY EFFICIENCY PROGRAM - 2019 UTILITY BUDGETS BY ACTIVITY
C&I and Municipal Program Total and Grand Total (Residential, C&I and Municipal)

		Electric Utilities					Gas Utilities			Grand Total
		Liberty	NHEC	Eversource	Unitil	Sub-total Electric	Liberty	Unitil	Sub-total Gas	
Total C&I and Municipal	Internal Admin	\$ 74,623	\$ 55,312	\$ 309,676	\$ 144,059	\$ 583,671	\$ 104,694	\$ 54,240	\$ 158,934	\$ 742,605
	External Admin	\$ 3,425	\$ 28,847	\$ 28,926	\$ 3,960	\$ 65,158	\$ 7,646	\$ 2,304	\$ 9,950	\$ 75,108
	Rebate/Services	\$ 1,661,311	\$ 703,727	\$ 14,392,326	\$ 1,848,424	\$ 18,605,789	\$ 3,014,471	\$ 784,479	\$ 3,798,950	\$ 22,404,738
	Implementation Services	\$ 289,893	\$ 190,420	\$ 1,275,732	\$ 342,472	\$ 2,098,517	\$ 243,404	\$ 99,396	\$ 342,800	\$ 2,441,318
	Marketing	\$ 89,198	\$ 33,480	\$ 521,956	\$ 76,480	\$ 721,114	\$ 187,234	\$ 30,690	\$ 217,924	\$ 939,039
	EM&V	\$ 156,997	\$ 60,107	\$ 869,927	\$ 140,616	\$ 1,227,648	\$ 187,234	\$ 50,842	\$ 238,076	\$ 1,465,724
	Total	\$ 2,275,448	\$ 1,071,893	\$ 17,398,545	\$ 2,556,011	\$ 23,301,896	\$ 3,744,684	\$ 1,021,951	\$ 4,766,635	\$ 28,068,531
Total C&I and Municipal %	Internal Admin	3.3%	5.2%	1.8%	5.6%	2.5%	2.8%	5.3%	3.3%	2.6%
	External Admin	0.2%	2.7%	0.2%	0.2%	0.3%	0.2%	0.2%	0.2%	0.3%
	Rebate/Services	73.0%	65.7%	82.7%	72.3%	79.8%	80.5%	76.8%	79.7%	79.8%
	Implementation Services	12.7%	17.8%	7.3%	13.4%	9.0%	6.5%	9.7%	7.2%	8.7%
	Marketing	3.9%	3.1%	3.0%	3.0%	3.1%	5.0%	3.0%	4.6%	3.3%
	EM&V	6.9%	5.6%	5.0%	5.5%	5.3%	5.0%	5.0%	5.0%	5.2%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Grand Total (Residential, C&I and Municipal)	Internal Admin	\$ 124,825	\$ 171,305	\$ 588,821	\$ 262,225	\$ 1,147,176	\$ 215,509	\$ 119,902	\$ 335,412	\$ 1,482,587
	External Admin	\$ 5,908	\$ 96,227	\$ 55,000	\$ 9,682	\$ 166,817	\$ 15,728	\$ 4,199	\$ 19,927	\$ 186,744
	Rebate/Services	\$ 2,861,938	\$ 1,941,909	\$ 27,883,975	\$ 3,834,499	\$ 36,522,321	\$ 6,235,737	\$ 1,638,130	\$ 7,873,867	\$ 44,396,188
	Implementation Services	\$ 484,195	\$ 418,718	\$ 1,907,372	\$ 600,081	\$ 3,410,366	\$ 494,244	\$ 252,866	\$ 747,110	\$ 4,157,477
	Marketing	\$ 149,502	\$ 83,701	\$ 992,451	\$ 166,414	\$ 1,392,069	\$ 361,281	\$ 63,856	\$ 425,137	\$ 1,817,205
	EM&V	\$ 251,740	\$ 132,206	\$ 1,654,085	\$ 266,779	\$ 2,304,810	\$ 385,395	\$ 109,652	\$ 495,047	\$ 2,799,857
	Total	\$ 3,878,109	\$ 2,844,066	\$ 33,081,704	\$ 5,139,680	\$ 44,943,559	\$ 7,707,894	\$ 2,188,606	\$ 9,896,499	\$ 54,840,057
Grand Total % (Residential, C&I and Municipal)	Internal Admin	3.2%	6.0%	1.8%	5.1%	2.6%	2.8%	5.5%	3.4%	2.7%
	External Admin	0.2%	3.4%	0.2%	0.2%	0.4%	0.2%	0.2%	0.2%	0.3%
	Rebate/Services	73.8%	68.3%	84.3%	74.6%	81.3%	80.9%	74.8%	79.6%	81.0%
	Implementation Services	12.5%	14.7%	5.8%	11.7%	7.6%	6.4%	11.6%	7.5%	7.6%
	Marketing	3.9%	2.9%	3.0%	3.2%	3.1%	4.7%	2.9%	4.3%	3.3%
	EM&V	6.5%	4.6%	5.0%	5.2%	5.1%	5.0%	5.0%	5.0%	5.1%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NHSaves ELECTRIC PROGRAMS - 2019 UTILITY GOALS BY PROGRAM
Total Customers Served, Program Budgets, Lifetime kWh and MMBtu Savings

	Liberty		NHEC		Eversource		Unitil		Total	
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	56	3,014,008	59	717,623	800	10,921,950	110	1,090,804	1,025	15,744,385
B/C Ratio / Planned Budget	1.63	\$659,279	1.68	\$473,777	1.80	\$5,749,403	1.88	\$939,446	1.79	\$7,821,904
/ Lifetime MMBtu Savings		35,240		33,422		410,125		59,639		538,426
Home Performance w/ENERGY STAR										
Number of Participants / Lifetime kWh Savings	70	1,289,863	153	2,509,161	1,025	8,579,038	100	1,456,640	1,348	13,834,702
B/C Ratio / Planned Budget	2.01	\$317,833	2.50	\$472,827	2.24	\$3,631,394	1.79	\$622,000	2.21	\$5,044,054
/ Lifetime MMBtu Savings		41,522		85,305		597,290		57,893		782,010
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	73	7,935,055	32	1,412,190	822	21,106,853	29	1,216,159	956	31,670,257
B/C Ratio / Planned Budget	6.31	\$185,138	1.73	\$236,675	2.67	\$2,010,103	1.81	\$205,783	2.79	\$2,637,699
/ Lifetime MMBtu Savings		29,189		13,299		254,155		10,856		307,500
ENERGY STAR Products										
Number of Participants / Lifetime kWh Savings	14,445	6,373,812	32,721	13,203,333	108,633	61,242,368	28,092	12,023,832	183,891	92,843,345
B/C Ratio / Planned Budget	2.14	\$291,612	1.61	\$582,895	1.77	\$3,202,801	2.05	\$617,955	1.80	\$4,695,263
/ Lifetime MMBtu Savings		1,765		2,193		39,246		7,122		50,326
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	95	64,974,298	23	19,553,956	573	597,820,312	59	56,285,881	750	738,634,447
B/C Ratio / Planned Budget	2.78	\$1,186,168	2.01	\$364,338	2.22	\$9,034,255	1.95	\$1,259,359	2.23	\$11,844,120
/ Lifetime MMBtu Savings		0		0		0		0		0
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	90	24,661,345	111	14,548,563	751	198,624,361	56	32,911,026	1,008	270,745,295
B/C Ratio / Planned Budget	1.63	\$835,475	1.33	\$482,781	1.62	\$4,925,290	1.68	\$1,008,203	1.61	\$7,251,749
/ Lifetime MMBtu Savings		0		0		0		0		0
Municipal										
Number of Participants / Lifetime kWh Savings	5	3,849,842	21	1,837,464	55	50,768,525	26	5,481,132	107	61,936,963
B/C Ratio / Planned Budget	1.36	\$167,048	1.00	\$159,403	1.20	\$1,453,179	1.14	\$220,642	1.20	\$2,000,271
/ Lifetime MMBtu Savings		1,485		4,939		51,523		1,800		59,746
Educational Programs										
Number of Participants / Planned Budget	0	\$41,258	0	\$46,370	0	\$283,085	0	\$47,817	0	\$418,530
Company Specific Programs / FCM Expenses										
Number of Participants / Lifetime kWh Savings	12,000	1,991,000	0	0	105,044	68,115,110	25,800	2,423,614	142,844	72,529,723
/ Planned Budget		\$194,300		\$20,000		\$2,740,194		\$218,475		\$3,172,969
/ Lifetime MMBtu Savings		0		0		0		0		0
Smart Start (Eversource/NHEC)										
Number of Participants / Planned Budget	0	\$0	0	\$5,000	0	\$52,000	0	\$0	0	\$57,000
Utility Performance Incentive										
Planned Budget		\$213,296		\$156,149		\$1,816,634		\$282,682		\$2,468,761
TOTAL PLANNED BUDGET		\$4,091,405		\$3,000,215		\$34,898,337		\$5,422,363		\$47,412,320

NHSAVES ELECTRIC PROGRAMS
SBC¹ and RGGI Funding Allocation
2019 Budget

Program Allocation Summary

Program	RGGI	SBC ¹	TOTAL
HEA²			
Liberty	5.55036%	94.44964%	100.00000%
NHEC	6.50420%	93.49580%	100.00000%
Eversource	5.51352%	94.48648%	100.00000%
Unitil	5.16988%	94.83012%	100.00000%
Municipal			
Liberty	100.00000%	0.00000%	100.00000%
NHEC	100.00000%	0.00000%	100.00000%
Eversource	100.00000%	0.00000%	100.00000%
Unitil	100.00000%	0.00000%	100.00000%

A	B	C	D
Utility	HEA Budget	RGGI HEA ³	SBC HEA ⁴
Liberty	\$ 659,279	\$36,592	\$622,686
NHEC	\$ 473,777	\$30,815	\$442,961
Eversource	\$ 5,749,403	\$316,995	\$5,432,408
Unitil	\$ 939,446	\$48,568	\$890,878
Total	\$ 7,821,904	\$432,971	\$7,388,934

Notes:

¹ SBC = System Benefits Charge, Forward Capacity Market and Carryforward/Interest

² HEA Allocation

RGGI HEA = RGGI HEA (C) /Total HEA Funds (B)

SBC HEA = SBC HEA (D) /Total HEA Funds (B)

³ 17.0% of Total RGGI Funds including SB 268 funding less RGGI HEA Performance Incentive (((\$2,686,965 x .17) - (\$432,970 x .055))

⁴ SBC HEA = Utility's total HEA program budget (B) less RGGI HEA (C)

NHSAVES ELECTRIC PROGRAMS - 2019 UTILITY GOALS BY PROGRAM
Total Customers Served, Program Budgets, Lifetime kWh and MMBtu Savings

(System Benefits Charge, Forward Capacity Market and Interest Funds Only)

	Liberty		NHEC		Eversource		Unitil		Total	
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	53	2,846,720	55	670,947	756	10,319,765	104	1,034,410	968	14,871,843
B/C Ratio / Planned Budget	1.63	\$622,686	1.68	\$442,961	1.80	\$5,432,408	1.88	\$890,878	1.79	\$7,388,934
/ Lifetime MMBtu Savings		33,285		31,248		387,513		56,555		508,601
Home Performance w/ENERGY STAR										
Number of Participants / Lifetime kWh Savings	70	1,289,863	153	2,509,161	1,025	8,579,038	100	1,456,640	1,348	13,834,702
B/C Ratio / Planned Budget	2.01	\$317,833	2.50	\$472,827	2.24	\$3,631,394	1.79	\$622,000	2.21	\$5,044,054
/ Lifetime MMBtu Savings		41,522		85,305		597,290		57,893		782,010
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	73	7,935,055	32	1,412,190	822	21,106,853	29	1,216,159	956	31,670,257
B/C Ratio / Planned Budget	6.31	\$185,138	1.73	\$236,675	2.67	\$2,010,103	1.81	\$205,783	2.79	\$2,637,699
/ Lifetime MMBtu Savings		29,189		13,299		254,155		10,856		307,500
ENERGY STAR Products										
Number of Participants / Lifetime kWh Savings	14,445	6,373,812	32,721	13,203,333	108,633	61,242,368	28,092	12,023,832	183,891	92,843,345
B/C Ratio / Planned Budget	2.14	\$291,612	1.61	\$582,895	1.77	\$3,202,801	2.05	\$617,955	1.80	\$4,695,263
/ Lifetime MMBtu Savings		1,765		2,193		39,246		7,122		50,326
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	95	64,974,298	23	19,553,956	573	597,820,312	59	56,285,881	750	738,634,447
B/C Ratio / Planned Budget	2.78	\$1,186,168	2.01	\$364,338	2.22	\$9,034,255	1.95	\$1,259,359	2.23	\$11,844,120
/ Lifetime MMBtu Savings		0		0		0		0		0
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	90	24,661,345	111	14,548,563	751	198,624,361	56	32,911,026	1,008	270,745,295
B/C Ratio / Planned Budget	1.63	\$835,475	1.33	\$482,781	1.62	\$4,925,290	1.68	\$1,008,203	1.61	\$7,251,749
/ Lifetime MMBtu Savings		0		0		0		0		0
Municipal										
Number of Participants / Lifetime kWh Savings	0	0	0	0	0	0	0	0	0	0
B/C Ratio / Planned Budget	0.00	\$0	0.00	\$0	0.00	\$0	0.00	\$0	0.00	\$0
/ Lifetime MMBtu Savings		0		0		0		0		0
Educational Programs										
Number of Participants / Planned Budget	0	\$41,258	0	\$46,370	0	\$283,085	0	\$47,817	0	\$418,530
Company Specific Programs / FCM Expenses										
Number of Participants / Lifetime kWh Savings	12,000	1,991,000	0	0	105,044	68,115,110	25,800	2,423,614	142,844	72,529,723
/ Planned Budget		\$194,300		\$20,000		\$2,740,194		\$218,475		\$3,172,969
/ Lifetime MMBtu Savings		0		0		0		0		0
Smart Start (Eversource/NHEC)										
Number of Participants / Planned Budget	0	\$0	0	\$5,000	0	\$52,000	0	\$0	0	\$57,000
Utility Performance Incentive										
Planned Budget		\$202,096		\$145,687		\$1,719,274		\$267,876		\$2,334,932
TOTAL PLANNED BUDGET		\$3,876,565		\$2,799,534		\$33,030,804		\$5,138,346		\$44,845,250

NHSAVES ELECTRIC PROGRAMS - 2019 UTILITY GOALS BY PROGRAM
Total Customers Served, Program Budgets, Lifetime kWh and MMBtu Savings

(Energy Efficiency Fund Only - Regional Greenhouse Gas Initiative)

	Liberty		NHEC		Eversource		Unitil		Total	
Home Energy Assistance										
Number of Units / Lifetime kWh Savings	3	167,288	4	46,676	44	602,184	6	56,393	57	872,542
B/C Ratio / Planned Budget	1.63	\$36,592	1.68	\$30,815	1.80	\$316,995	1.88	\$48,568	1.79	\$432,971
/ Lifetime MMBtu Savings		1,956		2,174		22,612		3,083		29,825
Home Performance w/ENERGY STAR										
Number of Participants / Lifetime kWh Savings	-	-	-	-	-	-	-	-	-	-
B/C Ratio / Planned Budget	-	-	-	-	-	-	-	-	-	-
/ Lifetime MMBtu Savings		-		-		-		-		-
ENERGY STAR Homes										
Number of Homes / Lifetime kWh Savings	-	-	-	-	-	-	-	-	-	-
B/C Ratio / Planned Budget	-	-	-	-	-	-	-	-	-	-
/ Lifetime MMBtu Savings		-		-		-		-		-
ENERGY STAR Products										
Number of Participants / Lifetime kWh Savings	-	-	-	-	-	-	-	-	-	-
B/C Ratio / Planned Budget	-	-	-	-	-	-	-	-	-	-
/ Lifetime MMBtu Savings		-		-		-		-		-
Large Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	-	-	-	-	-	-	-	-	-	-
B/C Ratio / Planned Budget	-	-	-	-	-	-	-	-	-	-
/ Lifetime MMBtu Savings		-		-		-		-		-
Small Business Energy Solutions										
Number of Participants / Lifetime kWh Savings	-	-	-	-	-	-	-	-	-	-
B/C Ratio / Planned Budget	-	-	-	-	-	-	-	-	-	-
/ Lifetime MMBtu Savings		-		-		-		-		-
Municipal										
Number of Participants / Lifetime kWh Savings	5	3,849,842	21	1,837,464	55	50,768,525	26	5,481,132	107	61,936,963
B/C Ratio / Planned Budget	1.36	\$167,048	1.00	\$159,403	1.20	\$1,453,179	1.14	\$220,642	1.20	\$2,000,271
/ Lifetime MMBtu Savings		1,485		4,939		51,523		1,800		59,746
Educational Programs										
Number of Participants / Planned Budget	-	-	-	-	-	-	-	-	-	-
Company Specific Programs / FCM Expenses										
Number of Participants / Lifetime kWh Savings	-	-	-	-	-	-	-	-	-	-
/ Planned Budget		-		-		-		-		-
/ Lifetime MMBtu Savings		-		-		-		-		-
Smart Start (Eversource/NHEC)										
Number of Participants / Planned Budget	-	-	-	-	-	-	-	-	-	-
Utility Performance Incentive										
Planned Budget		\$11,200		\$10,462		\$97,360		\$14,807		\$133,828
TOTAL PLANNED BUDGET		\$214,840		\$200,680		\$1,867,533		\$284,017		\$2,567,070

NHSAVES GAS PROGRAMS - 2019 UTILITY GOALS BY PROGRAM
Total Customers Served, Program Budgets and Lifetime MMBtu Savings

	Liberty		Unitil		Total	
Home Energy Assistance						
Number of Units / Lifetime MMBtu Savings	245	155,507	62	39,470	307	194,976
B/C Ratio / Planned Budget	1.19	\$1,310,342	1.04	\$374,026	1.15	\$1,684,368
Home Performance w/ENERGY STAR						
Number of Participants / Lifetime MMBtu Savings	692	201,357	100	28,946	792	230,303
B/C Ratio / Planned Budget	1.41	\$1,035,751	1.00	\$204,237	1.34	\$1,239,988
ENERGY STAR Homes						
Number of Homes / Lifetime MMBtu Savings	121	64,419	43	35,260	164	99,679
B/C Ratio / Planned Budget	1.26	\$421,351	1.10	\$191,400	1.21	\$612,751
ENERGY STAR Products						
Number of Participants / Lifetime kWh Savings	1,470	689,080	502	351,880	1,972	1,040,960
B/C Ratio / Planned Budget	1.14	\$925,001	1.19	\$315,236	1.15	\$1,240,237
/ Lifetime MMBtu Savings		201,701		68,316		270,018
Large Business Energy Solutions						
Number of Participants / Lifetime MMBtu Savings	94	1,155,640	72	236,974	166	1,392,613
B/C Ratio / Planned Budget	1.79	\$2,300,303	1.84	\$623,035	1.80	\$2,923,338
Small Business Energy Solutions						
Number of Participants / Lifetime MMBtu Savings	771	486,962	317	130,384	1,088	617,345
B/C Ratio / Planned Budget	1.72	\$1,361,981	1.71	\$380,546	1.72	\$1,742,527
Education						
B/C Ratio / Planned Budget	0.00	\$82,400	0.00	\$18,370	0.00	\$100,770
Company Specific Programs						
Number of Participants / Lifetime MMBtu Savings	38,000	27,356	11,600	8,746	49,600	36,102
B/C Ratio / Planned Budget	1.02	\$270,764	1.06	\$81,756	1.03	\$352,520
Utility Performance Incentive						
Planned Budget		\$423,934		\$120,373		\$544,307
Total Program Expenses		\$8,131,828		\$2,308,979		\$10,440,807

Program Cost-Effectiveness - 2019 PLAN

	Total Resource Benefit / Cost Ratio	Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
Home Energy Assistance	1.80	10,348.0	5,749.4	-	823.8	10,921.9	83.7	111.5	800	19,721.5	410,125.2
Energy Star Homes	2.67	8,102.7	2,010.1	1,024.0	971.5	21,106.9	112.9	218.5	822	10,813.4	254,155.0
Home Performance with Energy Star	2.24	14,705.4	3,631.4	2,931.1	578.4	8,579.0	81.3	100.4	1,025	29,826.9	597,290.3
Energy Star Products	1.77	7,954.3	3,202.8	1,280.0	7,991.3	61,242.4	2,128.0	977.3	108,633	2,709.0	39,246.5
Home Energy Reports	1.79	1,485.5	829.6	-	5,933.6	16,274.5	677.4	494.5	105,000	-	-
Res Customer Engagement Platform	0.00	-	211.9	-	-	-	-	-	-	-	-
ISO-NE Forward Capacity Market Expenses	0.00	-	48.0	-	-	-	-	-	-	-	-
Sub-Total Residential	2.04	42,595.9	15,683.2	5,235.1	16,298.6	118,124.7	3,083.2	1,902.0	216,280	63,070.8	1,300,816.9
Commercial, Industrial & Municipal											
Large Business Energy Solutions	2.22	52,787.1	9,034.3	14,734.2	44,385.5	597,820.3	5,984.6	4,647.2	573	-	-
Small Business Energy Solutions	1.62	18,329.1	4,925.3	6,419.3	14,994.0	198,624.4	1,757.8	1,764.8	751	-	-
Municipal Energy Solutions	1.20	4,615.5	1,453.2	2,383.9	3,599.5	50,768.5	670.6	172.1	55	3,434.8	51,522.6
C&I Customer Partnerships	0.00	-	25.4	-	-	-	-	-	-	-	-
Energy Rewards RFP Program	1.78	5,532.3	1,195.6	1,906.2	4,205.4	51,840.7	568.1	714.3	44	-	-
C&I Customer Engagement Platform	0.00	-	317.8	-	-	-	-	-	-	-	-
Education	0.00	-	283.1	-	-	-	-	-	-	-	-
ISO Forward Capacity Market Expenses	0.00	-	112.0	-	-	-	-	-	-	-	-
Sub-Total Commercial & Industrial	1.90	81,264.0	17,346.5	25,443.6	67,184.4	899,053.8	8,981.1	7,298.4	1,423	3,434.8	51,522.6
Smart Start	0.00	-	52.0	-	-	-	-	-	-	-	-
Total	1.94	123,859.9	33,081.7	30,678.7	83,483.0	1,017,178.5	12,064.3	9,200.5	217,703	66,505.6	1,352,339.5

Note: a 10% NEI adder is applied to total benefits excluding water.

Annual kWh Savings	83,483,045	81.1%	kWh > 55%	Lifetime kWh Savings	1,017,178,517	72.0%	kWh > 55%
Annual MMBTU Savings (in kWh)	<u>19,490,879</u>	<u>18.9%</u>		Lifetime MMBTU Savings (in kWh)	<u>396,331,601</u>	<u>36.3%</u>	
	102,973,924	100.0%			1,413,510,118	108.2%	

Present Value Benefits - 2019 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Electric DRIPE	Total Electric Benefit	Gas Benefit	Gas DRIPE	Total Gas Benefit	Other Fuels	Fossil Emissions	Water Benefit	Other Non- Resource Benefit
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak									
Residential Programs																		
Home Energy Assistance	\$ 10,348	\$ 123	\$ -	\$ 173	\$ 126	\$ 193	\$ 210	\$ 75	\$ 80	\$ 49	\$ 1,031	\$ 319	\$ 10	\$ 329	\$ 6,642	\$ 745	\$ -	\$ 1,600.44
Energy Star Homes	\$ 8,103	\$ 320	\$ -	\$ 418	\$ 304	\$ 316	\$ 407	\$ 131	\$ 165	\$ 90	\$ 2,150	\$ 553	\$ 16	\$ 569	\$ 4,226	\$ 440	\$ 23	\$ 695
Home Performance with Energy Star	\$ 14,705	\$ 112	\$ -	\$ 157	\$ 114	\$ 146	\$ 169	\$ 55	\$ 63	\$ 41	\$ 856	\$ -	\$ -	\$ -	\$ 11,545	\$ 1,064	\$ -	\$ 1,240
Energy Star Products	\$ 7,954	\$ 437	\$ -	\$ 796	\$ 579	\$ 1,422	\$ 1,029	\$ 566	\$ 359	\$ 268	\$ 5,457	\$ 80	\$ 3	\$ 83	\$ 553	\$ 69	\$ 1,184	\$ 609
Home Energy Reports	\$ 1,485	\$ 64	\$ -	\$ 148	\$ 107	\$ 388	\$ 329	\$ 133	\$ 118	\$ 63	\$ 1,350	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 135
Res Customer Engagement Platform	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ISO-NE Forward Capacity Market Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Total Residential	\$ 42,596	\$ 1,057	\$ -	\$ 1,692	\$ 1,230	\$ 2,465	\$ 2,144	\$ 960	\$ 785	\$ 511	\$ 10,843	\$ 952	\$ 29	\$ 981	\$ 22,966	\$ 2,318	\$ 1,207	\$ 4,279
Commercial/Industrial Programs																		
Large Business Energy Solutions	\$ 52,787	\$ 3,794	\$ -	\$ 5,855	\$ 4,255	\$ 12,339	\$ 11,895	\$ 4,102	\$ 3,402	\$ 2,346	\$ 47,988	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,798.83
Small Business Energy Solutions	\$ 18,329	\$ 1,459	\$ -	\$ 2,244	\$ 1,631	\$ 4,060	\$ 3,403	\$ 1,667	\$ 1,337	\$ 863	\$ 16,663	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,666
Municipal Energy Solutions	\$ 4,616	\$ 139	\$ -	\$ 215	\$ 157	\$ 982	\$ 1,078	\$ 285	\$ 321	\$ 122	\$ 3,299	\$ -	\$ -	\$ -	\$ 805	\$ 101	\$ -	\$ 410
C&I Customer Partnerships	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Energy Rewards RFP Program	\$ 5,532	\$ 532	\$ -	\$ 844	\$ 614	\$ 953	\$ 906	\$ 467	\$ 407	\$ 307	\$ 5,029	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 503
C&I Customer Engagement Platform	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Education	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ISO Forward Capacity Market Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Total Commercial & Industrial	\$ 81,264	\$ 5,924	\$ -	\$ 9,159	\$ 6,656	\$ 18,333	\$ 17,281	\$ 6,521	\$ 5,467	\$ 3,638	\$ 72,980	\$ -	\$ -	\$ -	\$ 805	\$ 101	\$ -	\$ 7,378
Smart Start	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 123,860	\$ 6,981	\$ -	\$ 10,851	\$ 7,886	\$ 20,798	\$ 19,425	\$ 7,480	\$ 6,253	\$ 4,149	\$ 83,823	\$ 952	\$ 29	\$ 981	\$ 23,771	\$ 2,420	\$ 1,207	\$ 11,658

Performance Incentive Calculation 2019

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.86	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	899,053,849	
4. Threshold Lifetime kWh Savings (65%) ²	584,385,002	
5. Implementation Expenses	\$17,346,545	
6. Benefit / Cost Percentage of Implementation Expenses	2.75%	
7. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 8. Commercial & Industrial Performance Incentive	 \$954,060	
9. Maximum Commercial & Industrial Performance Incentive (6.875%)	\$1,192,575	
 Residential Incentive		
10. Benefit / Cost Ratio	1.96	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	118,124,668	
13. Threshold Lifetime kWh Savings (65%)	76,781,034	
14. Implementation Expenses	\$15,683,159	
15. Benefit / Cost Percentage of Implementation Expenses	2.75%	
16. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 17. Residential Performance Incentive	 \$862,574	
18. Maximum Residential Performance Incentive (6.875%)	\$1,078,217	
 19. TOTAL PLANNED / EARNED INCENTIVE	 \$1,816,634	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. Benefit Cost ratios are Nominal\$/Nominal\$

**Planned Versus Actual Benefit / Cost Ratio by Sector
 2019**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
1. Benefits (Value) From Eligible Programs	\$ 81,264,048	\$ -
2. Implementation Expenses	\$ 17,346,545	\$ -
3. Customer Contribution	\$ 25,443,640	\$ -
4. Performance Incentive	\$ 954,060	\$ -
5. Total Costs	\$ 43,744,244	\$ -
6. Benefit/Cost Ratio - Commercial & Industrial Sector	1.86	
Residential		
7. Benefits (Value) From Eligible Programs	\$ 42,595,887	\$ -
8. Implementation Expenses	\$ 15,683,159	\$ -
9. Customer Contribution	\$ 5,235,082	\$ -
10. Performance Incentive	\$ 862,574	\$ -
11. Total Costs	\$ 21,780,815	\$ -
12. Benefit/Cost Ratio - Residential Sector	1.96	

**Lifetime Energy Savings by Sector and Program
2019**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
Large Business Energy Solutions	597,820,312	
Small Business Energy Solutions	198,624,361	
Municipal Energy Solutions	50,768,525	
C&I Customer Partnerships	-	
Energy Rewards RFP Program	51,840,651	
C&I Customer Engagement Platform	-	
Education	-	
ISO Forward Capacity Market Expenses	-	
Total Commercial & Industrial	899,053,849	
Residential		
Home Energy Assistance	10,921,950	
Energy Star Homes	21,106,853	
Home Performance with Energy Star	8,579,038	
Energy Star Products	61,242,368	
Home Energy Reports	16,274,459	
Res Customer Engagement Platform	-	
ISO-NE Forward Capacity Market Expenses	-	
Total Residential	118,124,668	

Eversource Energy Home Energy Assistance Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
Oil-Wxn: Air Sealing, Insulation, Water measures	152	189	243			382	21	22	21	87%	87%			1,664,496	31	31	31	98%	98%	94,038	126,244	150,453
Propane-Wxn: Air Sealing, Insulation, Water measures	54	91	87			382	21	22	21	87%	87%			604,174	21	15	21	98%	98%	23,253	29,043	37,203
Gas-Wxn: Air Sealing, Insulation, Water measures	60	212	96			382	22	16	22	87%	87%			696,629	20	0.7	20	98%	98%	25,906	2,391	41,448
Kerosene-Wxn: Air Sealing, Insulation, Water measures	108	75	173			382	20	22	20	87%	87%			1,149,927	23	22	23	98%	98%	49,109	35,866	78,568
Electric-Wxn: Air Sealing, Insulation, Water measures	13		20	5,611		5,611	19		21	87%	87%	1,164,201		2,083,968								
Cord Wood-Wxn: Air Sealing, Insulation, Water measures	13	24	21			382	20	22	20	87%	87%			140,700	47	44	47	98%	98%	12,312	22,933	19,699
Wood Pellets-Wxn: Air Sealing, Insulation, Water measures	9		14			382	21		20	87%	87%			93,800	47		47	98%	98%	8,609		13,133
Baseload SF homes	92		147				17	17	20	87%	87%							98%	100%			
LED Lighting Products	448	542	4,321	369	349	58	8	8	5	87%	87%	1,149,529	1,314,964	1,084,393								
Refrigerator	204	260	256	586	747	842	12	12	12	87%	87%	1,247,849	1,961,069	2,248,222								
Direct Install Water Measures (if broken out from Wxn)	277	2,176		382	97		21	20		87%		1,906,222	3,658,490									
Oil Boiler Replacement, >=87% AFUE	23	45	47	130		77	20	18	25	87%	87%	51,657		78,657	16	16	16	98%	100%	7,144	12,799	18,798
Propane Boiler Replacement, >=95% AFUE	3	19	8	399		399	20	18	25	87%	87%	20,529		68,322	20	12	17	98%	100%	1,167	3,950	3,289
Gas Boiler Replacement, >=95% AFUE		2	2					18	25	87%	87%					(24)	20	98%	100%	(856)		1,131
Kerosene Boiler Replacement, >=87% AFUE		7	1					18	25	87%	87%					13	6	98%	100%		1,618	180
Oil Furnace Replacement, >=87% ECM	25	45	50	76	16	7	18	16	20	87%	87%	29,205	10,118	5,769	17		24	98%	100%	7,266		23,781
Propane Furnace Replacement, >=95% ECM	11	19	29	2,148	12	131	18	18	20	87%	87%	381,543	3,629	66,460	17		17	98%	100%	3,488		9,793
Natural Gas Furnace Replacement, >=95% ECM		2	8		8,404		18	18	20	87%	87%		256,786				23	98%	100%			3,642
Kerosene Furnace Replacement, >=87% ECM	19	7	45	99		88	18	1	20	87%	87%	29,126		68,571	10		10	98%	100%	3,226		9,008
Base load SF Lighting			883			58			5		87%			221,647								
Base load SF Fridge			74			842			12		87%			646,214								
Program Summary*	1,510	3,715	6,524	429,220	532,325	823,838						5,979,861	7,205,056	10,921,950	11,489	10,944	19,721			235,517	233,989	410,125

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. All Annual Energy Savings and Measure Lives were updated for 2018-2020 to reflect more current information based on 2016 participation results. LED Measure Life updated to 5 years.
2. US DOE WAP Collaboration: The federal Weatherization Assistance Program is expected to fund additional work and achieve additional MMBTU Savings.
3. For gas heated homes, customer may be served by both gas and electric utilities in this program, but gas companies will pay for the weatherization project up to their cap first and will claim associated MMBTU savings.

Eversource Energy ENERGY STAR® Homes

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
SF-Oil Heated Home	2	3		342	1,766		25	25		100%		16,121	132,475		47	48		100%		2,230	3,585	
SF-Propane Heated Home	87	105	154	1,276	877	1,008	25	25	24	100%	100%	2,767,842	2,303,100	3,679,929	57	64	39	100%	100%	124,161	167,298	142,384
SF-Gas Heated Home	19	7	17	1,436	1,394	1,069	25	25	23	100%	100%	676,909	243,875	415,319	48	54	36	100%	100%	22,612	9,520	13,946
SF-Electric Heated Home			42			5,604			25	100%	100%			5,779,153				100%	100%			
SF-Wood Pellets Heated Home			2			6,836			25	100%	100%			335,692				100%	100%			1,657
SF-Cord Wood Heated Home	6			1,074			25			100%		151,880			50		34	100%		7,054		
GSHP Heating	19	8		13,750	14,535		25	25		100%		6,481,541	2,906,900									
GSHP Cooling	19	8		169	7		25	25		100%		79,664	1,350									
GSHP Water	19	8		1,954	1,488		25	25		100%		921,086	297,625									
GSHP SF -Lights and Appliances	19	8		(162)	(170)		25	25		100%		(76,364)	(33,950)									
SF-Air Source Heating (including DHPs)	19	13		9,570	11,109		25	25		100%		4,511,153	3,610,350			2		100%			708	
SF-Heat Pump Cooling (including DHPs)	19	13		71	(167)		25	25		100%		33,468	(54,400)									
SF-Heat Pump Water	19	13		520	1,027		25	25		100%		245,120	333,775									
SF-Air Source Heating (Lights and Appliances)	19	13		(79)	(180)		25	25		100%		(37,239)	(58,625)									
Split System ASHP-MF Heated Home (heating)	57	142		1,930	1,789		25	25		100%		2,728,974	6,351,450			2		100%			5,860	
Split System ASHP-MF Heated Home (cooling)	57	142		14	116		25	25		100%		20,246	410,825									
Split System ASHP-MF Heated Home (water)	57	142		105	447		25	25		100%		148,283	1,585,550									
Split System ASHP-MF Lights and Appliances	57	142		(16)	6		25	25		100%		(22,528)	22,775									
LED Lighting Products	3,771	3,593	4,887	25	25	16	8	8	5	100%	100%	743,280	708,180	389,381								
LED Fixture	754	653	958	25	25	16	8	8	5	100%	100%	148,656	128,706	76,356								
Clothes Washer	53	65	107	124	124	89	11	11	14	100%	100%	71,960	88,596	133,269	0.5	0.5	0.3	100%	100%	263	324	404
Clothes Dryer		1		160	160	160	12	12	12	100%			1,920									
Refrigerator	339	402	715	41	41	41	12	12	12	100%	100%	168,462	199,535	351,650								
Programmable / Wifi Thermostats	321						15			100%												
MF-Wood Heated Home			6			21			21		100%			2,554			9		100%			1,114
MF-Propane Heated Home	38	74	103	1,660	1,472	866	25	25	24	100%	100%	1,564,998	2,723,275	2,131,775	24	17	11	100%	100%	22,853	31,849	27,561
MF-Gas Heated Home	132	113	335	347	594	493	25	25	23	100%	100%	1,144,994	1,677,175	3,833,291	16	9	9	100%	100%	53,884	26,275	67,088
MF-Electric Heated Home			163			1,004			24		100%			3,978,485								
Program Summary*	5,898	5,668	7,489	986,318	1,027,594	971,509						22,488,505	23,580,462	21,106,853	9,336	9,833	10,813			233,057	245,420	254,155

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. The Energy Star Homes Heat Pump Program was merged in to the Energy Star Homes program for 2015-2016. The new single family homes with heat pumps are listed at the bottom of the table, broken down by savings type (heating, cooling, hot water, lights & appliances)
2. Measure Life Changes:
> LEDs measure life changed to 5 years.
3. Lighting & Appliance Energy Savings have been updated per the EPA Energy Star Appliance Calculators and NH evaluation results.

Eversource Energy Home Performance with ENERGY STAR®

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
Oil-Wxn: Air Sealing, Insulation, Water measures	264	203	520			225	20	21	20	100%	100%			2,337,829	37	36	37	100%	100%	199,536	154,764	389,015
Propane-Wxn: Air Sealing, Insulation, Water measures	107	82	210			225	19	21	20	100%	100%			944,442	31	32	31	100%	100%	62,822	54,118	128,486
Gas-Wxn: Air Sealing, Insulation, Water measures		1						7		100%						0.09		100%			1	
Kerosene-Wxn: Air Sealing, Insulation, Water measures	4	2	9			225	19	18	20	100%	100%			39,179	25	34	25	100%	100%	2,168	1,072	4,365
Electric-Wxn: Air Sealing, Insulation, Water measures	14		27	5,730		5,730	20		20	100%	100%	1,546,383		3,051,725								
Cord Wood-Wxn: Air Sealing, Insulation, Water measures	22	89	44			225	21	21	20	100%	100%			196,816	42	19	42	100%	100%	19,015	35,717	36,319
Wood Pellets-Wxn: Air Sealing, Insulation, Water measures	18		35			225	21		20	100%	100%			157,177	42		42	100%	100%	15,212		29,004
Baseload SF	92		181				18		20	100%	100%			-								
Baseload MF	549						20			100%												
LED Lighting Products			5,531			24			5		100%			660,971								
Refrigerator			51			804			12		100%			494,115								
Direct Install Water Measures (if broken out from Wxn)		57			52			8		100%			24,036									
Elec Savings on Fossil Homes (Lighting)	249	207		369	396		8	8		100%		736,154	656,232									
Elec Savings on Fossil Homes (Refrigerators)	62	9		586	894		12	12		100%		438,253	96,600									
Elec Savings on Fossil Homes (Elec Shell, secondary heat)	62	1,474		1,500	148		18	20		100%		1,701,831	4,351,090									
Elec Savings on Baseload Homes (Lighting)	641			369			8			100%		1,893,200										
Elec Savings on Baseload Homes (Refrigerators)	64			586			12			100%		450,830										
Oil Boiler Replacement, >=87% AFUE			29			142			25		100%			101,814			3		100%			1,936
Propane Boiler Replacement, >=95% AFUE			7			142			25		100%			25,453			10		100%			1,828
Oil Furnace Replacement, >=87% ECM			34			168			20		100%			113,573			5		100%			3,110
Propane Furnace Replacement, >=95% ECM			26			168			20		100%			86,040			6		100%			3,226
Oil Boiler Replacement (Oil, AFUE>=85%)	9	6					20	18							5	4				990	467	
Propane Boiler Replacement (LP, AFUE>=90%)	1	17					20	20							10	8				208	2,811	
Oil Boiler Replacement (Oil, AFUE>=90%)	3						20								11					645		
Propane Boiler Replacement (LP, AFUE>=95%)	2						20								13					524		
Oil Furnace Replacement (Oil, AFUE>=85%)	10			168	168		18	18		100%		30,240			18					3,240		
Propane Furnace Replacement (LP, AFUE>=95%)	10			168	168		18	18		100%		30,240			5					810		
Oil Furnace Replacement (Oil, AFUE>=90%)	4			168	168		18	18		100%		13,440			21					1,656		
Propane Furnace Replacement (LP, AFUE>=97%)	1			168	168		18	18		100%		2,688			6					94		
Base load SF Lighting			1,632			24			5		100%			194,987					100%			
Base load SF Fridge			18			804			12		100%			174,917					100%			
Program Summary*	2,190	2,147	8,352	578,127	311,703	578,374						6,843,259	5,127,958	8,579,038	15,376	11,843	29,827			306,920	248,949	597,290

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions.

- For LED Annual kWh savings, we assumed the same weighted average energy savings as the lighting program but longer hours use (3 hours/day vs. 2 hours/day as the program requires retrofit lights to be on 3 or more hours/day).
The measure life for LEDs has been updated to 5 years
- Ancillary kWh Savings are no longer separated as they are included in the weatherization measure savings as appropriate.

Eversource Energy ENERGY STAR® Products Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
LED Lighting Products	248,557	327,267	384,845	25	25	16	8	8	5	100%	89%	48,932,510	64,427,876	27,281,099								
CFL		1,181			29			5		100%			171,133									
Mini Split HP (assumed 1.5 ton) (cooling)-Mini Split Baseline			1,263			103			18		100%			2,339,306								
Mini Split HP (assumed 1.5 ton) (heating)-Electric Resistance Baseline						1,926			18		100%											
Mini Split HP (assumed 1.5 ton) (heating) -Mini Split Baseline			1,263			328			18		100%			7,461,482								
						-																
Air Source Heat Pump (cooling) (assumed 3 ton)			35			220			18		100%			137,214								
Air Source Heat Pump (heating) (assumed 3 ton)			35			2,087			18		100%			1,301,683								
DHW Heat Pump Water Heater 50 gal			237			1,384			13		100%			4,267,612								
DHW Heat Pump Water Heater 80 gal			9			1,640			13		100%			201,474								
Wifi Thermostat (Heating&Cooling)			200			25			15		100%			74,577			7		100%			19,802
ES Dehumidifier	1,853	1,341	1,390	162	162	214	12	12	12	100%	100%	3,608,496	2,611,230	3,568,878								
ES Pool Pumps (2 speed)	26	2	23	782	782	842	10	10	10	100%	100%	202,785	15,634	197,028								
ES Pool Pumps (Variable Speed)	10	117	9	946	946	1,062	10	10	10	100%	100%	99,172	1,106,675	95,580								
ES Clothes Washers	6,211	3,111	1,070	124	124	89	11	11	11	14	100%	8,465,906	4,240,324	1,328,232	0.11	0.11	0.27	100%	100%	7,502	3,757	4,030
ES Clothes Dryers	607	1,196	880	160	160	93	12	12	12	100%	100%	1,166,684	2,298,912	985,248								
ES Dishwasher						23			13		100%											
ES AC (central) 3 ton			241			200			14		100%			674,406								
ES Room AC (room)	2,248	1,046	2,023	16	16	16	9	9	9	100%	100%	326,829	152,097	294,254								
ES Room Air Purifier	143	187	129	390	390	391	9	9	9	100%	50%	501,715	657,099	226,158								
ES Refrigerator	4,495	1,486	982	41	41	64	12	12	12	100%	100%	2,231,287	737,585	757,711								
Primary Refrigerator Recycling/Pickup/Turnin	87	97	78	492	492	492	8	8	8	100%	100%	340,333	381,510	307,938								
2nd Refrigerator Pickup/Turnin	389	520	350	755	755	755	8	8	8	100%	100%	2,351,902	3,140,800	2,114,604								
2nd Freezer Pickup/Turnin	87	193	78	658	658	658	8	8	8	100%	100%	455,497	1,015,952	412,171								
Room AC Pickup/Turnin	24		22	16	16	16	5	5	5	100%	100%	1,946		1,750								
ECM Motors for FHA Furnace Fans			16			168			18	100%	100%			47,628								
ECM Motor for FWH Circulating Pump			16			142			15	100%	100%			33,548								
Refrigerator CEE Tier 2+			655			96			12	100%	100%			757,318								
Washer Tier CEE Tier 2+			2,497			156			14	100%	100%			5,449,225			0.44		100%			15,414
Dryer Hybrid			110			229			12	100%	100%			302,808								
Dryer Heat Pump			110			472			12	100%	100%			623,436								
Central Air 16 SEER 3 ton (\$250 default)	153	38		200	200		12	12		100%		367,153	90,389									
DHPMS 16 SEER 1 ton (Cooling Only Unit)	7	20		67	67		12	12		100%		5,364	16,240									
Wifi Thermostat on Central Air and Cooling DHPMS	10			32	25		12	12		100%		3,719										
ASHP 16.0 SEER Cooling 3 ton (\$250 default)	4	31		124	41		12	12		100%		5,900	15,390									
ASHP 18.0 SEER Cooling 3 ton (\$500 default)	10	41		220	73		12	12		100%		26,517	36,414									
Wifi Thermostat on ASHP 16.0 SEER Cooling 3 ton	5			32	10		12	12		100%		1,844										
ASHP 9.0 HSPF heating 3 ton (\$250 default)	4	31		1,031	172		12	12		100%		49,133	64,085									
ASHP 10 HSPF heating 3 ton (\$500 default)	10	41		2,087	348		12	12		100%		251,554	172,723									
Wifi Thermostats on ASHP HSPF heating	5			297	45		12	12		100%		17,109										
DHPMS Cooling (per ton) 16 SEER (\$250 default)	119	148		67	67		12	12		100%		95,300	118,447									
DHPMS Cooling (per ton) 18 SEER (\$500 default)	703	926		99	99		12	12		100%		832,905	1,097,191									
Wifi Thermostat on DHPMS Cooling	10	161		16	16		12	12		100%		1,801	30,178									
DHPMS Heating (per ton) 9.0 HSPF (\$250 default)	119	148		344	172		12	12		100%		491,333	305,336									
DHPMS Heating (per ton) 10 HSPF (\$500 default)	703	926		696	348		12	12		100%		5,869,591	3,866,022									
Wifi Thermostat on DHPMS Heating	10	161		107	107		12	12		100%		12,339	206,743									
DHW: Heat Pump Water Heater 50 Gallon Electric, EF>=2.3 (ES=EF)	151	87		1,775	1,775		10	10		100%		2,674,298	1,544,250									
DHW: Heat Pump Water Heater 80 Gallon Electric, EF>=2.3 (ES=EF)	6	24		2,672	2,672		10	10		100%		156,853	641,280									
Program Summary*	266,764	340,529	398,565	8,938,588	10,433,413	7,991,276						79,547,776	89,161,514	61,242,368	682.0	341.6	2,709.0			7,501.9	3,757.5	39,246.5

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. The Annual kWh Savings for LEDs were adjusted to reflect the weighted average of bulbs they are intended to replace (using halogen wattages, per the Energy Security & Independence Act of 2007).
2. Measure Life Changes:
 - > LEDs measure life changed to 5 years.
3. Appliance Energy Savings have been updated per the EPA Energy Star Appliance Calculators and NH evaluation results.

Eversource Energy Home Energy Reports Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
Behavioral Savings	50,000	50,000	105,000	13	47	14	1	1	1	100%	100%	644,800	2,328,439	1,471,533								
Behavioral Savings	50,000	50,000	105,000	10	10	11	2	2	2	100%	100%	969,779	969,779	2,213,185								
Behavioral Savings	50,000	50,000	105,000	7	7	8	3	3	3	100%	100%	1,093,911	1,093,911	2,496,473								
Behavioral Savings	50,000	50,000	105,000	22	22	24	4	4	4	100%	100%	4,422,694	4,422,694	10,093,267								
Program Summary*	200,000	200,000	420,000	2,600,000	4,283,639	5,933,600						7,131,184	8,814,823	16,274,459								

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual kWh Savings were developed with contractor based on 50,000 current customers in 2018; and 100,000 customers in 2019-2020

Eversource Energy Large Business Energy Solutions Programs

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBtu)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBtu)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
Retrofit Track																						
Cooling	6	2	14	36,254	156,455	25,990	13	13	13	99.86%	99.86%	2,591,558	4,062,027	4,548,703								
Heating	7	9	5	58,412	130,605	53,258	13	13	13	99.86%	99.86%	5,287,742	15,259,009	3,673,103								
Lighting	1	2	14	97,775	1,140,600	48,431	13	12	13	99.86%	99.86%	1,324,580	26,949,594	8,672,455								
Lighting-LED	88	116	228	56,327	134,618	63,006	13	13	13	99.86%	99.86%	64,315,994	200,148,030	186,256,162								
LightingOS Only	11	13	9	19,452	38,732	171,497	9	9	9	99.86%	99.86%	1,840,893	4,525,241	13,205,095								
Park Lot Lights	36	22	64	57,026	55,515	91,923	13	13	13	99.86%	99.86%	26,934,461	15,854,678	75,930,723								
Process	39	17	51	133,197	120,484	47,202	14	13	12	99.86%	99.86%	73,200,951	26,017,110	28,342,124								
								-														
New Equipment & Construction Track																						
Cooling	30	32	12	22,256	11,562	45,205	14	14	14	99.86%	99.86%	9,360,923	5,077,767	7,565,636								
Heating	5	12	45	171,327	124,221	130,428	12	15	15	99.86%	99.86%	10,602,401	22,327,985	84,820,718								
Lighting		1	1	57,198	14,875	31,093	15	15	15	99.86%	99.86%	-	222,807	356,137								
Lighting-LED	18	38	43	104,525	73,494	132,571	15	15	15	99.86%	99.86%	28,525,751	41,831,758	85,440,681								
LightingOS Only	8	1	1	22,102	3,048	77,456	10	10	11	99.86%	99.86%	1,812,892	30,437	538,861								
Park Lot Lights	10	7	19	90,032	47,714	104,415	15	15	15	99.86%	99.86%	13,962,345	5,002,839	29,705,967								
Process	22	30	69	130,093	225,907	71,471	15	16	14	99.86%	99.86%	44,602,402	110,958,802	68,763,947								
Program Summary*	703	687	1,147	20,649,115	34,891,136	44,385,526						284,362,894	478,268,085	597,820,312								

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings were updated based on recent trends and reflect expected project sizes.

Eversource Energy Small Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
Retrofit Track																						
Cooling	4	3	8	20,474	44,207	24,014	10	13	10	100%	100%	882,342	1,661,290	2,037,107								
Lighting	126	171	201	25,421	30,723	29,126	10	13	13	100%	107%	32,115,239	68,421,490	81,532,765								
Ext. Lighting	18	43	45	40,400	24,493	31,448	13	13	13	100%	103%	9,594,122	13,864,286	18,893,754								
Process	14	2	35	30,226	38,807	21,488	13	13	14	100%	100%	5,496,693	1,008,982	10,378,474								
Custom		4	21		32,559	20,247		15	13	100%	100%		1,980,707	5,594,317								
Motors		3	1		25,831	25,951		13	11	100%	100%		1,007,396	284,208								
Refrigeration	2	4	2	30,247	62,712	43,844	13	12	15	100%	100%	591,947	3,075,980	1,363,793								
DHW			4			14,235			10		100%			573,245								
New Equipment & Construction Track																						
Cooling	6	15	7	12,771	4,185	26,148	15	17	15	100%	100%	1,102,306	1,051,320	2,840,424								
Heating		1	0		1,237	12,808		15	15	100%	100%		18,555	57,250								
Lighting	34	36	43	23,214	50,909	27,565	15	15	15	100%	107%	11,788,537	27,215,107	18,545,419								
Ext. Lighting	19	10	1	23,214	70,340	26,198	15	15	15	100%	103%	6,597,900	10,551,045	292,537								
Process	18	6	32	16,445	29,939	8,617	15	15	15	100%	100%	4,478,604	2,694,480	4,169,032								
Custom		1	21		7,927	6,876		15	15	100%	100%		118,905	2,147,140								
Motors		4	2		2,846	59,222		15	15	100%	100%		170,745	2,033,708								
Refrigeration			0			34,711			15		100%			165,117								
Direct Install Track																						
Ext Lighting	32		281	31,427		1,719	13		13	100%	103%	12,679,713		6,334,899								
Lighting	108	110	40	19,765	20,930	73,867	13	13	13	100%	107%	27,475,487	29,842,959	40,502,587								
Refrigeration	5	9	6	16,068	19,675	12,025	12	10	13	100%	100%	1,023,943	1,788,356	878,586								
Program Summary*	389	424	753	9,330,764	12,254,082	14,994,004						113,826,834	164,471,603	198,624,361								

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Expanded New, Retrofit and Direct Install into detailed measures for 2018 and beyond. Used data from past years to develop 2018-2020 plan by measure type.
2. Other Sales: Customer may still purchase bulbs through catalog, but the quantities have been very small so did not plan for any in 2018-2020.

Eversource Energy Municipal Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan		2019
ALL																						
Cooling			0.03			27,471			15		100%			13,301								
Heating			11			14,143			21		100%			3,379,814								
Lighting			1			161,695			15		107%			1,984,256								
Lighting-LED			10			54,313			13		107%			7,573,554								
LightingOS Only			1			67,550			9		100%			389,087								
Park Lot Lights			28			80,010			14		103%			32,234,929								
Process			5			88,985			13		100%			5,193,583								
FF Savings			56						15								61		100%			51523
New Equipment & Construction Track																						
Cooling	4	1		3,431	2,609		15	15		100%		208,477	39,135									
Heating		2						15									216		100%			6472
Lighting	18	4		29,852	42,514		15	15		100%		7,859,494	2,543,727									
Park Lot Lights	10	11		20,092	66,525		13	15		100%		2,724,004	10,976,655									
Process	0.33	1		44,838	81,537		15	15		100%		223,774	1,223,055									
Custom	0.46			70,944			15			100%		493,395										
Ext. Ltg.	0.46	1		22,932	7,300		15	13		100%		159,438	94,900									
Motors		1			291,112			15		100%			4,366,680									
Retrofit																						
Cooling	3			54,666			14			100%		2,548,127										
Custom	6			19,269			13			100%		1,532,330										
Ext. Ltg.	8	11		15,164	6,541		13	13		100%		1,586,820	944,396									
Heating		13			12,579			12		100%			1,968,695									
Lighting		15			47,108			13		100%			9,187,620									
Lighting-LED	71	8		23,130	61,863		13	14		100%		21,423,514	6,899,432									
LightingOS Only	2	1		26,556	270		9	9		100%		428,747	2,430									
Motors		5			18,874			13		100%			1,226,797									
Park Lot Lights	2	9		118,862	125,820		14	15		100%		4,052,886	16,917,091									
Process	2			131,614			13			100%		3,529,609										
Weatherization Track																						
Ret: Heating (LP Savings)		13						16		100%					429			100%	100%		91566	
Ret: Heating (Oil Savings)		13						25		100%					3			100%	100%		1098	
HVAC Track																						
Weatherization - Oil heat	5						20								28	28		100%		2800		
Weatherization - Propane Heat	5						20								28	28		100%		2800		
DMSHP (any, SEER >= 20, HSPF >= 10, Cooling)	10			124			12			100%		15,046										
DMSHP (oil, SEER >= 20, HSPF >= 10, Heating)	5			536			12			100%		32,443										
DMSHP (LP, SEER >= 20, HSPF >= 10, Heating)	5			536			12			100%		32,443										
Energy Star Wifi Thermostat (DMSHP)	10			110			15			100%		16,454										
Heat Pump Water Heater (50 gallons)	2			1,775			10			100%		28,400										
Heat Pump Water Heater (80 gallons)	2			2,672			10			100%		42,752										
Furnace: LP, w/ ECM. 95% AFUE, up to 150 MBH	2			168			18			100%		6,048						100%			324	
Furnace: LP, w/ ECM. 97% AFUE, up to 150 MBH	2			168			18			100%		5,376						100%			288	
Boiler: LP Condensing AFUE >= 90%, up to 300 MBH	1						20								9			100%			490	
Boiler: Oil AFUE >= 85%, up to 300 MBH	1						20								31			100%			354	
Boiler: LP Condensing AFUE >= 95%, up to 300 MBH	1						20								22			100%			445	
Boiler: Oil AFUE >= 87%, up to 300 MBH	1						20								28			100%			354	
Boiler: LP Condensing AFUE >= 90%, up to 301 - 499 MBH	1						20								22			100%			934	
Boiler: Oil AFUE >= 85%, up to 301 - 499 MBH	1						20								58			100%			675	
Boiler: LP Condensing AFUE >= 90%, up to 500 - 999 MBH	1						20								42			100%			1717	
Boiler: Oil AFUE >= 85%, up to 500 - 999 MBH	1						20								107			100%			1266	
Boiler: LP Condensing AFUE >= 90%, up to 1000 - 1700 MBH	1						20								79			100%			3155	
Boiler: Oil AFUE >= 85%, up to 1000 - 1700 MBH	1						20								197			100%			2277	
Steam Trap (Oil)	48						6								142			100%			7402	
Steam Trap (LP)	48						6								26			100%			7402	
Boiler Reset Control (Oil)	2						15								19			100%			515	
Boiler Reset Control (LP)	2						15								19			100%			515	
Direct Install Track																						
Lighting	42	21		21,742	26,559		13	13		100%		11,820,108	7,226,295									
Refrigeration		2			9,199			10		100%			183,970									
Program Summary*	325.4	132.0	111.3	4,419,676.1	4,524,552.2	3,599,498.0						58,769,686.4	63,800,877.6	50,768,524.7	3,433.1	6,050.7	3,434.8			33,710.1	99,136.4	51,522.6

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

- Used data from past years to develop 2018-2020 plan by measure type.
- Since this is funded by RGI, the 2018-2020 Plan includes some Weatherization Projects and as well as incentives for customers replacing heating systems to upgrade to more efficient models.

Eversource Energy C&I RFP Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019	2017 Plan	2017 Actual	2019	2017	2019	2017 Plan	2017 Actual	2019
Cooling	2		17	191,396		23,658	13		15	100%	100%	4,251,844		6,067,131								
Lighting						0			0		100%											
Lighting-LED	2	2	5	146,136	10,652	107,205	13	13	13	100%	100%	3,603,138	276,952	7,483,973								
LightingOS Only		1	1		624	122,710		9	9	100%	100%		5,616	1,223,884								
Park Lot Lights	2		2	99,008		49,770	8		13	100%	100%	1,529,655		1,360,512								
Process	10	6	18	242,964	331,674	162,448	13	12	12	100%	100%	31,051,720	24,652,056	35,705,152								
Program Summary*	15	15	15	3,171,974	2,011,970	4,205,420						40,436,356	24,934,624	51,840,651								

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Estimated project mix based on trends seen in projects completed 2015 - 2016.

**PSNH d/b/a Eversource Energy
2019 System Benefits Charge ("SBC") Calculation
(\$ in 000's)**

Year	EE Total Budget	RGGI Revenues	FCM Revenues	Other Revenues	Carryforward with Interest	Current Year Interest	SBC Requirement	Forecasted Distribution (MWH)	SBC Rate EE Portion (cents/kWh)	SBC Rate EAP Portion (cents/kWh)	SBC Rate LBR Portion (cents/kWh)	2019 Total SBC Rate (cents/kWh)
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M
2019	\$ 34,898	\$ 1,868	\$ 5,777	\$ -	\$ (386)	\$ (18)	\$ 27,658	7,852,026	0.352	0.150	0.062	0.565

Col. A: Effective year (January 1, 2019 - December 31, 2019)
Col. B: Company Forecast
Col. C: Company Forecast
Col. D: Company Forecast
Col. E: Company Forecast
Col. F: Page 2, Line 9 Col. N + Line 11 Col. O
Col. G: Page 3, Line 11, Col. O
Col. H: Col. B - Col. C - Col. D - Col. E - Col. F - Col. G
Col. I: Company Forecast
Col. J: (Col. H / Col. I) x 100
Col. K: EAP Portion of SBC Rate
Col. L: Page 4, Col. G
Col. M: Col. J + Col. K + Col. L

PSNH d/b/a Eversource Energy
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2018 to December 31, 2018
(\$ in 000's)

Line	Description	Carryover 12/31/17	Actual Jan 2018	Actual Feb 2018	Actual Mar 2018	Actual Apr 2018	Actual May 2018	Actual Jun 2018	Actual Jul 2018	Forecast Aug 2018	Forecast Sep 2018	Forecast Oct 2018	Forecast Nov 2018	Forecast Dec 2018	2018 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	SBC Revenues		1,740	1,837	1,726	1,751	1,503	1,695	1,943	2,003	1,688	1,708	1,690	1,909	21,193
2	RGGI Revenues		-	-	-	419	-	483	-	-	483	-	-	483	1,869
3	FCM Revenues		444	438	433	430	441	449	610	495	495	495	495	495	5,719
4	Other Revenues		-	-	-	-	-	-	-	-	-	-	-	-	-
5	Total Revenues		2,184	2,275	2,159	2,600	1,944	2,627	2,553	2,497	2,666	2,203	2,185	2,887	28,781
6	Program Expenses		378	1,104	1,796	1,026	1,990	2,094	1,813	3,683	3,761	3,761	3,761	3,761	28,929
7	Total Program Expenses		378	1,104	1,796	1,026	1,990	2,094	1,813	3,683	3,761	3,761	3,761	3,761	28,929
8	Current Month (Over)/Under Recovery		(1,806)	(1,171)	(363)	(1,574)	46	(534)	(740)	1,185	1,095	1,558	1,576	874	
9	Cumulative (Over)/Under Recovery	386	(1,420)	(2,591)	(2,954)	(4,528)	(4,482)	(5,016)	(5,756)	(4,570)	(3,476)	(1,917)	(341)	533	
10	Interest @ Prime Rate		0.38%	0.38%	0.38%	0.40%	0.40%	0.40%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
11	Interest on Deferral Balance		(2)	(8)	(10)	(15)	(18)	(19)	(22)	(22)	(17)	(11)	(5)	0	(148)
12	Monthly Sales (MWh)		756,620	667,944	627,520	636,684	546,614	616,421	706,414	728,243	613,972	621,188	614,641	694,243	7,830,504
13	EE SBC Rate		0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	

Line 1: (Line 12 x Line 13) / 100
Line 2: Company Forecast
Line 3: Company Forecast
Line 4: Company Forecast
Line 5: Sum of Lines 1 through Lines 4
Line 6: Company Forecast
Line 7: Sum of Line 6
Line 8: Line 7 - Line 5
Line 9: Prior month Line 9 + Current month Line 8
Line 10: Prime Rate / 12
Line 11: (Prior Month Line 9 + Current Month Line 9) / 2 x Line 10
Line 12: Company Forecast
Line 13: 2018 approved rate

PSNH d/b/a Eversource Energy
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2019 to December 31, 2019
(\$ in 000's)

Line	Description	Carryover 12/31/2018	Forecast Jan 2019	Forecast Feb 2019	Forecast Mar 2019	Forecast Apr 2019	Forecast May 2019	Forecast June 2019	Forecast Jul 2019	Forecast Aug 2019	Forecast Sep 2019	Forecast Oct 2019	Forecast Nov 2019	Forecast Dec 2019	2019 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	SBC Revenues		2,513	2,227	2,286	2,054	2,124	2,279	2,578	2,585	2,182	2,176	2,173	2,463	27,639
2	RGGI Revenues		-	-	467	-	-	467	-	-	467	-	-	467	1,868
3	FCM Revenues		481	481	481	481	481	481	481	481	481	481	481	481	5,777
4	Other Revenues		-	-	-	-	-	-	-	-	-	-	-	-	-
5	Total Revenues		2,995	2,709	3,234	2,535	2,606	3,227	3,059	3,066	3,130	2,657	2,654	3,411	35,284
6	Program Expenses		2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	34,898
7	Total Program Expenses		2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	2,908	34,898
8	Current Month (Over)/Under Recovery		(86)	200	(326)	373	302	(319)	(151)	(158)	(222)	251	254	(503)	
9	Cumulative (Over)/Under Recovery	386	299	499	173	546	848	529	378	220	(2)	249	503	0	
10	Interest @ Prime Rate		0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
11	Interest on Deferral Balance		1	2	1	1	3	3	2	1	0	1	2	1	18
12	Monthly Sales (MWh)		713,982	632,725	649,381	583,424	603,529	647,459	732,393	734,264	619,828	618,166	617,224	699,653	7,852,026
13	EE SBC Rate		0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	

Line 1: (Line 12 x Line 13) / 100
Line 2: Page 1, Col. C
Line 3: Page 1, Col. D
Line 4: Page 1, Col. E
Line 5: Sum of Lines 1 through Lines 4
Line 6: Page 1, Col. B
Line 7: Sum of Line 6
Line 8: Line 7 - Line 5
Line 9: Prior month Line 9 + Current month Line 8
Line 10: Prime Rate / 12
Line 11: (Prior Month Line 9 + Current Month Line 9) / 2 x Line 10
Line 12: Company Forecast
Line 13: Page 1, Col. J

PSNH d/b/a Eversource Energy
2019 System Benefits Charge Calculation (LBR Component)
(\$ in 000's)

Year	Forecasted LBR Revenue	Prior Year Deferral with Interest	Current Year Interest	Total LBR Revenue	Forecasted Distribution (MWH)	SBC Rate LBR Portion (cents/kWh)
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G
2019	\$ 4,741	\$ 167	\$ (3)	\$ 4,905	7,852,026	0.062

Col. A: Effective year (January 1, 2019 - December 31, 2019)
Col. B: Page 5, Line 21, Col. O / 1000
Col. C: Page 6, Line 7, Col. N
Col. D: Page 7, Line 6, Col. O
Col. E: Col. B + Col. C + Col. D
Col. F: Company Forecast
Col. G: (Col. E * 100) / Col. F

**PSNH d/b/a Eversource Energy
Monthly and Cumulative Savings and Lost Base Revenue
January 1, 2019 to December 31, 2019**

Line	Description	Cumulative Annual kWh Savings / Monthly kW Savings	Forecast Jan 2019	Forecast Feb 2019	Forecast Mar 2019	Forecast Apr 2019	Forecast May 2019	Forecast June 2019	Forecast Jul 2019	Forecast Aug 2019	Forecast Sep 2019	Forecast Oct 2019	Forecast Nov 2019	Forecast Dec 2019	2019 Annual kWh and Monthly kW Savings	Cumulative Annual kWh and Monthly kW Savings
		12/31/2018														
1	Residential Annual kWh Savings (2017, 2018, & 2019)	26,186,394	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	1,358,217	16,298,600	42,484,994
2	C&I Annual kWh Savings (2017 & 2018)	94,971,106	-	-	-	-	-	-	-	-	-	-	-	-	-	94,971,106
3	C&I Annual kWh Savings (2019)	-	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	5,598,703	67,184,440	67,184,440
4	C&I Monthly Installed kW Savings*		728	728	728	728	728	728	728	728	728	728	728	728	8,734	8,734
Total 2019 Lost Base Revenue																
5	Monthly Residential Savings (2019)		56,592	56,592	56,592	56,592	56,592	56,592	56,592	56,592	56,592	56,592	56,592	56,592		
6	Cumulative Residential Savings	2,182,200	2,238,792	2,351,977	2,465,161	2,578,346	2,691,531	2,804,715	2,917,900	3,031,085	3,144,270	3,257,454	3,370,639	3,483,824		
7	Average Residential kWh Distribution Rate		0.04025	0.04025	0.04025	0.04025	0.04025	0.04025	0.04025	0.04025	0.04025	0.04025	0.04025	0.04025		
8	Total Lost Residential Revenue		\$ 90,104	\$ 94,660	\$ 99,215	\$ 103,770	\$ 108,326	\$ 112,881	\$ 117,436	\$ 121,992	\$ 126,547	\$ 131,102	\$ 135,658	\$ 140,213	\$	1,381,903
9	Monthly C&I Savings (2017 & 2018)	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259	7,914,259		
10	Average C&I kWh Distribution Rate		0.02767	0.02767	0.02767	0.02767	0.02767	0.02767	0.02767	0.02767	0.02767	0.02767	0.02767	0.02767		
11	Lost C&I kWh Revenue		\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966	\$ 218,966		
12	Monthly C&I Savings (2019)		233,279	233,279	233,279	233,279	233,279	233,279	233,279	233,279	233,279	233,279	233,279	233,279		
13	Cumulative C&I Savings	-	233,279	699,838	1,166,397	1,632,955	2,099,514	2,566,072	3,032,631	3,499,190	3,965,748	4,432,307	4,898,865	5,365,424		
14	Average C&I kWh Distribution Rate		0.01177	0.01177	0.01177	0.01177	0.01177	0.01177	0.01177	0.01177	0.01177	0.01177	0.01177	0.01177		
15	Lost C&I kWh Revenue		\$ 2,746	\$ 8,239	\$ 13,732	\$ 19,224	\$ 24,717	\$ 30,209	\$ 35,702	\$ 41,195	\$ 46,687	\$ 52,180	\$ 57,672	\$ 63,165		
16	Monthly C&I kW Savings (2019)		364	364	364	364	364	364	364	364	364	364	364	364		
17	Cumulative Monthly C&I kW Savings	-	364	1,092	1,820	2,547	3,275	4,003	4,731	5,459	6,187	6,914	7,642	8,370		
18	Average C&I Demand Rate		6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42	6.42		
19	Lost C&I Demand Revenue		\$ 2,335	\$ 7,006	\$ 11,677	\$ 16,348	\$ 21,019	\$ 25,689	\$ 30,360	\$ 35,031	\$ 39,702	\$ 44,372	\$ 49,043	\$ 53,714		
20	Total Lost C&I kWh and Demand Revenue		\$ 224,048	\$ 234,211	\$ 244,374	\$ 254,538	\$ 264,701	\$ 274,865	\$ 285,028	\$ 295,191	\$ 305,355	\$ 315,518	\$ 325,682	\$ 335,845	\$	3,359,356
21	Total Lost Revenue		\$ 314,152	\$ 328,871	\$ 343,589	\$ 358,308	\$ 373,027	\$ 387,746	\$ 402,464	\$ 417,183	\$ 431,902	\$ 446,620	\$ 461,339	\$ 476,058	\$	4,741,259

Lines 1-3: Company Forecast
Line 4: Line 1 + Line 2 + Line 3
Line 5: Company Forecast
Line 6: Line 5
Line 7: Line 2 / 12
Line 8: Prior Month Line 8 + Current Month Line 7
Line 9: Page 8, Column 7
Line 10: Line 8 x Line 9
Line 11: Line 1 / 12
Line 12: Page 8, Column 8
Line 14: Line 3 / 12
Line 15: Prior Month Line 15 + Current Month Line 14
Line 16: Page 8, Column 7
Line 17: Line 15 x Line 16
Line 18: Line 5 / 12
Line 19: Prior Month Line 19 + Current Month Line 18
Line 20: Page 8, Column 6
Line 21: Line 19 x Line 20
Line 22: Line 10 + Line 13 + Line 17 + Line 21

PSNH d/b/a Eversource Energy
Lost Base Revenue Reconciliation
January 1, 2018 to December 31, 2018
(\$ in 000's)

Line	Description	Actual Carryover 12/31/2017	Actual Jan 2018	Actual Feb 2018	Actual Mar 2018	Actual Apr 2018	Actual May 2018	Actual Jun 2018	Actual Jul 2018	Forecast Aug 2018	Forecast Sep 2018	Forecast Oct 2018	Forecast Nov 2018	Forecast Dec 2018	2018 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	Revenue Recovery		130	200	188	191	164	185	212	218	184	186	184	208	2,252
2	Lost Revenues		135	140	153	161	171	188	198	213	227	244	261	277	2,367
3	Current Month (Over)/Under Recovery		5	(61)	(36)	(30)	7	3	(14)	(6)	43	58	76	69	116
4	Cumulative (Over)/Under Recovery	52	57	(4)	(40)	(70)	(62)	(59)	(73)	(79)	(36)	22	98	167	
5	Interest @ Prime Rate		0.38%	0.38%	0.38%	0.40%	0.40%	0.40%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
6	Interest on Deferral Balance		0	0	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0	1	(1)
7	Cummulative (Over)/Under Recovery Incl Carrying Charge		57	(4)	(39)	(70)	(63)	(60)	(74)	(80)	(37)	21	97	167	
8	Monthly Sales (MWh)		756,620	667,944	627,520	636,684	546,614	616,421	706,414	728,243	613,972	621,188	614,641	694,243	7,830,504
9	SBC Rate (LBR Component)		0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030	

Line 1: (Line 8 x Line 9) / 100
Line 2: Company Forecast
Line 3: Line 2 - Line 1
Line 4: Prior month Line 4 + Current month Line 3
Line 5: Prime Rate / 12
Line 6: (Prior Month Line 4 + Current Month Line 4) / 2 x Line 5
Line 7: Line 4 + Line 6
Line 8: Company Actuals and Forecast
Line 9: Approved Rates

PSNH d/b/a Eversource Energy
Lost Base Revenue Reconciliation
January 1, 2019 to December 31, 2019
(\$ in 000's)

Line	Description	Forecast Carryover 12/31/2018	Forecast Jan 2019	Forecast Feb 2019	Forecast Mar 2019	Forecast Apr 2019	Forecast May 2019	Forecast Jun 2019	Forecast Jul 2019	Forecast Aug 2019	Forecast Sep 2019	Forecast Oct 2019	Forecast Nov 2019	Forecast Dec 2019	2019 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	Revenue Recovery		443	392	403	362	374	401	454	455	384	383	383	434	4,868
2	Lost Revenues		314	329	344	358	373	388	402	417	432	447	461	476	4,741
3	Current Month (Over)/Under Recovery		(129)	(63)	(59)	(3)	(1)	(14)	(52)	(38)	48	63	79	42	(127)
4	Cumulative (Over)/Under Recovery	167	38	(25)	(84)	(88)	(89)	(102)	(154)	(192)	(145)	(81)	(3)	40	
5	Interest @ Prime Rate		0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
6	Interest on Deferral Balance		0	0	(0)	(0)	(0)	(0)	(1)	(1)	(1)	(0)	(0)	0	(3)
7	Cummulative (Over)/Under Recovery Incl Carrying Charge		39	(25)	(84)	(88)	(89)	(103)	(156)	(194)	(147)	(85)	(6)	36	
8	Monthly Sales (MWh)		713,982	632,725	649,381	583,424	603,529	647,459	732,393	734,264	619,828	618,166	617,224	699,653	7,852,026
9	SBC Rate (LBR Component)		0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	

Line 1: (Line 8 x Line 9) / 100
Line 2: Page 5, Line 21 / 1000
Line 3: Line 2 - Line 1
Line 4: Prior month Line 4 + Current month Line 3
Line 5: Prime Rate / 12
Line 6: (Prior Month Line 4 + Current Month Line 4) / 2 x Line 5
Line 7: Line 4 + Line 6
Line 8: Company Forecast
Line 9: Company Forecast

Eversource
Calculation of Forecasted Average Distribution Rate for Lost Revenue
Based on Actual Billing Determinants and Distribution Rates*

	(1)	(2)	(3) = (1) + (2)	(4)	(5)	(6) = (1) + (4)	(7) = (2) / (5)	(8) = (3) / (5)
For the Period 07/01/17 Through 06/30/18								
Rate Class	Revenue			Delivery kW	Delivery kWh	Average Distribution Rate \$/kW	Average Distribution Rate \$/kWh ^(a)	Average Distribution Rate \$/kWh ^(b)
	Demand Charges	kWh Charges	Total Demand and kWh Charges					
Residential	\$ -	\$ 126,308,907	\$ 126,308,907	\$ -	3,138,357,008	N/A	N/A	\$ 0.04025
General Service Rate G	\$ 35,256,059	\$ 38,175,341	\$ 73,431,400	4,046,223	1,703,273,539	\$ 9.43	\$ 0.02241	\$ 0.04311
Primary General Service Rate GV	\$ 23,010,148	\$ 9,812,649	\$ 32,822,797	4,251,134	1,656,083,534	\$ 2.31	\$ 0.00593	\$ 0.01982
Large General Service Rate LG	<u>\$ 13,899,519</u>	<u>\$ 5,462,448</u>	<u>\$ 19,361,967</u>	<u>2,947,989</u>	<u>1,180,885,664</u>	<u>\$ 1.85</u>	<u>\$ 0.00463</u>	<u>\$ 0.01640</u>
Commercial and Industrial	\$ 72,165,726	\$ 53,450,438	\$ 125,616,164	11,245,346	4,540,242,737	\$ 6.42	\$ 0.01177	\$ 0.02767

* Excludes the outdoor lighting rates (Rate OL and Rate EOL), the Customer/Meter charge revenue from each rate, and the on/off peak kWh associated with Rate B >= 115 kV under Rate LG.

(a) For 2019 C&I Savings

(b) For 2017 and 2018 C&I Savings

Bill Impacts of Changes in System Benefits Charge - PSNH d/b/a Eversource Energy

	<u>Current Rates*</u>	<u>2019</u>
System Benefits Charge (\$/kWh)	\$ 0.00455	\$ 0.00565
<u>Bill per month, including PSNH default energy service</u>		
Residential Rate R (625 kWh/month)	\$ 118.76	\$ 119.45
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)	\$ 1,761.16	\$ 1,772.13
<u>Change from previous rate level - \$ per month</u>		
Residential Rate R (625 kWh/month)		\$ 0.69
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)		\$ 10.97
<u>Change from previous rate level - %</u>		
Residential Rate R (625 kWh/month)		0.6%
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)		0.6%

* Stated at Eversource's rate levels effective April 1, - July 31 2018.

Eversource
Calculation of Distribution Revenue at the Rate Levels in Effect July 2017 - June 2018
Based on Billing Determinants for the Twelve Months Ending June 2018

Residential Rate R								
Rate	Source	July 1, 2017 - December 31, 2017			January 1, 2018 - June 30, 2018			July 2017 - Jun 2018 Total
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units Revenue
Standard	Customer Charge	2,618,086	\$ 12.64	\$ 33,092,607	2,630,086	\$ 12.69	\$ 33,375,791	5,248,172 \$ 66,468,398
	All kWh	1,488,583,049	\$ 0.04125	\$ 61,404,051	1,519,610,226	\$ 0.04141	\$ 62,927,059	3,008,193,275 \$ 124,331,110
Uncontrolled Water Heating	Customer Charge	259,829	\$ 4.45	\$ 1,156,239	257,056	\$ 4.47	\$ 1,149,040	516,885 \$ 2,305,279
	All kWh	42,811,188	\$ 0.02022	\$ 865,642	51,317,728	\$ 0.02030	\$ 1,041,750	94,128,916 \$ 1,907,392
Controlled Water Heating	Customer Charge	1,560	\$ 7.85	\$ 12,246	1,511	\$ 7.88	\$ 11,907	3,071 \$ 24,153
	All kWh	257,549	\$ 0.00120	\$ 309	303,863	\$ 0.00120	\$ 365	561,412 \$ 674
LCS - Radio-controlled & 8 Hour Switch	Customer Charge	20,593	\$ 9.07	\$ 186,779	20,563	\$ 9.11	\$ 187,329	41,156 \$ 374,107
	All kWh	10,126,170	\$ 0.00120	\$ 12,151	24,276,216	\$ 0.00120	\$ 29,131	34,402,386 \$ 41,283
LCS - 8 Hour No Switch	Customer Charge	634	\$ 7.85	\$ 4,977	617	\$ 7.88	\$ 4,862	1,251 \$ 9,839
	All kWh	129,713	\$ 0.00120	\$ 156	226,656	\$ 0.00120	\$ 272	356,369 \$ 428
LCS - 10,11 Hour Switch	Customer Charge	30	\$ 9.07	\$ 272	30	\$ 9.11	\$ 273	60 \$ 545
	All kWh	9,274	\$ 0.02438	\$ 226	7,663	\$ 0.02448	\$ 188	16,937 \$ 414
LCS - 10,11 Hour No Switch	Customer Charge	601	\$ 7.85	\$ 4,718	579	\$ 7.88	\$ 4,563	1,180 \$ 9,280
	All kWh	120,394	\$ 0.02438	\$ 2,935	153,037	\$ 0.02448	\$ 3,746	273,431 \$ 6,682
Time of Day	Customer Charge	221	\$ 29.35	\$ 6,486	231	\$ 29.47	\$ 6,808	452 \$ 13,294
	On Peak kWh	70,792	\$ 0.13183	\$ 9,333	83,664	\$ 0.13235	\$ 11,073	154,456 \$ 20,405
	Off Peak kWh	114,867	\$ 0.00192	\$ 221	154,959	\$ 0.00193	\$ 299	269,826 \$ 520
Total Residential	Customer/Meter	2,901,554		\$ 34,464,324	2,910,673		\$ 34,740,573	5,812,227 \$ 69,204,896
	Demand	-		-	-		-	- \$ -
	kWh	1,542,222,996		\$ 62,295,023	1,596,134,012		\$ 64,013,883	3,138,357,008 \$ 126,308,907
				\$ 96,759,347			\$ 98,754,456	\$ 195,513,803

General Service Rate G								
Rate	Source	July 1, 2017 - December 31, 2017			January 1, 2018 - June 30, 2018			July 2017 - Jun 2018 Total
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units Revenue
Standard	Single Phase Customer Charge	335,447	\$ 14.83	\$ 4,974,679	335,734	\$ 14.89	\$ 4,999,079	671,181 \$ 9,973,758
	Three Phase Customer Charge	118,192	\$ 29.64	\$ 3,503,211	118,793	\$ 29.76	\$ 3,535,280	236,985 \$ 7,038,491
	Demand Charge > 5 kW	2,112,374	\$ 8.69	\$ 18,356,530	1,923,148	\$ 8.72	\$ 16,769,854	4,035,522 \$ 35,126,384
	First 500 kWh Charge	133,751,554	\$ 0.06959	\$ 9,307,771	253,196,980	\$ 0.06986	\$ 17,688,341	386,948,534 \$ 26,996,112
	Next 1,000 kWh Charge	141,163,171	\$ 0.01724	\$ 2,433,653	123,004,126	\$ 0.01731	\$ 2,129,201	264,167,297 \$ 4,562,854
	All Additional kWh Charge	574,696,563	\$ 0.00610	\$ 3,505,649	463,624,816	\$ 0.00612	\$ 2,837,384	1,038,321,379 \$ 6,343,033
Time of Day	Single Phase Customer Charge	106	\$ 38.42	\$ 4,073	93	\$ 38.57	\$ 3,587	199 \$ 7,660
	Three Phase Customer Charge	129	\$ 54.90	\$ 7,082	131	\$ 55.12	\$ 7,221	260 \$ 14,303
	Demand Charge	6,743	\$ 12.10	\$ 81,590	3,958	\$ 12.15	\$ 48,085	10,701 \$ 129,675
	On peak kWh	184,607	\$ 0.04882	\$ 9,013	126,879	\$ 0.04901	\$ 6,218	311,486 \$ 15,231
	Off peak kWh	311,687	\$ 0.00765	\$ 2,384	222,094	\$ 0.00768	\$ 1,706	533,781 \$ 4,090
Space Heating	Meter Charge	2,533	\$ 2.97	\$ 7,523	2,509	\$ 2.98	\$ 7,477	5,042 \$ 15,000
	All kWh	1,981,927	\$ 0.03413	\$ 67,643	3,212,845	\$ 0.03426	\$ 110,072	5,194,772 \$ 177,715
Uncontrolled Water Heating	Customer Charge	7,772	\$ 4.45	\$ 34,585	7,666	\$ 4.47	\$ 34,267	15,438 \$ 68,852
	All kWh	1,557,242	\$ 0.02022	\$ 31,487	1,861,383	\$ 0.02030	\$ 37,786	3,418,625 \$ 69,274
Controlled Water Heating	Customer Charge	-	\$ 7.85	\$ -	-	\$ 7.88	\$ -	- \$ -
	All kWh	-	\$ 0.00120	\$ -	-	\$ 0.00120	\$ -	- \$ -
LCS - Radio-controlled & 8 Hour Switch	Customer Charge	1,165	\$ 9.07	\$ 10,567	1,154	\$ 9.11	\$ 10,513	2,319 \$ 21,079
	All kWh	1,322,828	\$ 0.00120	\$ 1,587	2,910,378	\$ 0.00120	\$ 3,492	4,233,206 \$ 5,080
LCS - 8 Hour No Switch	Customer Charge	41	\$ 7.85	\$ 322	36	\$ 7.88	\$ 284	77 \$ 606
	All kWh	31,039	\$ 0.00120	\$ 37	36,759	\$ 0.00120	\$ 44	67,798 \$ 81
LCS - 10,11 Hour Switch	Customer Charge	-	\$ 9.07	\$ -	-	\$ 9.11	\$ -	- \$ -
	All kWh	-	\$ 0.02438	\$ -	-	\$ 0.02448	\$ -	- \$ -
LCS - 10,11 Hour No Switch	Customer Charge	12	\$ 7.85	\$ 94	12	\$ 7.88	\$ 95	24 \$ 189
	All kWh	57,360	\$ 0.02438	\$ 1,398	19,300	\$ 0.02448	\$ 472	76,660 \$ 1,871
Total General Service	Customer/Meter	465,397		\$ 8,542,136	466,128		\$ 8,597,802	931,525 \$ 17,139,937
	Demand	2,119,117		\$ 18,438,120	1,927,106		\$ 16,817,939	4,046,223 \$ 35,256,059
	kWh	855,057,978		\$ 15,360,623	848,215,561		\$ 22,814,718	1,703,273,539 \$ 38,175,341
				\$ 42,340,879			\$ 48,230,458	\$ 90,571,337

Primary General Service Rate GV								
Rate	Source	July 1, 2017 - December 31, 2017			January 1, 2018 - June 30, 2018			July 2017 - Jun 2018 Total
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units Revenue
Standard	Customer Charge	8,291	\$ 193.27	\$ 1,602,402	8,298	\$ 194.03	\$ 1,610,061	16,589 \$ 3,212,463
	First 100 kW Demand Charge	803,328	\$ 5.56	\$ 4,466,504	791,250	\$ 5.58	\$ 4,415,175	1,594,578 \$ 8,881,679
	All Additional kW Demand Charge	1,391,116	\$ 5.32	\$ 7,400,737	1,231,281	\$ 5.34	\$ 6,575,041	2,622,397 \$ 13,975,778
	First 200,000 kWh	729,664,285	\$ 0.00604	\$ 4,407,172	711,498,916	\$ 0.00606	\$ 4,311,683	1,441,163,201 \$ 8,718,856
	All Additional kWh	116,319,422	\$ 0.00507	\$ 589,739	96,332,560	\$ 0.00509	\$ 490,333	212,651,982 \$ 1,080,072
Rate B < 115 KV	Administrative Charge	41	\$ 340.50	\$ 13,961	47	\$ 341.84	\$ 16,066	88 \$ 30,027
	Translation Charge	18	\$ 57.12	\$ 1,028	21	\$ 57.34	\$ 1,204	39 \$ 2,232
	Demand Charge	17,049	\$ 4.46	\$ 76,039	17,110	\$ 4.48	\$ 76,653	34,159 \$ 152,691
	First 200,000 kWh	1,238,528	\$ 0.00604	\$ 7,481	1,029,823	\$ 0.00606	\$ 6,241	2,268,351 \$ 13,721
	All Additional kWh	-	\$ 0.00507	\$ -	-	\$ 0.00509	\$ -	- \$ -
Space Heating	Meter Charge	-	\$ 2.97	\$ -	-	\$ 2.98	\$ -	- \$ -
	All kWh	-	\$ 0.03413	\$ -	-	\$ 0.03426	\$ -	- \$ -
Total GV	Customer/Meter	8,350		\$ 1,617,390	8,366		\$ 1,627,332	16,716 \$ 3,244,722
	Demand	2,211,493		\$ 11,943,279	2,039,641		\$ 11,066,868	4,251,134 \$ 23,010,148
	kWh	847,222,235		\$ 5,004,392	808,861,299		\$ 4,808,257	1,656,083,534 \$ 9,812,649
				\$ 18,565,062			\$ 17,502,457	\$ 36,067,519

Large General Service Rate LG									
Rate	Source	July 1, 2017 - December 31, 2017			January 1, 2018 - June 30, 2018			July 2017 - Jun 2018 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
Standard	Customer Charge	625	\$ 604.10	\$ 377,563	627	\$ 606.47	\$ 380,257	1,252	\$ 757,819
	Demand Charge	1,408,962	\$ 4.73	\$ 6,664,390	1,270,776	\$ 4.75	\$ 6,036,186	2,679,738	\$ 12,700,576
	On peak kWh	269,352,227	\$ 0.00506	\$ 1,362,922	243,903,864	\$ 0.00508	\$ 1,239,032	513,256,091	\$ 2,601,954
	Off Peak kWh	339,194,608	\$ 0.00427	\$ 1,448,361	318,181,521	\$ 0.00429	\$ 1,364,999	657,376,129	\$ 2,813,360
Rate B < 115 KV	Administrative Charge	54	\$ 340.50	\$ 18,387	53	\$ 341.84	\$ 18,118	107	\$ 36,505
	Translation Charge	12	\$ 57.12	\$ 685	21	\$ 57.34	\$ 1,204	33	\$ 1,890
	Demand charge	141,075	\$ 4.46	\$ 629,195	127,176	\$ 4.48	\$ 569,748	268,251	\$ 1,198,943
	On peak kWh	1,939,150	\$ 0.00506	\$ 9,812	2,165,816	\$ 0.00508	\$ 11,002	4,104,966	\$ 20,814
	Off Peak kWh	2,859,756	\$ 0.00427	\$ 12,211	3,288,722	\$ 0.00429	\$ 14,109	6,148,478	\$ 26,320
Rate B >= 115 KV	Administrative Charge	31	\$ 340.50	\$ 10,556	33	\$ 341.84	\$ 11,281	64	\$ 21,836
	Translation Charge	-	\$ 57.12	\$ -	13	\$ 57.34	\$ 745	13	\$ 745
	Demand charge	512,892	\$ -	\$ -	400,636	\$ -	\$ -	913,528	\$ -
	On peak kWh	3,376,729	\$ -	\$ -	5,384,690	\$ -	\$ -	8,761,419	\$ -
	Off Peak kWh	9,352,794	\$ -	\$ -	11,674,131	\$ -	\$ -	21,026,925	\$ -
Total LG	Customer/Meter	722		\$ 407,190	747		\$ 411,604	1,469	\$ 818,795
	Demand	2,062,929		\$ 7,293,585	1,798,588		\$ 6,605,934	3,861,517	\$ 13,899,519
	kWh	626,075,264		\$ 2,833,307	584,598,744		\$ 2,629,141	1,210,674,008	\$ 5,462,448
				\$ 10,534,082			\$ 9,646,680		\$ 20,180,762

Outdoor Lighting Rate OL									
Type	Fixture	July 1, 2017 - December 31, 2017			January 1, 2018 - June 30, 2018			July 2017 - Jun 2018 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
High Pressure Sodium	4,000 Lumens	21,216	\$ 15.77	\$ 334,576	21,279	\$ 15.83	\$ 336,846	42,495	\$ 671,422
	5,800 Lumens	3,766	\$ 15.77	\$ 59,390	3,706	\$ 15.83	\$ 58,659	7,472	\$ 118,049
	9,500 Lumens	5603	\$ 20.97	\$ 117,495	5,560	\$ 21.05	\$ 117,036	11,163	\$ 234,531
	16,000 Lumens	4982	\$ 29.65	\$ 147,716	5,034	\$ 29.77	\$ 149,862	10,016	\$ 297,578
	30,000 Lumens	8180	\$ 30.39	\$ 248,590	8,257	\$ 30.51	\$ 251,910	16,437	\$ 500,500
	50,000 Lumens	11395	\$ 30.73	\$ 350,168	11,685	\$ 30.85	\$ 360,496	23,080	\$ 710,664
	130,000 Lumens	1848	\$ 49.32	\$ 91,143	1,897	\$ 49.51	\$ 93,914	3,745	\$ 185,057
	12,000 Lumens	55	\$ 21.68	\$ 1,192	55	\$ 21.77	\$ 1,197	110	\$ 2,390
	34,200 Lumens	36	\$ 27.76	\$ 999	31	\$ 27.87	\$ 864	67	\$ 1,863
	Mercury	3,500 Lumens	32675	\$ 13.91	\$ 454,509	30,146	\$ 13.96	\$ 420,834	62,821
7,000 Lumens		6057	\$ 16.73	\$ 101,334	5,896	\$ 16.80	\$ 99,058	11,953	\$ 200,392
11,000 Lumens		499	\$ 20.69	\$ 10,324	371	\$ 20.77	\$ 7,710	870	\$ 18,034
20,000 Lumens		2578	\$ 25.55	\$ 65,868	2,581	\$ 25.65	\$ 66,205	5,159	\$ 132,073
56,000 Lumens		867	\$ 40.61	\$ 35,209	858	\$ 40.77	\$ 34,978	1,725	\$ 70,187
15,000 Lumens		32	\$ 23.67	\$ 757	20	\$ 23.76	\$ 464	52	\$ 1,222
Metal Halide	5,000 Lumens	1333	\$ 16.45	\$ 21,928	1,359	\$ 16.51	\$ 22,435	2,692	\$ 44,363
	8,000 Lumens	796	\$ 22.51	\$ 17,918	788	\$ 22.60	\$ 17,800	1,584	\$ 35,718
	13,000 Lumens	0	\$ 30.89	\$ -	\$	\$ 31.01	\$ -	-	\$ -
	13,500 Lumens	708	\$ 31.55	\$ 22,337	727	\$ 31.67	\$ 23,032	1,435	\$ 45,369
	20,000 Lumens	1771	\$ 31.55	\$ 55,875	1,887	\$ 31.67	\$ 59,761	3,658	\$ 115,636
	36,000 Lumens	2687	\$ 31.83	\$ 85,527	2,814	\$ 31.96	\$ 89,935	5,501	\$ 175,463
Incandescent	100,000 Lumens	1649	\$ 47.72	\$ 78,690	1,666	\$ 47.91	\$ 79,818	3,315	\$ 158,508
	600 Lumens	537	\$ 9.08	\$ 4,876	534	\$ 9.12	\$ 4,870	1,071	\$ 9,746
	1,000 Lumens	1560	\$ 10.14	\$ 15,818	1,451	\$ 10.18	\$ 14,768	3,011	\$ 30,587
	2,500 Lumens	24	\$ 13.01	\$ 312	24	\$ 13.06	\$ 313	48	\$ 626
Fluorescent	6,000 Lumens	0	\$ 22.35	\$ -	0	\$ 22.44	\$ -	-	\$ -
	20,000 Lumens	12	\$ 34.65	\$ 416	12	\$ 34.79	\$ 417	24	\$ 833
Total Rate OL	Fixtures	110,866		\$ 2,322,971	108,637		\$ 2,313,184	219,503	\$ 4,636,155
	Demand								
	kWh	9,117,859		\$ 2,322,971	7,951,982		\$ 2,313,184	17,069,841	\$ 4,636,155

Outdoor Lighting Rate EOL									
Type	Fixture	July 1, 2017 - December 31, 2017			January 1, 2018 - June 30, 2018			July 2017 - Jun 2018 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
High Pressure Sodium	4,000 Lumens	60,617	\$ 8.39	\$ 508,577	40,760	\$ 8.42	\$ 343,199	101,377	\$ 851,776
	5,800 Lumens	2,807	\$ 8.39	\$ 23,551	1,507	\$ 8.42	\$ 12,689	4,314	\$ 36,240
	9,500 Lumens	6,521	\$ 10.32	\$ 67,297	3,871	\$ 10.36	\$ 40,104	10,392	\$ 107,400
	16,000 Lumens	7,577	\$ 11.35	\$ 85,999	4,504	\$ 11.39	\$ 51,301	12,081	\$ 137,300
	30,000 Lumens	15,189	\$ 11.35	\$ 172,395	11,894	\$ 11.39	\$ 135,473	27,083	\$ 307,868
	50,000 Lumens	1,095	\$ 11.71	\$ 12,822	837	\$ 11.76	\$ 9,843	1,932	\$ 22,666
	130,000 Lumens	367	\$ 22.23	\$ 8,158	350	\$ 22.32	\$ 7,812	717	\$ 15,970
Metal Halide	5,000 Lumens	9,347	\$ 8.72	\$ 81,506	5,615	\$ 8.75	\$ 49,131	14,962	\$ 130,637
	8,000 Lumens	918	\$ 11.52	\$ 10,575	577	\$ 11.57	\$ 6,676	1,495	\$ 17,251
	13,000 Lumens	-	\$ 12.30	\$ -	-	\$ 12.35	\$ -	-	\$ -
	13,500 Lumens	579	\$ 12.95	\$ 7,498	558	\$ 13.00	\$ 7,254	1,137	\$ 14,752
	20,000 Lumens	486	\$ 13.17	\$ 6,401	618	\$ 13.22	\$ 8,170	1,104	\$ 14,571
	36,000 Lumens	347	\$ 13.54	\$ 4,698	435	\$ 13.59	\$ 5,912	782	\$ 10,610
	100,000 Lumens	616	\$ 24.12	\$ 14,858	315	\$ 24.21	\$ 7,626	931	\$ 22,484
LED's	Per Fixture	137,732	\$ 3.36	\$ 462,780	178,608	\$ 3.37	\$ 601,909	316,340	\$ 1,064,688
	Per Watt	1,946,547	\$ 0.0511	\$ 99,469	2,901,583	\$ 0.0513	\$ 148,851	4,848,130	\$ 248,320
	Maintenance credit (contract)			\$ (53)			\$ (25)		\$ (78)
Total Rate EOL	Fixtures	244,198		\$ 1,566,530	250,449		\$ 1,435,925	494,647	\$ 3,002,455
	Demand	-		\$ -	-		\$ -	-	\$ -
	kWh	6,616,388		\$ -	5,596,189		\$ -	12,212,577	\$ -
				\$ 1,566,530			\$ 1,435,925		\$ 3,002,455

Total Retail							
Type	Source	July 1, 2017 - December 31, 2017		January 1, 2018 - June 30, 2018		July 2017 - Jun 2018 Total	
		Units	Revenue	Units	Revenue	Units	Revenue
Total Retail	Customer/Meter	3,376,023	\$ 45,031,040	3,385,914	\$ 45,377,310	6,761,937	\$ 90,408,350
	Fixtures	355,064	\$ 3,889,501	359,086	\$ 3,749,109	714,150	\$ 7,638,609
	Demand	6,393,539	\$ 37,674,984	5,765,335	\$ 34,490,742	12,158,874	\$ 72,165,726
	kWh	3,886,312,720	\$ 85,493,346	3,851,357,787	\$ 94,265,999	7,737,670,506	\$ 179,759,345
			\$ 172,088,871		\$ 177,883,160		\$ 349,972,031

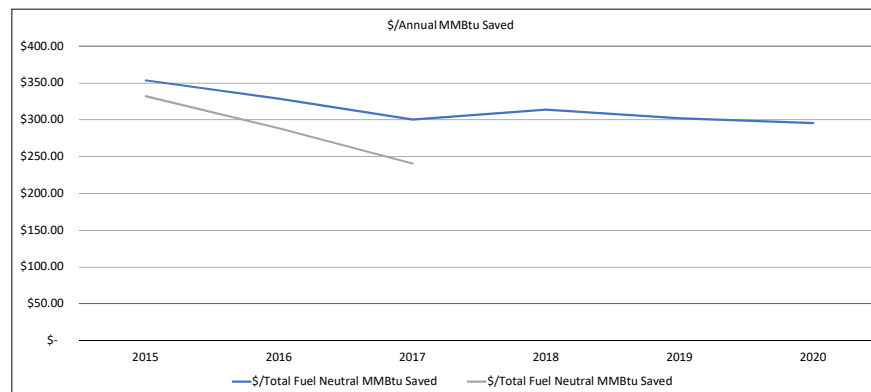
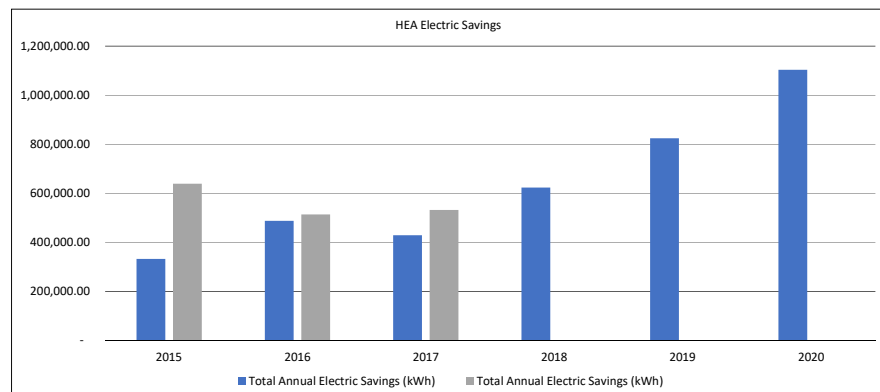
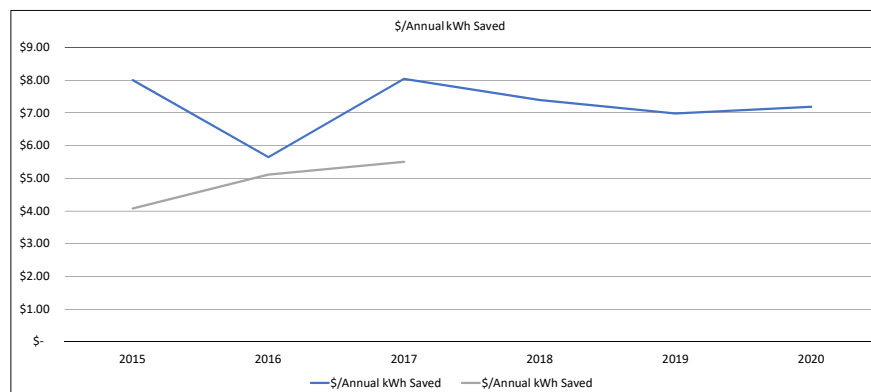
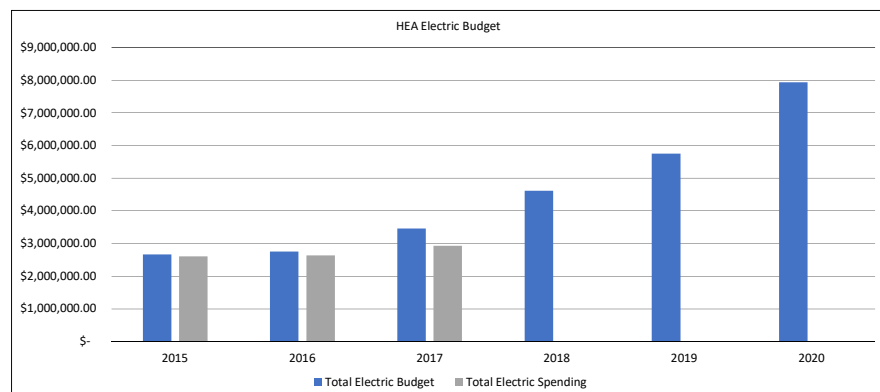
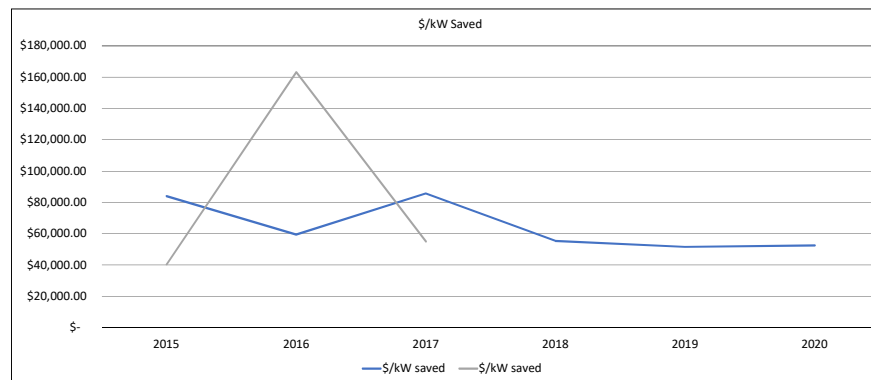
Lost Base Revenue							
Summary of Data Included in the Calculation of the Average Distribution Rates*							
Type	Source	July 1, 2017 - December 31, 2017		January 1, 2018 - June 30, 2018		July 2017 - Jun 2018 Total	
		Units	Revenue	Units	Revenue	Units	Revenue
Total Residential	Demand	-	\$ -	-	\$ -	-	\$ -
	kWh	1,542,222,996	\$ 62,295,023	1,596,134,012	\$ 64,013,883	3,138,357,008	\$ 126,308,907
			\$ 62,295,023		\$ 64,013,883		\$ 126,308,907
Total General Service	Demand	2,119,117	\$ 18,438,120	1,927,106	\$ 16,817,939	4,046,223	\$ 35,256,059
	kWh	855,057,978	\$ 15,360,623	848,215,561	\$ 22,814,718	1,703,273,539	\$ 38,175,341
			\$ 33,798,744		\$ 39,632,656		\$ 73,431,400
Total GV	Demand	2,211,493	\$ 11,943,279	2,039,641	\$ 11,066,868	4,251,134	\$ 23,010,148
	kWh	847,222,235	\$ 5,004,392	808,861,299	\$ 4,808,257	1,656,083,534	\$ 9,812,649
			\$ 16,947,672		\$ 15,875,125		\$ 32,822,797
Total LG	Demand	1,550,037	\$ 7,293,585	1,397,952	\$ 6,605,934	2,947,989	\$ 13,899,519
	kWh	613,345,741	\$ 2,833,307	567,539,923	\$ 2,629,141	1,180,885,664	\$ 5,462,448
			\$ 10,126,891		\$ 9,235,076		\$ 19,361,967
Total	Demand	5,880,647	\$ 37,674,984	5,364,699	\$ 34,490,742	11,245,346	\$ 72,165,726
	kWh	3,857,848,950	\$ 85,493,346	3,820,750,795	\$ 94,265,999	7,678,599,744	\$ 179,759,345
			\$ 123,168,330		\$ 128,756,741		\$ 251,925,071

* The Lost Base Revenue calculation excludes the outdoor lighting rates (Rate OL and Rate EOL), the Customer/Meter charge revenue from each rate, and the on/off peak kWh associated with Rate B >= 115 kWh under Rate LG.

Home Energy Assistance

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 2,661,464.00	\$ 2,751,286.00	\$ 3,450,394.00	\$ 4,611,266.00	\$ 5,749,403.00	\$ 7,927,639.00
	Total Annual Electric Savings (kWh)	332,704.68	487,614.55	429,219.81	623,609.04	823,838.00	1,102,644.60
	\$/Annual kWh Saved	\$ 8.00	\$ 5.64	\$ 8.04	\$ 7.39	\$ 6.98	\$ 7.19
2)	Total Electric Budget	\$ 2,661,464.00	\$ 2,751,286.00	\$ 3,450,394.00	\$ 4,611,266.00	\$ 5,749,403.00	\$ 7,927,639.00
	Total kW saved	31.70	46.33	40.26	83.25	111.46	151.12
	\$/kW saved	\$ 83,961.98	\$ 59,383.90	\$ 85,705.87	\$ 55,388.90	\$ 51,582.52	\$ 52,458.82
3)	Total Electric Budget	\$ 2,661,464.00	\$ 2,751,286.00	\$ 3,450,394.00	\$ 4,611,266.00	\$ 5,960,136.00	\$ 7,927,639.00
	Total Fuel Neutral MMBtu Saved	7,527.20	8,371.96	11,489.26	14,683.27	19,721.49	26,820.91
	\$/Total Fuel Neutral MMBtu Saved	\$ 353.58	\$ 328.63	\$ 300.31	\$ 314.05	\$ 302.22	\$ 295.58

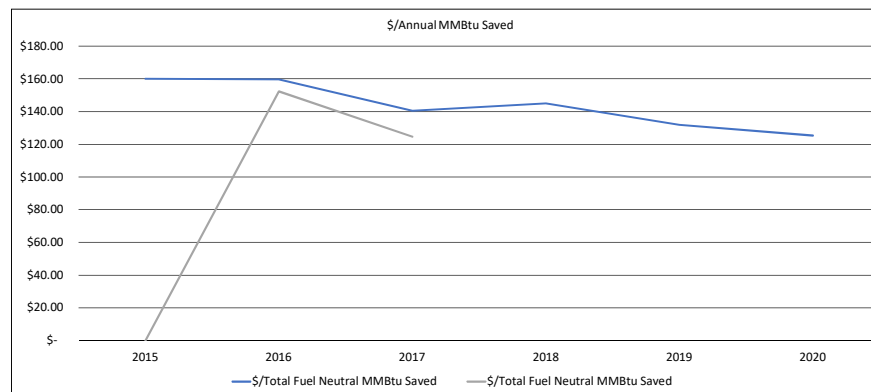
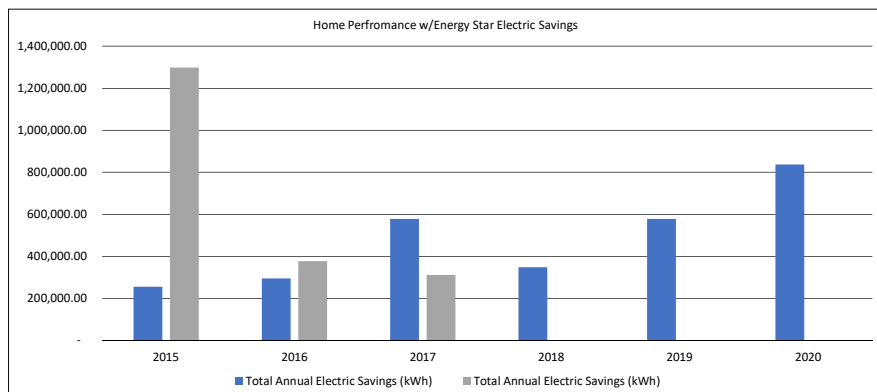
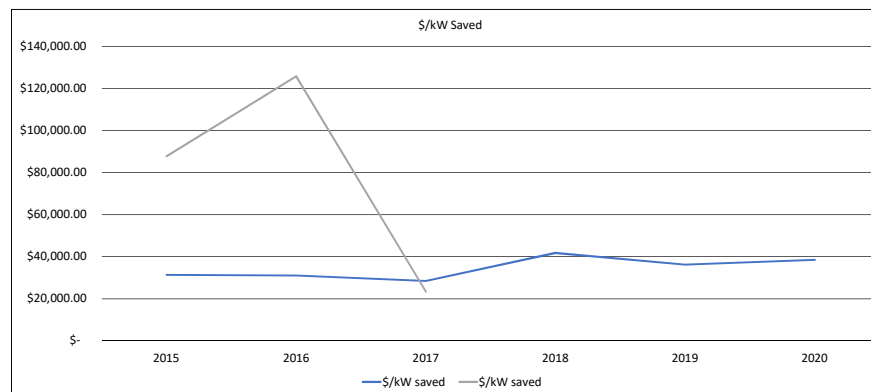
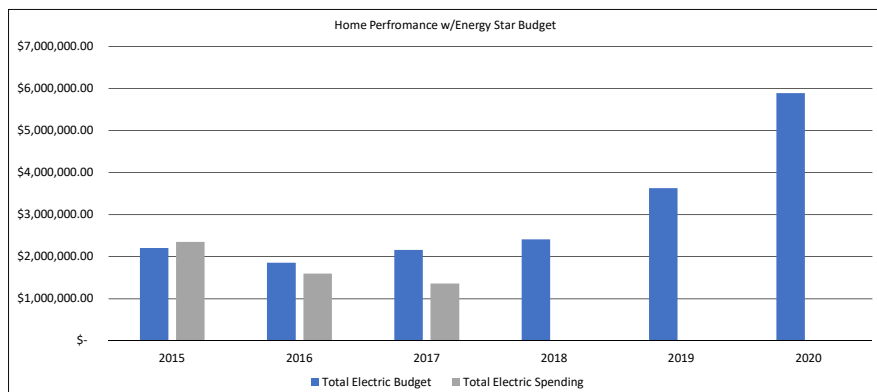
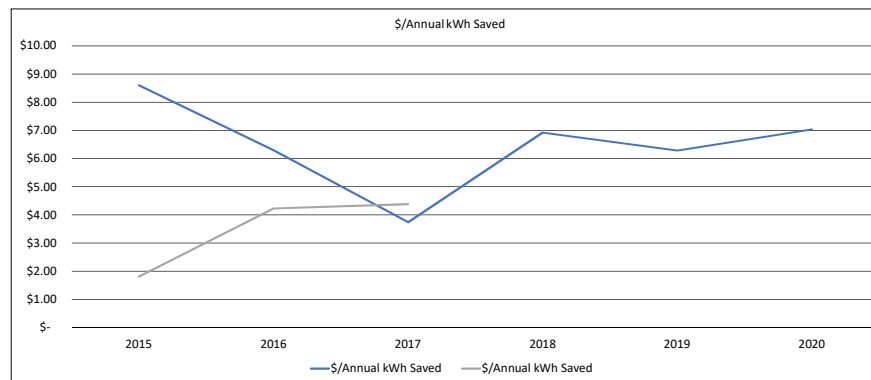
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 2,602,622.35	\$ 2,630,799.37	\$ 2,930,672.42
	Total Annual Electric Savings (kWh)	638,554.22	514,041.71	532,325.13
	\$/Annual kWh Saved	\$ 4.08	\$ 5.12	\$ 5.51
2)	Total Electric Spending	\$ 2,602,622.35	\$ 2,630,799.37	\$ 2,930,672.42
	Total kW saved	64.34	16.12	53.36
	\$/kW saved	\$ 40,451.13	\$ 163,221.09	\$ 54,918.84
3)	Total Electric Spending	\$ 2,602,622.35	\$ 2,630,799.37	\$ 2,630,800.37
	Total Fuel Neutral MMBtu Saved	7,839.29	9,126.57	10,943.68
	\$/Total Fuel Neutral MMBtu Saved	\$ 332.00	\$ 288.26	\$ 240.39



Home Performance w/Energy Star

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 2,203,268.95	\$ 1,860,400.33	\$ 2,161,078.61	\$ 2,415,741.54	\$ 3,631,394.07	\$ 5,890,311.74
	Total Annual Electric Savings (kWh)	256,056.96	295,674.17	578,126.50	348,885.75	578,374.00	837,859.55
	\$/Annual kWh Saved	\$ 8.60	\$ 6.29	\$ 3.74	\$ 6.92	\$ 6.28	\$ 7.03
2)	Total Electric Budget	\$ 2,203,268.95	\$ 1,860,400.33	\$ 2,161,078.61	\$ 2,415,741.54	\$ 3,631,394.07	\$ 5,890,311.74
	Total kW saved	70.29	59.98	75.98	57.84	100.38	153.07
	\$/kW saved	\$ 31,344.04	\$ 31,015.03	\$ 28,442.09	\$ 41,764.27	\$ 36,174.81	\$ 38,480.30
3)	Total Electric Budget	\$ 2,203,268.95	\$ 1,860,400.33	\$ 2,161,078.61	\$ 2,415,741.54	\$ 3,935,216.60	\$ 5,890,311.74
	Total Fuel Neutral MMBtu Saved	13,764.71	11,649.95	15,376.05	16,650.12	29,826.87	46,998.56
	\$/Total Fuel Neutral MMBtu Saved	\$ 160.07	\$ 159.69	\$ 140.55	\$ 145.09	\$ 131.94	\$ 125.33

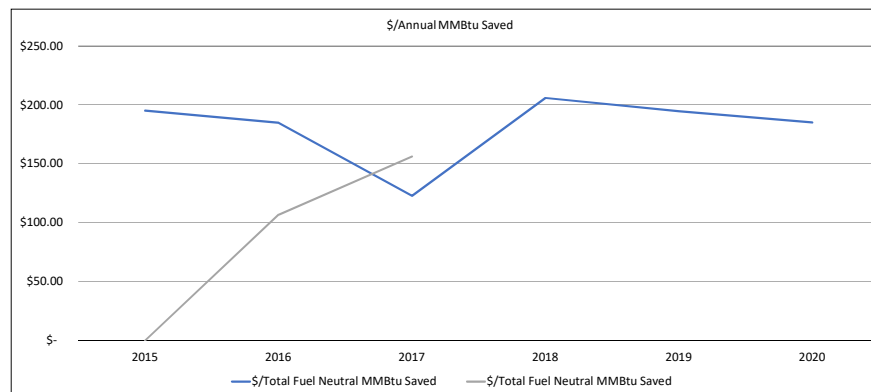
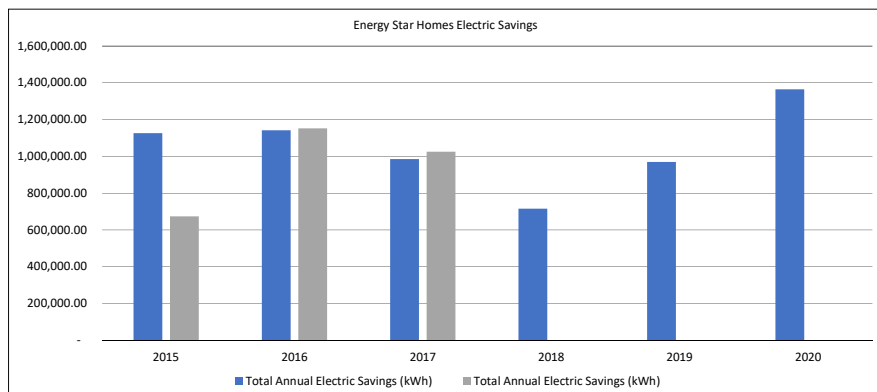
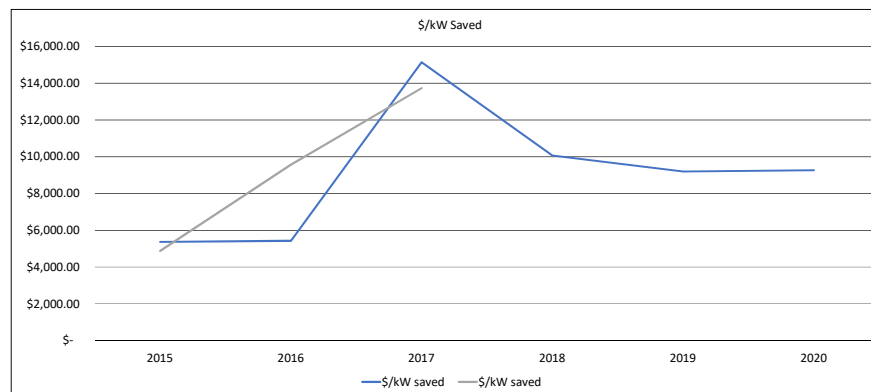
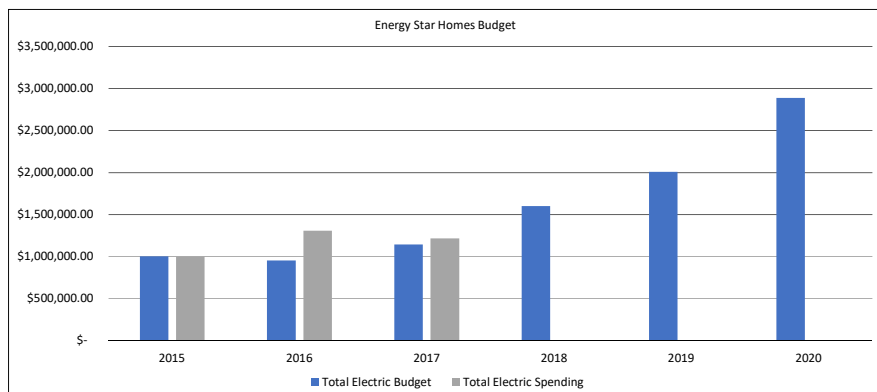
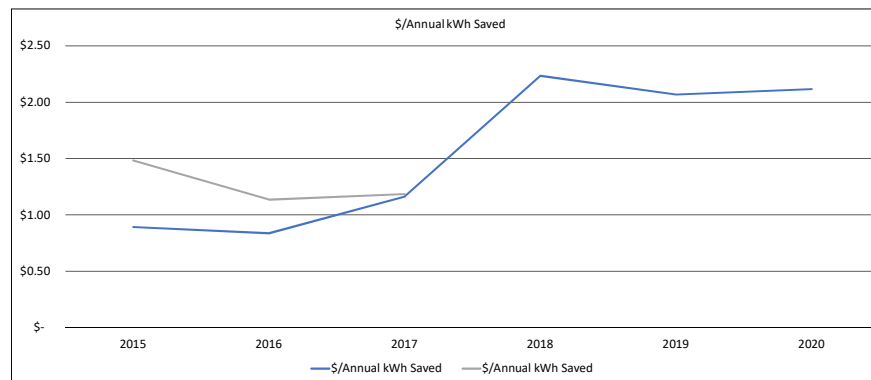
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 2,349,224.06	\$ 1,599,052.72	\$ 1,365,080.05
	Total Annual Electric Savings (kWh)	1,297,571.81	377,818.52	311,703.00
	\$/Annual kWh Saved	\$ 1.81	\$ 4.23	\$ 4.38
2)	Total Electric Spending	\$ 2,349,224.06	\$ 1,599,052.72	\$ 1,365,080.05
	Total kW saved	26.75	12.71	58.41
	\$/kW saved	\$ 87,835.36	\$ 125,789.42	\$ 23,371.81
3)	Total Electric Spending	\$ 2,349,224.06	\$ 1,599,052.72	\$ 1,599,052.72
	Total Fuel Neutral MMBtu Saved	15,422.74	12,836.50	11,843.32
	\$/Total Fuel Neutral MMBtu Saved	\$ 152.32	\$ 124.57	\$ 135.02



Energy Star Homes

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 1,006,618.95	\$ 957,269.48	\$ 1,147,210.86	\$ 1,603,217.35	\$ 2,010,103.01	\$ 2,889,907.63
	Total Annual Electric Savings (kWh)	1,127,834.31	1,143,193.79	986,318.15	717,397.53	971,508.81	1,365,879.84
	\$/Annual kWh Saved	\$ 0.89	\$ 0.84	\$ 1.16	\$ 2.23	\$ 2.07	\$ 2.12
2)	Total Electric Budget	\$ 1,006,618.95	\$ 957,269.48	\$ 1,147,210.86	\$ 1,603,217.35	\$ 2,010,103.01	\$ 2,889,907.63
	Total kW saved	187.30	176.08	75.75	159.13	218.47	311.59
	\$/kW saved	\$ 5,374.24	\$ 5,436.52	\$ 15,143.81	\$ 10,075.13	\$ 9,200.65	\$ 9,274.80
3)	Total Electric Budget	\$ 1,006,618.95	\$ 957,269.48	\$ 1,147,210.86	\$ 1,603,217.35	\$ 2,105,505.53	\$ 2,889,907.63
	Total Fuel Neutral MMBtu Saved	5,158.61	5,177.38	9,335.70	7,781.99	10,813.41	15,610.93
	\$/Total Fuel Neutral MMBtu Saved	\$ 195.13	\$ 184.89	\$ 122.88	\$ 206.02	\$ 194.71	\$ 185.12

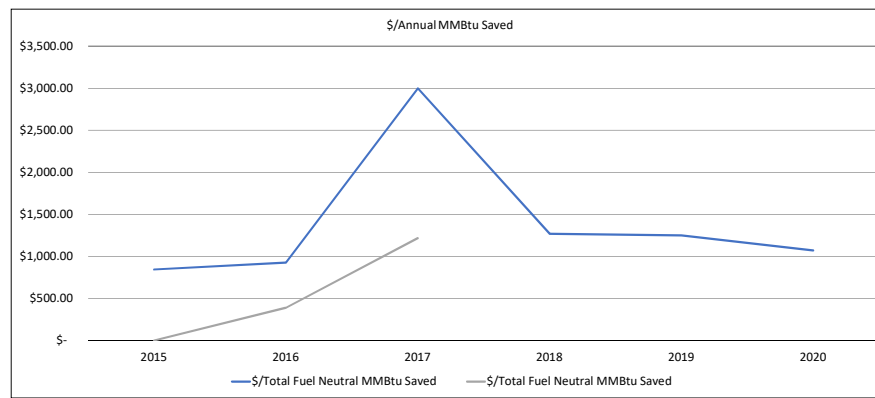
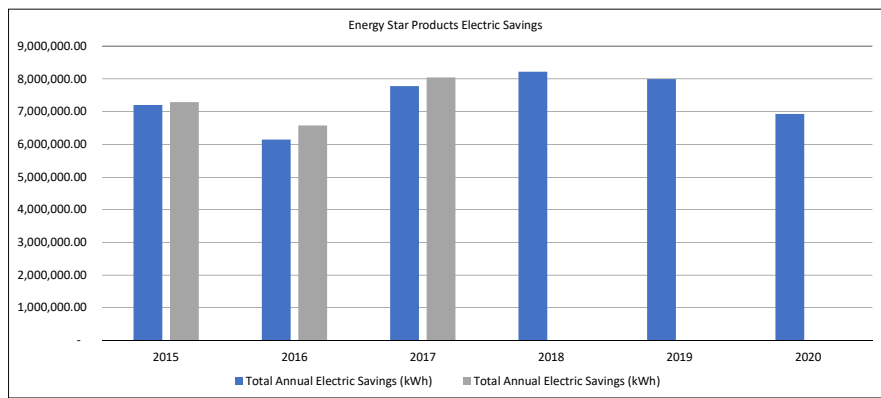
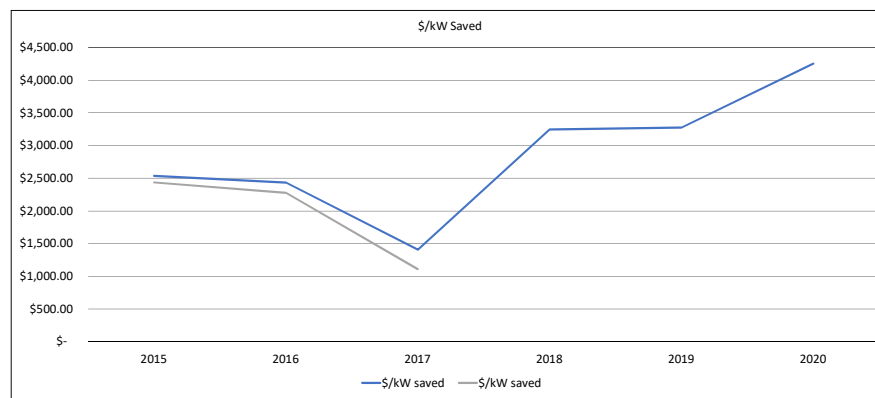
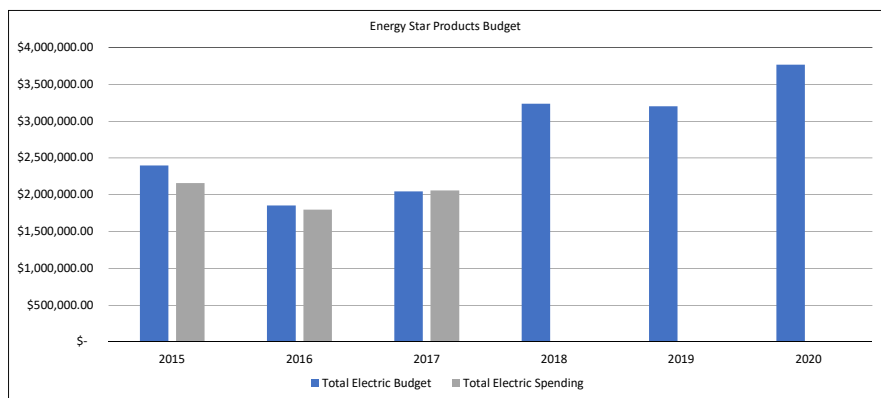
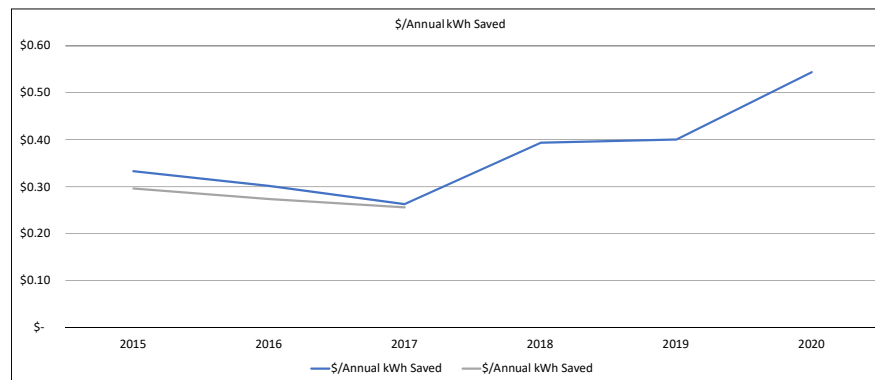
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 1,000,669.85	\$ 1,309,689.49	\$ 1,218,908.50
	Total Annual Electric Savings (kWh)	674,639.98	1,153,065.16	1,027,593.90
	\$/Annual kWh Saved	\$ 1.48	\$ 1.14	\$ 1.19
2)	Total Electric Spending	\$ 1,000,669.85	\$ 1,309,689.49	\$ 1,218,908.50
	Total kW saved	204.73	136.81	88.78
	\$/kW saved	\$ 4,887.75	\$ 9,572.72	\$ 13,729.43
3)	Total Electric Spending	\$ 1,000,669.85	\$ 1,309,689.49	\$ 1,309,689.49
	Total Fuel Neutral MMBtu Saved	9,364.77	8,379.13	9,833.29
	\$/Total Fuel Neutral MMBtu Saved	\$ 106.85	\$ 156.30	\$ 133.19



Energy Star Products

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 2,397,437.10	\$ 1,853,017.79	\$ 2,044,263.55	\$ 3,235,076.39	\$ 3,202,801.21	\$ 3,767,565.68
	Total Annual Electric Savings (kWh)	7,197,903.64	6,137,671.04	7,773,228.53	8,217,144.12	7,991,276.24	6,921,514.31
	\$/Annual kWh Saved	\$ 0.33	\$ 0.30	\$ 0.26	\$ 0.39	\$ 0.40	\$ 0.54
2)	Total Electric Budget	\$ 2,397,437.10	\$ 1,853,017.79	\$ 2,044,263.55	\$ 3,235,076.39	\$ 3,202,801.21	\$ 3,767,565.68
	Total kW saved	944.51	761.13	1,452.08	996.25	977.25	885.84
	\$/kW saved	\$ 2,538.28	\$ 2,434.55	\$ 1,407.82	\$ 3,247.25	\$ 3,277.34	\$ 4,253.08
3)	Total Electric Budget	\$ 2,397,437.10	\$ 1,853,017.79	\$ 2,044,263.55	\$ 3,235,076.39	\$ 3,383,946.99	\$ 3,767,565.68
	Total Fuel Neutral MMBtu Saved	2,839.32	1,998.41	681.99	2,545.57	2,709.02	3,517.25
	\$/Total Fuel Neutral MMBtu Saved	\$ 844.37	\$ 927.25	\$ 2,997.51	\$ 1,270.86	\$ 1,249.14	\$ 1,071.17

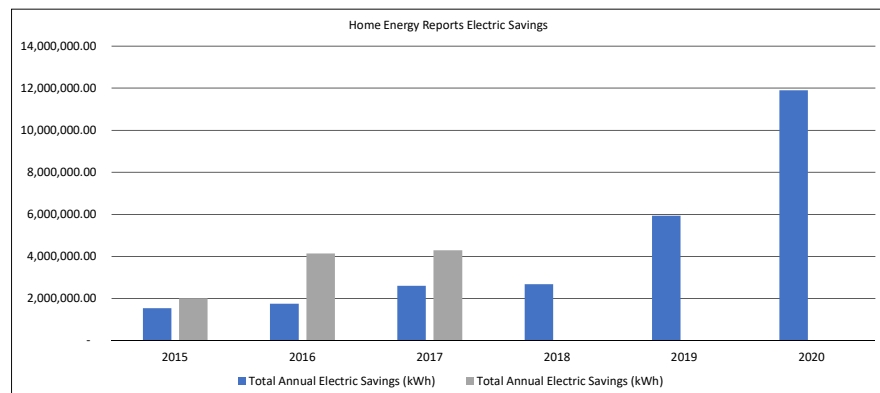
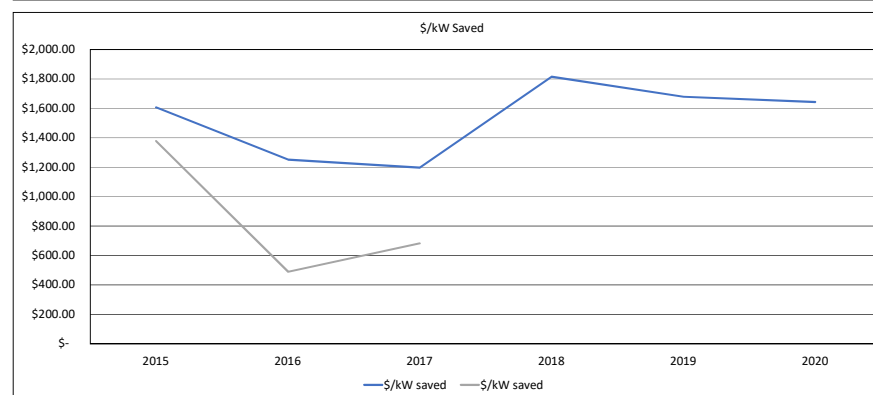
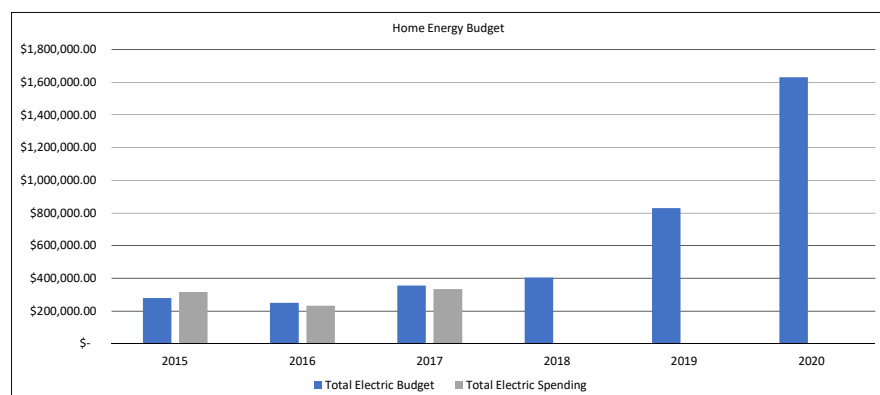
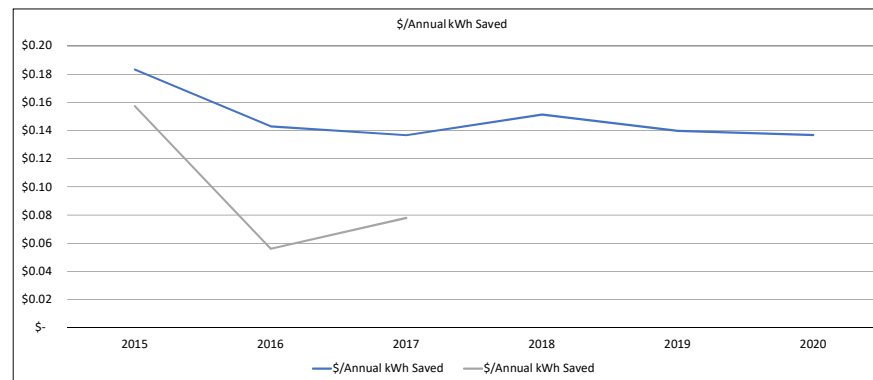
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 2,159,065.92	\$ 1,799,457.82	\$ 2,058,666.85
	Total Annual Electric Savings (kWh)	7,288,383.41	6,571,188.82	8,039,990.99
	\$/Annual kWh Saved	\$ 0.30	\$ 0.27	\$ 0.26
2)	Total Electric Spending	\$ 2,159,065.92	\$ 1,799,457.82	\$ 2,058,666.85
	Total kW saved	886.37	790.47	1,851.20
	\$/kW saved	\$ 2,435.84	\$ 2,276.43	\$ 1,112.07
3)	Total Electric Spending	\$ 2,159,065.92	\$ 1,799,457.82	\$ 1,799,457.82
	Total Fuel Neutral MMBtu Saved	5,526.86	1,478.74	341.59
	\$/Total Fuel Neutral MMBtu Saved	\$ 390.65	\$ 1,216.89	\$ 5,267.92



Home Energy Reports

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 280,402.00	\$ 251,006.39	\$ 355,117.61	\$ 404,663.00	\$ 829,581.11	\$ 1,628,822.42
	Total Annual Electric Savings (kWh)	1,529,834.00	1,755,680.67	2,600,000.00	2,675,775.15	5,933,600.00	11,900,800.00
	\$/Annual kWh Saved	\$ 0.18	\$ 0.14	\$ 0.14	\$ 0.15	\$ 0.14	\$ 0.14
2)	Total Electric Budget	\$ 280,402.00	\$ 251,006.39	\$ 355,117.61	\$ 404,663.00	\$ 829,581.11	\$ 1,628,822.42
	Total kW saved	174.64	200.42	296.80	222.98	494.47	991.73
	\$/kW saved	\$ 1,605.60	\$ 1,252.40	\$ 1,196.47	\$ 1,814.78	\$ 1,677.73	\$ 1,642.40
3)	Total Electric Budget	\$ 1,529,834.00	\$ 1,755,680.67	\$ 2,600,000.00	\$ 2,675,775.15	\$ 5,933,600.00	\$ 11,900,800.00
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						

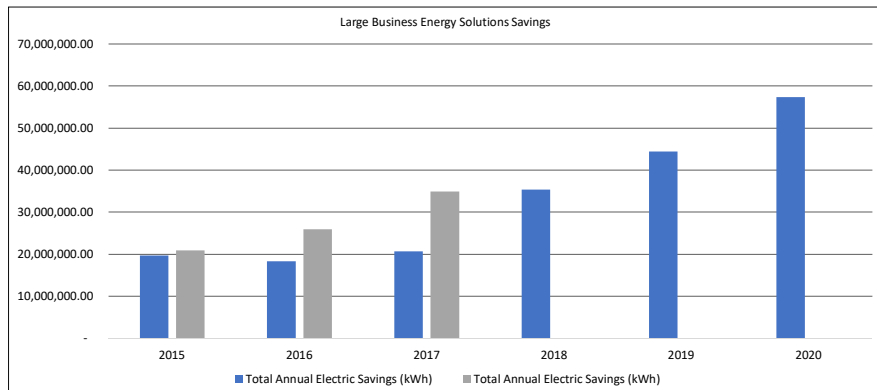
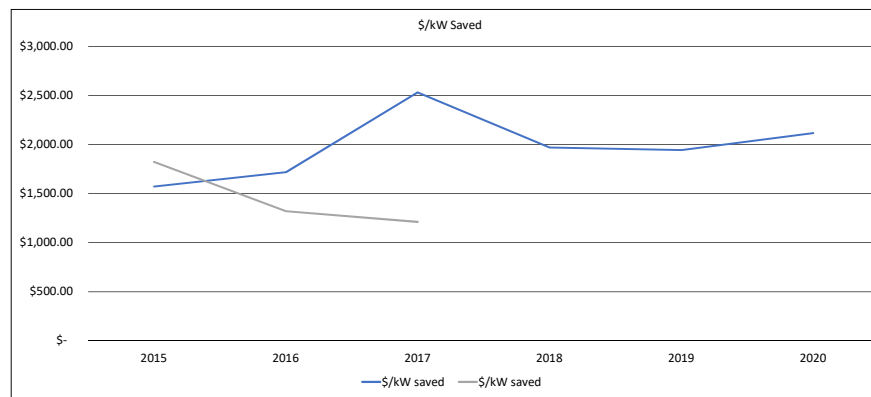
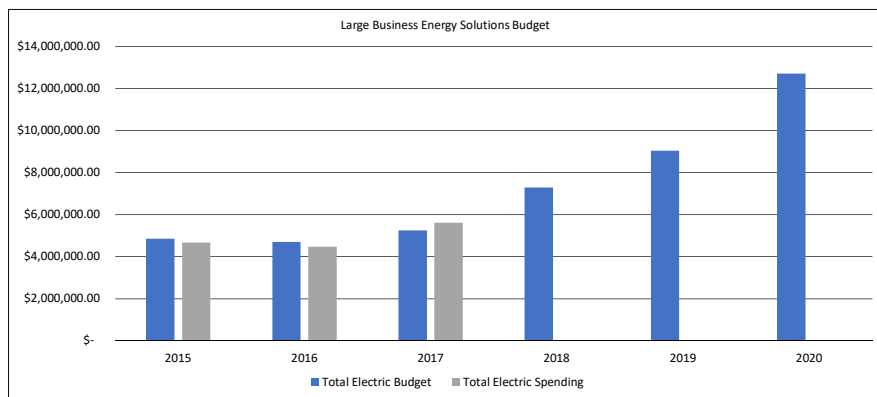
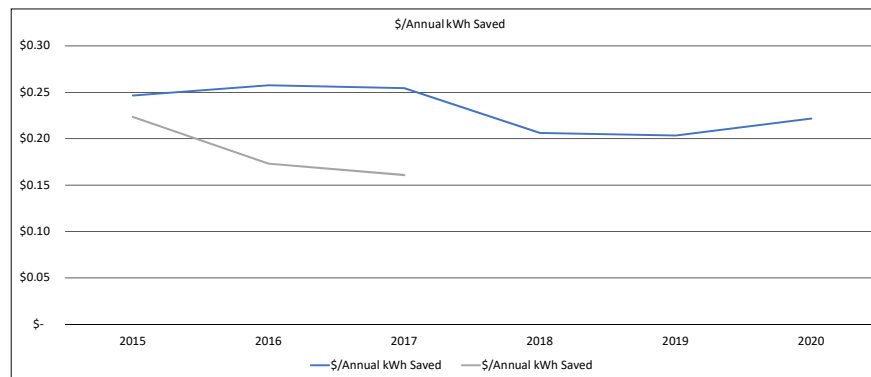
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 316,754.26	\$ 231,662.02	\$ 333,867.14
	Total Annual Electric Savings (kWh)	2,013,872.00	4,142,136.00	4,283,639.00
	\$/Annual kWh Saved	\$ 0.16	\$ 0.06	\$ 0.08
2)	Total Electric Spending	\$ 316,754.26	\$ 231,662.02	\$ 333,867.14
	Total kW saved	229.89	472.85	489.00
	\$/kW saved	\$ 1,377.83	\$ 489.93	\$ 682.76
3)	Total Electric Spending	\$ 316,754.26	\$ 231,662.02	\$ 231,662.02
	Total Fuel Neutral MMBtu Saved			
	\$/Total Fuel Neutral MMBtu Saved			



Large Business Energy Solutions

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 4,858,386.57	\$ 4,704,790.31	\$ 5,257,680.00	\$ 7,291,994.08	\$ 9,034,254.87	\$ 12,710,056.63
	Total Annual Electric Savings (kWh)	19,691,600.38	18,265,965.37	20,649,114.70	35,375,682.52	44,385,526.15	57,341,330.81
	\$/Annual kWh Saved	\$ 0.25	\$ 0.26	\$ 0.25	\$ 0.21	\$ 0.20	\$ 0.22
2)	Total Electric Budget	\$ 4,858,386.57	\$ 4,704,790.31	\$ 5,257,680.00	\$ 7,291,994.08	\$ 9,034,254.87	\$ 12,710,056.63
	Total kW saved	3,090.57	2,739.43	2,076.70	3,702.66	4,647.18	6,004.40
	\$/kW saved	\$ 1,572.00	\$ 1,717.44	\$ 2,531.75	\$ 1,969.39	\$ 1,944.03	\$ 2,116.79
3)	Total Electric Budget	\$ 4,858,386.57	\$ 4,704,790.31	\$ 5,257,680.00	\$ 7,291,994.08	\$ 9,477,437.58	\$ 12,710,056.63
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						

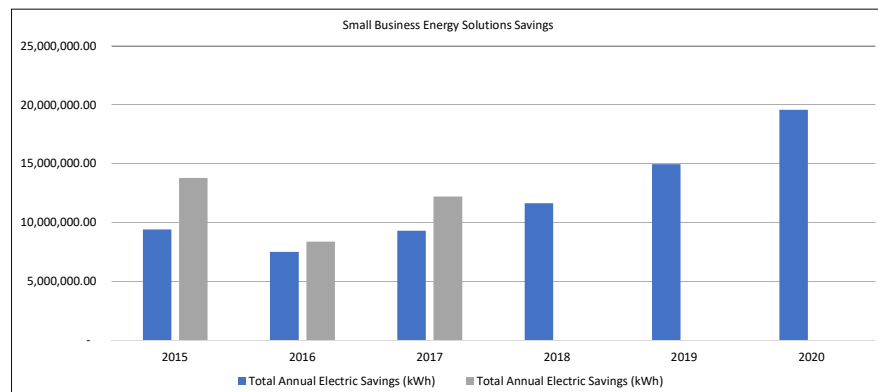
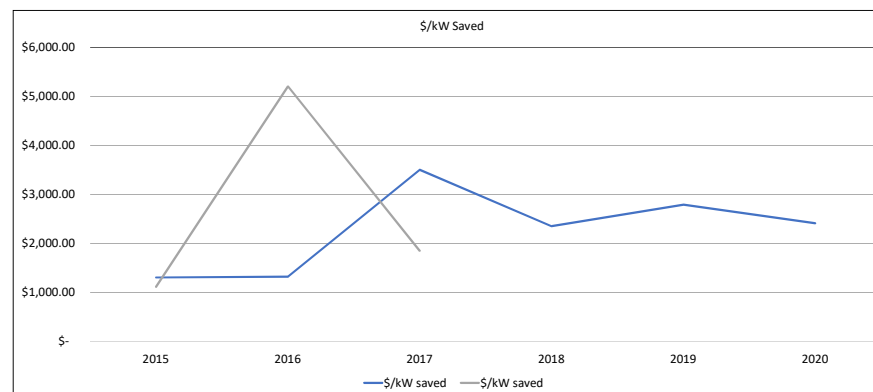
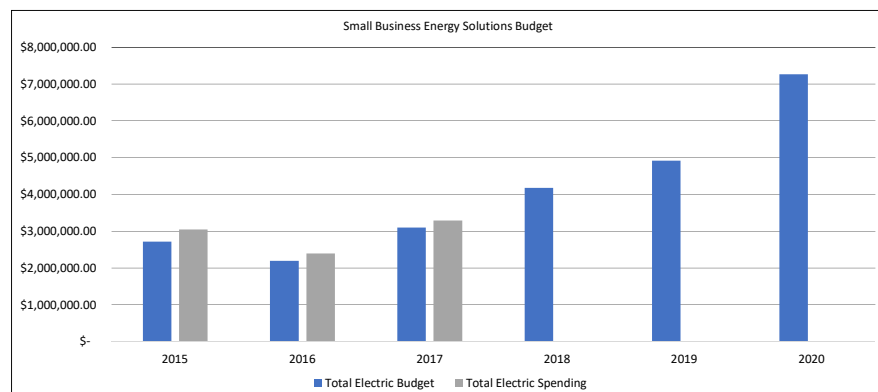
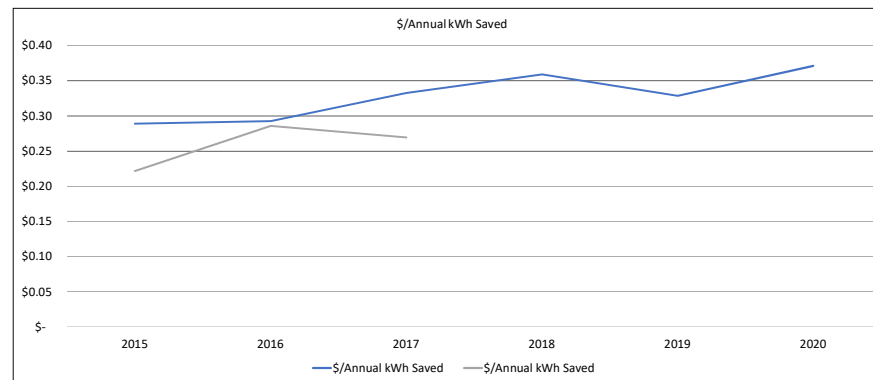
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 4,674,280.43	\$ 4,476,682.34	\$ 5,610,438.18
	Total Annual Electric Savings (kWh)	20,925,520.22	25,882,542.70	34,891,136.25
	\$/Annual kWh Saved	\$ 0.22	\$ 0.17	\$ 0.16
2)	Total Electric Spending	\$ 4,674,280.43	\$ 4,476,682.34	\$ 5,610,438.18
	Total kW saved	2,564.23	3,392.39	4,628.74
	\$/kW saved	\$ 1,822.88	\$ 1,319.62	\$ 1,212.09
3)	Total Electric Spending	\$ 4,674,280.43	\$ 4,476,682.34	\$ 4,476,682.34
	Total Fuel Neutral MMBtu Saved			
	\$/Total Fuel Neutral MMBtu Saved			



Small Business Energy Solutions

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 2,729,372.64	\$ 2,205,961.93	\$ 3,104,617.49	\$ 4,184,601.47	\$ 4,925,290.44	\$ 7,269,237.07
	Total Annual Electric Savings (kWh)	9,447,957.26	7,535,748.40	9,330,764.44	11,667,553.31	14,994,003.91	19,598,951.62
	\$/Annual kWh Saved	\$ 0.29	\$ 0.29	\$ 0.33	\$ 0.36	\$ 0.33	\$ 0.37
2)	Total Electric Budget	\$ 2,729,372.64	\$ 2,205,961.93	\$ 3,104,617.49	\$ 4,184,601.47	\$ 4,925,290.44	\$ 7,269,237.07
	Total kW saved	2,082.66	1,659.37	885.51	1,774.87	1,764.84	3,012.45
	\$/kW saved	\$ 1,310.52	\$ 1,329.39	\$ 3,506.02	\$ 2,357.70	\$ 2,790.79	\$ 2,413.07
3)	Total Electric Budget	\$ 2,729,372.64	\$ 2,205,961.93	\$ 3,104,617.49	\$ 4,184,601.47	\$ 5,422,730.78	\$ 7,269,237.07
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						

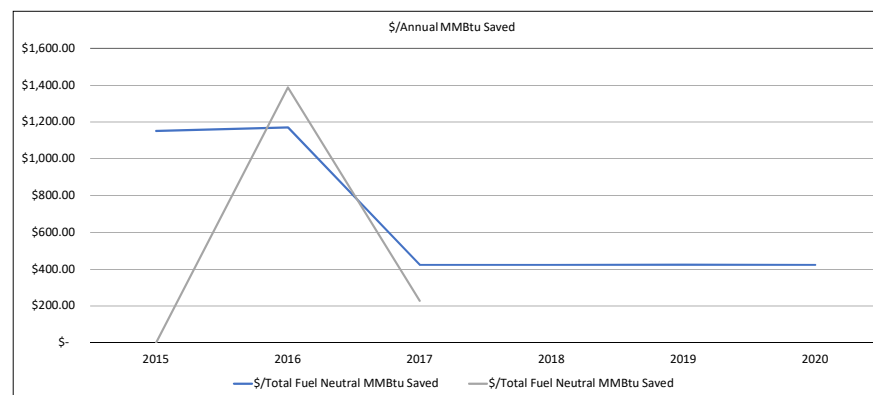
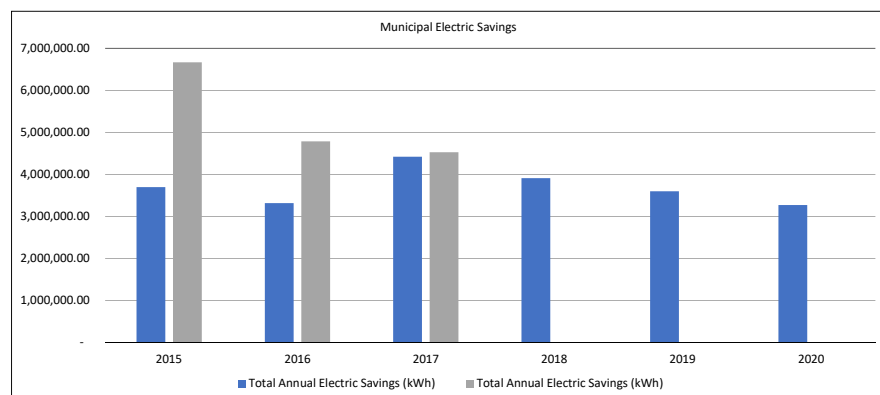
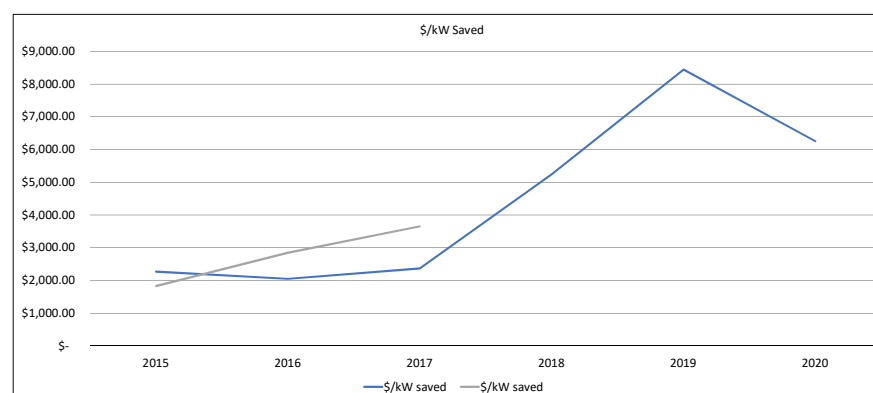
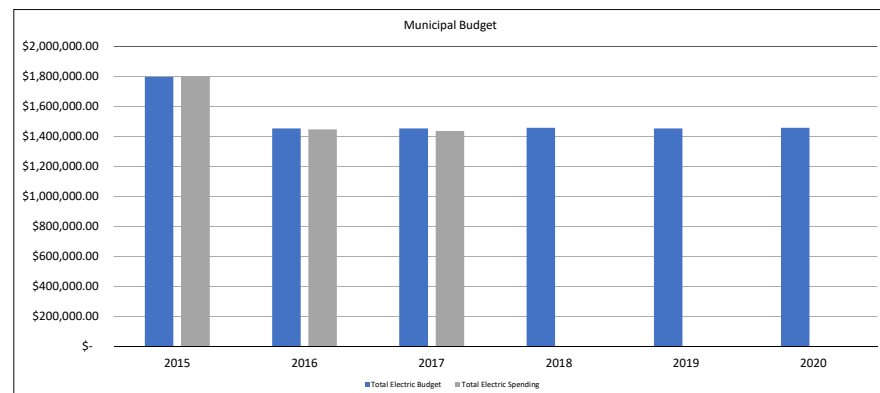
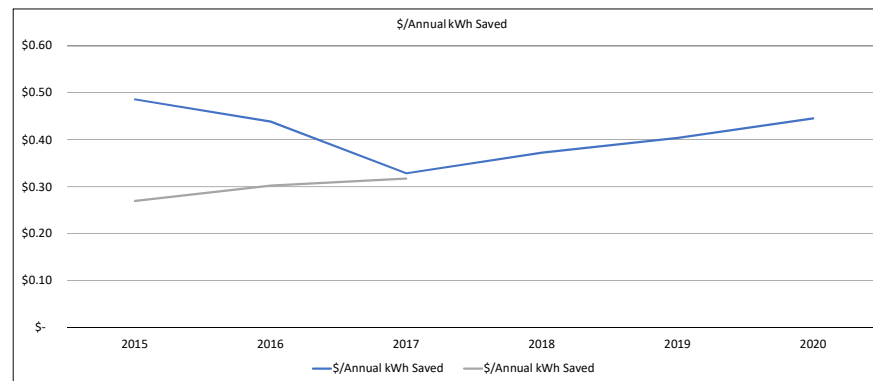
Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 3,059,995.12	\$ 2,401,441.56	\$ 3,301,924.13
	Total Annual Electric Savings (kWh)	13,805,821.64	8,410,520.19	12,254,082.00
	\$/Annual kWh Saved	\$ 0.22	\$ 0.29	\$ 0.27
2)	Total Electric Spending	\$ 3,059,995.12	\$ 2,401,441.56	\$ 3,301,924.13
	Total kW saved	2,731.04	461.50	1,781.57
	\$/kW saved	\$ 1,120.45	\$ 5,203.55	\$ 1,853.38
3)	Total Electric Spending	\$ 3,059,995.12	\$ 2,401,441.56	\$ 2,401,441.56
	Total Fuel Neutral MMBtu Saved			
	\$/Total Fuel Neutral MMBtu Saved			



Municipal

Planned		2015	2016	2017	2018	2019	2020
1) Total Electric Budget	\$	1,797,393.00	\$ 1,453,463.00	\$ 1,452,442.83	\$ 1,456,555.00	\$ 1,453,178.57	\$ 1,456,555.00
Total Annual Electric Savings (kWh)		3,698,108.00	3,312,917.02	4,419,676.13	3,905,245.08	3,599,497.95	3,267,027.93
\$/Annual kWh Saved	\$	0.49	\$ 0.44	\$ 0.33	\$ 0.37	\$ 0.40	\$ 0.45
2) Total Electric Budget	\$	1,797,393.00	\$ 1,453,463.00	\$ 1,452,442.83	\$ 1,456,555.00	\$ 1,453,178.57	\$ 1,456,555.00
Total kW saved		791.05	709.12	614.36	277.96	172.13	232.53
\$/kW saved	\$	2,272.16	\$ 2,049.67	\$ 2,364.18	\$ 5,240.16	\$ 8,442.44	\$ 6,263.84
3) Total Electric Budget	\$	1,797,393.00	\$ 1,453,463.00	\$ 1,452,442.83	\$ 1,456,555.00	\$ 1,456,555.00	\$ 1,456,555.00
Total Fuel Neutral MMBtu Saved		1,561.73	1,242.64	3,433.10	3,442.82	3,434.84	3,442.82
\$/Total Fuel Neutral MMBtu Saved	\$	1,150.90	\$ 1,169.65	\$ 423.07	\$ 423.07	\$ 424.05	\$ 423.07

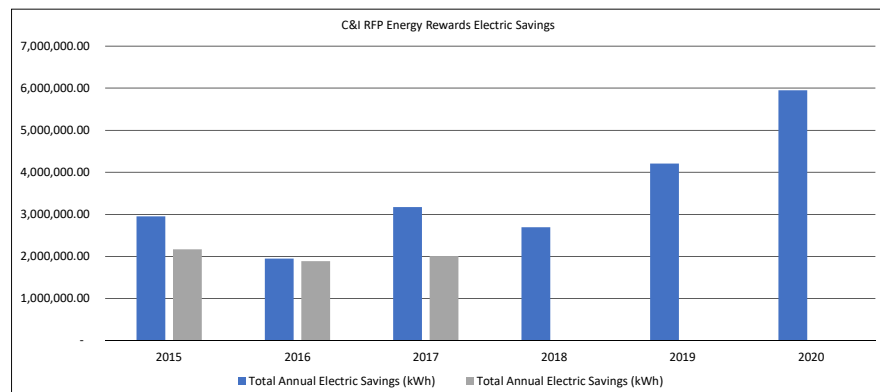
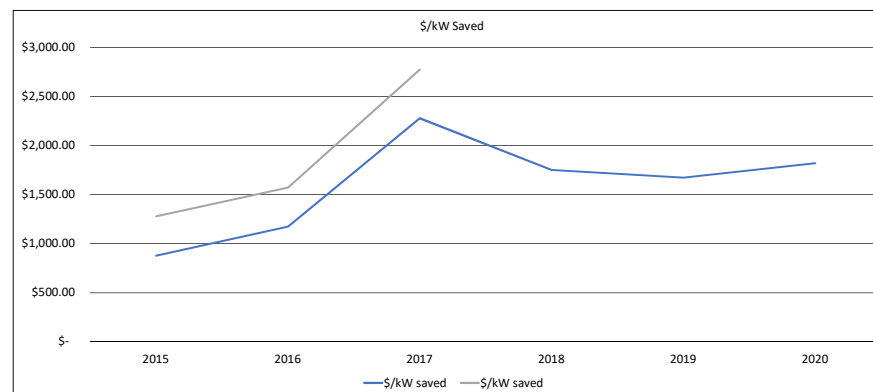
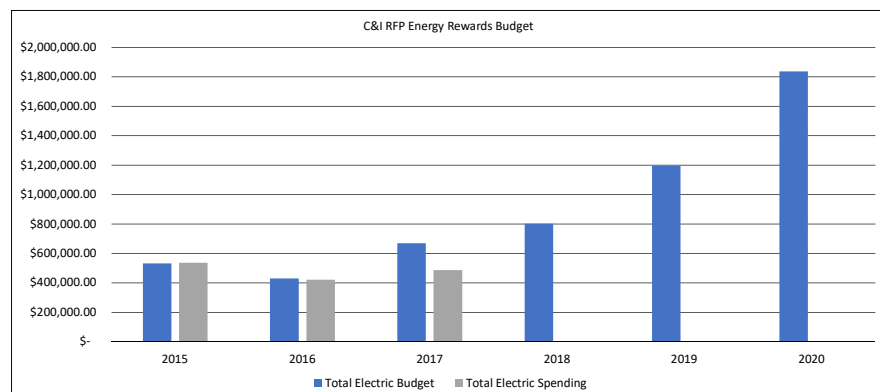
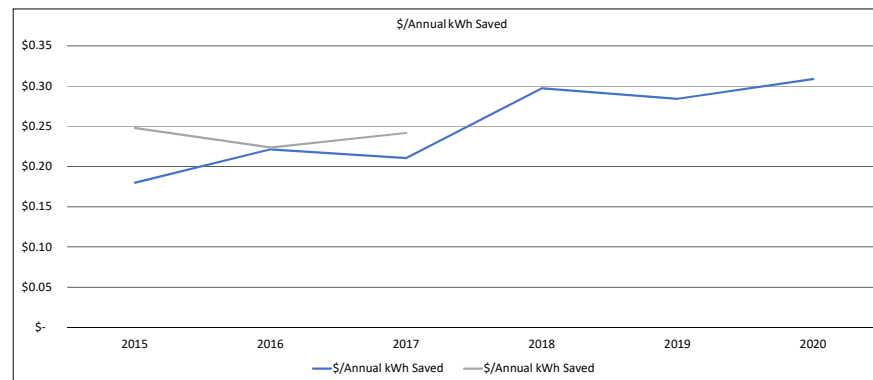
Actuals		2015	2016	2017
1) Total Electric Spending	\$	1,798,133.05	\$ 1,447,065.12	\$ 1,436,276.77
Total Annual Electric Savings (kWh)		6,663,323.93	4,783,558.00	4,524,552.20
\$/Annual kWh Saved	\$	0.27	\$ 0.30	\$ 0.32
2) Total Electric Spending	\$	1,798,133.05	\$ 1,447,065.12	\$ 1,436,276.77
Total kW saved		983.31	508.31	393.39
\$/kW saved	\$	1,828.66	\$ 2,846.84	\$ 3,651.03
3) Total Electric Spending	\$	1,798,133.05	\$ 1,447,065.12	\$ 1,447,065.12
Total Fuel Neutral MMBtu Saved		1,296.50	6,349.80	6,050.72
\$/Total Fuel Neutral MMBtu Saved	\$	1,386.91	\$ 227.89	\$ 239.16



C&I RFP Energy Rewards Program

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 532,143.26	\$ 431,354.63	\$ 668,686.55	\$ 801,059.90	\$ 1,195,560.67	\$ 1,837,304.11
	Total Annual Electric Savings (kWh)	2,955,930.84	1,948,183.50	3,171,974.18	2,693,943.49	4,205,420.01	5,948,560.33
	\$/Annual kWh Saved	\$ 0.18	\$ 0.22	\$ 0.21	\$ 0.30	\$ 0.28	\$ 0.31
2)	Total Electric Budget	\$ 532,143.26	\$ 431,354.63	\$ 668,686.55	\$ 801,059.90	\$ 1,195,560.67	\$ 1,837,304.11
	Total kW saved	606.12	367.83	293.53	457.56	714.28	1,010.34
	\$/kW saved	\$ 877.95	\$ 1,172.69	\$ 2,278.10	\$ 1,750.73	\$ 1,673.81	\$ 1,818.50
3)	Total Electric Budget	\$ 532,143.26	\$ 431,354.63	\$ 668,686.55	\$ 801,059.90	\$ 1,263,185.06	\$ 1,837,304.11
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						

Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 537,929.38	\$ 422,586.60	\$ 486,616.60
	Total Annual Electric Savings (kWh)	2,169,714.00	1,888,877.00	2,011,970.00
	\$/Annual kWh Saved	\$ 0.25	\$ 0.22	\$ 0.24
2)	Total Electric Spending	\$ 537,929.38	\$ 422,586.60	\$ 486,616.60
	Total kW saved	420.48	269.00	175.38
	\$/kW saved	\$ 1,279.31	\$ 1,570.93	\$ 2,774.69
3)	Total Electric Spending	\$ 537,929.38	\$ 422,586.60	\$ 422,586.60
	Total Fuel Neutral MMBtu Saved			
	\$/Total Fuel Neutral MMBtu Saved			



Program Cost-Effectiveness - 2019 PLAN

	Total Resource Benefit / Cost Ratio	Benefits (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
Home Energy Assistance	1.63	1,076.5	659.3	0.0	406.7	3,014.0	20.5	19.1	56	1,559.0	35,240.5
Energy Star Homes	6.31	1,667.5	185.1	78.9	329.4	7,935.1	32.6	76.8	73	1,171.1	29,189.0
Home Performance with Energy Star	2.01	1,069.7	317.8	213.3	92.3	1,289.9	11.5	15.8	70	2,091.8	41,522.2
Energy Star Products	2.14	722.5	291.6	46.0	982.6	6,373.8	268.3	117.0	14,445	123.9	1,764.8
Home Energy Reports	1.44	185.9	129.3	-	668.0	1,991.0	86.8	63.3	12,000	-	-
ISO-NE Forward Capacity Market Expenses	0.00	-	19.5	-	-	-	-	-	-	-	-
Sub-Total Residential	2.43	4,722.2	1,602.7	338.2	2,479.0	20,603.7	419.6	292.0	26,644	4,945.9	107,716.4
Commercial, Industrial & Municipal											
Large Business Energy Solutions	2.78	5,968.2	1,186.2	960.0	4,499.0	64,974.3	499.2	595.0	95	-	-
Small Business Energy Solutions	1.63	2,245.6	835.5	541.8	1,830.4	24,661.3	160.1	226.4	90	-	-
Municipal Energy Solutions	1.36	398.1	167.0	124.8	274.5	3,849.8	25.4	37.0	5	59.4	1,485.2
C&I Education	0.00	-	41.3	-	-	-	-	-	-	-	-
ISO Forward Capacity Market Expenses	0.00	-	45.5	-	-	-	-	-	-	-	-
Sub-Total Commercial & Industrial	2.21	8,611.9	2,275.4	1,626.6	6,603.9	93,485.5	684.7	858.4	191	59.4	1,485.2
Total	2.28	13,334.0	3,878.109	1,964.8	9,083	114,089.2	1,104.3	1,150.3	26,835	5,005.3	109,201.7

Note: a 10% NEI adder is applied to total benefits, and an additional 10% NEI adder is applied to total benefits of the Home Energy Assistance program, excluding water.

Annual kWh Savings	9,082,927	86.1%	kWh > 55%	Lifetime kWh Savings	114,089,224	78.1%	kWh > 55%
Annual MMBTU Savings (in kWh)	<u>1,466,910</u>	<u>13.9%</u>		Lifetime MMBTU Savings (in kWh)	<u>32,003,851</u>	<u>21.9%</u>	
	10,549,837	100.0%			146,093,074	100.0%	

Present Value Benefits - 2019 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Electric DRIPE	Gas Benefits	Gas DRIPE	Other Fuels	Fossil Emissions	Water Benefits	Other Non- Resource Benefits
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak							
Residential Programs																
Home Energy Assistance	\$ 1,076	\$ 17	\$ -	\$ 20	\$ 18	\$ 68	\$ 51	\$ 27	\$ 20	\$ 11	\$ 18	\$ 1	\$ 611	\$ 43	\$ -	\$ 172.29
Energy Star Homes	\$ 1,668	\$ 120	\$ -	\$ 127	\$ 113	\$ 118	\$ 152	\$ 49	\$ 62	\$ 33	\$ 0	\$ 0	\$ 710	\$ 34	\$ 2	\$ 148
Home Performance with Energy Star	\$ 1,070	\$ 16	\$ -	\$ 19	\$ 17	\$ 22	\$ 26	\$ 8	\$ 10	\$ 7	\$ -	\$ -	\$ 806	\$ 45	\$ -	\$ 93
Energy Star Products	\$ 723	\$ 42	\$ -	\$ 68	\$ 61	\$ 154	\$ 100	\$ 64	\$ 40	\$ 28	\$ 4	\$ 0	\$ 24	\$ 2	\$ 77	\$ 58
Home Energy Reports	\$ 186	\$ 9	\$ -	\$ 17	\$ 15	\$ 48	\$ 41	\$ 17	\$ 15	\$ 8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17
ISO-NE Forward Capacity Market Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Total Residential	\$ 4,722	\$ 204	\$ -	\$ 252	\$ 223	\$ 410	\$ 369	\$ 165	\$ 146	\$ 87	\$ 22	\$ 1	\$ 2,150	\$ 124	\$ 80	\$ 489
Commercial/Industrial Programs																
Large Business Energy Solutions	\$ 5,968	\$ 532	\$ -	\$ 656	\$ 581	\$ 1,352	\$ 1,038	\$ 569	\$ 415	\$ 283	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 542.56
Small Business Energy Solutions	\$ 2,246	\$ 189	\$ -	\$ 238	\$ 210	\$ 506	\$ 412	\$ 213	\$ 164	\$ 109	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 204
Municipal Energy Solutions	\$ 398	\$ 32	\$ -	\$ 40	\$ 36	\$ 83	\$ 61	\$ 34	\$ 23	\$ 17	\$ -	\$ -	\$ 33	\$ 2	\$ -	\$ 36
C&I Education	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ISO Forward Capacity Market Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Total Commercial & Industrial	\$ 8,612	\$ 753	\$ -	\$ 934	\$ 827	\$ 1,941	\$ 1,512	\$ 815	\$ 603	\$ 410	\$ -	\$ -	\$ 33	\$ 2	\$ -	\$ 783
Total	\$ 13,334	\$ 957	\$ -	\$ 1,186	\$ 1,050	\$ 2,350	\$ 1,881	\$ 980	\$ 749	\$ 497	\$ 22	\$ 1	\$ 2,183	\$ 126	\$ 80	\$ 1,272

Performance Incentive Calculation 2019

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	2.14	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	93,485,485	
4. Threshold Lifetime kWh Savings (65%) ²	60,765,566	
5. Implementation Expenses	\$2,275,448	
6. Benefit / Cost Percentage of Implementaton Expenses	2.75%	
7. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 8. Commercial & Industrial Performance Incentive	 \$125,150	
9. Maximum Commercial & Industrial Performance Incentive (6.875%)	\$156,437	
 Residential Incentive		
10. Benefit / Cost Ratio	2.33	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	20,603,738	
13. Threshold Lifetime kWh Savings (65%)	13,392,430	
14. Implementation Expenses	\$1,602,661	
15. Benefit / Cost Percentage of Implementation Expenses	2.75%	
16. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 17. Residential Performance Incentive	 \$88,146	
18. Maximum Residential Performance Incentive (6.875%)	\$110,183	
 19. TOTAL PLANNED / EARNED INCENTIVE	 \$213,296	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. Benefit Cost ratios are Nominal\$/Nominal\$

**Planned Versus Actual Benefit / Cost Ratio by Sector
2019**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
1. Benefits (Value) From Eligible Programs	\$ 8,611,854	\$ -
2. Implementation Expenses	\$ 2,275,448	\$ -
3. Customer Contribution	\$ 1,626,622	\$ -
4. Performance Incentive	\$ 125,150	\$ -
5. Total Costs	\$ 4,027,219	\$ -
6. Benefit/Cost Ratio - Commercial & Industrial Sector	2.14	
Residential		
7. Benefits (Value) From Eligible Programs	\$ 4,722,150	\$ -
8. Implementation Expenses	\$ 1,602,661	\$ -
9. Customer Contribution	\$ 338,193	\$ -
10. Performance Incentive	\$ 88,146	\$ -
11. Total Costs	\$ 2,029,001	\$ -
12. Benefit/Cost Ratio - Residential Sector	2.33	

**Lifetime Energy Savings by Sector and Program
2019**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
Large Business Energy Solutions	64,974,298	
Small Business Energy Solutions	24,661,345	
Municipal Energy Solutions	3,849,842	
Total Commercial & Industrial	93,485,485	
Residential		
Home Energy Assistance	3,014,008	
Energy Star Homes	7,935,055	
Home Performance with Energy Star	1,289,863	
Energy Star Products	6,373,812	
Home Energy Reports	1,991,000	
Total Residential	20,603,738	

Liberty Utilities Electric ENERGY STAR® Products Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017 Plan	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
LED Lighting Products			53,217			16			5		89.0%											
Markdowns: LED Single Bulbs [Home Depot, Lowes]	6,570	1,619	-	25	25	-	8	8	-	95.0%	-	1,228,742	302,790	3,772,485	-	-	-	100%	100%	-	-	-
Markdowns: LED Multi-Packs (per bulb) [Home Depot, Lowes]	15,461	36,602	-	25	25	-	8	8	-	62.3%	-	1,896,257	4,489,154	-	-	-	-	100%	-	-	-	-
Markdowns: LED Globe/Candelabra [Home Depot, Lowes]	6,609	469	-	25	25	-	8	8	-	95.0%	-	1,236,036	87,714	-	-	-	-	100%	-	-	-	-
Markdowns: LED Reflector [Home Depot, Lowes]	3,870	4,149	-	25	25	-	8	8	-	95.0%	-	723,779	775,959	-	-	-	-	100%	-	-	-	-
Markdowns: LED Interior Fixture [Home Depot, Lowes]	1,868	800	-	25	25	-	8	8	-	96.4%	-	354,508	151,823	-	-	-	-	100%	-	-	-	-
Markdowns: LED Exterior Fixture [Home Depot, Lowes]	623	254	-	25	25	-	5	5	-	100.0%	-	76,655	31,253	-	-	-	-	100%	-	-	-	-
Coupon: LED Single Bulbs	87	478	-	25	25	-	8	8	-	95.0%	-	16,271	89,397	-	-	-	-	100%	-	-	-	-
Coupon: LED Multi-Packs (per bulb)	1,102	1,413	-	25	25	-	8	8	-	62.3%	-	135,158	173,301	-	-	-	-	100%	-	-	-	-
Coupon: LED Globe/Candelabra (Per bulb)	1,467	-	-	25	25	-	8	8	-	95.0%	-	274,363	-	-	-	-	-	100%	-	-	-	-
Coupon: LED Reflector (per bulb)	173	10	-	25	25	-	8	8	-	95.0%	-	32,355	1,870	-	-	-	-	100%	-	-	-	-
Coupon: LED Interior Fixture	208	54	-	25	25	-	8	8	-	96.4%	-	39,474	10,248	-	-	-	-	100%	-	-	-	-
Coupon: LED Exterior Fixture	70	6	-	25	25	-	5	5	-	100.0%	-	8,613	738	-	-	-	-	100%	-	-	-	-
Catalog: LED Single Bulbs (Rebate)	157	33	-	25	25	-	8	8	-	95.0%	-	29,363	6,172	-	-	-	-	100%	-	-	-	-
Catalog: LED Multi-Packs (per bulb, Rebate)	1,416	195	-	25	25	-	8	8	-	62.3%	-	173,699	23,916	-	-	-	-	100%	-	-	-	-
Catalog: LED Globe/Candelabra (Per bulb)	472	3	-	25	25	-	8	8	-	95.0%	-	88,275	561	-	-	-	-	100%	-	-	-	-
Catalog: LED Reflector (per bulb)	276	22	-	25	25	-	8	8	-	95.0%	-	51,618	4,115	-	-	-	-	100%	-	-	-	-
Catalog: LED Interior Fixture	133	-	-	25	25	-	8	8	-	96.4%	-	25,241	-	-	-	-	-	100%	-	-	-	-
Catalog: LED Exterior Fixture	44	-	-	25	-	-	5	-	-	100.0%	-	5,414	-	-	-	-	-	100%	-	-	-	-
Retail: CFL (Multy packs)	-	107	-	-	18	-	-	5	-	100.0%	-	-	9,659	-	-	-	-	100%	-	-	-	-
Mini Split HP (assumed 1.5 ton) (cooling)-Mini Split Baseline			45			103			18	100.0%				83,472			-	100%				-
Mini Split HP (assumed 1.5 ton) (heating) -Mini Split Baseline			45			328			18	100.0%				266,245			-	100%				-
Air Source Heat Pump (cooling)			1			220			18	100.0%				3,960			-	100%				-
Air Source Heat Pump (heating)			2			2,087			18	100.0%				75,133			-	100%				-
DHPMS 16 SEER 1 ton (Cooling Only Unit)	1	-	-	67	67	-	12	12	-	100.0%	-	800	-	-	-	-	-	100%	-	-	-	-
Wif Thermostat on Central Air and/or Cooling-Only DHPMS	1	-	-	33	33	-	12	12	-	100.0%	-	392	-	-	-	-	-	100%	-	-	-	-
ASHP 16.0 SEER Heating/Cooling 3 ton (\$250 default), Cooling Portior	2	-	-	124	124	-	12	12	-	100.0%	-	2,970	-	-	-	-	-	100%	-	-	-	-
ASHP 18.0 SEER Heating/Cooling 3 ton (\$500 default), Cooling Portior	1	1	-	220	220	-	12	12	-	100.0%	-	2,640	2,640	-	-	-	-	100%	-	-	-	-
Wifi Thermostats on ASHP Heating/Cooling, Cooling Portior	1	1	-	32	32	-	12	12	-	100.0%	-	392	384	-	-	-	-	100%	-	-	-	-
ASHP 9.0 HSPF Heating/Cooling 3 ton (\$250 default), Heating Portior	2	-	-	1,031	1,031	-	12	12	-	100.0%	-	24,735	-	-	-	-	-	100%	-	-	-	-
ASHP 10 HSPF Heating/Cooling 3 ton (\$500 default), Heating Portior	1	1	-	2,087	2,087	-	12	12	-	100.0%	-	25,044	25,044	-	-	-	-	100%	-	-	-	-
Wifi Thermostats on ASHP Heating/Cooling, Heating Portior	2	1	-	297	297	-	12	12	-	100.0%	-	5,341	3,561	-	-	-	-	100%	-	-	-	-
DHPMS Heating/Cooling (per ton) 16 SEER (\$250 default), Cooling Portior	20	4	-	67	108	-	12	12	-	100.0%	-	15,992	5,195	-	-	-	-	100%	-	-	-	-
DHPMS Heating/Cooling (per ton) 18 SEER (\$500 default), Cooling Portior	10	27	-	99	184	-	12	12	-	100.0%	-	11,846	59,480	-	-	-	-	100%	-	-	-	-
Wif Thermostat on DHPMS Heating/Cooling, Cooling Portior	15	2	-	16	16	-	12	12	-	100.0%	-	2,811	375	-	-	-	-	100%	-	-	-	-
DHPMS Heating/Cooling (per ton) 9.0 HSPF (\$250 default), Heating Portior	20	4	-	344	558	-	12	12	-	100.0%	-	82,451	26,793	-	-	-	-	100%	-	-	-	-
DHPMS Heating/Cooling (per ton) 10 HSPF (\$500 default), Heating Portior	10	27	-	696	1,294	-	12	12	-	100.0%	-	83,481	419,257	-	-	-	-	100%	-	-	-	-
Wif Thermostat on DHPMS Heating/Cooling, Heating Portior	15	2	-	57	57	-	12	12	-	100.0%	-	10,265	1,369	-	-	-	-	100%	-	-	-	-
DHW Heat Pump Water Heater			7			1,384			13	100.0%				125,944			-	100%				-
DHW: Heat Pump Water Heater 50 Gallon Electric, EF>=2.3 (ES=EF>=2.0)	16	4	-	1,775	1,775	-	10	10	-	100.0%	-	284,000	71,000	-	-	-	-	100%	-	-	-	-
DHW: Heat Pump Water Heater 80 Gallon Electric, EF>=2.3 (ES=EF>=2.0)	1	1	-	2,672	2,672	-	10	10	-	100.0%	-	26,720	26,720	-	-	-	-	100%	-	-	-	-
Wifi Thermostat (Heating&Cooling)			5			25			15	100.0%				1,680			7	100%				446
ES Dehumidifier	5	118	115	162	162	214	12	12	12	100.0%	100.0%	9,736	229,773	295,320	-	-	-	100%	100%	-	-	-
ES Pool Pumps (2 speed)	2	-	2	782	782	842	10	10	10	100.0%	100.0%	15,634	-	16,840	-	-	-	100%	100%	-	-	-
ES Pool Pumps (Variable Speed)	3	16	16	946	946	1,062	10	10	10	100.0%	100.0%	28,376	151,340	169,920	-	-	-	100%	100%	-	-	-
ES Clothes Washers CEE Tier <2	204	247	260	124	124	89	11	11	14	100.0%	100.0%	277,768	336,663	322,748	0.1	0.1	0.3	100%	100%	246	298	979
ES Clothes Washers CEE Tier 2+			55			156			14	100.0%	100.0%			120,043			0.4	100%	100%			340
ES AC (central) 3 ton	1	3	3	200	200	200	12	12	14	100.0%	100.0%	2,399	7,197	8,391	-	-	-	100%	100%	-	-	-
ES Room AC (room)	55	94	65	16	16	16	9	9	9	100.0%	100.0%	7,997	13,668	9,454	-	-	-	100%	100%	-	-	-
ES Room Air Purifier	5	19	55	390	390	391	9	9	9	100.0%	50.0%	17,570	66,764	96,649	-	-	-	100%	100%	-	-	-
ES Refrigerator CEE Tier <2	110	117	165	41	41	64	12	12	12	100.0%	100.0%	54,599	58,074	127,642	-	-	-	100%	100%	-	-	-
ES Refrigerator CEE Tier 2+			40			96			12	100.0%	100.0%			46,272			-	100%				-
Primary Refrigerator Recycling/Pickup/Turnin	5	9	8	492	492	492	8	8	8	100.0%	100.0%	19,665	35,398	31,462	-	-	-	100%	100%	-	-	-
2nd Refrigerator Pickup/Turnin	70	70	70	755	755	755	8	8	8	100.0%	100.0%	422,800	422,800	422,800	-	-	-	100%	100%	-	-	-
2nd Freezer Pickup/Turnin	5	17	20	658	658	658	8	8	8	100.0%	100.0%	26,320	89,488	105,280	-	-	-	100%	100%	-	-	-
Room AC Pickup/Turnin			5			16			5	100.0%	100.0%			405			-	100%				-
ES Clothes Dryers	20	92	190	160	160	93	12	12	12	100.0%	100.0%	38,443	176,839	212,724	-	-	-	100%	100%	-	-	-
ES Clothes Dryers - Hybrid			7			229			12	100.0%	100.0%			19,270			-	100%				-
ES Clothes Dryers - Heat Pump			7			472			12	100.0%	100.0%			39,673			-	100%				-
Program Summary*				959,637	990,532	982,578						7,897,008	8,388,492	6,373,812	22	27	124			246	298	1,765

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. The Annual kWh Savings for LEDs were adjusted to reflect the weighted average of bulbs they are intended to replace (using halogen wattages, per the Energy Security & Independence Act of 2007)
2. Appliance Energy Savings have been updated per the EPA Energy Star Appliance Calculators and NH evaluation results.
3. Program Summary quantity total divides LED Lighting Products by 4, plus all other quantities; Note Heat Pumps are split into two measure lines to account for different load shapes. As such, the quantities are only counted once for Air Source & Ductless Mini-Split system

Liberty Utilities Electric ENERGY STAR® Homes Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Propane Heated Home	35	1	47	463	74	50	25	25	25	100.0%	100.0%	401,597	1,850	59,303	32	32	24	100%	100%	27,607	795	28,024
Electric Heated Home			9			31,688			25		100.0%			7,044,169			-		100%			-
LED Lighting Products			511			25			17		100.0%			217,109			-		100%			-
LED Bulbs (Installed by Builder or HERS Rater)	367	54	-	25	25	-	8	8	-	100.0%	-	72,385	10,643	-	-	-	-	100%	-	-	-	-
Interior hard-wired fixtures	73	-	-	25	25	-	8	8	-	100.0%	-	14,477	-	-	-	-	-	100%	-	-	-	-
Thermostat (Programmable/WiFi)	31	-	-	-	-	-	15	15	-	100.0%	-	-	-	-	-	-	-	100%	-	-	-	-
Clothes Washer	5	1	11	124	124	172	11	11	14	100.0%	100.0%	7,008	1,363	26,391	0	0	0	100%	100%	15	3	41
Refrigerator	33	5	65	41	41	95	12	12	12	100.0%	100.0%	16,406	2,482	73,941	-	-	-	100%	100%	-	-	-
MF - Propane			5			848			24		100.0%			100,853			9		100%			1,124
MF - Electric			12			1,417			24		100.0%			413,290			-		100%			-
Split System ASHP-SF Heated Home (heating)	2	4	-	9,570	24,325	-	25	25	-	100.0%	-	478,500	2,432,500	-	-	-	-	100%	-	-	-	-
Split System ASHP-SF Heated Home (cooling)	2	4	-	71	-	-	25	25	-	100.0%	-	3,550	-	-	-	-	-	100%	-	-	-	-
Split System ASHP-SF Heated Home (water)	2	4	-	520	-	-	25	25	-	100.0%	-	26,000	-	-	-	-	-	100%	-	-	-	-
Split System ASHP-Lights and Appliances	2	4	-	(79)	-	-	25	25	-	100.0%	-	(3,950)	-	-	-	-	-	100%	-	-	-	-
				49,090	99,035	329,428						1,015,973	2,448,838	7,935,055	1,106	32	1,171			27,622	798	29,189

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Lighting & Appliance Energy Savings have been updated per the EPA Energy Star Appliance Calculators and NH evaluation results.

Liberty Utilities Electric Home Energy Assistance Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Oil-Wxn: Air Sealing, Insulation, Water measures	34	15	22	-	300	292	23	24	23	86.2%	86.9%		90,976	126,864	21	35	33	100%	98%	16,163	11,521	16,052
Propane-Wxn: Air Sealing, Insulation, Water measures	3	9	17	-	89	148	22	24	22	86.2%	86.9%		16,210	46,978	21	17	18	100%	98%	1,356	3,178	6,585
Kerosene-Wxn: Air Sealing, Insulation, Water measures	2	4	9	-	829	476	19	22	24	86.2%	86.9%		59,702	83,357	20	27	28	100%	98%	761	2,344	5,554
Electric-Wxn: Air Sealing, Insulation, Water measures	1	7	7	5,418	3,017	3,017	13	19	19	86.2%	86.9%	59,489	321,832	371,978	-	4	-	100%	98%	-	467	-
Wood Pellets-Wxn: Air Sealing, Insulation, Water measures	2	7	1	-	121	382	21	22	22	86.2%	86.9%	-	15,843	9,048	21	3	57	100%	98%	865	475	1,524
Baseload SF Homes	29	38	55	382	36	-	21	21	20	86.2%	86.9%	197,588	24,409	-	-	0	-	100%	98%	-	284	-
LED Lighting Products	37	-	1,435	369	-	231	8	-	5	86.2%	86.9%	94,681	-	1,443,613	-	-	-	100%	100%	-	-	-
Refrigerator	17	4	77	586	147	842	12	12	12	86.2%	86.9%	100,207	6,062	672,197	-	-	-	100%	100%	-	-	-
Oil Boiler Replacement, >=85% AFUE	3	-	7	40	40	77	20	20	25	98.1%	86.9%	2,365	-	11,833	16	16	16	100%	100%	951	-	2,828
Thermostat, Standard - 7 Day		27	-		288	-		15	-		0.0%		101,345	-		3	-	100%	100%		1,020	-
Heating System (Other - Furnace)		3	-		4	-		18	-		0.0%		172	-		68	-	100%	100%		3,672	-
Heating System (Other - Boiler)		6	-		-	-		18	-		0.0%		-	-		46	-	100%	100%		5,061	-
Oil Furnace Replacement, >=85% ECM			5			7			20		86.9%			572			17	100%				1,635
Propane Furnace Replacement, >=90% ECM			2			131			20		86.9%			5,629			17	100%				830
LP Boiler Replacement AFUE>=85%	2	-	-	57	57	-	20	20	-	98.1%		2,237	-	-	24	24	-	100%		948	-	-
Kerosene Furnace Replacement, >=85% ECM			1			88			20		86.9%			1,888			9	100%				234
Kerosene Boiler Replacement AFUE>=85%	3	-	-	-	-	-	20	20	-	98.1%	-	-	-	-	6	6	-	100%	-	384	-	-
WXn Quality Assurance	1	-	1	100	-	-	1	-	1	86.9%	0.0%	87	-	-	-	-	-	100%		-	-	-
Baseload SF DHW	5	-	-	1,122	-	-	10	-	-	86.2%	0.0%	45,953	-	-	-	-	-	100%	-	-	-	-
Baseload SF Lighting	5	256	330	369	67	61	8	8	5	86.2%	86.9%	12,727	112,882	87,218	-	(0.1)	-	100%	-	-	(150)	-
Baseload SF Fridge	3	32	28	586	662	533	12	12	12	86.2%	86.9%	15,154	219,251	152,832	-	(0.3)	-	100%	-	-	(116)	-
Program Summary*				42,396	65,579	406,681						530,488	968,684	3,014,008	967	1,344	1,559			21,427	27,755	35,240

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. US DOE WAP Collaboration: The federal Weatherization Assistance Program is expected to fund additional work and achieve additional MMBTU Savings.

Liberty Utilities Electric Home Performance with ENERGY STAR®

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Oil-Wxn: Air Sealing, Insulation, Water measures			41			29			21		100.0%			25,150			34		100%			29,259
Propane-Wxn: Air Sealing, Insulation, Water measures	22	3	20	511	37	893	23	20	18	100.0%	100.0%	250,244	2,100	315,533	24	1	30	100%	100%	11,576	72	10,582
Cord Wood-Wxn: Air Sealing, Insulation, Water measures			4			3,652			19		100.0%			271,709			14		100%			1,019
Electric-Wxn: Air Sealing, Insulation, Water measures	8	5	5	4,866	1,881	3,361	20	21	19	100.0%	100.0%	783,983	179,535	335,348	-	6	-	100%	100%	-	572	-
Air Sealing & Insulation, Kerosene (includes insulation, water, etc.)	1	27	-	2,108	255	-	21	21	-	100.0%	-	44,267	147,465	-	20	8	-	100%	-	414	4,662	-
LED Lighting Products	32	25	744	369	2,348	24	8	19	5	100.0%	100.0%	93,299	1,136,050	88,908	-	-	-	100%	100%	-	-	-
Refrigerator	8	-	20	586	369	804	12	8	12	100.0%	100.0%	55,544	-	191,416	-	-	-	100%	100%	-	-	-
Oil Boiler Replacement, >=87% AFUE			4			142			25		100.0%			15,497			3		100%			295
Oil Furnace Replacement, >=87% ECM			2			168			20		100.0%			7,709			5		100%			211
Propane Furnace Replacement, >=95% ECM			1			168			20		100.0%			4,166			6		100%			156
Baseload SF Lighting	31	-	32	369	1,500	191	8	18	5	100.0%	100.0%	91,543	-	30,586	-	-	-	100%	100%	-	-	-
Baseload SF Fridg	3	28	5	586	385	64	12	9	12	100.0%	100.0%	21,799	97,950	3,840	-	-	-	100%	100%	-	-	-
AS: Boiler Circulator Pump Savings		39	-		9	-		20	-	100.0%	-		7,020	-			-	100%	-			-
AS: Furnace Fan Savings		5	-		84	-		18	-	100.0%	-		7,560	-			-	100%	-			-
AS: Room AC (per unit)		43	-		28	-		20	-	100.0%	-		24,080	-			-	100%	-			-
Air Sealing & Insulation, Oil (includes insulation, water, etc.)	30	32	-	580	-	-	21	21	-	100.0%	-	362,717	-	-	23	17	-	100%	-	14,435	11,496	-
Elec Savings on Fossil Homes (Elec Shell, Secondary Heating)	8	-	-	1,500	586	-	18	12	-	100.0%	-	215,689	-	-	-	-	-	100%	-	-	-	-
Program Summary*				110,909	87,035	92,345						1,919,084	1,601,760	1,289,863	1,224	797	2,092			26,425	16,802	41,522

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

1. For LED Annual kWh savings, we assumed the same weighted average energy savings as the lighting program but longer hours use (3 hours/day vs. 2 hours/day as the program requires retrofit lights to be on 3 or more hours/day)
The measure life for LEDs has been updated to 5 years
2. Ancillary kWh Savings are no longer separated as they are included in the weatherization measure savings as appropriate

Liberty Utilities Electric Home Energy Reports Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Behavioral Savings			12,000			55.7			3		100%			1,991,000			0		100%			-
Program Summary*				-	-	668,000						-	-	1,991,000	-	-	-			-	-	-

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual kWh Savings were developed with program implementation support vendor

Liberty Utilities Electric Large Business Energy Solutions Programs

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017 Plan	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																						
Lighting	14	22	25	49,537	45,363	45,363	13	13	13	99.9%	99.9%	8,793,945	12,955,530	14,721,824	-	-	-	100%	100%	-	-	-
Parking Lot Lights		1	1		9,592	91,207		13	13	100.0%	99.9%		124,699	1,184,003		-	-	100%	100%		-	-
Process	5	13	13	27,794	4,645	4,645	15	13	13	99.9%	99.9%	2,081,647	783,849	783,832	-	-	-	100%	100%	-	-	-
Custom	4	6	2	144,545	162,491	413,247	15	14	13	99.9%	99.9%	8,660,573	13,641,010	10,729,129	-	-	-	100%	100%	-	-	-
New Equipment & Construction Track																						
Cooling	1	-	8	65,170	100	12,594	23	10	15	99.9%	99.9%	1,496,802	-	1,509,139	-	-	-	100%	100%	-	-	-
Lighting	10	14	22	6,743	10,500	6,603	15	15	15	99.9%	99.9%	1,010,000	2,201,913	2,176,024	-	-	-	100%	100%	-	-	-
Parking Lot Lights		9	10		11,672	11,672		15	15	100.0%	99.9%		1,575,743	1,748,332		-	-	100%	100%		-	-
Process		16	16		23,542	23,542		15	15	100.0%	99.9%		5,642,143	5,642,012		-	-	100%	100%		-	-
Custom	3	3	5	279,008	153,520	326,607	15	15	16	99.9%	99.9%	11,135,904	6,898,713	26,272,577	-	-	-	100%	100%	-	-	-
Lighting - Control	4	3	3	21,949	25,288	6,486	10	10	10	99.9%	106.6%	876,720	758,628	207,426	-	-	-	100%	100%	-	-	-
NC - Air Compressor and Controls	2	-	-	2,981	100	-	13	10	-	99.9%	-	71,945	-	-	-	-	-	100%	-	-	-	-
NC - HVAC	2	7	-	8,778	12,318	-	15	15	-	99.9%	-	262,977	1,291,539	-	-	-	-	100%	-	-	-	-
ECMs (< 1 HP)	-	7	-	-	1,288	-	-	15	-	100.0%	-	-	135,253	-	-	-	-	100%	-	-	-	-
Program Summary*				2,378,149	3,298,930	4,498,959						34,390,514	46,009,020	64,974,298	-	-	-			-	-	-

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings were updated based on recent trends and reflect expected project sizes.

Liberty Utilities Electric Small Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																						
Lighting	105	107	21	4,792	7,234	37,685	13	13	13	94.0%	106.6%	6,145,392	9,459,163	11,095,161	-	-	0	100%	100%	-	-	-
Ext. Lighting	6	45	18	23,496	6,686	17,978	13	13	13	100.0%	102.7%	1,832,651	3,911,203	4,320,437	-	-	0	100%	100%	-	-	-
Process			3			20,670			13	99.9%				804,983			0		100%			-
Custom	6	5	5	12,235	51,528	38,977	14	14	14	100.0%	99.9%	976,095	3,575,525	2,779,071	-	-	0	100%	100%	-	-	-
New Equipment & Construction Track																						
Cooling	13	9	20	27,939	1,389	1,358	15	15	15	100.0%	99.9%	5,326,791	187,562	406,889	-	-	0	100%	100%	-	-	-
Lighting	3	24	15	14,981	2,523	14,081	15	15	15	100.0%	106.6%	674,158	908,135	3,326,866			0		100%	-	-	-
Ext. Lighting			4			14,988			15	102.7%				923,561			0		100%			-
Process	-	11	1	-	3,762	14,800	-	15	13	100.0%	99.9%	-	620,786	192,126	-	-	0	100%	100%	-	-	-
Custom	-	3	3	-	19,856	18,076	-	15	15	100.0%	99.9%	-	893,535	812,253	-	-	0	100%	100%	-	-	-
NC - Air Compressor and Controls	3	1	-	7,049	18,540	-	13	13	-	100.0%	-	274,911	241,020	-	-	-	-	100%	-	-	-	-
NC - Aerator - Low Flow Faucet	150	-	-	332	332	-	10	10	-	94.0%	-	468,120	-	-	-	-	-	100%	-	-	-	-
NC - LED - 100 Watt Bulb	60	-	-	220	220	-	13	13	-	94.0%	-	161,304	-	-	-	-	-	100%	-	-	-	-
NC - LED - 17 Watt Bulb	40	-	-	192	192	-	13	13	-	94.0%	-	93,850	-	-	-	-	-	100%	-	-	-	-
NC - LED - 7.5 Watt Bulb	40	-	-	168	168	-	13	13	-	94.0%	-	82,118	-	-	-	-	-	100%	-	-	-	-
NC - Lighting - Control	2	2	-	108	7,172	-	10	13	-	94.0%	-	2,028	171,797	-	-	-	-	100%	-	-	-	-
NC - Pipe Insulation	30	-	-	67	67	-	15	15	-	94.0%	-	28,341	-	-	-	-	-	100%	-	-	-	-
NC - Shower Head Fixture	30	-	-	1,016	1,016	-	10	10	-	94.0%	-	286,512	-	-	-	-	-	100%	-	-	-	-
NC - Shower Head Hand Held	20	-	-	1,016	1,016	-	10	10	-	94.0%	-	191,008	-	-	-	-	-	100%	-	-	-	-
NC - Spray Valve	5	-	-	6,544	6,544	-	5	5	-	94.0%	-	153,784	-	-	-	-	-	100%	-	-	-	-
Program Summary*				1,259,303	1,492,157	1,830,396						16,697,063	19,968,727	24,661,345	-	-	-			-	-	-

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings were updated based on recent trends and reflect expected project sizes.

Liberty Utilities Electric Municipal Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Actual	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																						
Lighting	11	6	1	20,526	9,988	11,615	13	13	13	100.0%	106.6%	2,921,514	779,055	239,441	-	-	-	100%	100%	-	-	-
Ext. Lighting	1	5	4	19,088	18,138	17,978	13	13	13	100.0%	106.6%	248,139	1,178,999	956,099	-	-	-	100%	100%	-	-	-
New Equipment & Construction Track																						
Lighting	9	25	2	3,178	4,027	69,879	15	15	15	100.0%	106.6%	429,075	1,510,122	2,234,733	-	-	-	100%	100%	-	-	-
Ext. Lighting			2			4,514			15		106.6%			144,358			-		100%			-
Custom	3	-	-	4,772	4,772	75,968	15	15	15	100.0%	100.0%	214,622	-	-	-	-	-	100%	100%	-	-	-
Lighting Controls			7			1,469			10		106.6%			116,524			-		100%			-
VFDs	1	-	1	77,887	77,887	15,577	13	13	13	100.0%	100.0%	506,266	-	125,554	-	-	-	100%	100%	-	-	-
DMSHP (any, SEER >= 20, HSPF >= 10, Cooling)	4	-	2	124	124	124	12	12	12	100.0%	100.0%	5,970	-	3,066	-	-	-	100%	100%	-	-	-
DMSHP (oil, SEER >= 20, HSPF >= 10, Heating)	2	-	2	536	536	536	12	12	12	100.0%	100.0%	12,874	-	15,964	-	-	-	100%	100%	-	-	-
DMSHP (LP, SEER >= 20, HSPF >= 10, Heating)	2	2	1	536	536	536	12	12	12	100.0%	100.0%	12,874	12,874	7,982	-	-	-	100%	100%	-	-	-
Energy Star Wifi Thermostat (DMSHP)	4	-	4	110	110	110	15	15	15	100.0%	100.0%	6,582	-	6,121	-	-	-	100%	100%	-	-	-
Bolier: LP Condensing AFUE >= 90%. up to 301 - 499 MBH	1	2	1	-	-	-	25	25	25	100.0%	100.0%	-	-	-	-	58	16	100%	100%	-	2,920	492
Bolier: Oil AFUE >= 85%. up to 301 - 499 MBH	2	-	2	-	-	-	25	25	25	100.0%	100.0%	-	-	-	-	-	24	100%	100%	-	-	994
Furnace: Oil, w/ ECM. 85% AFUE, up to 150 MBH	1	-	-	168	168	-	18	18	-	100.0%	-	3,024	-	-	-	-	-	100%	-	-	-	-
Furnace: Oil, w/ ECM. 87% AFUE, up to 150 MBH	1	-	-	168	168	-	18	18	-	100.0%	-	3,024	-	-	-	-	-	100%	-	-	-	-
HVAC: Unitary HVAC		6	-		2,174	-		15	-	100.0%	-		195,651	-		-	-		-		-	-
Program Summary*				329,094	265,410	274,540						4,363,964	3,676,700	3,849,842	-	117	59			-	2,920	1,485

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings were updated based on recent trends and reflect expected project sizes.
2. Since this is funded by RGGI, the 2018-2020 Plan includes some Weatherization Projects and as well as incentives for customers replacing heating systems to upgrade to more efficient model:

**Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
2019 System Benefits Charge ("SBC") Calculation
(\$ in 000's)**

Year	EE Total Budget	RGGI Revenues	FCM Revenues	Other Revenues	Carryforward with Interest	Current Year Interest	SBC Requirement	Forecasted Distribution (MWH)	SBC Rate EE Portion (cents/kWh)	SBC Rate EAP Portion (cents/kWh)	SBC Rate LBR Portion (cents/kWh)	2018 Total SBC Rate (cents/kWh)
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M
2019	\$ 3,232	\$ 214	\$ 633	\$ -	\$ (13)	\$ 138	\$ 2,260	918,145	0.352	0.150	0.011	0.513

Col. A: Effective year (January 1, 2019 - December 31, 2019)
Col. B: Company Forecast
Col. C: Company Forecast
Col. D: Company Forecast
Col. E: Company Forecast
Col. F: Page 2, Line 9 Col. N + Line 11 Col. O
Col. G: Page 3, Line 11, Col. O
Col. H: Col. B - Col. C - Col. D - Col. E - Col. F - Col. G
Col. I: Company Forecast
Col. J: (Col. H / Col. I) x 100
Col. K: EAP Portion of SBC Rate
Col. L: Page 4, Col. G
Col. M: Col. J + Col. K + Col. L

Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2018 to December 31, 2018
(\$ in 000's)

Line	Description	Carryover 12/31/17	Actual Jan-18	Actual Feb-18	Actual Mar-18	Actual Apr-18	Actual May-18	Actual Jun-18	Actual Jul-18	Forecast Aug-18	Forecast Sep-18	Forecast Oct-18	Forecast Nov-18	Forecast Dec-18	2018 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	SBC Revenues		23	20	20	19	19	21	22	174	156	143	148	164	930
2	RGGI Revenues		-	-	51	48	-	-	55	-	54	-	-	59	267
3	FCM Revenues		45	44	44	43	55	50	66	41	41	37	40	40	546
4	Other Revenues		-	-	-	-	-	-	-	-	-	-	-	-	-
5	Total Revenues		68	64	115	110	74	71	143	215	251	180	188	263	1,743
6	Program Expenses		107	192	67	129	125	160	236	256	256	256	256	256	2,298
7	Total Program Expenses		107	192	67	129	125	160	236	256	256	256	256	256	2,298
8	Current Month (Over)/Under Recovery		39	128	(48)	19	51	89	93	41	5	76	68	(7)	
9	Cumulative (Over)/Under Recovery	(13)	26	155	107	126	176	265	358	399	404	480	549	542	
10	Interest @ Prime Rate		0.38%	0.38%	0.38%	0.40%	0.40%	0.40%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
11	Interest on Deferral Balance		0	0	0	0	1	1	1	2	2	2	2	2	14
12	Monthly Sales (MWh)		82,892	74,290	71,924	70,283	69,006	77,250	81,180	87,796	76,569	69,399	69,969	76,708	907,266
13	EE SBC Rate		0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	

Line 1: (Line 12 x Line 13) / 100
Line 2: Company Forecast
Line 3: Company Forecast
Line 4: Company Forecast
Line 5: Sum of Lines 1 through Lines 4
Line 6: Company Forecast
Line 7: Sum of Line 6
Line 8: | Line 7 - Line 5
Line 9: Prior month Line 9 + Current month Line 8
Line 10: Prime Rate / 12
Line 11: (Prior Month Line 9 + Current Month Line 9) / 2 x Line 10
Line 12: Company Forecast
Line 13: 2017 approved rate

Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2019 to December 31, 2019
(\$ in 000's)

Line	Description	Carryover 12/31/2018	Forecast Jan 2019	Forecast Feb 2019	Forecast Mar 2019	Forecast Apr 2019	Forecast May 2019	Forecast June 2019	Forecast Jul 2019	Forecast Aug 2019	Forecast Sep 2019	Forecast Oct 2019	Forecast Nov 2019	Forecast Dec 2019	2019 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	SBC Revenues		\$282	\$256	\$257	\$238	\$248	\$271	\$312	\$315	\$274	\$250	\$253	\$277	\$3,232
2	RGGI Revenues		\$0	\$0	\$53	\$0	\$0	\$53	\$0	\$0	\$53	\$0	\$0	\$53	\$214
3	FCM Revenues		\$424	\$424	\$424	\$424	\$424	\$424	\$529	\$529	\$529	\$529	\$529	\$529	\$5,719
4	Other Revenues		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Total Revenues		\$706	\$680	\$734	\$663	\$672	\$748	\$841	\$844	\$856	\$779	\$782	\$859	\$9,165
6	Program Expenses		\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$3,232
7	Total Program Expenses		\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$269	\$3,232
8	Current Month (Over)/Under Recovery		(\$437)	(\$411)	(\$465)	(\$393)	(\$403)	(\$479)	(\$572)	(\$575)	(\$587)	(\$510)	(\$512)	(\$590)	
9	Cumulative (Over)/Under Recovery	\$13	(\$424)	(\$834)	(\$1,300)	(\$1,693)	(\$2,096)	(\$2,575)	(\$3,147)	(\$3,721)	(\$4,308)	(\$4,818)	(\$5,330)	(\$5,920)	
10	Interest @ Prime Rate		0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
11	Interest on Deferral Balance		(\$1)	(\$3)	(\$4)	(\$6)	(\$8)	(\$10)	(\$12)	(\$14)	(\$17)	(\$19)	(\$21)	(\$23)	(\$138)
12	Monthly Sales (MWh)		80,095	72,613	72,933	67,755	70,480	76,884	88,660	89,486	77,813	71,040	71,774	78,613	918,145
13	EE SBC Rate		0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	

Line 1: (Line 12 x Line 13) / 100
Line 2: Page 1, Col. C
Line 3: Page 1, Col. D
Line 4: Page 1, Col. E
Line 5: Sum of Lines 1 through Lines 4
Line 6: Page 1, Col. B
Line 7: Sum of Line 6
Line 8: |Line 7 - Line 5
Line 9: Prior month Line 9 + Current month Line 8
Line 10: Prime Rate / 12
Line 11: (Prior Month Line 9 + Current Month Line 9) / 2 x Line 10
Line 12: Company Forecast
Line 13: Page 1, Col. J

**Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
2019 System Benefits Charge Calculation (LBR Component)
(\$ in 000's)**

Year	Forecasted LBR Revenue	Prior Year Deferral with Interest	Current Year Interest	Total LBR Revenue	Forecasted Distribution (MWH)	SBC Rate LBR Portion (cents/kWh)
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G
2019	\$ 99	\$ -	\$ (1)	\$ 99	918,145	0.011

Col. A: Effective year (January 1, 2019 - December 31, 2019)

Col. B: Page 5, Line 21, Col. O / 1000

Col. C: Page 6, Line 7, Col. N

Col. D: Page 7, Line 6, Col. O

Col. E: Col. B + Col. C + Col. D

Col. F: Company Forecast

Col. G: (Col. E * 100) / Col. F

**Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
Monthly and Cumulative Savings and Lost Base Revenue
January 1, 2019 to December 31, 2019**

Line	Description	Cumulative Annual kWh Savings / 12/31/2018	Forecast												2019 Annual MWh and Monthly MW Savings	Cumulative Annual kWh and Monthly kW
			Col. A Jan 2019	Col. B Feb 2019	Col. C Mar 2019	Col. D Apr 2019	Col. E May 2019	Col. F June 2019	Col. G Jul 2019	Col. H Aug 2019	Col. I Sep 2019	Col. J Oct 2019	Col. K Nov 2019	Col. L Dec 2019		
1	Residential Annual kWh Savings (2017, 2018, & 2019)	-	206,586	206,586	206,586	206,586	206,586	206,586	206,586	206,586	206,586	206,586	206,586	206,586	2,479,032	2,479,032
2	C&I Annual kWh Savings (2017 & 2018)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	C&I Annual kWh Savings (2019)	-	550,325	550,325	550,325	550,325	550,325	550,325	550,325	550,325	550,325	550,325	550,325	550,325	6,603,895	6,603,895
4	C&I Monthly Installed kW Savings*	-	188	188	188	188	188	188	188	188	188	188	188	188	2,255	2,255
Total 2019 Lost Base Revenue																
5	Monthly Residential Savings (2019)	-	17,215	17,215	17,215	17,215	17,215	17,215	17,215	17,215	17,215	17,215	17,215	17,215		
6	Cumulative Residential Savings	-	17,215	34,431	51,646	68,862	86,077	103,293	120,508	137,724	154,939	172,155	189,370	206,586		
7	Average Residential kWh Distribution Rate	-	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349	0.04349		
8	Total Lost Residential Revenue	-	\$ 749	\$ 1,498	\$ 2,246	\$ 2,995	\$ 3,744	\$ 4,493	\$ 5,241	\$ 5,990	\$ 6,739	\$ 7,488	\$ 8,236	\$ 8,985	\$	58,403
9	Monthly C&I Savings (2017 & 2018)	-	-	-	-	-	-	-	-	-	-	-	-	-		
10	Average C&I kWh Distribution Rate	-	-	-	-	-	-	-	-	-	-	-	-	-		
11	Lost C&I kWh Revenue	-	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -		
12	Monthly C&I Savings (2019)	-	45,860	45,860	45,860	45,860	45,860	45,860	45,860	45,860	45,860	45,860	45,860	45,860		
13	Cumulative C&I Savings	-	45,860	91,721	137,581	183,442	229,302	275,162	321,023	366,883	412,743	458,604	504,464	550,325		
14	Average C&I kWh Distribution Rate	-	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872	0.00872		
15	Lost C&I kWh Revenue	-	\$ 400	\$ 800	\$ 1,199	\$ 1,599	\$ 1,999	\$ 2,399	\$ 2,799	\$ 3,198	\$ 3,598	\$ 3,998	\$ 4,398	\$ 4,798		
16	Monthly C&I kW Savings (2019)	-	16	16	16	16	16	16	16	16	16	16	16	16		
17	Cumulative Monthly C&I kW Savings	-	16	31	47	63	78	94	110	125	141	157	172	188		
18	Average C&I Demand Rate	-	7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77	7.77		
19	Lost C&I Demand Revenue	-	\$ 122	\$ 243	\$ 365	\$ 486	\$ 608	\$ 730	\$ 851	\$ 973	\$ 1,095	\$ 1,216	\$ 1,338	\$ 1,459		
20	Total Lost C&I kWh and Demand Revenue	-	\$ 521	\$ 1,043	\$ 1,564	\$ 2,086	\$ 2,607	\$ 3,129	\$ 3,650	\$ 4,171	\$ 4,693	\$ 5,214	\$ 5,736	\$ 6,257	\$	40,671
21	Total Lost Revenue	-	\$ 1,270	\$ 2,540	\$ 3,811	\$ 5,081	\$ 6,351	\$ 7,621	\$ 8,891	\$ 10,161	\$ 11,432	\$ 12,702	\$ 13,972	\$ 15,242	\$	99,073

Lines 1-3: Company Forecast
Line 4: Line 1 + Line 2 + Line 3
Line 5: Company Forecast
Line 6: Line 5
Line 7: Line 2 / 12
Line 8: Prior Month Line 8 + Current Month Line 7
Line 9: Page 8, Column 7
Line 10: Line 8 x Line 9
Line 11: Line 1 / 12
Line 12: Page 8, Column 8
Line 14: Line 3 / 12
Line 15: Prior Month Line 15 + Current Month Line 14
Line 16: Page 8, Column 7
Line 17: Line 15 x Line 16
Line 18: Line 5 / 12
Line 19: Prior Month Line 19 + Current Month Line 18
Line 20: Page 8, Column 6
Line 21: Line 19 x Line 20
Line 22: Line 10 + Line 13 + Line 17 + Line 21

Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
Lost Base Revenue Reconciliation
January 1, 2019 to December 31, 2019
(\$ in 000's)

Line	Description	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	2019
		Carryover 12/31/2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019	Oct 2019	Nov 2019	Dec 2019	Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	Revenue Recovery		8	7	7	7	7	8	9	9	8	7	7	8	92
2	Lost Revenues		<u>1</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>99</u>
3	Current Month (Over)/Under Recovery		(7)	(5)	(3)	(2)	(1)	(0)	0	1	4	6	7	7	7
4	Cumulative (Over)/Under Recovery	-	(7)	(11)	(15)	(17)	(17)	(17)	(17)	(16)	(13)	(7)	(0)	7	
5	Interest @ Prime Rate		0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	0.42%	
6	Interest on Deferral Balance		(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	0	(1)
7	Cummulative (Over)/Under Recovery Incl Carrying Charge		<u>(7)</u>	<u>(12)</u>	<u>(15)</u>	<u>(17)</u>	<u>(18)</u>	<u>(18)</u>	<u>(18)</u>	<u>(17)</u>	<u>(13)</u>	<u>(7)</u>	<u>(1)</u>	<u>7</u>	
8	Monthly Sales (MWh)		80,095	72,613	72,933	67,755	70,480	76,884	88,660	89,486	77,813	71,040	71,774	78,613	918,145
9	SBC Rate (LBR Component)		0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	

Line 1: (Line 7 x Line 8) / 100

Line 2: Page 5, Line 21 / 1000

Line 3: Line 2 - Line 1

Line 4: Prior month Line 4 + Current month Line 3

Line 5: Prime Rate / 12

Line 6: (Prior Month Line 4 + Current Month Line 4) / 2 x Line 5

Line 7: Company Forecast

Line 8: Company Forecast

**Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
Calculation of Forecasted Average Distribution Rate for Lost Revenue
Based on Actual Billing Determinants and Distribution Rates for 2017***

	(1)	(2)	(3) = (1) + (2)	(4)	(5)	(6) = (1) + (4)	(7) = (2) / (5)	(8) = (3) / (5)
For the Period 01/01/17 Through 12/31/17								
<u>Rate Class</u>	<u>Demand</u> <u>Charges^(a)</u>	<u>Revenue</u> <u>kWh</u> <u>Charges</u>	<u>Total Demand</u> <u>and kWh Charges</u>	<u>Delivery</u> <u>kW</u>	<u>Delivery</u> <u>kWh</u>	<u>Average</u> <u>Distribution Rate</u> <u>\$/kW</u>	<u>Average</u> <u>Distribution Rate</u> <u>\$/kWh</u>	<u>Average</u> <u>Distribution Rate</u> <u>\$/kWh</u>
Rate D	\$ -	\$ 12,396,923	\$ 12,396,923	\$ -	285,033,459	N/A	N/A	\$ 0.04349
Rate D-10	\$ -	\$ 196,145	\$ 196,145	\$ -				
Rate T	\$ -	\$ 579,942	\$ 579,942	\$ -				
Total Residential	\$ -	\$ 13,173,010	\$ 13,173,010	\$ -				
Rate G-1	\$ 7,343,205	\$ 816,869	\$ 8,160,074	945,482	338,835,206	\$ 7.77	\$ 0.00241	\$ 0.02408
Rate G-2	\$ -	\$ 297,905	\$ 297,905	-	146,641,437	\$ -	\$ 0.00203	\$ 0.00203
Rate G-3	\$ -	\$ 3,862,813	\$ 3,862,813	-	86,877,874	\$ -	\$ 0.04446	\$ 0.04446
Rate V	\$ -	\$ 14,839	\$ 14,839	-	326,822	\$ -	\$ 0.04540	\$ 0.04540
Total Commercial and Industrial	\$ 7,343,205	\$ 4,992,426	\$ 12,335,631	945,482	572,681,339	\$ 7.77	\$ 0.00872	\$ 0.02154

* Excludes the outdoor lighting Rate OL and the Customer/Meter charge revenue from each rate

(a) For Rate G-2, the demand charge is excluded from the average rate calculation as ratchet for rate class is under internal review.

Bill Impacts of Changes in System Benefits Charge - Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities

	<u>Current Rates*</u>	<u>2019</u>
System Benefits Charge (\$/kWh)	\$ 0.00457	\$ 0.00513
<u>Bill per month, including PSNH default energy service</u>		
Residential Rate D (650 kWh/month)	\$ 123.44	\$ 123.80
Rate G-2, 25 kW, 9,000 kWh per month	\$ 1,428.36	\$ 1,433.93
<u>Change from previous rate level - \$ per month</u>		
Residential Rate D (650 kWh/month)		\$ 0.36
Rate G-2, 25 kW, 9,000 kWh per month		\$ 5.57
<u>Change from previous rate level - %</u>		
Residential Rate D (650 kWh/month)		0.29%
Rate G-2, 25 kW, 9,000 kWh per month		0.39%

* Stated at Liberty's most recent rate levels (effective August 1, 2018). Rate G-2 energy service rate is based on December 1, 2018 rate.

**Liberty Utilities (Granite State Electric) d/b/a Liberty Utilities
Calculation of Distribution Revenue at the Rate Levels in Effect During 2017
Based on Billing Determinants for the Twelve Months Ending December 2017**

Residential Rate D									
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
Standard	Customer Charge	138,699	\$ 12.12	\$ 1,681,032	280,699	\$ 14.54	\$ 4,081,363	419,398	\$ 5,762,395
	First 250 kWh	30,668,090	\$ 0.03356	\$ 1,029,221	64,412,248	\$ 0.04061	\$ 2,615,781	95,080,338	\$ 3,645,002
	Excess 250 kWh	57,407,781	\$ 0.05002	\$ 2,871,537	109,286,196	\$ 0.05273	\$ 5,762,661	166,693,977	\$ 8,634,198
Off Peak kWh 16 Hour	All kWh	466,825	\$ 0.03208	\$ 14,976	760,386	\$ 0.04185	\$ 31,822	1,227,211	\$ 46,798
Farm kWh	All kWh	346,145	\$ 0.04179	\$ 14,465	596,995	\$ 0.04576	\$ 27,318	943,140	\$ 41,784
D-6 kWh	All kWh	271,795	\$ 0.03346	\$ 9,094	470,356	\$ 0.04262	\$ 20,047	742,151	\$ 29,141
Total Residential	Customer/Meter	138,699		\$ 1,681,032	280,699		\$ 4,081,363	419,398	\$ 5,762,395
	Demand	-		-	-		-	-	-
	kWh	89,160,636		\$ 3,939,294	175,526,181		\$ 8,457,630	264,686,817	\$ 12,396,923
				\$ 5,620,326			\$ 12,538,993		\$ 18,159,319

Residential Rate D-10									
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
Standard	Customer Charge	1,747	\$ 12.28	\$ 21,453	3,522	\$ 14.54	\$ 51,210	5,269	\$ 72,663
	On Peak kWh	740,473	\$ 0.09	\$ 69,301	1,167,020	\$ 0.10	\$ 121,627	1,907,493	\$ 190,928
	Off Peak kWh	1,556,833	\$ 0.00	\$ 2,569	1,878,578	\$ 0.00	\$ 2,649	3,435,411	\$ 5,218
Total Rate D-10	Customer/Meter	1,747		\$ 21,453	3,522		\$ 51,210	5,269	\$ 72,663
	Demand	-		\$ -	-		\$ -	-	\$ -
	kWh	2,297,306		\$ 71,870	3,045,598		\$ 124,276	5,342,904	\$ 196,145
				\$ 93,323			\$ 175,485		\$ 268,808

Commercial & Industrial Rate G-1									
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
Standard	Customer Charge	543	\$ 333.68	\$ 181,188	1,089	\$ 378.73	\$ 412,437	1,632	\$ 593,625
	Demand Charge	298,786	\$ 7.11	\$ 2,124,368	646,696	\$ 8.07	\$ 5,218,837	945,482	\$ 7,343,205
	On Peak kWh	49,493,794	\$ 0.00	\$ 244,004	82,981,478	\$ 0.01	\$ 428,184	132,475,272	\$ 672,189
	Off Peak kWh	63,406,470	\$ 0.00173	\$ 109,693	142,540,567	\$ 0.00152	\$ 216,662	205,947,037	\$ 326,355
	Credit for High Voltage Delivery	110,121	\$ (0.44)	\$ (48,453)	302,776	\$ (0.44)	\$ (133,221)	412,897	\$ (181,675)
Total Rate G-1	Customer/Meter	543		\$ 181,188	1,089		\$ 412,437	1,632	\$ 593,625
	Demand	298,786		\$ 2,124,368	646,696		\$ 5,218,837	945,482	\$ 7,343,205
	kWh	113,010,385		\$ 305,244	225,824,821		\$ 511,625	338,835,206	\$ 818,869
				\$ 2,610,801			\$ 6,142,898		\$ 8,753,699

Commercial Rate G-2									
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
Standard	Customer Charge	3,473	\$ 55.64	\$ 193,238	7,134	\$ 63.15	\$ 450,512	10,607	\$ 643,750
	Demand Charge	164,862	\$ 7.15	\$ 1,178,763	338,414	\$ 8.12	\$ 2,747,922	503,276	\$ 3,926,685
	All kWh	48,189,518	\$ 0.00213	\$ 102,644	98,448,203	\$ 0.00200	\$ 196,896	146,637,721	\$ 299,540
	Credit for High Voltage Delivery	1,530	\$ (0.44)	\$ (673)	2,186	\$ (0.44)	\$ (962)	3,716	\$ (1,635)
Total Rate G-2	Customer/Meter	3,473		\$ 193,238	7,134		\$ 450,512	10,607	\$ 643,750
	Demand	164,862		\$ 1,178,763	338,414		\$ 2,747,922	503,276	\$ 3,926,685
	kWh	48,191,048		\$ 101,970	98,450,389		\$ 195,935	146,641,437	\$ 297,905
				\$ 1,473,971			\$ 3,394,368		\$ 4,868,340

General Service Rate G-3									
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total	
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units	Revenue
Standard	Customer Charge	22,190	\$ 12.03	\$ 266,946	44,834	\$ 14.54	\$ 651,886	67,024	\$ 918,832
	All kWh	30,261,252	\$ 0.04153	\$ 1,256,750	56,616,622	\$ 0.04603	\$ 2,606,063	86,877,874	\$ 3,862,813
Total Rate G-3	Customer/Meter	22,190		\$ 266,946	44,834		\$ 651,886	67,024	\$ 918,832
	Demand	-		\$ -	-		\$ -	-	\$ -
	kWh	30,261,252		\$ 1,256,750	56,616,622		\$ 2,606,063	86,877,874	\$ 3,862,813
				\$ 1,523,695			\$ 3,257,949		\$ 4,781,645

Electric Heat Rate T								
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units Revenue
Standard	Customer Charge	3,950	\$ 12.25	\$ 48,388	7,934	\$ 14.54	\$ 115,360	11,884 \$ 163,748
	All kWh	6,890,108	\$ 0.03702	\$ 255,072	8,113,630	\$ 0.04004	\$ 324,870	15,003,738 \$ 579,942
Total Rate T	Customer/Meter	3,950		\$ 48,388	7,934		\$ 115,360	11,884 \$ 163,748
	Demand	-		\$ -	-		\$ -	- \$ -
	kWh	6,890,108		\$ 255,072	8,113,630		\$ 324,870	15,003,738 \$ 579,942
				\$ 303,459				\$ 743,689

Electric Heat Rate V								
Rate	Source	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units Revenue
Standard	Customer Charge	71	\$ 12.07	\$ 857	144	\$ 14.54	\$ 2,094	215 \$ 2,951
	All kWh	131,803	\$ 0.04257	\$ 5,611	195,019	\$ 0.04732	\$ 9,228	326,822 \$ 14,839
Total Rate V	Customer/Meter	71		\$ 857	144		\$ 2,094	215 \$ 2,951
	Demand	-		\$ -	-		\$ -	- \$ -
	kWh	131,803		\$ 5,611	195,019		\$ 9,228	326,822 \$ 14,839
				\$ 6,468				\$ 17,790

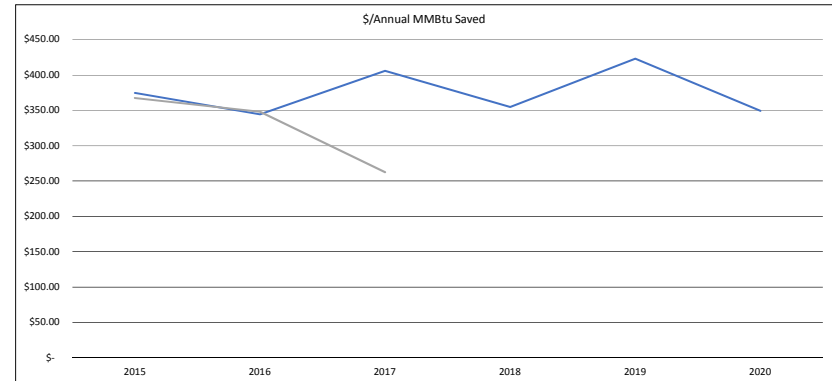
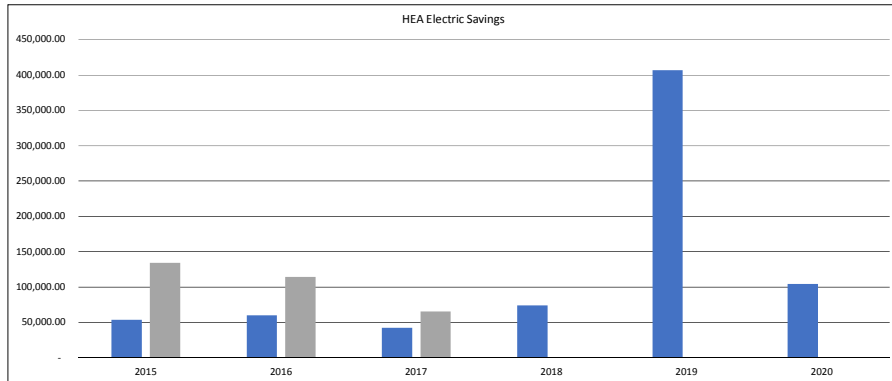
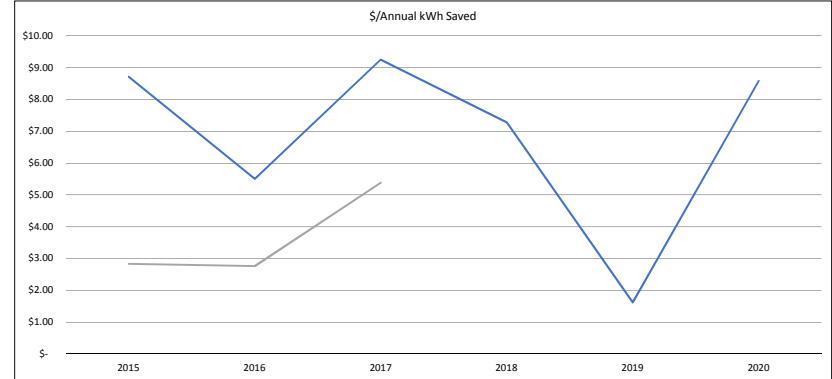
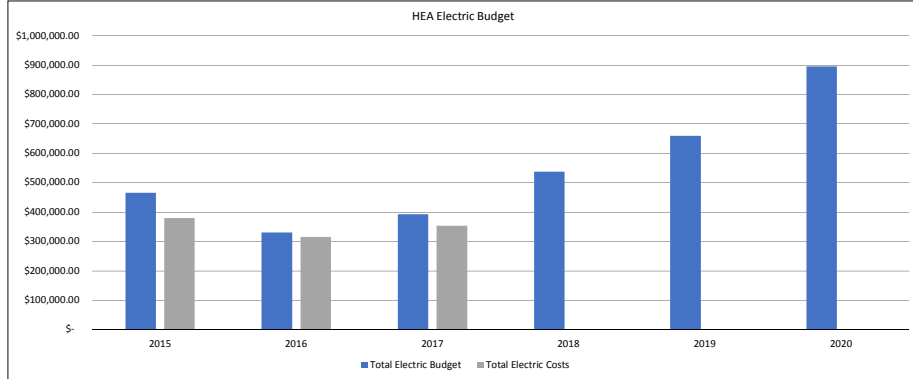
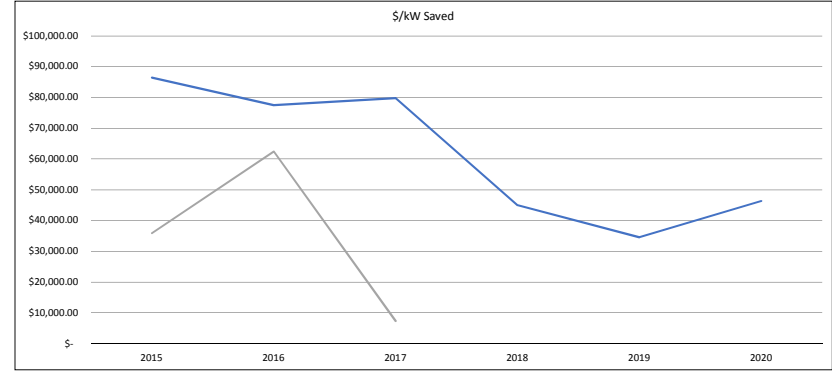
Outdoor Lighting Rate OL								
Type	Fixture	January 1, 2017 - April 30, 2017			May 1, 2017 - December 31, 2017			2017 Total
		Units	Rate/Charge	Revenue	Units	Rate/Charge	Revenue	Units Revenue
High Pressure Sodium	HPS RWY 50W	9,808	\$ 6.71	\$ 65,812	19566	\$ 7.64	\$ 149,484	29,374 \$ 215,296
	HPS RWY 100W	7,304	\$ 8.14	\$ 59,455	14423	\$ 9.27	\$ 133,701	21,727 \$ 193,156
	HPS RWY 250W	2,279	\$ 14.30	\$ 32,590	4215	\$ 16.28	\$ 68,620	6,494 \$ 101,210
	HPS RWY 400W	980	\$ 18.63	\$ 18,257	1926	\$ 21.21	\$ 40,850	2,906 \$ 59,108
	HPS POST 100W	1,644	\$ 9.38	\$ 15,421	3226	\$ 10.67	\$ 34,421	4,870 \$ 49,842
	HPS FLD 250W	1,069	\$ 14.42	\$ 15,415	2106	\$ 16.42	\$ 34,581	3,175 \$ 49,996
	HPS FLD 400W	1,717	\$ 19.91	\$ 34,185	3434	\$ 22.67	\$ 77,849	5,151 \$ 112,034
Incandescent	INC RWY 103W	69	\$ 8.96	\$ 618	207	\$ 10.21	\$ 2,113	276 \$ 2,732
Mercury	MV RWY 100W	246	\$ 6.49	\$ 1,597	696	\$ 7.38	\$ 5,136	942 \$ 6,733
	MV RWY 175W	595	\$ 7.89	\$ 4,695	1185	\$ 8.99	\$ 10,653	1,780 \$ 15,348
POLES	MV RWY 400W	204	\$ 14.92	\$ 3,044	407	\$ 16.99	\$ 6,915	611 \$ 9,959
	MV RWY 1000W	4	\$ 28.31	\$ 113	8	\$ 32.23	\$ 258	12 \$ 371
	MV FLD 400W	88	\$ 16.50	\$ 1,452	174	\$ 18.78	\$ 3,268	262 \$ 4,720
	MV FLD 1000W	-	\$ 28.50	\$ -	0	\$ 32.44	\$ -	- \$ -
	WOOD	488	\$ 7.91	\$ 3,860	957	\$ 9.01	\$ 8,623	1,445 \$ 12,483
	POLE FIBER DIRECT EMBEDDED	735	\$ 8.19	\$ 6,020	2205	\$ 9.33	\$ 20,573	2,940 \$ 26,592
	POLE FIBER RWY <25FT	524	\$ 13.90	\$ 7,284	1056	\$ 15.83	\$ 16,716	1,580 \$ 24,000
LED	POLE FIBER RWY =>25FT	-	\$ 23.22	\$ -	8	\$ 26.44	\$ 212	8 \$ 212
	POLE METAL EMBEDDED	677	\$ 16.57	\$ 11,218	1319	\$ 18.86	\$ 24,876	1,996 \$ 36,094
	POLE METAL =>25FT	296	\$ 19.97	\$ 5,911	781	\$ 22.74	\$ 17,760	1,077 \$ 23,671
	LED 30W	-	\$ -	\$ -	0	\$ 11.28	\$ -	- \$ -
	LED 50W	-	\$ -	\$ -	0	\$ 11.74	\$ -	- \$ -
	LED 130W	-	\$ -	\$ -	0	\$ 13.57	\$ -	- \$ -
	LED 190W	-	\$ -	\$ -	0	\$ 17.86	\$ -	- \$ -
Incandescent	LED 50W URD	-	\$ -	\$ -	0	\$ 12.90	\$ -	- \$ -
	LED 90W FLOOD	-	\$ -	\$ -	0	\$ 13.01	\$ -	- \$ -
	LED 130W FLOOD	-	\$ -	\$ -	0	\$ 14.24	\$ -	- \$ -
	LED 50W BARN	-	\$ -	\$ -	0	\$ 4.97	\$ -	- \$ -
	All kWh	-	\$ -	\$ -	0	\$ -	\$ -	- \$ -
Total Rate OL	Fixtures	28,727		\$ 286,945	57,899		\$ 656,610	86,626 \$ 943,555
	Demand kWh	-		\$ -	-		\$ -	- \$ -
				\$ 286,945				\$ 943,555

Total Retail						
Type	Source	January 1, 2017 - June 30, 2017		July 1, 2017 - December 31, 2017		2017 Total
		Units	Revenue	Units	Revenue	Units Revenue
Total Retail	Customer/Meter	170,673	\$ 2,393,101.17	341,834	\$ 5,764,863	512,507 \$ 8,157,964
	Fixtures	28,727	\$ 286,945	57,899	\$ 656,610	86,626 \$ 943,555
	Demand	463,648	\$ 3,303,132	985,110	\$ 7,832,575	1,448,758 \$ 11,135,707
	kWh	289,942,538	\$ 5,935,811	567,772,260	\$ 12,229,626	857,714,798 \$ 18,165,436
			\$ 11,918,989		\$ 26,483,674	\$ 38,402,662

Lost Base Revenue						
Summary of Data Included in the Calculation of the Average Distribution Rates*						
Type	Source	January 1, 2017 - June 30, 2017		July 1, 2017 - December 31, 2017		2017 Total
		Units	Revenue	Units	Revenue	Units Revenue
Total Rate D	Demand kWh	-	\$ -	-	\$ -	- \$ -
		89,160,636	<u>\$ 3,939,294</u>	175,526,181	<u>\$ 8,457,630</u>	264,686,817 <u>\$ 12,396,923</u>
			\$ 3,939,294		\$ 8,457,630	\$ 12,396,923
Total Rate D-10	Demand kWh	-	\$ -	-	\$ -	- \$ -
		2,297,306	<u>\$ 71,870</u>	3,045,598	<u>\$ 124,276</u>	5,342,904 <u>\$ 196,145</u>
			\$ 71,870		\$ 124,276	\$ 196,145
Total Rate G-1	Demand kWh	298,786	\$ 2,124,368	646,696	\$ 5,218,837	945,482 \$ 7,343,205
		113,010,385	<u>\$ 305,244</u>	225,824,821	<u>\$ 511,625</u>	338,835,206 <u>\$ 816,869</u>
			\$ 2,429,613		\$ 5,730,461	\$ 8,160,074
Total Rate G-2	Demand kWh	164,862	\$ 1,178,763	338,414	\$ 2,747,922	503,276 \$ 3,926,685
		48,191,048	<u>\$ 101,970</u>	98,450,389	<u>\$ 195,935</u>	146,641,437 <u>\$ 297,905</u>
			\$ 1,280,734		\$ 2,943,856	\$ 4,224,590
Total Rate G-3	Demand kWh	-	\$ -	-	\$ -	- \$ -
		30,261,252	<u>\$ 1,256,750</u>	56,616,622	<u>\$ 2,606,063</u>	86,877,874 <u>\$ 3,862,813</u>
			\$ 1,256,750		\$ 2,606,063	\$ 3,862,813
Total Rate T	Demand kWh	-	\$ -	-	\$ -	- \$ -
		6,890,108	<u>\$ 255,072</u>	8,113,630	<u>\$ 324,870</u>	15,003,738 <u>\$ 579,942</u>
			\$ 255,072		\$ 324,870	\$ 579,942
Total Rate V	Demand kWh	-	\$ -	-	\$ -	- \$ -
		131,803	<u>\$ 5,611</u>	195,019	<u>\$ 9,228</u>	326,822 <u>\$ 14,839</u>
			\$ 5,611		\$ 9,228	\$ 14,839
Total	Demand kWh	463,648	\$ 3,303,132	176,511,291	\$ 7,966,758	1,448,758 \$ 11,269,890
		259,681,286	<u>\$ 4,679,061</u>	511,155,638	<u>\$ 9,623,563</u>	755,506,364 <u>\$ 18,165,436</u>
			\$ 7,982,193		\$ 17,590,321	\$ 29,435,327

Home Energy Assistance

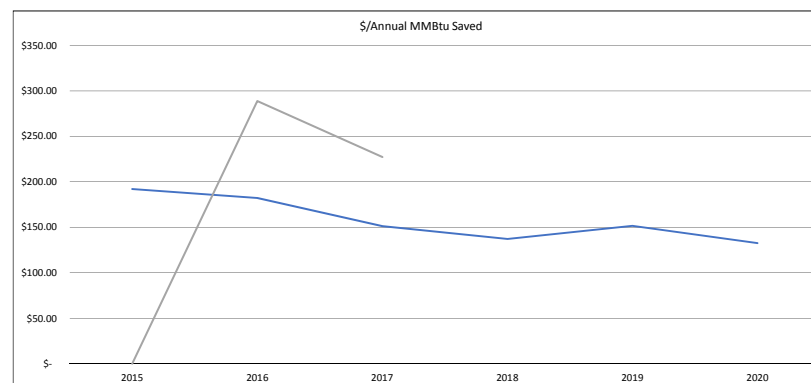
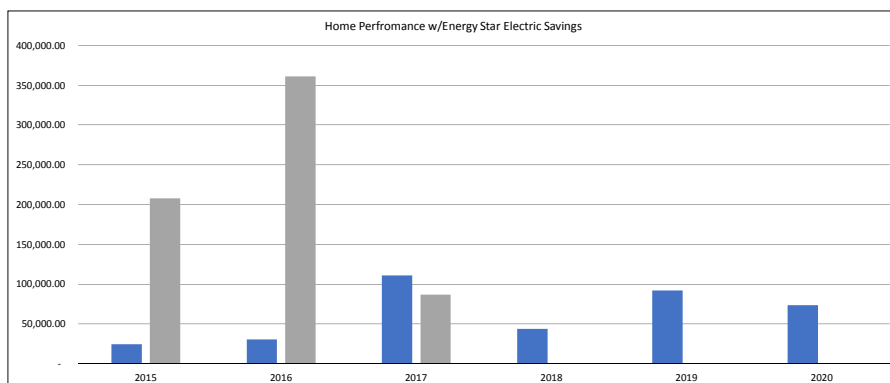
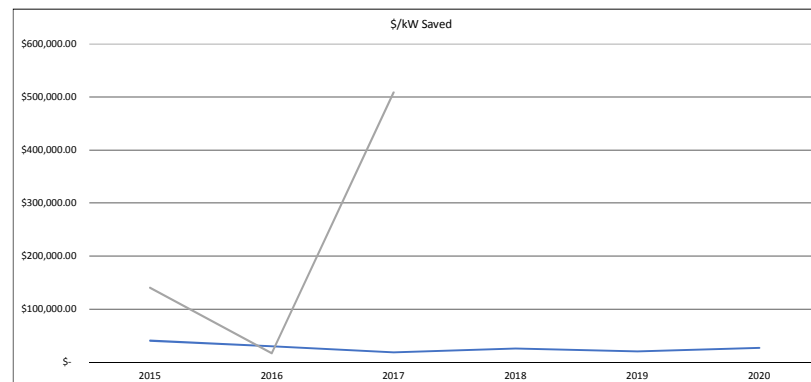
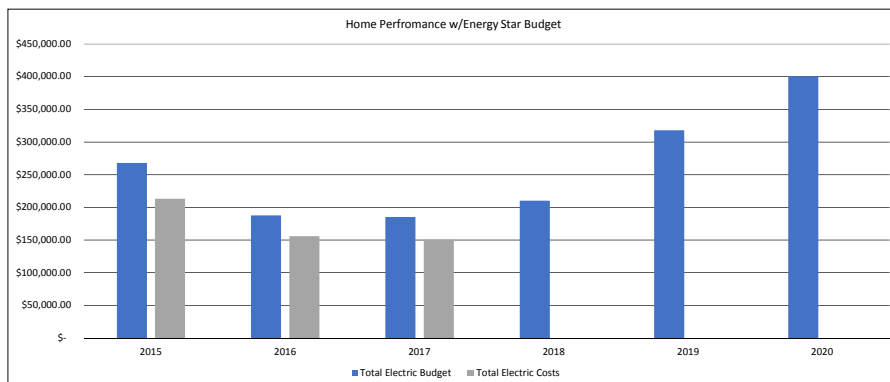
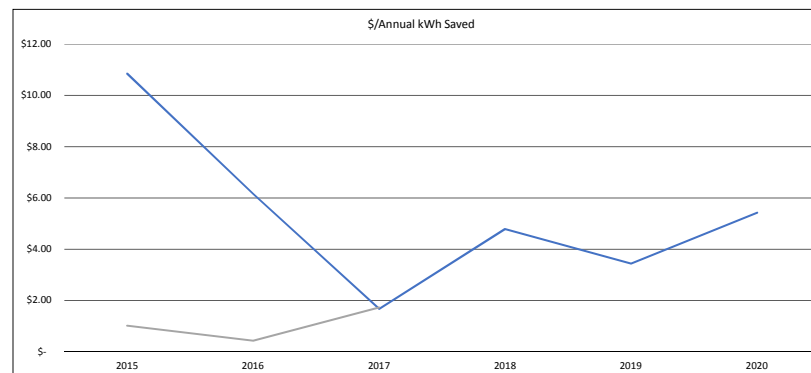
Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 465,548.53	\$ 330,589.02	\$ 392,167.81	\$ 536,897.99	\$ 659,278.57	\$ 895,463.27
	Annual Electric Savings Plan (kWh)	53,434.31	60,075.89	42,395.61	73,782.18	406,680.68	104,399.48
	\$/Annual kWh Plan	\$ 8.71	\$ 5.50	\$ 9.25	\$ 7.28	\$ 1.62	\$ 8.58
2)	Total Electric Budget	\$ 465,548.53	\$ 330,589.02	\$ 392,167.81	\$ 536,897.99	\$ 659,278.57	\$ 895,463.27
	Total summer peak kW Plan	5.38	4.26	4.92	11.95	19.07	19.35
	\$/kW Plan	\$ 86,467.08	\$ 77,552.06	\$ 79,786.89	\$ 44,945.12	\$ 34,564.58	\$ 46,271.20
3)	Total Electric Budget	\$ 465,548.53	\$ 330,589.02	\$ 392,167.81	\$ 536,897.99	\$ 659,278.57	\$ 895,463.27
	Total Annual MMBtu Plan	1,242.74	960.66	966.87	1,513.48	1,558.99	2,563.93
	\$/Annual MMBtu Plan	\$ 374.61	\$ 344.13	\$ 405.61	\$ 354.74	\$ 422.89	\$ 349.25
Home Energy Assistance							
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 378,874.12	\$ 314,957.99	\$ 352,987.37			
	Annual Electric Savings Actual (kWh)	134,001.08	114,076.40	65,578.70			
	\$/Annual kWh Actual	\$ 2.83	\$ 2.76	\$ 5.38			
2)	Total Electric Costs	\$ 378,874.12	\$ 314,957.99	\$ 352,987.37			
	Total summer peak kW Actual	10.54	5.04	48.06			
	\$/kW Actual	\$ 35,939.11	\$ 62,434.91	\$ 7,345.02			
3)	Total Electric Costs	\$ 378,874.12	\$ 314,957.99	\$ 352,987.37			
	Total Annual MMBtu Actual	1,031.25	905.27	1,344.94			
	\$/Annual MMBtu Actual	\$ 367.39	\$ 347.91	\$ 262.45			



Home Performance w/Energy Star

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 267,815.68	\$ 187,613.45	\$ 185,502.63	\$ 210,304.44	\$ 317,833.14	\$ 400,645.08
	Annual Electric Savings Plan (kWh)	24,689.24	30,442.48	110,909.35	43,887.81	92,345.04	73,852.00
	\$/Annual kWh Plan	\$ 10.85	\$ 6.16	\$ 1.67	\$ 4.79	\$ 3.44	\$ 5.42
2)	Total Electric Budget	\$ 267,815.68	\$ 187,613.45	\$ 185,502.63	\$ 210,304.44	\$ 317,833.14	\$ 400,645.08
	Total summer peak kW Plan	6.62	6.20	9.94	8.10	15.77	14.74
	\$/kW Plan	\$ 40,437.10	\$ 30,241.93	\$ 18,661.03	\$ 25,963.96	\$ 20,155.56	\$ 27,185.69
3)	Total Electric Budget	\$ 267,815.68	\$ 187,613.45	\$ 185,502.63	\$ 210,304.44	\$ 317,833.14	\$ 400,645.08
	Total Annual MMBtu Plan	1,394.32	1,029.31	1,224.48	1,530.01	2,091.85	3,020.38
	\$/Annual MMBtu Plan	\$ 192.08	\$ 182.27	\$ 151.49	\$ 137.45	\$ 151.94	\$ 132.65

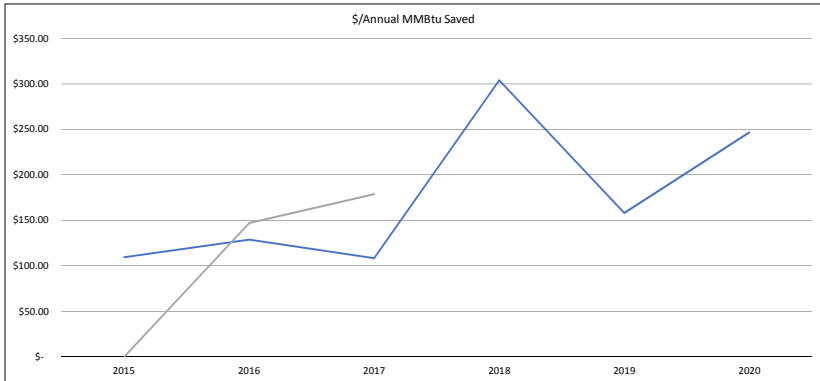
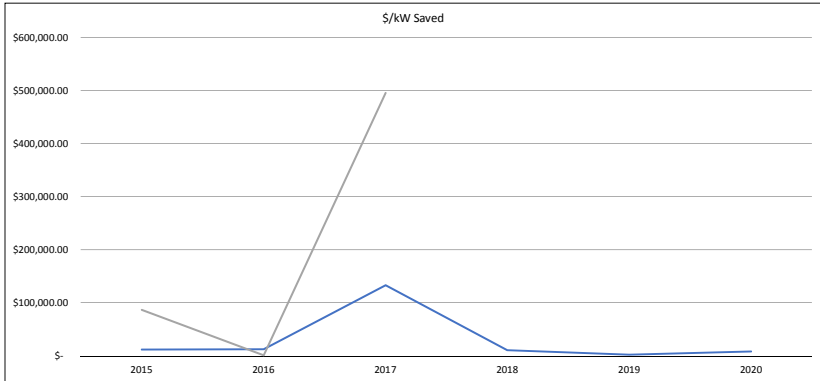
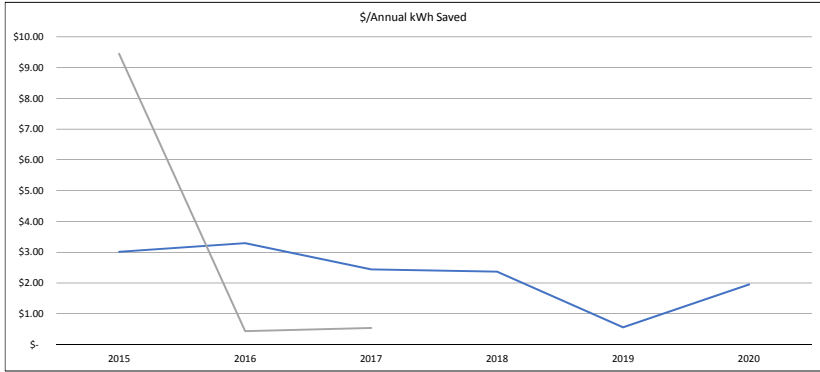
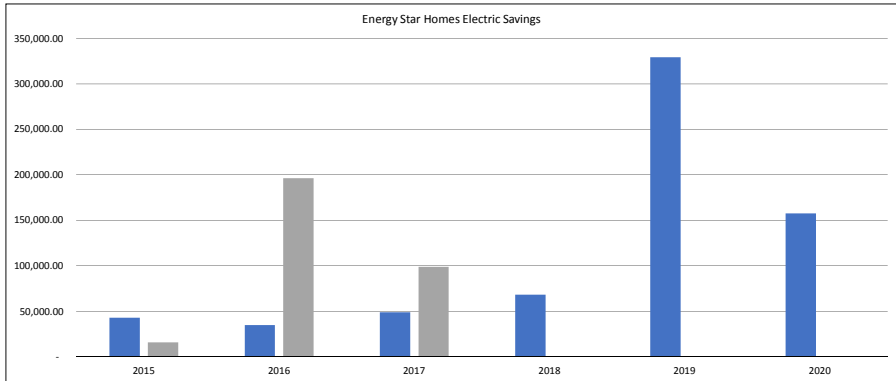
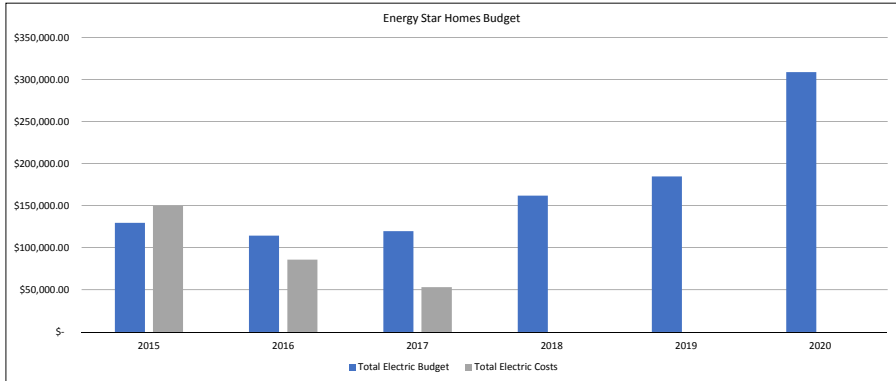
Actuals		2015	2016	2017
1)	Total Electric Costs	\$ 213,206.14	\$ 155,978.47	\$ 150,522.13
	Annual Electric Savings Actual (kWh)	208,056.02	361,214.88	87,034.75
	\$/Annual kWh Actual	\$ 1.02	\$ 0.43	\$ 1.73
2)	Total Electric Costs	\$ 213,206.14	\$ 155,978.47	\$ 150,522.13
	Total summer peak kW Actual	1.52	9.32	0.30
	\$/kW Actual	\$ 140,107.53	\$ 16,730.56	\$ 508,674.12
3)	Total Electric Costs	\$ 213,206.14	\$ 155,978.47	\$ 150,522.13
	Total Annual MMBtu Actual	737.17	685.57	796.59
	\$/Annual MMBtu Actual	\$ 289.22	\$ 227.52	\$ 188.96



Energy Star Homes

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 129,850.03	\$ 114,652.66	\$ 120,031.11	\$ 162,234.85	\$ 185,137.81	\$ 309,069.06
	Annual Electric Savings Plan (kWh)	42,970.69	34,754.68	49,089.91	68,431.30	329,428.18	157,822.24
	\$/Annual kWh Plan	\$ 3.02	\$ 3.30	\$ 2.45	\$ 2.37	\$ 0.56	\$ 1.96
2)	Total Electric Budget	\$ 129,850.03	\$ 114,652.66	\$ 120,031.11	\$ 162,234.85	\$ 185,137.81	\$ 309,069.06
	Total summer peak kW Plan	10.91	9.11	0.90	14.91	76.83	36.62
	\$/kW Plan	\$ 11,899.51	\$ 12,590.64	\$ 133,400.23	\$ 10,880.75	\$ 2,409.86	\$ 8,438.84
3)	Total Electric Budget	\$ 129,850.03	\$ 114,652.66	\$ 120,031.11	\$ 162,234.85	\$ 185,137.81	\$ 309,069.06
	Total Annual MMBtu Plan	1,186.87	888.95	1,105.64	533.16	1,171.12	1,251.52
	\$/Annual MMBtu Plan	\$ 109.41	\$ 128.98	\$ 108.56	\$ 304.29	\$ 158.09	\$ 246.96

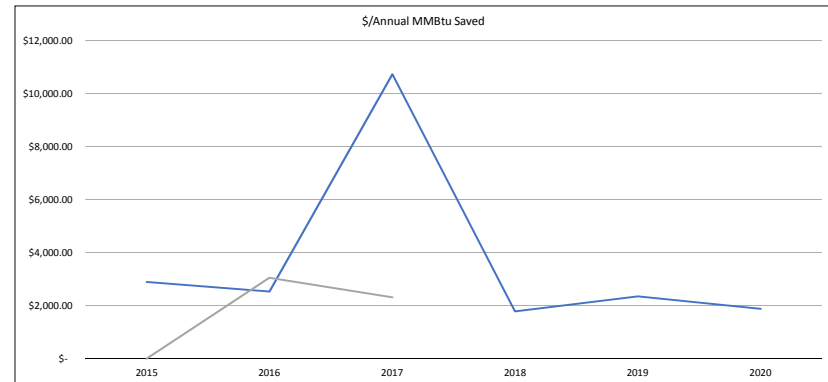
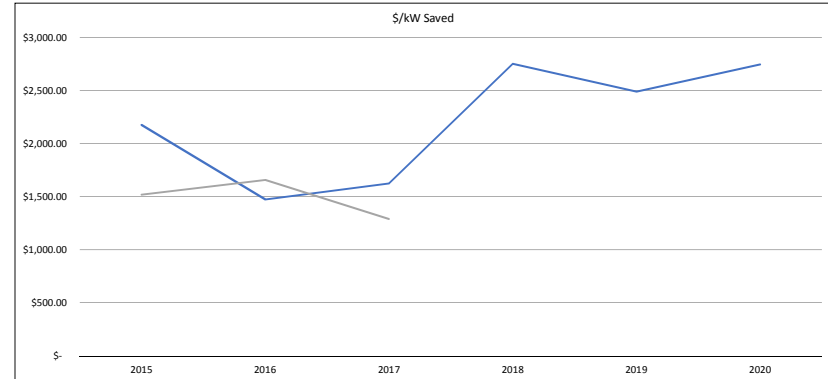
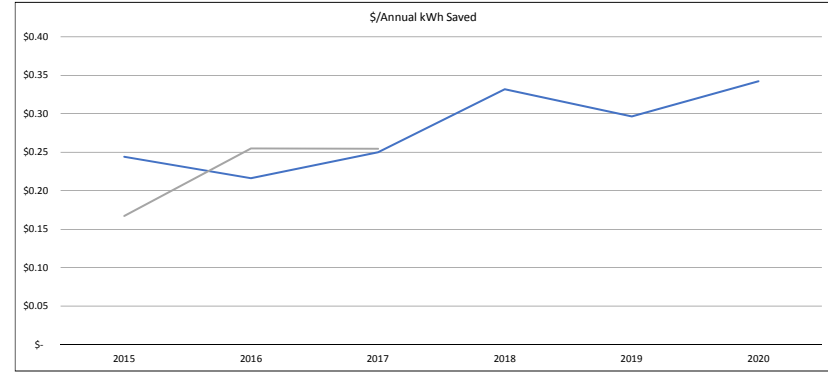
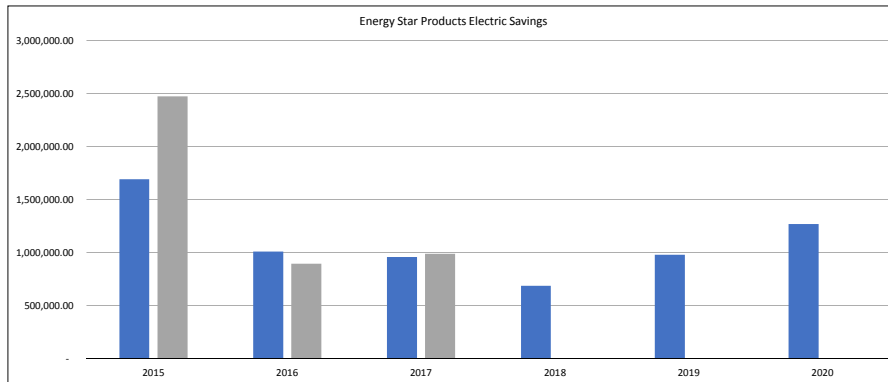
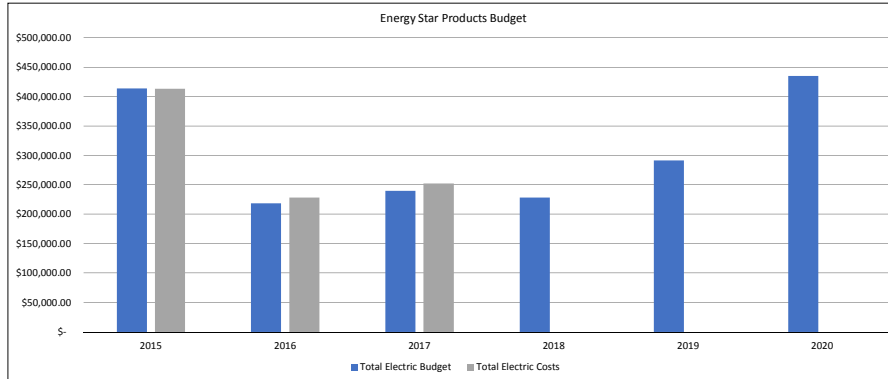
Actuals		2015	2016	2017
1)	Total Electric Costs	\$ 149,953.01	\$ 85,986.60	\$ 53,359.58
	Annual Electric Savings Actual (kWh)	15,851.36	196,439.12	99,035.15
	\$/Annual kWh Actual	\$ 9.46	\$ 0.44	\$ 0.54
2)	Total Electric Costs	\$ 149,953.01	\$ 85,986.60	\$ 53,359.58
	Total summer peak kW Actual	1.72	64.41	0.11
	\$/kW Actual	\$ 87,032.94	\$ 1,334.91	\$ 496,168.23
3)	Total Electric Costs	\$ 149,953.01	\$ 85,986.60	\$ 53,359.58
	Total Annual MMBtu Actual	1,017.91	480.69	32.07
	\$/Annual MMBtu Actual	\$ 147.32	\$ 178.88	\$ 1,663.95



Energy Star Products

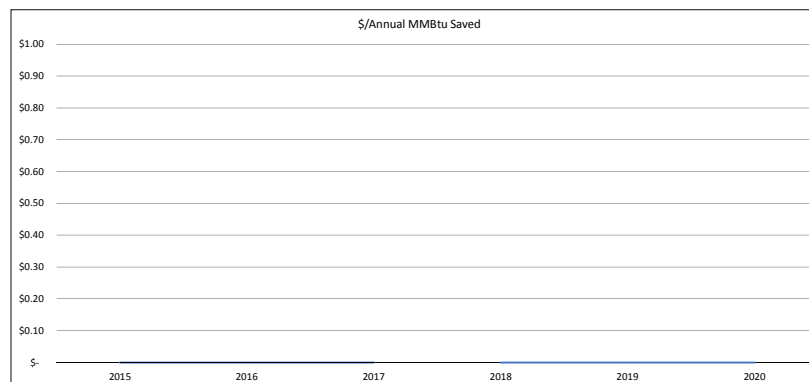
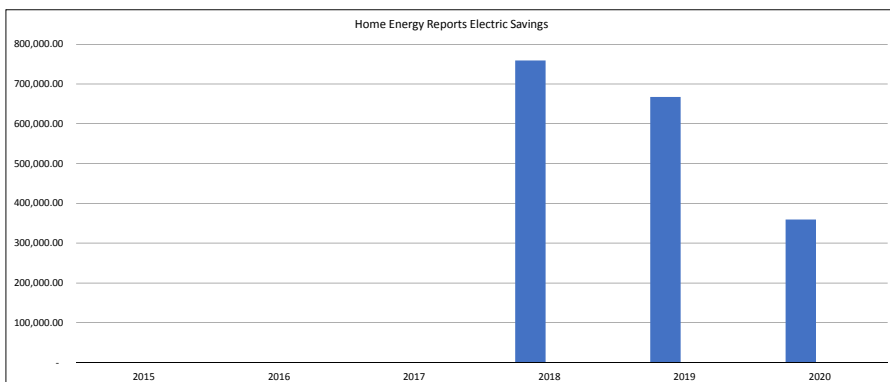
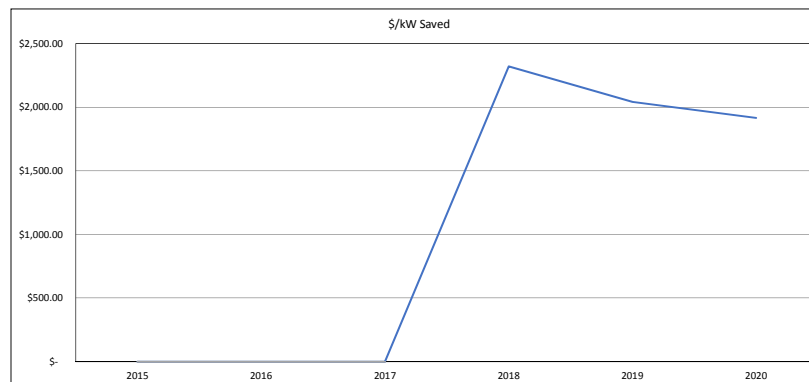
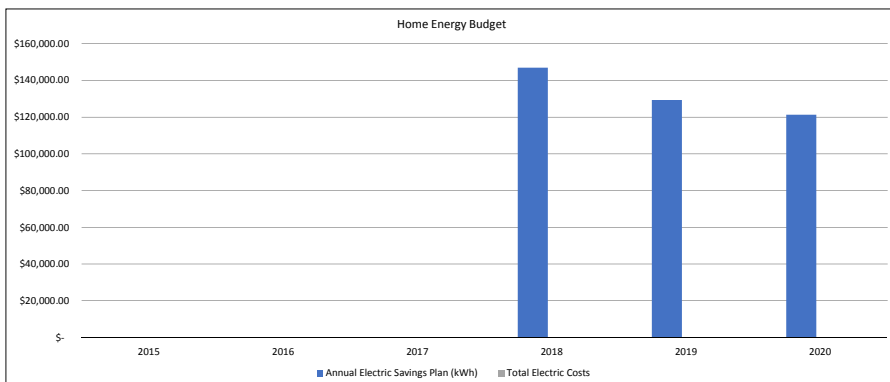
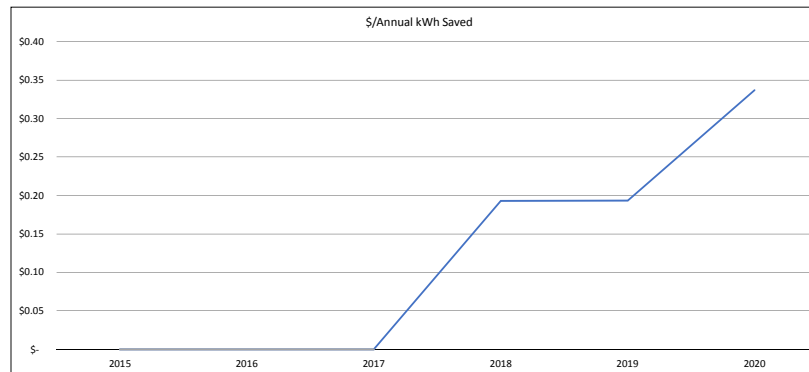
Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 413,896.97	\$ 218,882.36	\$ 240,062.22	\$ 228,330.53	\$ 291,611.91	\$ 434,986.08
	Annual Electric Savings Plan (kWh)	1,694,349.54	1,010,711.28	959,637.02	687,811.49	982,577.83	1,270,027.21
	\$/Annual kWh Plan	\$ 0.24	\$ 0.22	\$ 0.25	\$ 0.33	\$ 0.30	\$ 0.34
2)	Total Electric Budget	\$ 413,896.97	\$ 218,882.36	\$ 240,062.22	\$ 228,330.53	\$ 291,611.91	\$ 434,986.08
	Total summer peak kW Plan	189.91	148.30	147.58	82.84	116.97	158.17
	\$/kW Plan	\$ 2,179.47	\$ 1,475.95	\$ 1,626.67	\$ 2,756.42	\$ 2,492.99	\$ 2,750.12
3)	Total Electric Budget	\$ 413,896.97	\$ 218,882.36	\$ 240,062.22	\$ 228,330.53	\$ 291,611.91	\$ 434,986.08
	Total Annual MMBtu Plan	142.88	86.18	22.38	127.38	123.93	230.11
	\$/Annual MMBtu Plan	\$ 2,896.73	\$ 2,539.71	\$ 10,728.47	\$ 1,792.52	\$ 2,353.02	\$ 1,890.30

Energy Star Products Actuals		2015	2016	2017
1)	Total Electric Costs	\$ 413,643.25	\$ 228,647.55	\$ 252,360.43
	Annual Electric Savings Actual (kWh)	2,473,522.93	896,766.75	990,531.96
	\$/Annual kWh Actual	\$ 0.17	\$ 0.25	\$ 0.25
2)	Total Electric Costs	\$ 413,643.25	\$ 228,647.55	\$ 252,360.43
	Total summer peak kW Actual	272.18	137.68	195.41
	\$/kW Actual	\$ 1,519.74	\$ 1,660.70	\$ 1,291.44
3)	Total Electric Costs	\$ 413,643.25	\$ 228,647.55	\$ 252,360.43
	Total Annual MMBtu Actual	135.63	98.49	27.12
	\$/Annual MMBtu Actual	\$ 3,049.87	\$ 2,321.58	\$ 9,305.12



Home Energy Reports

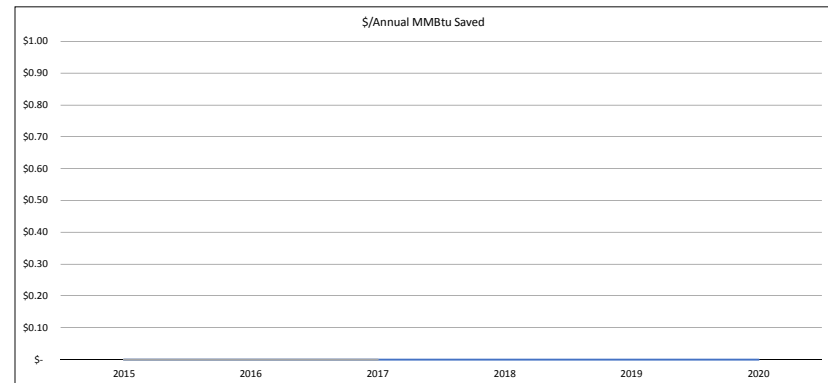
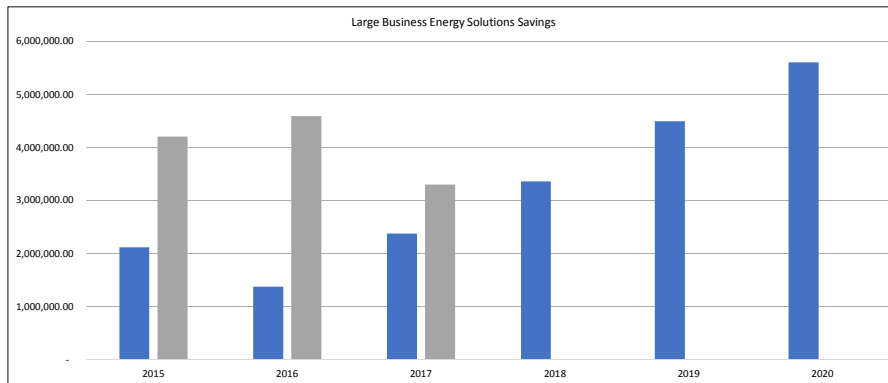
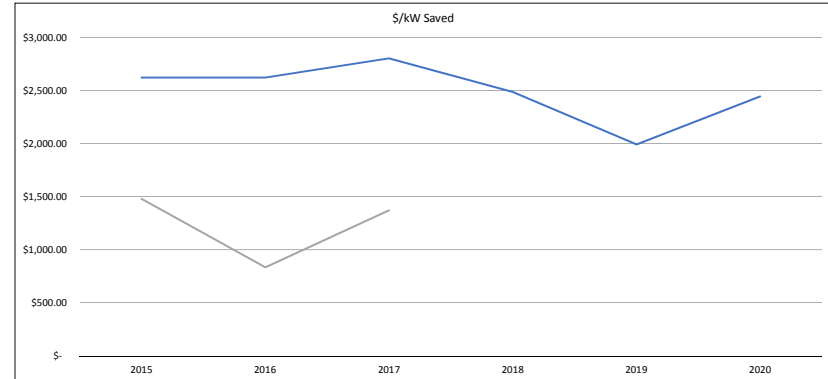
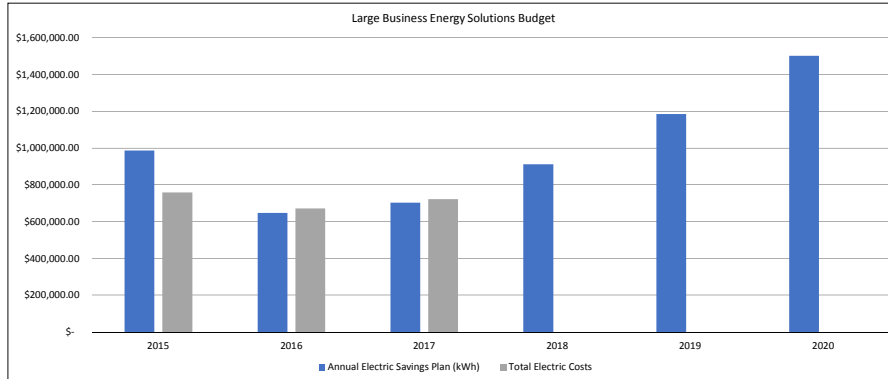
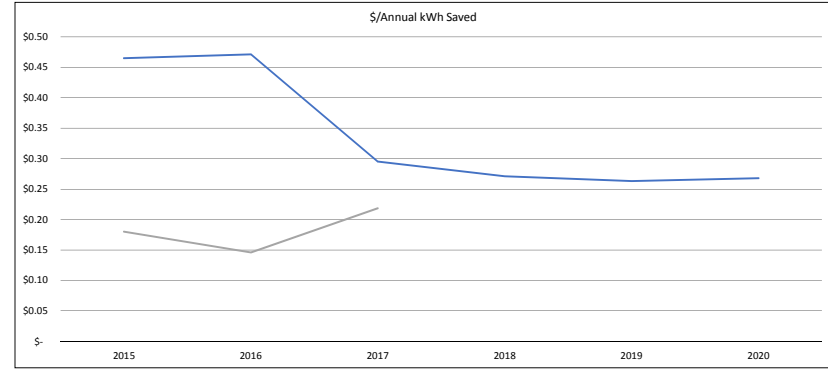
Planned		2015	2016	2017	2018	2019	2020
1)	Annual Electric Savings Plan (kWh)	\$ -	\$ -	\$ -	\$ 146,950.00	\$ 129,300.00	\$ 121,310.00
	Annual Electric Savings Plan (kWh)	-	-	-	760,000.00	668,000.00	360,000.00
	\$/Annual kWh Plan	\$ -	\$ -	\$ -	\$ 0.19	\$ 0.19	\$ 0.34
2)	Total Electric Budget	\$ -	\$ -	\$ -	\$ 146,950.00	\$ 129,300.00	\$ 121,310.00
	Total summer peak kW Plan	-	-	-	63.33	63.33	63.33
	\$/kW Plan	\$ -	\$ -	\$ -	\$ 2,320.26	\$ 2,041.58	\$ 1,915.42
3)	Total Electric Budget	\$ -	\$ -	\$ -	\$ 146,950.00	\$ 129,300.00	\$ 121,310.00
	Total Annual MMBtu Plan	-	-	-	-	-	-
	\$/Annual MMBtu Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Home Energy Reports							
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ -	\$ -	\$ -			
	Annual Electric Savings Actual (kWh)	-	-	-			
	\$/Annual kWh Actual	\$ -	\$ -	\$ -			
2)	Total Electric Costs	\$ -	\$ -	\$ -			
	Total summer peak kW Actual	-	-	-			
	\$/kW Actual	\$ -	\$ -	\$ -			
3)	Total Electric Costs	\$ -	\$ -	\$ -			
	Total Annual MMBtu Actual	-	-	-			
	\$/Annual MMBtu Actual	\$ -	\$ -	\$ -			



Large Business Energy Solutions

Planned	2015	2016	2017	2018	2019	2020
1) Annual Electric Savings Plan (kWh)	\$ 986,516.79	\$ 648,100.80	\$ 703,049.76	\$ 912,650.57	\$ 1,186,167.52	\$ 1,503,054.79
Annual Electric Savings Plan (kWh)	2,119,438.41	1,374,366.90	2,378,148.71	3,363,034.81	4,498,959.17	5,604,938.50
\$/Annual kWh Plan	\$ 0.47	\$ 0.47	\$ 0.30	\$ 0.27	\$ 0.26	\$ 0.27
2) Total Electric Budget	\$ 986,516.79	\$ 648,100.80	\$ 703,049.76	\$ 912,650.57	\$ 1,186,167.52	\$ 1,503,054.79
Total summer peak kW Plan	375.77	246.88	250.40	366.51	594.95	614.25
\$/kW Plan	\$ 2,625.32	\$ 2,625.16	\$ 2,807.71	\$ 2,490.11	\$ 1,993.71	\$ 2,446.96
3) Total Electric Budget	\$ 986,516.79	\$ 648,100.80	\$ 703,049.76	\$ 912,650.57	\$ 1,186,167.52	\$ 1,503,054.79
Total Annual MMBtu Plan	-	-	-	-	-	-
\$/Annual MMBtu Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

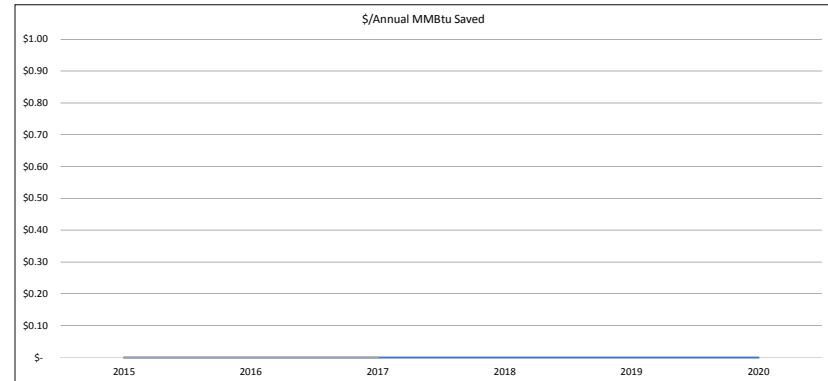
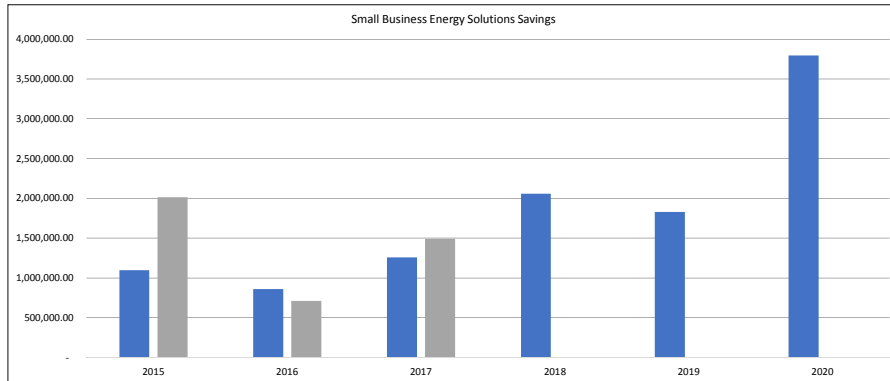
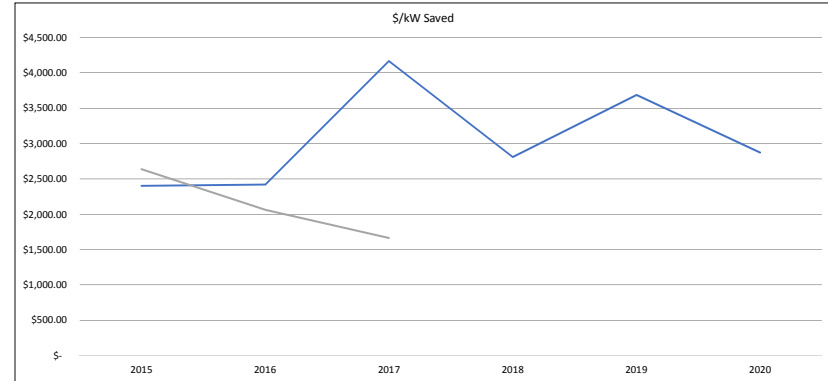
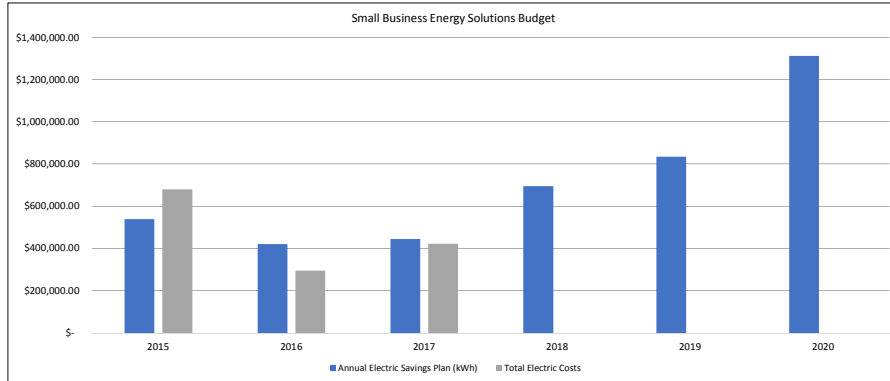
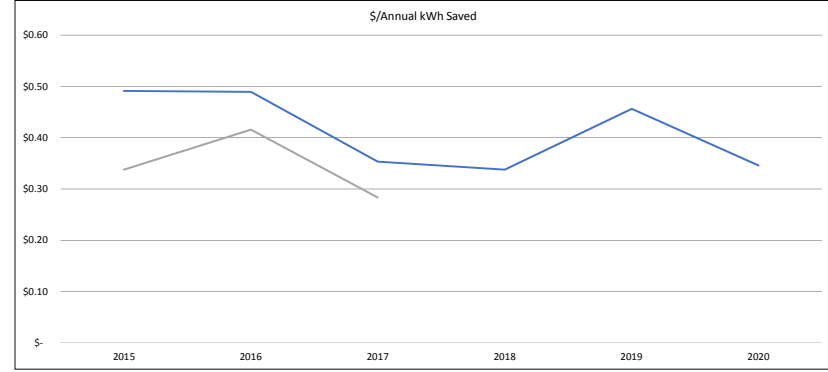
Actuals	2015	2016	2017
1) Total Electric Costs	\$ 758,942.69	\$ 671,700.75	\$ 722,352.73
Annual Electric Savings Actual (kWh)	4,209,731.13	4,591,503.58	3,298,929.54
\$/Annual kWh Actual	\$ 0.18	\$ 0.15	\$ 0.22
2) Total Electric Costs	\$ 758,942.69	\$ 671,700.75	\$ 722,352.73
Total summer peak kW Actual	512.42	804.65	525.73
\$/kW Actual	\$ 1,481.09	\$ 834.77	\$ 1,374.01
3) Total Electric Costs	\$ 758,942.69	\$ 671,700.75	\$ 722,352.73
Total Annual MMBtu Actual	-	-	-
\$/Annual MMBtu Actual	\$ -	\$ -	\$ -



Small Business Energy Solutions

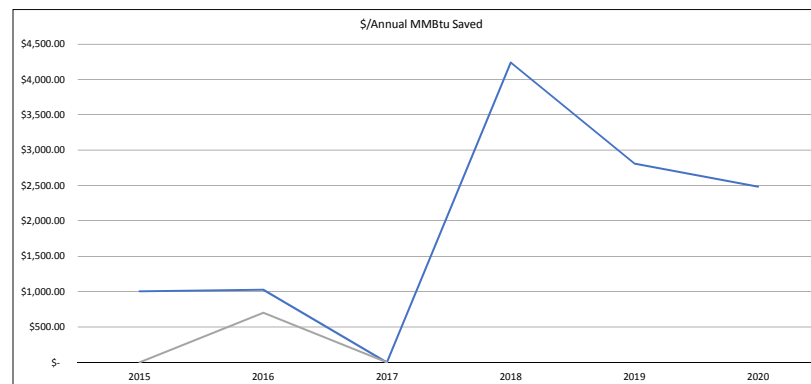
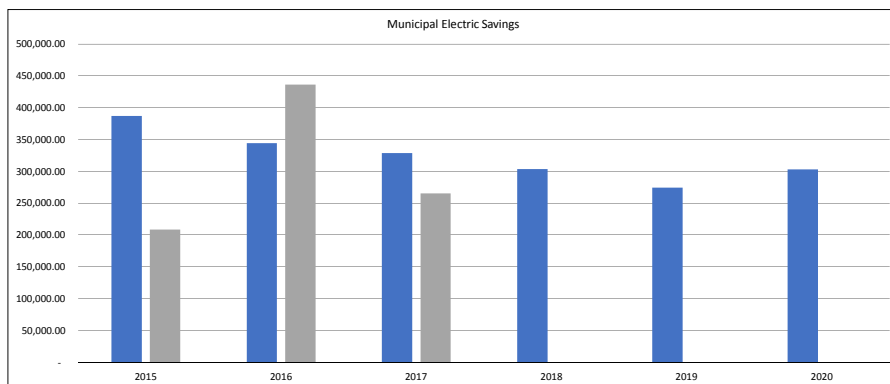
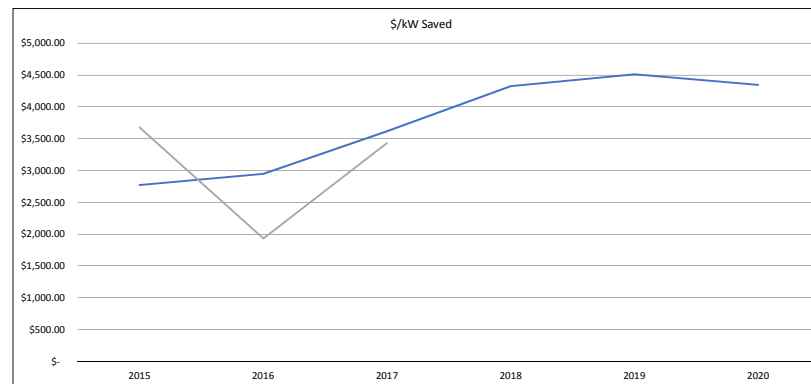
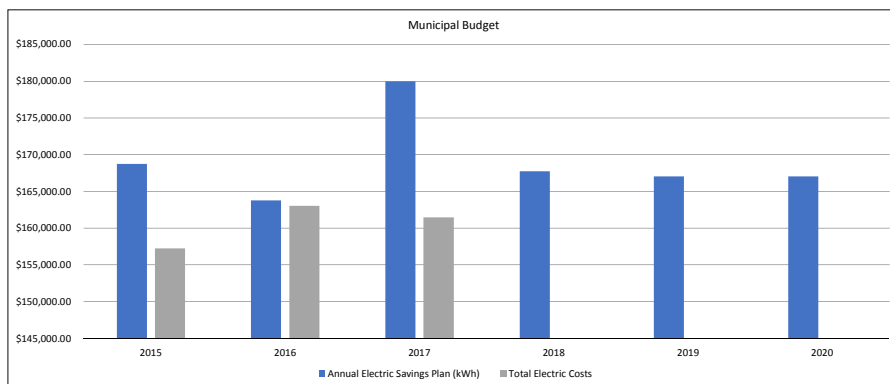
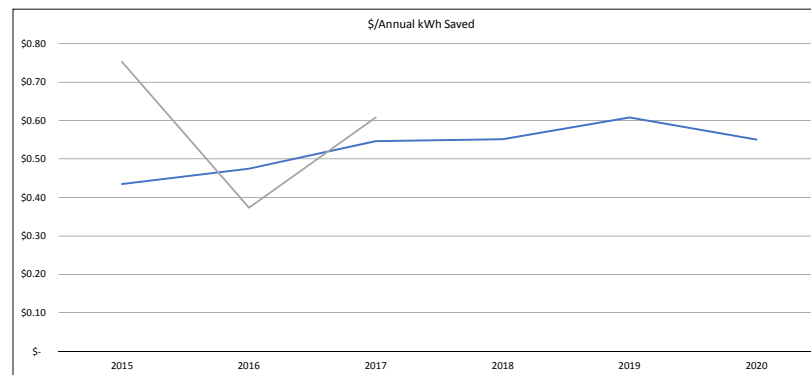
Planned		2015	2016	2017	2018	2019	2020
1)	Annual Electric Savings Plan (kWh)	\$ 539,501.37	\$ 421,265.52	\$ 445,264.85	\$ 695,978.13	\$ 835,474.51	\$ 1,313,376.74
	Annual Electric Savings Plan (kWh)	1,097,858.23	860,961.22	1,259,303.25	2,058,733.62	1,830,396.11	3,797,079.49
	\$/Annual kWh Plan	\$ 0.49	\$ 0.49	\$ 0.35	\$ 0.34	\$ 0.46	\$ 0.35
2)	Total Electric Budget	\$ 539,501.37	\$ 421,265.52	\$ 445,264.85	\$ 695,978.13	\$ 835,474.51	\$ 1,313,376.74
	Total summer peak kW Plan	224.27	173.92	106.80	247.48	226.38	457.04
	\$/kW Plan	\$ 2,405.55	\$ 2,422.14	\$ 4,169.17	\$ 2,812.23	\$ 3,690.62	\$ 2,873.68
3)	Total Electric Budget	\$ 539,501.37	\$ 421,265.52	\$ 445,264.85	\$ 695,978.13	\$ 835,474.51	\$ 1,313,376.74
	Total Annual MMBtu Plan	-	-	-	-	-	-
	\$/Annual MMBtu Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Small Business Energy Solutions		2015	2016	2017
1)	Total Electric Costs	\$ 681,255.21	\$ 295,732.97	\$ 423,319.49
	Annual Electric Savings Actual (kWh)	2,015,429.01	711,323.10	1,492,157.24
	\$/Annual kWh Actual	\$ 0.34	\$ 0.42	\$ 0.28
2)	Total Electric Costs	\$ 681,255.21	\$ 295,732.97	\$ 423,319.49
	Total summer peak kW Actual	258.17	143.16	254.31
	\$/kW Actual	\$ 2,638.78	\$ 2,065.69	\$ 1,664.55
3)	Total Electric Costs	\$ 681,255.21	\$ 295,732.97	\$ 423,319.49
	Total Annual MMBtu Actual	-	-	-
	\$/Annual MMBtu Actual	\$ -	\$ -	\$ -



Municipal

Planned		2015	2016	2017	2018	2019	2020
1)	Annual Electric Savings Plan (kWh)	\$ 168,757.07	\$ 163,787.53	\$ 179,990.30	\$ 167,754.53	\$ 167,047.78	\$ 167,047.78
	Annual Electric Savings Plan (kWh)	387,462.02	344,320.92	329,094.14	303,814.79	274,539.99	303,207.08
	\$/Annual kWh Plan	\$ 0.44	\$ 0.48	\$ 0.55	\$ 0.55	\$ 0.61	\$ 0.55
2)	Total Electric Budget	\$ 168,757.07	\$ 163,787.53	\$ 179,990.30	\$ 167,754.53	\$ 167,047.78	\$ 167,047.78
	Total summer peak kW Plan	60.88	55.57	49.75	38.77	37.03	38.44
	\$/kW Plan	\$ 2,771.77	\$ 2,947.59	\$ 3,618.26	\$ 4,327.39	\$ 4,510.93	\$ 4,346.07
3)	Total Electric Budget	\$ 168,757.07	\$ 163,787.53	\$ 179,990.30	\$ 167,754.53	\$ 167,047.78	\$ 167,047.78
	Total Annual MMBtu Plan	167.47	159.50	-	39.55	59.41	67.19
	\$/Annual MMBtu Plan	\$ 1,007.71	\$ 1,026.91	\$ -	\$ 4,241.36	\$ 2,811.83	\$ 2,486.16
Municipal		2015	2016	2017	2018	2019	2020
1)	Total Electric Costs	\$ 157,291.46	\$ 163,041.91	\$ 161,504.59			
	Annual Electric Savings Actual (kWh)	208,878.40	436,335.10	265,410.20			
	\$/Annual kWh Actual	\$ 0.75	\$ 0.37	\$ 0.61			
2)	Total Electric Costs	\$ 157,291.46	\$ 163,041.91	\$ 161,504.59			
	Total summer peak kW Actual	42.75	84.37	47.08			
	\$/kW Actual	\$ 3,679.72	\$ 1,932.35	\$ 3,430.31			
3)	Total Electric Costs	\$ 157,291.46	\$ 163,041.91	\$ 161,504.59			
	Total Annual MMBtu Actual	224.40	-	116.80			
	\$/Annual MMBtu Actual	\$ 700.94	\$ -	\$ 1,382.74			



Program Cost-Effectiveness - 2019 PLAN

	Total Resource Benefit / Cost Ratio	Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
Home Energy Assistance	1.68	794.3	473.8	-	61.4	717.6	6.3	8.7	59	1,676.6	33,421.9
Energy Star Homes	1.73	525.5	236.7	66.4	62.0	1,412.2	8.0	12.2	32	533.9	13,299.4
Home Performance with Energy Star	2.50	2,145.3	472.8	385.3	150.5	2,509.2	11.1	27.8	153	4,085.6	85,305.3
Energy Star Products	1.61	1,527.7	582.9	367.6	2,153.9	13,203.3	590.2	260.1	32,721	156.6	2,192.7
Home Energy Reports	0.00	-	-	-	-	-	-	-	-	-	-
Res Customer Engagement Platform	0.00	-	-	-	-	-	-	-	-	-	-
ISO-NE Forward Capacity Market Expenses	0.00	-	6.0	-	-	-	-	-	-	-	-
Sub-Total Residential	1.93	4,992.8	1,772.2	819.4	2,427.9	17,842.3	615.7	308.8	32,964	6,452.7	134,219.3
Commercial, Industrial & Municipal											
Large Business Energy Solutions	2.01	1,889.7	364.3	577.1	1,504.2	19,554.0	228.1	207.4	23	-	-
Small Business Energy Solutions	1.33	1,209.0	482.8	429.5	1,103.7	14,548.6	68.4	101.5	111	-	-
Municipal Energy Solutions	1.00	277.9	159.4	118.7	141.3	1,837.5	11.1	16.3	21	379.9	4,938.5
C&I Customer Partnerships	0.00	-	-	-	-	-	-	-	-	-	-
Energy Rewards RFP Program	0.00	-	-	-	-	-	-	-	-	-	-
C&I Customer Engagement Platform	0.00	-	-	-	-	-	-	-	-	-	-
Education	0.00	-	46.4	-	-	-	-	-	-	-	-
ISO Forward Capacity Market Expenses	0.00	-	14.0	-	-	-	-	-	-	-	-
Sub-Total Commercial & Industrial	1.54	3,376.6	1,066.9	1,125.3	2,749.2	35,940.0	307.5	325.2	155	379.9	4,938.5
Smart Start	0.00	-	5.0	-	-	-	-	-	-	-	-
Total	1.75	8,369.4	2,844.1	1,944.7	5,177.1	53,782.3	923.2	634.0	33,120	6,832.6	139,157.8

Note: a 10% NEI adder is applied to total benefits excluding water.

Annual kWh Savings	5,177,089	72.1%	kWh > 55%	Lifetime kWh Savings	53,782,289	56.9%	kWh > 55%
Annual MMBTU Savings (in kWh)	<u>2,002,449</u>	<u>27.9%</u>		Lifetime MMBTU Savings (in kWh)	<u>40,783,133</u>	<u>61.8%</u>	
	7,179,538	100.0%			94,565,422	118.7%	

Present Value Benefits - 2019 PLAN

	Total Benefits (\$000)	CAPACITY				ENERGY				Electric DRIPE	Total Electric Benefit	Gas Benefit	Gas DRIPE	Total Gas Benefit	Other Fuels	Fossil Emissions	Water Benefit	Other Non- Resource Benefit
		Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak									
Residential Programs																		
Home Energy Assistance	\$ 794	\$ 8	\$ -	\$ 10	\$ 9	\$ 13	\$ 14	\$ 5	\$ 5	\$ 4	\$ 68	\$ -	\$ -	\$ -	\$ 600	\$ 59	\$ -	\$ 66.82
Energy Star Homes	\$ 525	\$ 18	\$ -	\$ 20	\$ 17	\$ 23	\$ 25	\$ 10	\$ 10	\$ 5	\$ 129	\$ 0	\$ 0	\$ 0	\$ 323	\$ 25	\$ 3	\$ 45
Home Performance with Energy Star	\$ 2,145	\$ 36	\$ -	\$ 41	\$ 36	\$ 40	\$ 49	\$ 16	\$ 19	\$ 12	\$ 250	\$ -	\$ -	\$ -	\$ 1,574	\$ 140	\$ -	\$ 182
Energy Star Products	\$ 1,528	\$ 88	\$ -	\$ 150	\$ 130	\$ 324	\$ 199	\$ 139	\$ 86	\$ 60	\$ 1,176	\$ 7	\$ 0	\$ 8	\$ 20	\$ 4	\$ 199	\$ 120
Home Energy Reports	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Res Customer Engagement Platform	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ISO-NE Forward Capacity Market Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Total Residential	\$ 4,993	\$ 151	\$ -	\$ 222	\$ 192	\$ 400	\$ 287	\$ 170	\$ 120	\$ 81	\$ 1,623	\$ 8	\$ 0	\$ 8	\$ 2,517	\$ 228	\$ 203	\$ 415
Commercial/Industrial Programs																		
Large Business Energy Solutions	\$ 1,890	\$ 166	\$ -	\$ 216	\$ 187	\$ 431	\$ 378	\$ 143	\$ 99	\$ 97	\$ 1,718	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 171.79
Small Business Energy Solutions	\$ 1,209	\$ 83	\$ -	\$ 108	\$ 93	\$ 285	\$ 230	\$ 136	\$ 110	\$ 54	\$ 1,099	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 110
Municipal Energy Solutions	\$ 278	\$ 13	\$ -	\$ 17	\$ 15	\$ 40	\$ 29	\$ 17	\$ 11	\$ 8	\$ 150	\$ -	\$ -	\$ -	\$ 93	\$ 10	\$ -	\$ 24
C&I Customer Partnerships	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Energy Rewards RFP Program	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
C&I Customer Engagement Platform	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Education	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ISO Forward Capacity Market Expenses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sub-Total Commercial & Industrial	\$ 3,377	\$ 263	\$ -	\$ 341	\$ 296	\$ 756	\$ 637	\$ 295	\$ 221	\$ 159	\$ 2,967	\$ -	\$ -	\$ -	\$ 93	\$ 10	\$ -	\$ 306
Smart Start	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 8,369	\$ 413	\$ -	\$ 563	\$ 488	\$ 1,157	\$ 925	\$ 465	\$ 341	\$ 240	\$ 4,591	\$ 8	\$ 0	\$ 8	\$ 2,610	\$ 237	\$ 203	\$ 721

Performance Incentive Calculation 2019

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.50	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	35,939,983	
4. Threshold Lifetime kWh Savings (65%) ²	23,360,989	
5. Implementation Expenses	\$1,066,893	
6. Benefit / Cost Percentage of Implementation Expenses	2.75%	
7. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 8. Commercial & Industrial Performance Incentive	 \$58,679	
9. Maximum Commercial & Industrial Performance Incentive (6.875%)	\$73,349	
 Residential Incentive		
10. Benefit / Cost Ratio	1.86	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	17,842,306	
13. Threshold Lifetime kWh Savings (65%)	11,597,499	
14. Implementation Expenses	\$1,772,173	
15. Benefit / Cost Percentage of Implementation Expenses	2.75%	
16. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 17. Residential Performance Incentive	 \$97,470	
18. Maximum Residential Performance Incentive (6.875%)	\$121,837	
 19. TOTAL PLANNED / EARNED INCENTIVE	 \$156,149	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. Benefit Cost ratios are Nominal\$/Nominal\$

**Planned Versus Actual Benefit / Cost Ratio by Sector
2019**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
1. Benefits (Value) From Eligible Programs	\$ 3,376,552	\$ -
2. Implementation Expenses	\$ 1,066,893	\$ -
3. Customer Contribution	\$ 1,125,310	\$ -
4. Performance Incentive	\$ 58,679	\$ -
5. Total Costs	\$ 2,250,881	\$ -
6. Benefit/Cost Ratio - Commercial & Industrial Sector	1.50	
Residential		
7. Benefits (Value) From Eligible Programs	\$ 4,992,838	\$ -
8. Implementation Expenses	\$ 1,772,173	\$ -
9. Customer Contribution	\$ 819,396	\$ -
10. Performance Incentive	\$ 97,470	\$ -
11. Total Costs	\$ 2,689,039	\$ -
12. Benefit/Cost Ratio - Residential Sector	1.86	

**Lifetime Energy Savings by Sector and Program
2019**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
Large Business Energy Solutions	19,553,956	
Small Business Energy Solutions	14,548,563	
Municipal Energy Solutions	1,837,464	
C&I Customer Partnerships	-	
Energy Rewards RFP Program	-	
C&I Customer Engagement Platform	-	
Education	-	
ISO Forward Capacity Market Expenses	-	
Total Commercial & Industrial	35,939,983	
Residential		
Home Energy Assistance	717,623	
Energy Star Homes	1,412,190	
Home Performance with Energy Star	2,509,161	
Energy Star Products	13,203,333	
Home Energy Reports	-	
Res Customer Engagement Platform	-	
ISO-NE Forward Capacity Market Expenses	-	
Total Residential	17,842,306	

New Hampshire Electric Cooperative Inc Home Energy Assistance Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan
Oil-Wxn: Air Sealing, Insulation, Water measures	17	11	59				18.0	22.1	18.7						22	27	9.09	98.1%	98.1%	6,437	6,478	9,801
Propane-Wxn: Air Sealing, Insulation, Water measures	9	14	59				21.0	14.0	21.4						17	22	3.69	98.1%	98.1%	3,143	4,181	4,571
Kerosene-Wxn: Air Sealing, Insulation, Water measures	11	9	59				19.0	21.8	20.1						22	28	8.63	98.1%	98.1%	4,388	5,447	10,044
Electric-Wxn: Air Sealing, Insulation, Water measures			53			580			16.2		86.9%			431,835								
Cord Wood-Wxn: Air Sealing, Insulation, Water measures	7	5	59				21.0	22.7	19.7	86.9%	86.9%				24	23	3.41	98.1%	98.1%	3,243	2,570	3,881
All Fuels- Thermostat	20	14	33	46	42	44	15.0	15.0	15.0	86.9%	86.9%	12,004.46	7,664.58	18,929								
LED Lighting Products	31	26	39	579	475	567	8.0	8.0	5.0	86.9%	86.9%	123,658.50	85,843.30	95,830								
Refrigerator	14	14	21	754	699	773	12.0	12.0	12.0	86.9%	86.9%	108,562.04	102,048.41	171,029								
Direct Install Water Measures (if broken out from Wxn)	30	24		212	231		7.0	7.0		86.9%		38,282.28	33,657.24									
Oil Boiler Replacement, >=87% AFUE	3	2	3				20.0	20.0	25.0	86.9%	86.9%				16	12	17.26	100%	100.0%	1,125	468	1,330
Propane Boiler Replacement, >=95% AFUE		1						20.0	25.0	86.9%						30		100%			600	
Kerosene Boiler Replacement, >=87% AFUE			1						25.0		86.9%						7.73		100.0%			149
Oil Furnace Replacment, >=87% ECM	2	1	8				18.0	18.0	20.0	86.9%	86.9%				10	5	10.52	100%	100.0%	303	96	1,621
Propane Furnace Replacment, >=95% ECM			2						20.0		86.9%						36.75		100.0%			1,133
Kerosene Furnace Replacment, >=87% ECM		1	4					18.0	20.0	86.9%	86.9%					2	11.566	100%	100.0%		37	891
WXn Admin Fee (if not captured above)	35	32	59																			
Heatlh and Safety	32	32	55																			
Water Heater Replacment		1			30			19.0		86.9%	86.9%		495.33									
Electric Savings-Air Sealing	31	32		161	101		15.0	15.0		86.9%		65,921.02	42,298.60									
Electric Savings-Insulation	32	31		213	311		25.0	25.0		86.9%		150,145.69	209,124.83									

New Hampshire Electric Cooperative Inc Home Performance with ENERGY STAR®

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 & 2019	2017 Plan	2017 Actual	2019 Plan
Oil-Wxn: Air Sealing, Insulation, Water measures	26	19	153				20.0	20.5	21.1						27	29	14.84	100%	14,050	11,416	47,738
Propane-Wxn: Air Sealing, Insulation, Water measures	15	4	153				20.0	19.8	20.6						14	19	6.47	100%	4,066	1,539	20,390
Kerosene-Wxn: Air Sealing, Insulation, Water measures		1	153					21.2	21.7							11	0.45	100%		231	1,493
Electric-Wxn: Air Sealing, Insulation, Water measures			138			803			20.6		100%			2,273,446							
Cord Wood-Wxn: Air Sealing, Insulation, Water measures	18	6	153				20.0	21.7	20.6	100%	100%				17	14	4.98	100%	6,172	1,851	15,684
All Fuels- Thermostat	15	5	17	400	769	210	15.0	15.0	15.0	100%	100%	90,761	57,675	52,953							
LED Lighting Products	41	26	78	565	312	469	8.0	8.0	5.0	100%	100%	185,974	64,880	182,768							
Refrigerator	7			338			12.0	12.0	12.0	100%		29,450									
Direct Install Water Measures (if broken out from Wxn)	22	9		141	191		4.0	4.0		100%		12,627	6,864								
Electric Savings-Air Sealing	59	29		384	760		15.0	15.0		100%		338,065	330,405								
Electric Savings-Insulation	58	28		736	908		25.0	25.0		100%		1,068,796	635,698								
Tankless Water Heater		1							20.0		100%										
Wxn Admin Fee (if not captured above)	61	34	153							100%	100%					10		100%		194	
Furnace Ancillary Savings		4			126			20.0		100%			10,080								
Boiler Ancillary Savings		11			18			20.0	5.0	100%			3,960								
Cooling system Ancillary Savings		7			64			20.0	12.0	100%			8,920								
Health & Safety	39	5	81						1.0	100%	100%										
Custom			43						1.0	100%	100%										

New Hampshire Electric Cooperative Inc ENERGY STAR® Homes Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 & 2019	2017 Plan	2017 Actual	2019 Plan
SF-Oil Heated Home		1					25		100%						85		100%		2,126	
SF-Propane Heated Home	8	4	22		800		25	25	100%	100%		79,975		108	108	23.76	100%	21,255	10,761	13,239
SF-Oil Hot Water		1					25		100%						4		100%		104	
SF-Electric Heated Home			10			3,625.0		25		100%			865,672				100%			
SF-Cord Wood Heated Home		2					25		100%						76		100%		3,800	
GSHP Heating	7	2		15,166.0	20,841		25		100%		2,558,409	1,042,050								
GSHP Cooling	7	2		(39.0)	153		25		100%		(6,579)	7,650								
GSHP Water	7	2		1,969.0	2,020		25		100%		332,158	101,000								
Air Source Heating (including DHPs)	7	2		12,397.0	11,459.5		25		100%		2,091,296	572,975								
Heat Pump Cooling (including DHPs)	8	2		(48.0)	(296.5)		25		100%		(9,447)	(14,825)								
Heat Pump Water	8	3	10	2,206.0	2,471.0	2,043.0	25	25	100%	100%	434,161	185,325	487,881							
LED Lighting Products	202	143	350	24.6	24.6	20.3	8	5	100%	100%	39,899	28,185	35,501							
LED Fixture		6			24.6		8		100%			1,183								
Clothes Washer	8	9	16	123.9	123.9	88.7	11	14	100%	100%	10,730	12,267	19,763	0.454	0.454	0.269	100%	39	45	60
Refrigerator	19	6	22	41.4	41.4	41.0	12	12	100%	100%	9,490	2,978	10,966							
ES Homes (Net Zero Competition & QA)			1																	
SF-Propane Cooling	4	1		(59.0)	77.0		25		100%		(5,806)	1,925								
SF-Propane HW	8	5					25													
SF-Hybrid HP Heat		1			18,803.0		25		100%			470,075		8	5		100%	1,574	585	
SF-Hybrid HP Cool		1			274.0		25		100%			6,850			156		100%		3,909	
Ventilation	22	12		(348.0)	(203.7)		25		100%		(195,685)	(61,100)								

New Hampshire Electric Cooperative Inc ENERGY STAR® Products Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)		Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 & 2019	2017 Plan	2017 Actual	2019 Plan
LED Single Bulbs	6,416	7,397		24.61		8.0		95%		1,199,856	1,383,410								
LED Multi-Packs (per bulb)	18,107	38,525		24.61		8.0		62%		2,220,828	4,725,005								
LED Globe/Candelabra	8,284	1,137		24.61		8.0		95%		1,549,242	212,645								
LED Reflector	5,509	5,088		24.61		8.0		95%		1,030,317	951,573								
LED Interior Fixture	2,356	1,214		24.61		8.0		96%		447,069	230,392								
LED Exterior Fixture	786	247		24.61		5.0		100%		96,712	30,391								
CFL Coupon Multipack		174		28.98		5.0		62%			15,632								
LED Lighting Products			121,527		15.9		5		89%			8,614,890							
ES Dehumidifier	161	217	258	162	214.0	12.0	12	100%	100%	314,293	422,548	663,718							
ES Pool Pumps (2 speed)	2		35	782	842.0	10.0	10	100%	100%	17,662		296,756							
ES Pool Pumps (Variable Speed)	1	21	18	946	1,062.0	10.0	10	100%	100%	8,638	198,634	187,146							
ES Clothes Washers	459	465	423	124	88.7	11.0	14	100%	100%	625,075	633,800	524,999	0.110	0.110	0.27	100%	554	562	1,599
ES Clothes Dryers	21	197	352	160	93.3	12.0	12	100%	100%	40,646	378,667	394,593							
ES Room AC (room)	157	110	235	16	16.2	9.0	9	100%	100%	22,773	15,995	34,173							
ES Room Air Purifier	12	29	117	390	390.5	9.0	9	100%	50%	43,698	101,903	206,443							
ES Refrigerator	294	222	235	41	64.3	12.0	12	100%	100%	145,756	110,191	181,296							
Primary Refrigerator Recycling/Pickup/Turnin	26	18	47	491.64	491.6	8.0	8	100%	100%	103,748	70,796	184,811							
2nd Refrigerator Pickup/Turnin	75	86	117	755.00	755.0	8.0	8	100%	100%	455,214	519,440	709,582							
2nd Freezer Pickup/Turnin	8	19	47	658.00	658.0	8.0	8	100%	100%	39,673	100,016	247,367							
Room AC Pickup/Turnin	2		4	16.16	16.2	5.0	5	100%	100%	170		290							
ECM Motors for FHA Furnace Fans			2		168.0		18		100%			4,771							
ECM Motor for FWH Circulating Pump			2		142.0		15		100%			3,360							
CEE Tier 2+ Clothes Washers			282		155.9		14		100%			615,391			0.44	100%			1,737
Energy Star Clothes Dryers (Electric, Hybrid)			23		229.4		12		100%			64,680							
Energy Star Clothes Dryers (Electric, Heat Pump)			23		472.3		12		100%			133,166							
Energy Star Refrigerators CEE Tier 2+			117		96.4		12		100%			135,901							

New Hampshire Electric Cooperative Inc Large Business Energy Solutions Programs

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 & 2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																				
Snowmaking	2	3	2	89,099	101,720	118,798	13	13	99.86%	99.86%	2,176,185	3,961,514	3,519,072							
Lighting-LED	13	9	17	66,599	67,281	67,281	13	13	99.86%	99.86%	11,386,460	7,860,882	14,947,642							
LightingOS Only		2			2,731			13	99.86%			70,894								
Park Lot Lights	4	1		3,556	2,130			13	99.86%		173,706	27,651								
Process		1	3		114,600	24,469	13	13	99.86%	99.86%		1,487,714	1,087,243							
Refrigeration		3			73,751			13	99.86%			2,872,262								
New Equipment & Construction Track																				
Cooling		1			5,453			15	99.86%			81,680								

New Hampshire Electric Cooperative Inc Small Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 & 2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																				
Lighting	30	20	67	16,391	11,898	11,898	13	13	100%	102.7%	6,344,355	3,093,363	10,614,097							
Ext. Lighting	20	9	33	11,586	5,442	5,442	13	13	100%	102.7%	2,989,677	636,714	2,427,379							
Process		1			28,250		13		100%	100%		367,250								
Motors		1			10,672		13		100%	100%		138,736								
Refrigeration		2			2,222		13		100%	100%		57,759								
New Equipment & Construction Track																				
Cooling		6	11		9,022	9,022	15	15	100%	100%		812,010	1,507,086							
Lighting		6			10,272		15		100%	100%		924,480								
Ext. Lighting		2			20,279		15		100%	100%		608,355								
Lighting - Control		1			630		15		100%	100%		9,450								

New Hampshire Electric Cooperative Inc Municipal Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 & 2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																				
Boiler Replacement		2					13		100%						286		100%		7,438	
Park Lot Lights	8	4		4,638	5,759		13		100%		488,391									
Lighting-LED	13	7	13	11,083	20,805	10,027	13	13	100%	100%	1,833,955	3,576,491	1,723,700							
Weatherization-Oil	2	1	8				13	13	100%	100%				121	124	47.6	100%	3,640	1,615	4,939
Weatherization-Propane		2					13		100%						67		100%		1,746	

**New Hampshire Electric Cooperative, Inc.
2018 System Benefits Charge ("SBC") Calculation
(\$ in 000's)**

Year	EE Total Budget	RGGI Revenues	FCM Revenues	Carryforward with Interest	SBC Requirement	Forecasted Distribution (MWH)	SBC Rate EE Portion (cents/kWh)	SBC Rate EAP Portion (cents/kWh)	2018 Total SBC Rate (cents/kWh)
Col. A	Col. B	Col. C	Col. D	Col. F	Col. H	Col. I	Col. J	Col. K	Col. M
2019	\$ 3,000	\$ 201	\$ 75	\$ 57	\$ 2,667	757,675	0.352	0.150	0.502

Col. A: Effective year (January 1, 2018 - December 31, 2018)
Col. B: Budget Projections
Col. C: Budget Projections
Col. D: Budget Projections
Col. F: Budget Projections
Col. H: Col. B - Col. C - Col. D - Col. E + Col. F - Col. G
Col. I: Company Forecast
Col. J: (Col. H / Col. I) x 100
Col. K: EAP Portion of SBC Rate
Col. M: Col. J + Col. K

New Hampshire Electric Cooperative, Inc.
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2019 to December 31, 2019
(\$ in 000's)

Line	Description	Carryover 12/31/17	Forecast Jan 2018	Forecast Feb 2018	Forecast Mar 2018	Forecast Apr 2018	Forecast May 2018	Forecast June 2018	Forecast Jul 2018	Forecast Aug 2018	Forecast Sep 2018	Forecast Oct 2018	Forecast Nov 2018	Forecast Dec 2018	2018 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	SBC Revenues	56,949	286	273	226	222	169	191	213	211	250	190	201	237	2,667
2	RGGI Revenues		17	17	17	17	17	17	17	17	17	17	17	17	201
3	FCM Revenues		6	6	6	6	6	6	6	6	6	6	6	6	75
5	Total Revenues		309	296	249	245	192	214	236	234	273	213	224	260	2,943
6	Program Expenses		250	250	250	250	250	250	250	250	250	250	250	250	3,000
7	Total Program Expenses		250	250	250	250	250	250	250	250	250	250	250	250	3,000
8	Current Month Over/(Under) Recovery		59	46	(1)	(5)	(58)	(36)	(14)	(16)	23	(37)	(26)	10	
9	Cummulative Over/(Under) Recovery	57	116	161	160	155	97	61	47	31	54	17	(10)	0	
12	Interest @ Prime Rate		0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	0.40%	
13	Interest		0	1	1	1	1	0	0	0	0	0	0	(0)	4
14	Monthly Sales (MWh)		81,153	77,433	64,207	63,119	47,981	54,134	60,534	59,957	71,013	53,897	56,974	67,272	757,676
15	EE SBC Rate		0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	0.352	

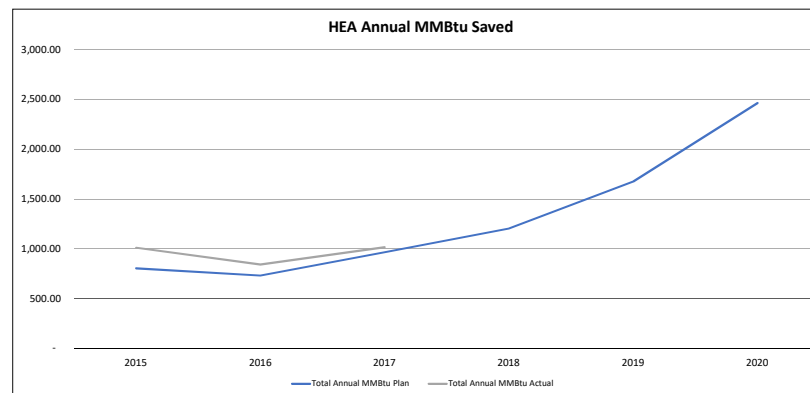
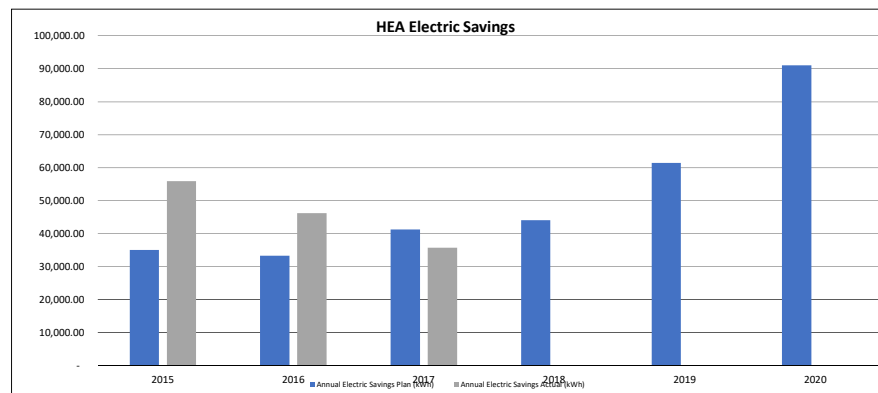
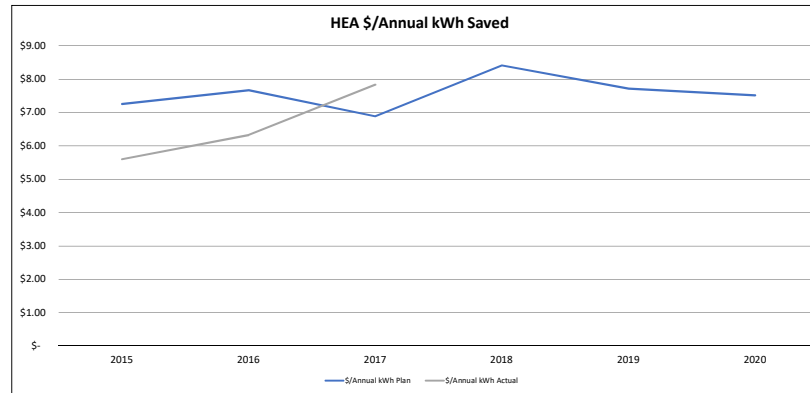
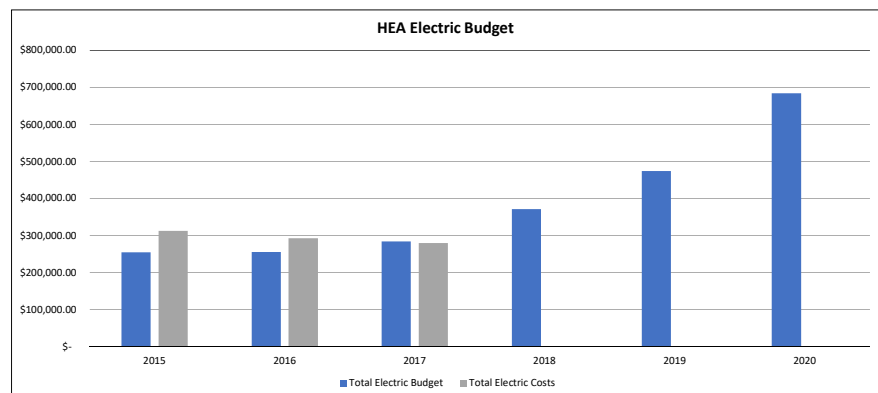
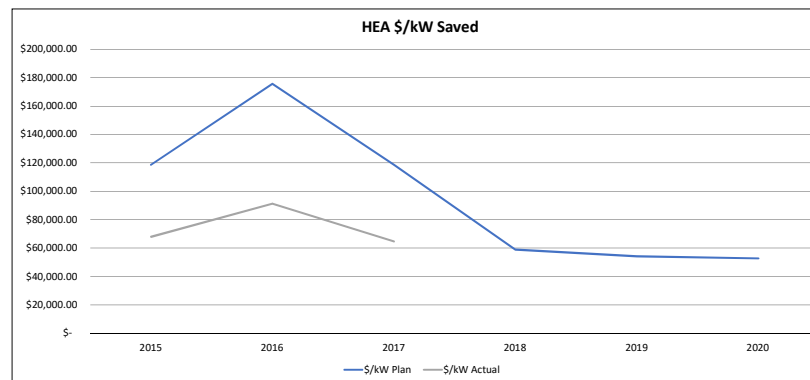
Line 1: (Line 14 x Line 15) / 100
Line 2: Page 1, Col. C
Line 3: Page 1, Col. D
Line 5: Sum of Lines 1 through Lines 4
Line 6: Page 1, Col. B
Line 7: Sum of Line 6
Line 8: Line 5 - Line 7
Line 9: Prior month Line 9 + Current month Line 9
Line 12: Prime Rate / 12
Line 13: (Prior Month Line 9 + Current Month Line 9) / 2 x Line 12
Line 14: Company Forecast
Line 15: Page 1, Col. J

Bill Impacts of Changes in System Benefits Charge - New Hampshire Electric Cooperative, Inc.

	<u>1/1/2018</u>	<u>2019</u>
System Benefits Charge (\$/kWh)	\$ 0.00425	\$ 0.00502
<u>Bill per month, including NHEC default energy service</u>		
Residential Rate Basic (625 kWh/month)	\$ 200.29	\$ 200.77
Commercial B3, three-phase service (<50 kW, 10,000 kWh/month)	\$ 1,825.60	\$ 1,833.30
<u>Change from previous rate level - \$ per month</u>		
Residential Rate R (625 kWh/month)		\$ 0.48
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)		\$ 7.70
<u>Change from previous rate level - %</u>		
Residential Rate R (625 kWh/month)		0.2%
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)		0.4%

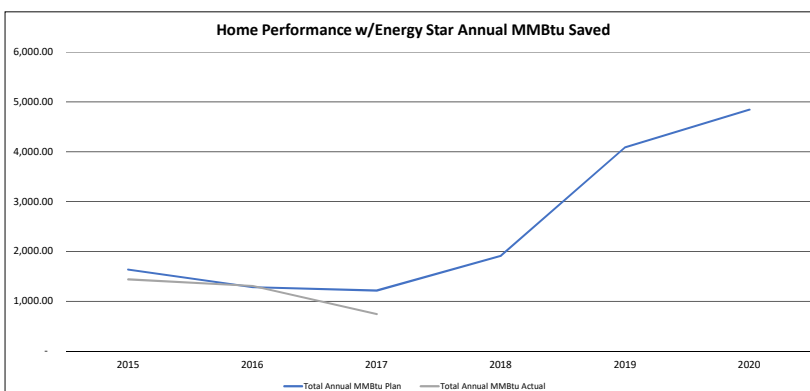
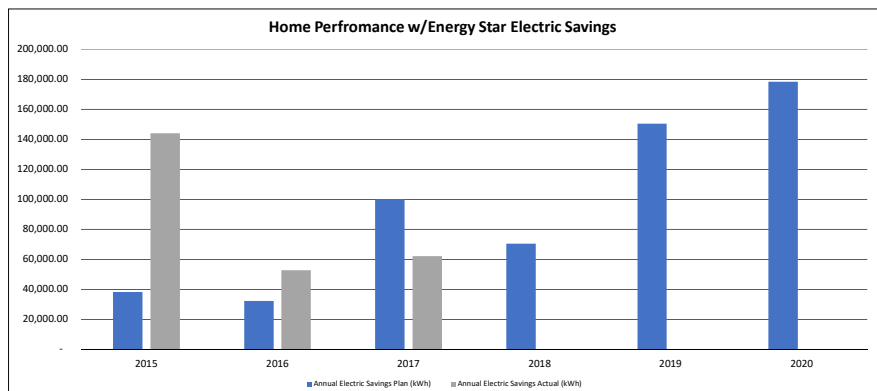
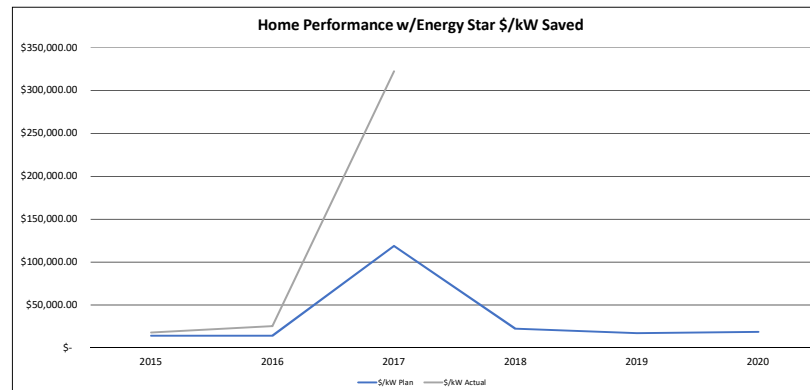
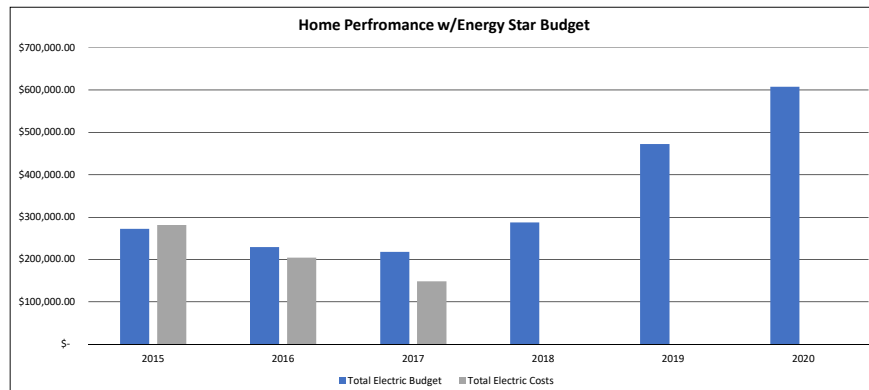
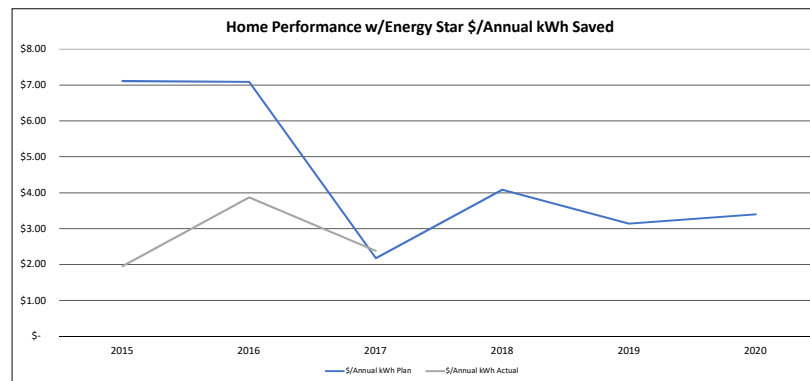
Home Energy Assistance

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 254,857.00	\$ 255,703.00	\$ 284,308.00	\$ 371,084.55	\$ 473,776.87	\$ 683,916.26
	Annual Electric Savings Plan (kWh)	35,100.20	33,320.82	41,277.05	44,118.52	61,415.15	91,013.19
	\$/Annual kWh Plan	\$ 7.26	\$ 7.67	\$ 6.89	\$ 8.41	\$ 7.71	\$ 7.51
2)	Total Electric Budget	\$ 254,857.00	\$ 255,703.00	\$ 284,308.00	\$ 371,084.55	\$ 473,776.87	\$ 683,916.26
	Total Summer Peak kW Plan	2.15	1.45	2.39	6.28	8.75	12.96
	\$/kW Plan	\$ 118,803.99	\$ 175,764.94	\$ 118,738.52	\$ 59,056.07	\$ 54,164.02	\$ 52,760.78
3)	Total Annual MMBtu Plan	\$ 2,661,464.00	\$ 2,751,286.00	\$ 3,450,394.00	\$ 4,611,266.00	\$ 5,960,136.00	\$ 7,927,639.00
	\$/Annual MMBtu Plan	\$ 803.73	\$ 732.78	\$ 965.66	\$ 1,204.43	\$ 1,676.62	\$ 2,462.74
		\$ 3,311.38	\$ 3,754.56	\$ 3,573.08	\$ 3,828.60	\$ 3,554.84	\$ 3,219.04
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 313,005.00	\$ 292,376.00	\$ 280,148.40			
	Annual Electric Savings Actual (kWh)	55,900.00	46,200.00	35,764.57			
	\$/Annual kWh Actual	\$ 5.60	\$ 6.33	\$ 7.83			
2)	Total Electric Costs	\$ 313,005.00	\$ 292,376.00	\$ 280,148.40			
	Total Summer Peak kW Actual	4.60	3.20	4.33			
	\$/kW Actual	\$ 68,044.57	\$ 91,367.50	\$ 64,654.44			
3)	Total Annual MMBtu Actual	\$ 2,602,622.35	\$ 2,630,799.37	\$ 2,630,800.37			
	\$/Annual MMBtu Actual	\$ 1,010.08	\$ 842.90	\$ 1,015.69			
		\$ 2,576.65	\$ 3,121.13	\$ 2,590.16			



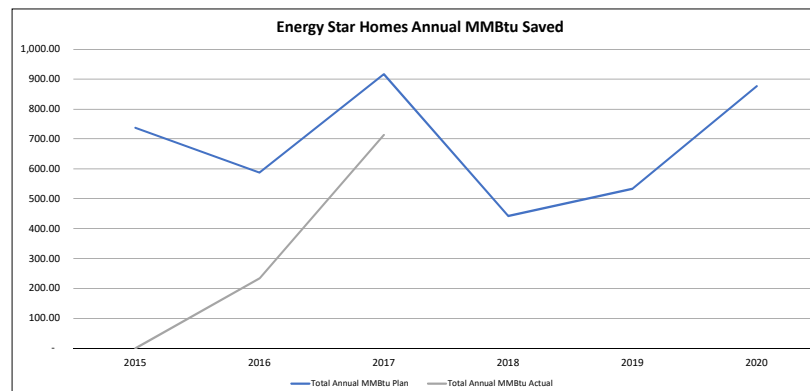
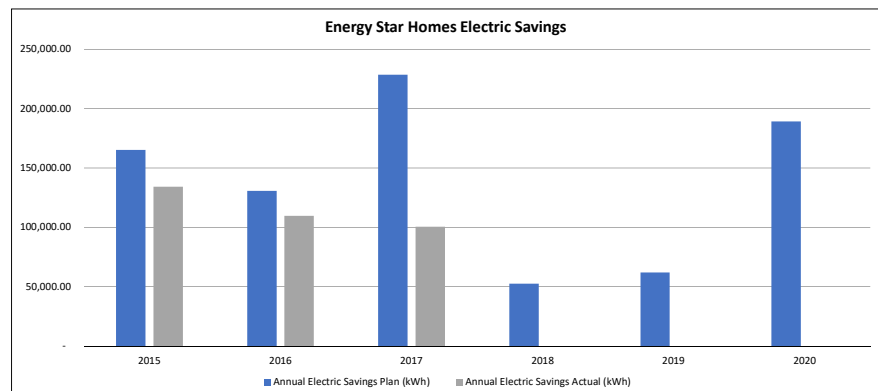
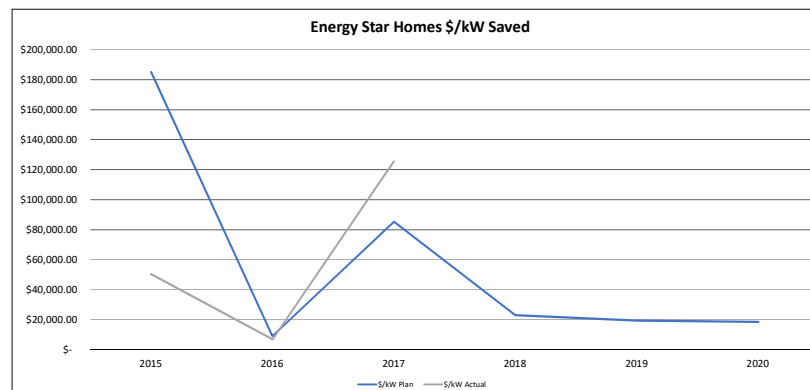
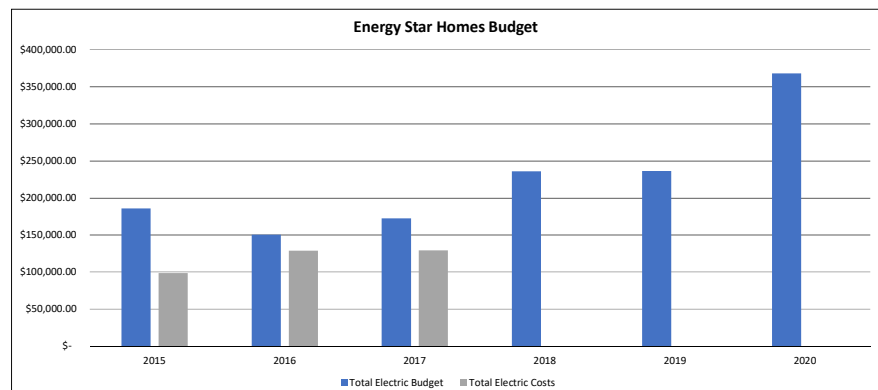
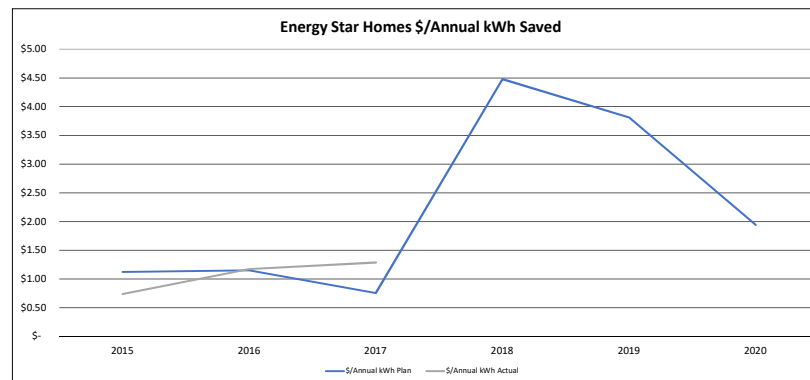
Home Performance w/Energy Star

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 272,233.00	\$ 229,205.00	\$ 218,456.00	\$ 287,669.67	\$ 472,826.87	\$ 607,369.67
	Annual Electric Savings Plan (kWh)	38,271.72	32,355.03	100,197.78	70,460.53	150,528.79	178,487.22
	\$/Annual kWh Plan	\$ 7.11	\$ 7.08	\$ 2.18	\$ 4.08	\$ 3.14	\$ 3.40
2)	Total Electric Budget	\$ 272,233.00	\$ 229,205.00	\$ 218,456.00	\$ 287,669.67	\$ 472,826.87	\$ 607,369.67
	Total Summer Peak kW Plan	19.43	16.31	1.84	12.99	27.78	32.91
	\$/kW Plan	\$ 14,008.04	\$ 14,051.07	\$ 118,668.66	\$ 22,145.49	\$ 17,017.84	\$ 18,457.94
3)	Total Annual MMBtu Plan	\$ 2,203,268.95	\$ 1,860,400.33	\$ 2,161,078.61	\$ 2,415,741.54	\$ 3,935,216.60	\$ 5,890,311.74
	\$/Annual MMBtu Plan	\$ 1,633.55	\$ 1,281.68	\$ 1,214.38	\$ 1,912.43	\$ 4,085.64	\$ 4,844.48
	\$/Annual MMBtu Plan	\$ 1,348.76	\$ 1,451.53	\$ 1,779.58	\$ 1,263.18	\$ 963.18	\$ 1,215.88
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 281,645.00	\$ 204,480.00	\$ 148,636.84			
	Annual Electric Savings Actual (kWh)	144,000.00	52,805.00	62,273.93			
	\$/Annual kWh Actual	\$ 1.96	\$ 3.87	\$ 2.39			
2)	Total Electric Costs	\$ 281,645.00	\$ 204,480.00	\$ 148,636.84			
	Total Summer Peak kW Actual	15.90	8.10	0.46			
	\$/kW Actual	\$ 17,713.52	\$ 25,244.44	\$ 322,270.51			
3)	Total Annual MMBtu Actual	\$ 2,349,224.06	\$ 1,599,052.72	\$ 1,599,052.72			
	\$/Annual MMBtu Actual	\$ 1,437.92	\$ 1,310.31	\$ 741.02			
	\$/Annual MMBtu Actual	\$ 1,633.77	\$ 1,220.36	\$ 2,157.91			



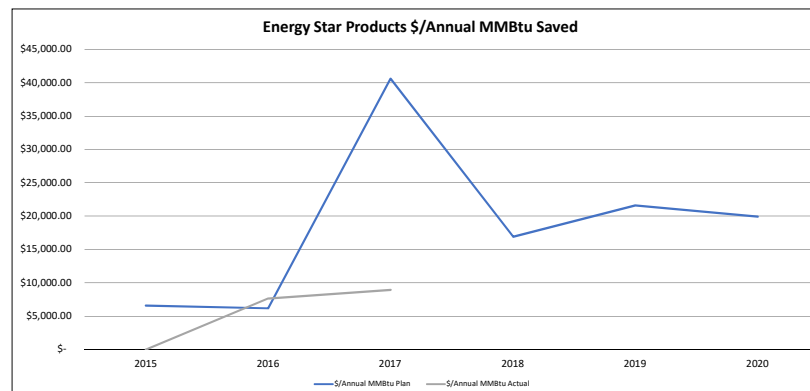
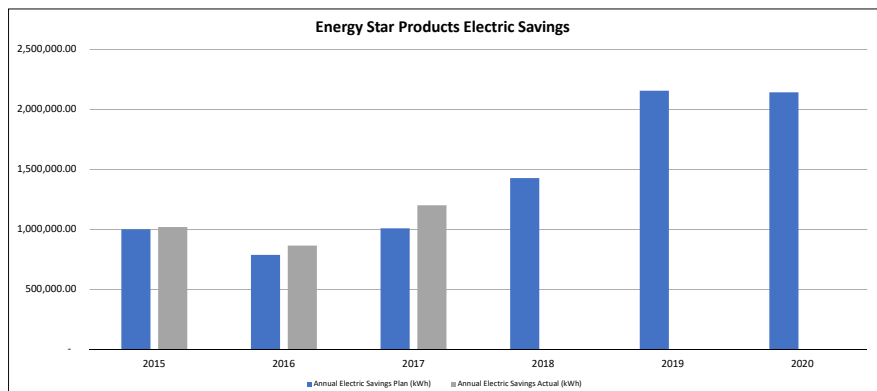
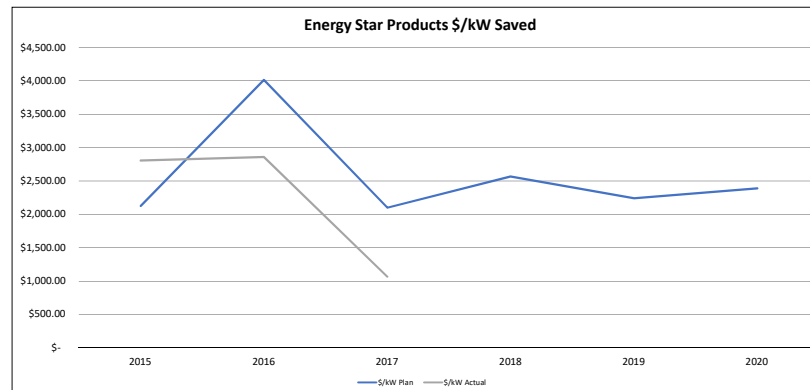
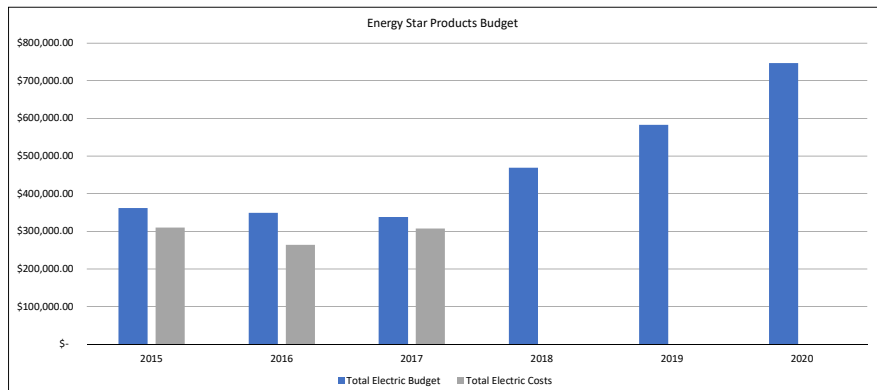
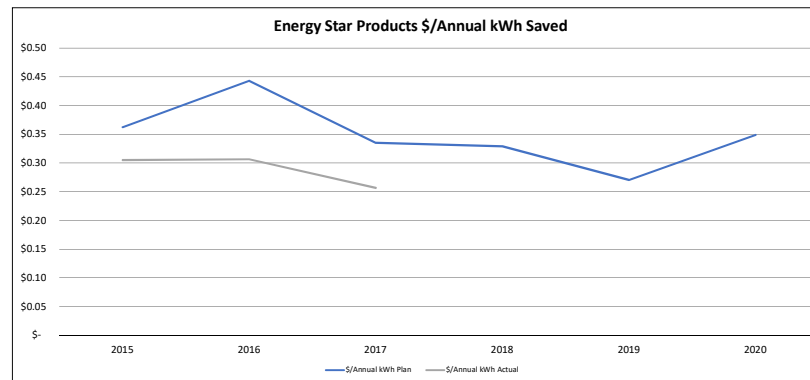
Energy Star Homes

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 186,042.00	\$ 150,426.00	\$ 172,764.00	\$ 235,909.21	\$ 236,674.96	\$ 368,142.19
	Annual Electric Savings Plan (kWh)	165,241.44	130,931.27	228,636.03	52,681.05	62,049.11	189,324.56
	\$/Annual kWh Plan	\$ 1.13	\$ 1.15	\$ 0.76	\$ 4.48	\$ 3.81	\$ 1.94
2)	Total Electric Budget	\$ 186,042.00	\$ 150,426.00	\$ 172,764.00	\$ 235,909.21	\$ 236,674.96	\$ 368,142.19
	Total Summer Peak kW Plan	1.01	16.55	2.03	10.22	12.18	20.00
	\$/kW Plan	\$ 185,056.05	\$ 9,089.54	\$ 85,266.64	\$ 23,075.53	\$ 19,434.72	\$ 18,402.81
3)	Total Annual MMBtu Plan	\$ 1,006,618.95	\$ 957,269.48	\$ 1,147,210.86	\$ 1,603,217.35	\$ 2,105,505.53	\$ 2,889,907.63
	\$/Annual MMBtu Plan	737.56	587.75	916.77	442.43	533.86	877.30
		\$ 1,364.79	\$ 1,628.70	\$ 1,251.37	\$ 3,623.67	\$ 3,943.93	\$ 3,294.09
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 99,069.00	\$ 129,039.00	\$ 129,650.82			
	Annual Electric Savings Actual (kWh)	134,300.00	109,900.00	100,710.35			
	\$/Annual kWh Actual	\$ 0.74	\$ 1.17	\$ 1.29			
2)	Total Electric Costs	\$ 99,069.00	\$ 129,039.00	\$ 129,650.82			
	Total Summer Peak kW Actual	1.96	18.80	1.03			
	\$/kW Actual	\$ 50,501.18	\$ 6,863.78	\$ 125,444.95			
3)	Total Annual MMBtu Actual	\$ 1,000,669.85	\$ 1,309,689.49	\$ 1,309,689.49			
	\$/Annual MMBtu Actual	234.69	713.60	966.41			
		\$ 4,263.80	\$ 1,835.33	\$ 1,355.22			



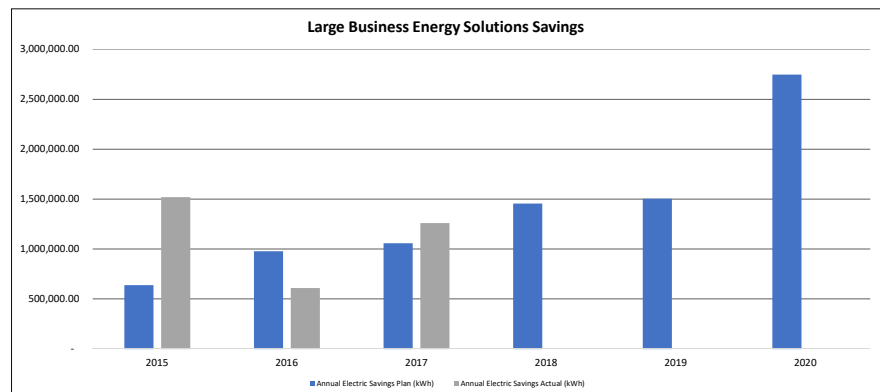
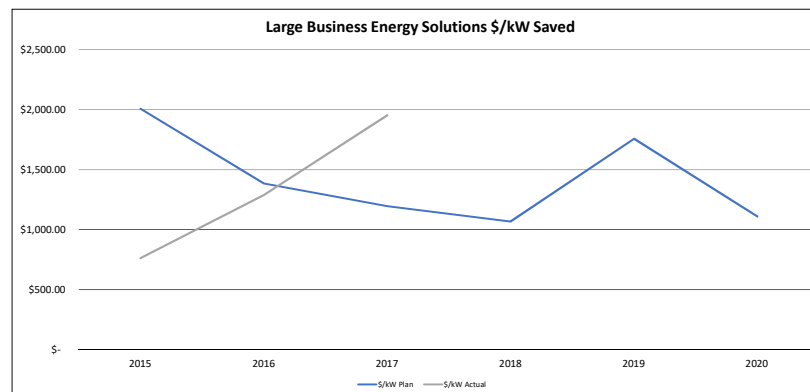
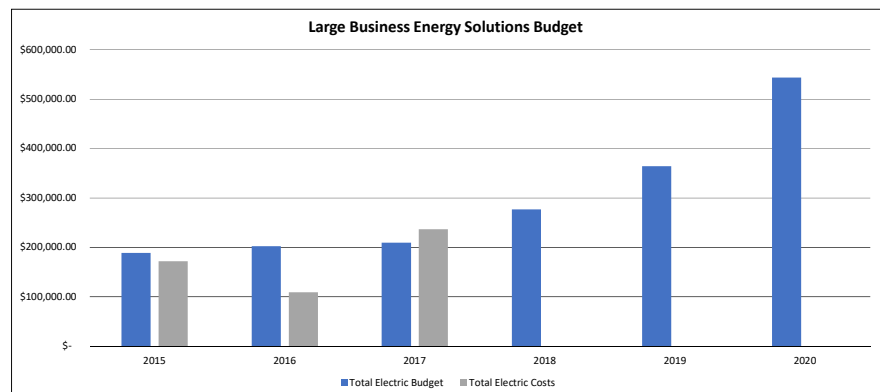
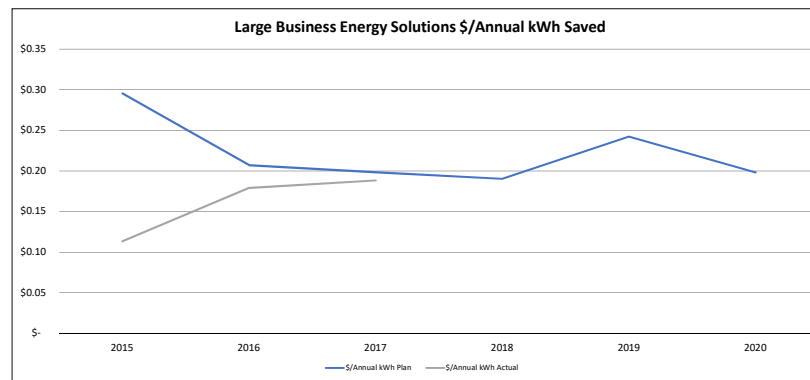
Energy Star Products

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 362,250.00	\$ 349,270.00	\$ 338,248.00	\$ 469,558.56	\$ 582,894.50	\$ 747,640.19
	Annual Electric Savings Plan (kWh)	999,269.23	787,893.83	1,008,685.09	1,426,971.51	2,153,939.62	2,139,876.53
	\$/Annual kWh Plan	\$ 0.36	\$ 0.44	\$ 0.34	\$ 0.33	\$ 0.27	\$ 0.35
2)	Total Electric Budget	\$ 362,250.00	\$ 349,270.00	\$ 338,248.00	\$ 469,558.56	\$ 582,894.50	\$ 747,640.19
	Total Summer Peak kW Plan	170.49	86.98	161.13	182.83	260.06	313.14
	\$/kW Plan	\$ 2,124.74	\$ 4,015.30	\$ 2,099.27	\$ 2,568.30	\$ 2,241.38	\$ 2,387.56
3)	Total Annual MMBtu Plan	\$ 2,397,437.10	\$ 1,853,017.79	\$ 2,044,263.55	\$ 3,235,076.39	\$ 3,383,946.99	\$ 3,767,565.68
	\$/Annual MMBtu Plan	\$ 364.14	\$ 300.17	\$ 50.35	\$ 191.64	\$ 156.62	\$ 189.11
		\$ 6,583.89	\$ 6,173.33	\$ 40,597.68	\$ 16,881.23	\$ 21,605.41	\$ 19,922.27
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 310,934.00	\$ 264,733.00	\$ 308,155.35			
	Annual Electric Savings Actual (kWh)	1,018,400.00	863,500.00	1,199,911.22			
	\$/Annual kWh Actual	\$ 0.31	\$ 0.31	\$ 0.26			
2)	Total Electric Costs	\$ 310,934.00	\$ 264,733.00	\$ 308,155.35			
	Total Summer Peak kW Actual	110.80	92.60	289.14			
	\$/kW Actual	\$ 2,806.26	\$ 2,858.89	\$ 1,065.76			
3)	Total Annual MMBtu Actual	\$ 2,159,065.92	\$ 1,799,457.82	\$ 1,799,457.82			
	\$/Annual MMBtu Actual	\$ 283.50	\$ 201.40	\$ 51.06			
		\$ 7,615.75	\$ 8,934.75	\$ 35,244.10			



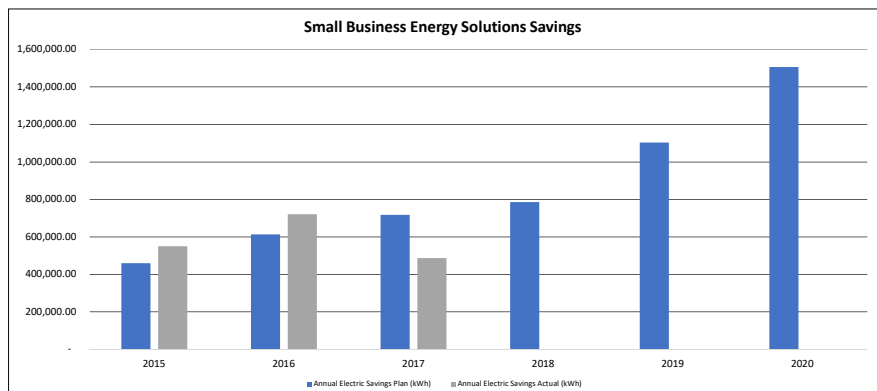
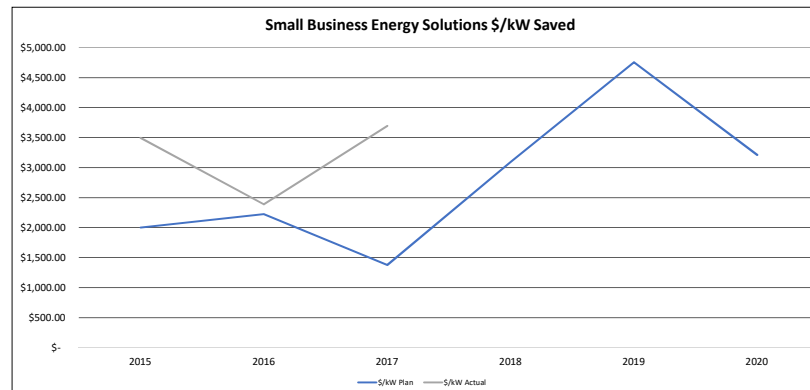
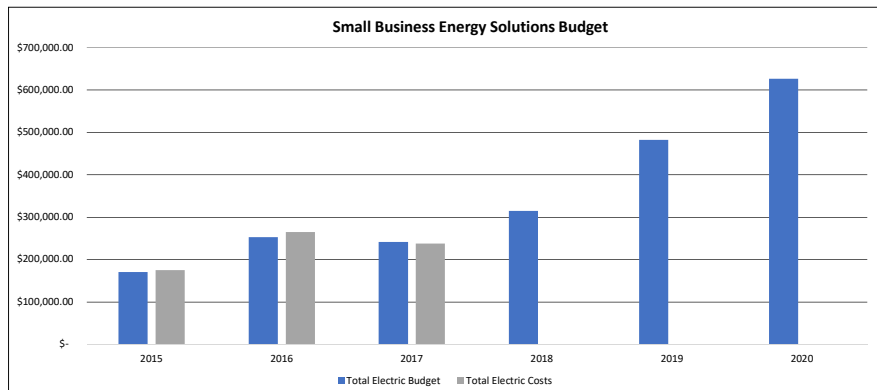
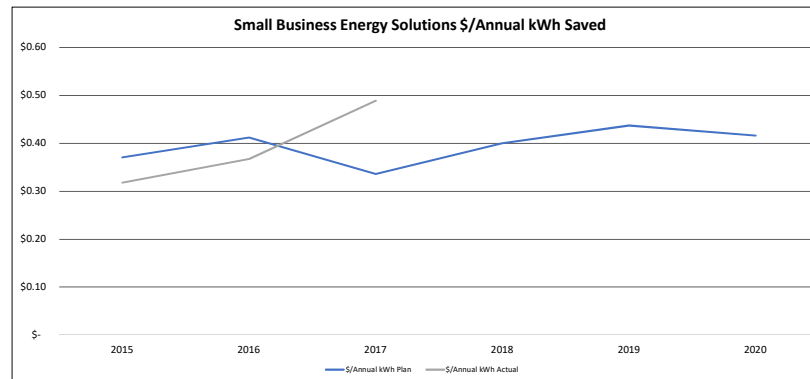
Large Business Energy Solutions

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 188,981.00	\$ 202,403.00	\$ 209,679.00	\$ 277,067.46	\$ 364,338.50	\$ 543,330.70
	Annual Electric Savings Plan (kWh)	639,637.22	978,279.40	1,056,642.38	1,456,171.75	1,504,150.45	2,744,681.41
	\$/Annual kWh Plan	\$ 0.30	\$ 0.21	\$ 0.20	\$ 0.19	\$ 0.24	\$ 0.20
2)	Total Electric Budget	\$ 188,981.00	\$ 202,403.00	\$ 209,679.00	\$ 277,067.46	\$ 364,338.50	\$ 543,330.70
	Total Summer Peak kW Plan	94.11	146.13	175.61	259.47	207.37	489.07
	\$/kW Plan	\$ 2,008.02	\$ 1,385.12	\$ 1,194.04	\$ 1,067.80	\$ 1,756.95	\$ 1,110.94
3)	Total Annual MMBtu Plan	\$ 4,858,386.57	\$ 4,704,790.31	\$ 5,257,680.00	\$ 7,291,994.08	\$ 9,477,437.58	\$ 12,710,056.63
	\$/Annual MMBtu Plan						
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 172,179.00	\$ 109,309.00	\$ 236,808.93			
	Annual Electric Savings Actual (kWh)	1,519,000.00	609,900.00	1,258,258.52			
	\$/Annual kWh Actual	\$ 0.11	\$ 0.18	\$ 0.19			
2)	Total Electric Costs	\$ 172,179.00	\$ 109,309.00	\$ 236,808.93			
	Total Summer Peak kW Actual	225.50	84.90	121.28			
	\$/kW Actual	\$ 763.54	\$ 1,287.50	\$ 1,952.66			
3)	Total Annual MMBtu Actual	\$ 4,674,280.43	\$ 4,476,682.34	\$ 4,476,682.34			
	\$/Annual MMBtu Actual						



Small Business Energy Solutions

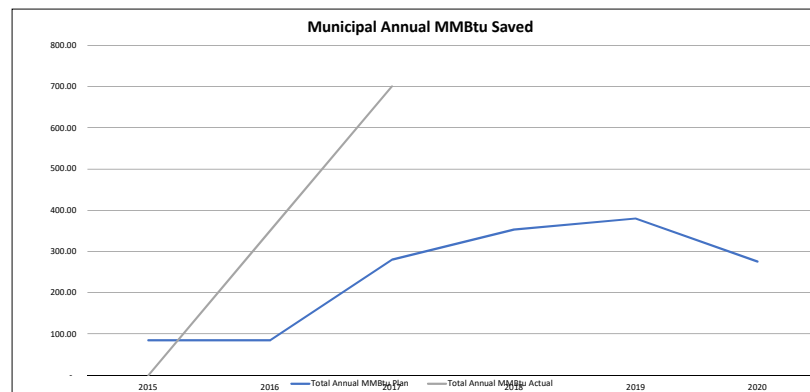
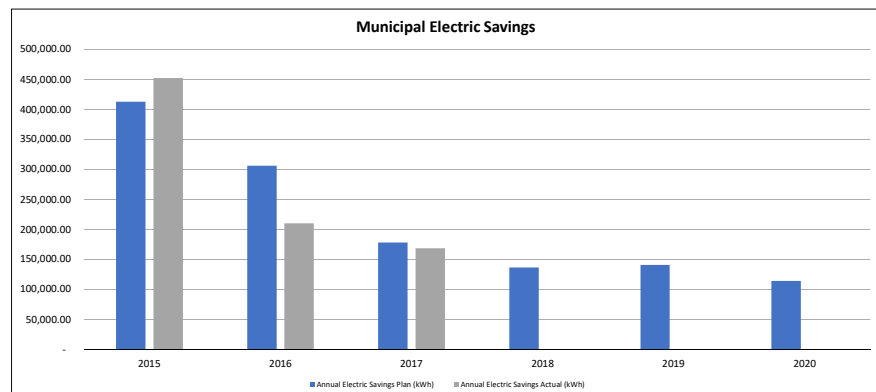
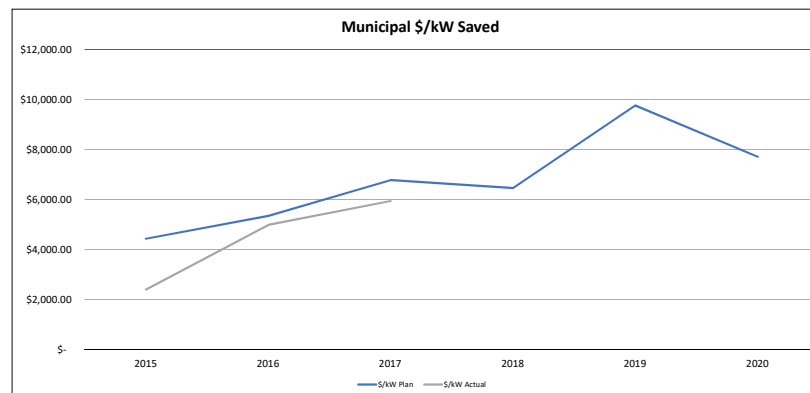
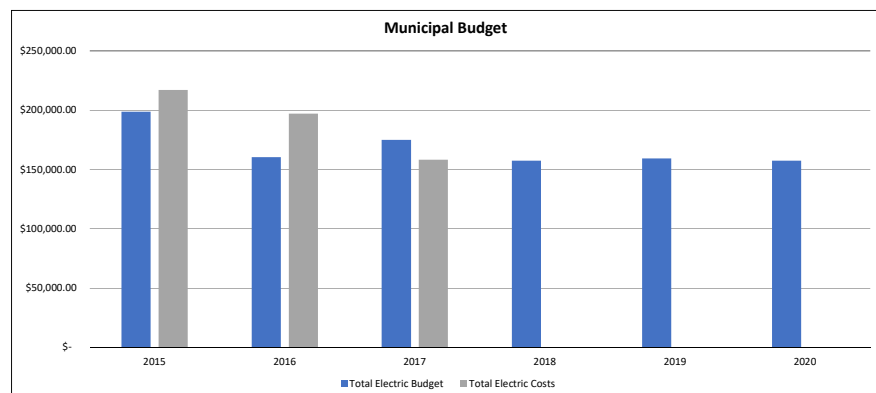
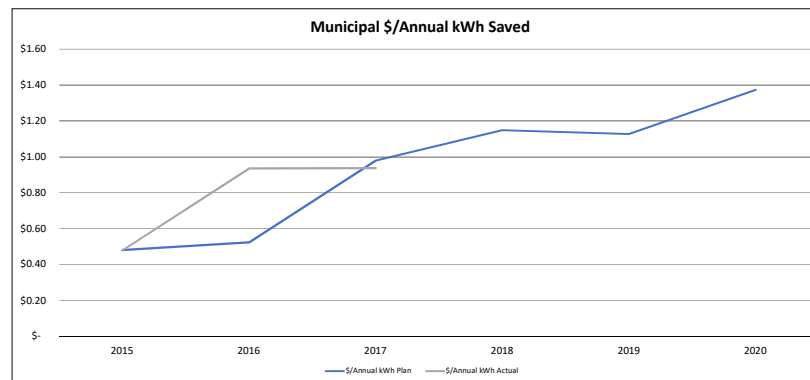
Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 170,507.00	\$ 253,038.00	\$ 241,342.00	\$ 314,465.22	\$ 482,781.50	\$ 626,671.90
	Annual Electric Savings Plan (kWh)	459,727.00	614,054.23	718,002.42	786,162.50	1,103,662.92	1,505,843.91
	\$/Annual kWh Plan	\$ 0.37	\$ 0.41	\$ 0.34	\$ 0.40	\$ 0.44	\$ 0.42
2)	Total Electric Budget	\$ 170,507.00	\$ 253,038.00	\$ 241,342.00	\$ 314,465.22	\$ 482,781.50	\$ 626,671.90
	Total Summer Peak kW Plan	85.06	113.62	175.08	101.83	101.53	195.04
	\$/kW Plan	\$ 2,004.49	\$ 2,227.11	\$ 1,378.49	\$ 3,088.21	\$ 4,755.29	\$ 3,212.97
3)	Total Annual MMBtu Plan	\$ 2,729,372.64	\$ 2,205,961.93	\$ 3,104,617.49	\$ 4,184,601.47	\$ 5,422,730.78	\$ 7,269,237.07
	\$/Annual MMBtu Plan						
Actuals		2015	2016	2017			
1)	Total Electric Costs	\$ 175,186.00	\$ 265,112.00	\$ 238,151.99			
	Annual Electric Savings Actual (kWh)	550,600.00	721,700.00	487,246.98			
	\$/Annual kWh Actual	\$ 0.32	\$ 0.37	\$ 0.49			
2)	Total Electric Costs	\$ 175,186.00	\$ 265,112.00	\$ 238,151.99			
	Total Summer Peak kW Actual	50.10	111.00	64.46			
	\$/kW Actual	\$ 3,496.73	\$ 2,388.40	\$ 3,694.33			
3)	Total Annual MMBtu Actual	\$ 3,059,995.12	\$ 2,401,441.56	\$ 2,401,441.56			
	\$/Annual MMBtu Actual						



Municipal

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 198,828.00	\$ 160,393.00	\$ 174,968.00	\$ 157,518.81	\$ 159,402.75	\$ 157,519.01
	Annual Electric Savings Plan (kWh)	413,076.33	306,456.75	178,641.98	137,004.63	141,343.42	114,757.64
	\$/Annual kWh Plan	\$ 0.48	\$ 0.52	\$ 0.98	\$ 1.15	\$ 1.13	\$ 1.37
2)	Total Electric Budget	\$ 198,828.00	\$ 160,393.00	\$ 174,968.00	\$ 157,518.81	\$ 159,402.75	\$ 157,519.01
	Total Summer Peak kW Plan	44.77	29.96	25.80	24.38	16.32	20.42
	\$/kW Plan	\$ 4,441.47	\$ 5,353.27	\$ 6,781.68	\$ 6,461.52	\$ 9,767.74	\$ 7,714.16
3)	Total Annual MMBtu Plan	\$ 1,797,393.00	\$ 1,453,463.00	\$ 1,452,442.83	\$ 1,456,555.00	\$ 1,456,555.00	\$ 1,456,555.00
	\$/Annual MMBtu Plan	84.60	84.60	280.03	353.15	379.89	275.67
		\$ 21,245.78	\$ 17,180.41	\$ 5,186.67	\$ 4,124.50	\$ 3,834.17	\$ 5,283.65

Actuals		2015	2016	2017
1)	Total Electric Costs	\$ 217,200.00	\$ 197,081.00	\$ 158,370.45
	Annual Electric Savings Actual (kWh)	452,700.00	210,600.00	168,841.99
	\$/Annual kWh Actual	\$ 0.48	\$ 0.94	\$ 0.94
2)	Total Electric Costs	\$ 217,200.00	\$ 197,081.00	\$ 158,370.45
	Total Summer Peak kW Actual	90.20	39.50	26.63
	\$/kW Actual	\$ 2,407.98	\$ 4,989.39	\$ 5,946.23
3)	Total Annual MMBtu Actual	\$ 1,798,133.05	\$ 1,447,065.12	\$ 1,447,065.12
	\$/Annual MMBtu Actual	350.53	700.35	830.79
		\$ 5,129.76	\$ 2,066.20	\$ 1,741.78



Program Cost-Effectiveness - 2019 PLAN

	Total Resource Benefit / Cost Ratio	Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
Home Energy Assistance	1.88	1,763.1	939.446	-	80.8	1,090.8	10.2	12.0	110	2,982	59,639
Energy Star Homes	1.81	442.0	205.783	38.110	65.1	1,216.2	6.9	15.1	29	436	10,856
Home Performance with Energy Star	1.79	1,650.7	622.000	298.070	87.9	1,456.6	11.4	17.1	100	2,886	57,893
Energy Star Products	2.05	1,451.4	617.955	88.518	1,840.7	12,023.8	503.0	230.9	28,092	485	7,122
Home Energy Reports	1.12	208.1	184.985	-	917.0	2,423.6	90.0	60.7	25,800	-	-
ISO-NE Forward Capacity Market Expenses		-	13.500	-	-	-	-	-	-	-	-
Sub-Total Residential	1.83	5,515.2	2,583.669	424.698	2,991.4	18,211.0	621.5	335.8	54,131	6,789	135,510
Commercial, Industrial & Municipal											
Large Business Energy Solutions	1.95	5,216.8	1,259.359	1,419.776	4,148.2	56,285.9	496.4	532.6	59	-	-
Small Business Energy Solutions	1.68	2,711.6	1,008.203	605.344	2,535.5	32,911.0	143.6	224.4	56	-	-
Municipal Energy Solutions	1.14	394.1	220.642	123.771	411.5	5,481.1	9.4	9.9	26	90	1,800
Education		-	47.817	-	-	-	-	-	-	-	-
ISO Forward Capacity Market Expenses		-	19.990	-	-	-	-	-	-	-	-
Sub-Total Commercial & Industrial	1.77	8,322.4	2,556.011	2,148.891	7,095.3	94,678.0	649.3	767.0	141	90	1,800
Total	1.79	13,837.6	5,139.680	2,573.589	10,086.7	112,889.1	1,270.8	1,102.8	54,272	6,879	137,310

Note: a 10% NEI adder (20% for Home Energy Assistance) is applied to total benefits excluding water.

Annual kWh Savings	10,086,726	83.3%	kWh > 55%	Lifetime kWh Savings	112,889,087	73.7%	kWh > 55%
Annual MMBTU Savings (in kWh)	<u>2,015,979</u>	<u>16.7%</u>		Lifetime MMBTU Savings (in kWh)	<u>40,241,465</u>	<u>26.3%</u>	
	12,102,705	100.0%			153,130,552	100.0%	

Present Value Benefits - 2019 PLAN

	CAPACITY						ENERGY						Electric DRIPE	Total Electric Benefit	Gas Benefit	Gas DRIPE	Total Gas Benefit	Other Fuels	Fossil Emissions	Water Benefit	Other Non-Resource Benefit
	Total Benefits (\$000)	Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak												
Residential Programs																					
Home Energy Assistance	\$ 1,763.1	\$ 12.9	\$ -	\$ 15.0	\$ 13.3	\$ 19.3	\$ 21.3	\$ 7.2	\$ 7.9	\$ 5.0	\$ 101.8	\$ -	\$ -	\$ -	\$ 1,309.9	\$ 69.0	\$ -	\$ 282.4			
Energy Star Homes	\$ 442.0	\$ 18.4	\$ -	\$ 20.8	\$ 18.4	\$ 18.6	\$ 24.3	\$ 7.5	\$ 9.5	\$ 6.3	\$ 123.8	\$ 0.1	\$ 0.0	\$ 0.1	\$ 263.3	\$ 12.8	\$ 3.3	\$ 38.7			
Home Performance with Energy Star	\$ 1,650.7	\$ 20.5	\$ -	\$ 23.2	\$ 20.5	\$ 23.0	\$ 27.6	\$ 10.4	\$ 11.3	\$ 7.0	\$ 143.5	\$ -	\$ -	\$ -	\$ 1,296.6	\$ 66.6	\$ -	\$ 144.0			
Energy Star Products	\$ 1,451.4	\$ 86.6	\$ -	\$ 138.5	\$ 122.7	\$ 290.0	\$ 184.1	\$ 124.6	\$ 75.5	\$ 56.0	\$ 1,077.9	\$ 14.0	\$ 0.5	\$ 14.5	\$ 103.9	\$ 7.3	\$ 128.2	\$ 119.6			
Home Energy Reports	\$ 208.1	\$ 7.8	\$ -	\$ 14.5	\$ 12.8	\$ 52.6	\$ 53.2	\$ 19.4	\$ 19.7	\$ 9.1	\$ 189.1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 18.9			
Sub-Total Residential	\$ 5,515.2	\$ 146.2	\$ -	\$ 211.9	\$ 187.6	\$ 403.5	\$ 310.6	\$ 169.0	\$ 123.9	\$ 83.4	\$ 1,636.1	\$ 14.1	\$ 0.5	\$ 14.6	\$ 2,973.7	\$ 155.6	\$ 131.5	\$ 603.6			
Commercial/Industrial Programs																					
Large Business Energy Solutions	\$ 5,216.8	\$ 452.6	\$ -	\$ 566.6	\$ 501.7	\$ 1,182.7	\$ 969.4	\$ 462.3	\$ 352.2	\$ 254.9	\$ 4,742.5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 474.3			
Small Business Energy Solutions	\$ 2,711.6	\$ 179.4	\$ -	\$ 228.9	\$ 202.7	\$ 655.3	\$ 557.5	\$ 282.6	\$ 238.3	\$ 120.4	\$ 2,465.1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 246.5			
Municipal Energy Solutions	\$ 394.1	\$ 7.9	\$ -	\$ 10.1	\$ 9.0	\$ 106.8	\$ 119.3	\$ 29.8	\$ 35.3	\$ 10.6	\$ 328.8	\$ -	\$ -	\$ -	\$ 27.4	\$ 2.3	\$ -	\$ 35.6			
Sub-Total Commercial & Industrial	\$ 8,322.4	\$ 640.0	\$ -	\$ 805.6	\$ 713.4	\$ 1,944.9	\$ 1,646.2	\$ 774.6	\$ 625.8	\$ 385.9	\$ 7,536.4	\$ -	\$ -	\$ -	\$ 27.4	\$ 2.3	\$ -	\$ 756.4			
Smart Start	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			
Total	\$ 13,837.6	\$ 786.2	\$ -	\$ 1,017.5	\$ 901.0	\$ 2,348.4	\$ 1,956.8	\$ 943.6	\$ 749.8	\$ 469.3	\$ 9,172.5	\$ 14.1	\$ 0.5	\$ 14.6	\$ 3,001.1	\$ 157.9	\$ 131.5	\$ 1,360.0			

Performance Incentive Calculation 2019

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.72	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime kWh Savings	94,678,039	
4. Threshold Lifetime kWh Savings (65%) ²	61,540,725	
5. Implementation Expenses	\$2,556,011	
6. Benefit / Cost Percentage of Implementaton Expenses	2.75%	
7. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 8. Commercial & Industrial Performance Incentive	 \$140,581	
9. Maximum Commercial & Industrial Performance Incentive (6.875%)	\$175,726	
 Residential Incentive		
10. Benefit / Cost Ratio	1.75	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime kWh Savings	18,211,048	
13. Threshold Lifetime kWh Savings (65%)	11,837,181	
14. Implementation Expenses	\$2,583,669	
15. Benefit / Cost Percentage of Implementation Expenses	2.75%	
16. Lifetime kWh Percentage of Implementation Expenses	2.75%	
 17. Residential Performance Incentive	 \$142,102	
18. Maximum Residential Performance Incentive (6.875%)	\$177,627	
 19. TOTAL PLANNED / EARNED INCENTIVE	 \$282,682	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime kWh Savings for each sector must be greater than or equal to 65% of projected savings.
3. Benefit Cost ratios are Nominal\$/Nominal\$

**Planned Versus Actual Benefit / Cost Ratio by Sector
 2019**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
1. Benefits (Value) From Eligible Programs	\$ 8,322,422	
2. Implementation Expenses	\$ 2,556,011	
3. Customer Contribution	\$ 2,148,891	
4. Performance Incentive	\$ 140,581	
5. Total Costs	\$ 4,845,483	
6. Benefit/Cost Ratio - Commercial & Industrial Sector	1.72	
Residential		
7. Benefits (Value) From Eligible Programs	\$ 5,515,161	
8. Implementation Expenses	\$ 2,583,669	
9. Customer Contribution	\$ 424,698	
10. Performance Incentive	\$ 142,102	
11. Total Costs	\$ 3,150,469	
12. Benefit/Cost Ratio - Residential Sector	1.75	

**Lifetime Energy Savings by Sector and Program
 2019**

	Lifetime kWh Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
Large Business Energy Solutions	56,285,881	
Small Business Energy Solutions	32,911,026	
Municipal Energy Solutions	5,481,132	
Total Commercial & Industrial	94,678,039	
Residential		
Home Energy Assistance	1,090,804	
Energy Star Homes	1,216,159	
Home Performance with Energy Star	1,456,640	
Energy Star Products	12,023,832	
Home Energy Reports	2,423,614	
Total Residential	18,211,048	

Unitil Energy Systems Inc Home Energy Assistance Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017*	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Oil-Wxn: Air Sealing, Insulation, Water measures	9		40	-		200.0	20	20	87%	87%	-	-	139,040	28.0		28	100%	98%	5,040	-	21,974
Propane-Wxn: Air Sealing, Insulation, Water measures	35		60	-		200.0	20	20	87%	87%	-	-	208,560	28.0		25	100%	98%	19,600	-	29,430
Kerosene-Wxn: Air Sealing, Insulation, Water measures	21		8	-		200.0	20	20	87%	87%	-	-	27,808	22.0		20	100%	98%	9,240	-	3,139
Electric-Wxn: Air Sealing, Insulation, Water measures	6		2	2,000.0		10,000.0	20	20	92%	87%	219,840	-	347,600			-	100%	98%	-	-	-
Weatherization - All Fuels		37			235.0	-	21	20	87%	87%	-	208,044			22.89	-	100%	100%	-	18,792	
All Fuels- Thermostat	10	7		171.1	13.6	-	12		99%	87%	20,224	1,123		0.0	1.97	-	100%	100%	-	165	
LED bulb	426	188	880	37.0	37.0	35.0	8	5	89%	87%	112,093	49,468	133,826			-	100%	100%	-	-	-
Refrigerator	9	25	25	762.0	733.9	714.0	12	12	100%	87%	77,724	220,164	186,140			-	100%	100%	-	-	-
Direct Install Water Measures (if broken out from Wxn)	15	26		49.0	112.5	-	7		88%	87%	4,528	18,018			0.17	-	100%	100%	-	31	
Oil Boiler Replacement, >=87% AFUE	2	4		-		142.0	20	25	87%	87%	-	-		15.0	28.21	16	100%	100%	600	2,257	
Propane Boiler Replacement, >=95% AFUE			4			142.0	20	20	87%	87%	-	-	9,872			17	100%	100%	-	-	1,335
Oil Furnace Replacement, >=87% ECM	9	5	3	168.0	168.0	168.0	18	20	99%	87%	26,808	14,893	8,760	12.0	12.93	17	100%	100%	1,944	1,164	998
Propane Furnace Replacement, >=95% ECM			6	168.0	168.0	168.0	18	20	99%	87%	-	-	17,519			17	100%	100%	-	-	2,007
Kerosene Furnace Replacement, >=87% ECM	5		4	168.0	168.0	168.0	18	20	99%	87%	14,893	-	11,679	12.0		9	100%	100%	1,080	-	754
DHW Pipe Wrap - Electric		3			160.0		10		87%		-	4,195	-		8.83		100%	100%	-	265	-
Heating System Tune Up		1			-		1		100%		-	-	-		2.52		100%	100%			
custom - exterior door		1			-		15		100%		-	-	-		2.29		100%	100%			
Program Summary*											476,110	515,905	1,090,804						37,504	22,674	59,639

Unitil Energy Systems Inc Energy Star Homes

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
SF-Propane Heated Home	11	2	24	1,276.2	1,403.0	800	25	25	100%	100%	31,905	70,150	480,000	46.6	119	18	100%	100%	12,825	5,950	10,800
SF-Electric Heated Home			5			8,000	20	17	100%	100%	-	-	680,000			-	100%	100%	-	-	-
Air Source Heating (including DHPs)	7	4		4,014.7	7,677.8	-	17		100%	100%	477,750	522,087				-	100%	100%	-	-	
Heat Pump Cooling (including DHPs)	7	4		126.1	(5.8)	-	17		100%	100%	15,000	(391)				-	100%	100%	-	-	
LED bulb	253	73	174	39.6	37.0	16	8	5	100%	100%	80,069	21,582	13,859			-	100%	100%	-	-	-
Clothes Washer	5	2	15	123.9	123.9	162	11	14	100%	100%	6,815	2,726	33,936	0.5	0.5	0	100%	100%	25	10	56
Refrigerator	5	31	17	39.6	39.6	41	12	12	100%	100%	2,378	14,742	8,364			-	100%	100%	-	-	-
MF-Propane Heated Home	6			100.0			25	25	100%	100%	15,000	-		25.0		-	100%	100%	3,750	-	
MF-Gas Heated Home		25			62.6		25	25	100%	100%	-	39,100			9.9	-	100%	100%	-	6,200	
Lights and Appliances	18	31		100.0	(103.4)		15		100%		(34,600)	(48,090)					100%		-		
Water Heating Savings	11	31		552.7	283.5		15		100%		91,200	131,804			7.8		100%		3,627		
Program Summary*											685,517	753,711	1,216,159						16,600	15,787	10,856

Unitil Energy Systems Inc Home Performance with Energy Star

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Oil-Wxn: Air Sealing, Insulation, Water measures	15	27	39	145.0	1.2	200	21	20	100%	100%	42,375	647,516	156,000	28.5	30	30	100%	100%	9,113	16,943	23,400
Propane-Wxn: Air Sealing, Insulation, Water measures	43	5	56	145.0	1.2	200	21	20	100%	100%	121,475	127,000	224,000	29.5	30	30	100%	100%	27,198	3,132	33,600
Gas-Wxn: Air Sealing, Insulation, Water measures		4			-	-	20	20	100%	100%	-	-			56	-	100%	100%	-	4,515	
Electric-Wxn: Air Sealing, Insulation, Water measures	3		5	5,500.0		7,500	21	20	100%	100%	352,506	-	750,000			-	100%	100%	-	-	-
Oil- Thermostat	3	2		20.0		-	15	15	100%	100%	900	-		3.2	3.1	5	100%	100%	144	93	
LED bulb	488	180	760	37.0	37.0	24	8	5	100%	100%	144,276	53,217	90,820			-	100%	100%	-	-	-
Refrigerator	5		9	714.0		804	12	12	100%	100%	42,840	-	86,832			-	100%	100%	-	-	-
Direct Install Water Measures (if broken out from Wxn)	17			29.4		-	4		100%	0%	2,000	-		0.7		-	100%	0%	48	-	
Ancillary Savings heating	58	25	95	100.0	23.8	25	19	25	100%	100%	110,200	11,302	59,375			-	100%	100%	-	-	-
Ancillary Savings cooling	35	13	48	75.0	66.7	65	20	25	100%	100%	52,200	17,340	77,188			-	100%	100%	-	-	-
Oil Boiler Replacement, >=87% AFUE		1			-	142	20	25	100%	100%	-	-			14.98	3	100%	100%	-	300	
Propane Boiler Replacement, >=95% AFUE			4			142		25	100%	100%	-	-	12,425			10	100%	100%	-	-	893
Program Summary*											868,772	856,375	1,456,640						36,502	24,982	57,893

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Unitil Energy Systems Inc Energy Star Products

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
LED Bulbs and Fixtures	59,016	53,653	103,000	29.2	24.6	16	8	5	68%	100%	9,309,483	7,154,143	8,203,950			-	100%	100%	-	-	-
						16			100%	100%	-	-	-			-	100%	100%	-	-	-
Mini Split HP (assumed 1.5 ton) (cooling)-Mini Split	82	60	95	120.0	206.4	103	12	18	100%	100%	118,117	148,608	176,008			-	100%	100%	-	-	-
Mini Split HP (assumed 1.5 ton) (heating) -Mini Split	82	60	95	520.6	1,058.3	328	12	18	100%	100%	512,225	761,976	561,396			-	100%	100%	-	-	-
						-			0%	0%	-	-	-			-					
Air Source Heat Pump (heating) (assumed 3 ton)		1			3,114.0		12	18	100%	100%	-	37,368				-	100%	100%	-	-	
DHW Heat Pump Water Heater 50 gal		10	45		1,775.0	1,384	10	13	100%	100%	-	177,500	809,640			-	100%	100%	-	-	-
DHW Heat Pump Water Heater 80 gal		4	8		2,672.0	1,640	10	13	100%	100%	-	106,880	170,560			-	100%	100%	-	-	-
Wifi Thermostat (Heating&Cooling)		4	50		32.3	25	15	15	100%	100%	-	1,936	18,642			7	100%	100%	-	-	4,950
						-			0%	0%	-	-	-			-					
ES Dehumidifier	46	176	85	162.3	162.3	214	12	12	100%	100%	89,573	342,714	218,280			-	100%	100%	-	-	-
ES Pool Pumps (2 speed)		2	13		781.7	842	10	10	100%	100%	-	15,634	109,460			-	100%	100%	-	-	-
ES Pool Pumps (Variable Speed)	5	12	20	945.8	945.9	1,062	10	10	100%	100%	47,290	113,506	212,400			-	100%	100%	-	-	-
ES Clothes Washers	870	510	380	123.9	123.9	89	11	14	100%	100%	1,185,819	695,135	471,724	0.5	0.5	0.3	100%	100%	4,341	2,545	1,431
ES Clothes Dryers	30	167	50	160.2	160.2	93	12	12	100%	100%	57,665	321,001	55,980			-	100%	100%	-	-	-
ES Dishwasher						23		13	100%	100%	-	-	-			0.1	100%	100%	-	-	-
ES AC (central) 3 ton	10	2	18	199.9	200.0	200	12	12	100%	100%	23,988	4,800	43,179			-	100%	100%	-	-	-
ES Room AC (room)	378	200	550	16.2	16.2	16	9	9	100%	100%	54,964	29,088	79,992			-	100%	100%	-	-	-
ES Room Air Purifier	35	33	61	390.4	390.4	391	9	9	100%	50%	122,985	115,958	107,192			-	100%	100%	-	-	-
ES Refrigerator	300	205	400	41.4	41.4	64	12	12	100%	100%	148,907	101,746	308,592			-	100%	100%	-	-	-
ES Freezers			30			53		16	100%	100%	-	-	25,200			-	100%	100%	-	-	-
						-					-	-	-			-					
Primary Refrigerator Recycling/Pickup/Turnin	20	80	30	533.0	533.0	492	8	8	100%	100%	85,280	341,120	117,984			-	100%	100%	-	-	-
2nd Refrigerator Pickup/Turnin	5		25	755.0		755	8	8	100%	100%	30,200	-	151,000			-	100%	100%	-	-	-
2nd Freezer Pickup/Turnin	5	18	15	663.0	663.0	658	8	8	100%	100%	26,520	95,472	78,960			-	100%	100%	-	-	-
Room AC Pickup/Turnin			50			16		5	100%	100%	-	-	4,050			-	100%	100%	-	-	-
ECM Motors for FHA Furnace Fans			15			168		18	100%	100%	-	-	45,360			-	100%	100%	-	-	-
ECM Motor for FWH Circulating Pump			12			142		15	100%	100%	-	-	25,560			-	100%	100%	-	-	-
ES AC (central) 3 ton			20	199.9		200	12	14	100%	100%	-	-	55,973			-	100%	100%	-	-	-
Refrigerator CEE Tier 2+			120			96		12	100%	100%	-	-	138,816			-	100%	100%	-	-	-
Washer Tier CEE Tier 2+			120			156		14	100%	100%	-	-	261,912			0.4	100%	100%	-	-	741
Dryer Hybrid			90			229		12	100%	100%	-	-	247,752			-	100%	100%	-	-	-
Dryer Heat Pump			40			472		12	100%	100%	-	-	226,704			-	100%	100%	-	-	-
Advanced Power Strips	50			79.1			5		100%		19,770										
Program Summary*											11,832,786	10,564,583	12,926,266						4,341	2,545	7,122

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Unitil Energy Systems Inc Home Energy Reports

	Quantity	Gross Annual Savings per Unit (kWh)	Measure Life	Installation or Electric Realization Rate	Net Total Lifetime Savings (kWh)	Gross Annual Savings Per Unit (MMBTU)	Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)
Measure	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan
Behavioral Savings	25,800	35.5	3	100%	2,423,614			-
Program Summary					2,423,614			-

Unitil Energy Systems Inc Large Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																					
Lighting-Custom			5			81,081		13	100%	100%	-	-	-						-	-	-
Lighting-LED	5	10	10	320,000.0	120,630.6	125,000	13	13	98%	100%	20,800,000	15,305,611	16,226,870						-	-	-
Lighting OS Only		3			10,316.7	-	9	9	104%	100%	-	288,578							-	-	-
Park Lot Lights	4	9	8	100,000.0	22,960.0	52,632	13	13	104%	100%	5,200,000	2,783,028	5,465,893						-	-	-
Process	2	1		425,531.9	425,981.0	-	13	13	104%	100%	11,063,830	5,737,112							-	-	-
Custom: Other			4			224,123	13	13	100%	100%	-	-	11,637,798						-	-	-
						-			0%	0%	-	-							-	-	-
New Equipment & Construction Track						-			0%	0%	-	-							-	-	-
Lighting-Custom			5			121,951		15	100%	100%	-	-	9,133,323						-	-	-
Lighting-LED			8			71,429		15	100%	100%	-	-	8,559,228						-	-	-
Lighting OS Only								9	100%	100%	-	-	-						-	-	-
Park Lot Lights						-		15	100%	100%	-	-							-	-	-
Process		1			142,642.0	-	15	15	100%	100%	-	2,139,630							-	-	-
HVAC		1			54,410.0		15		104%			845,531									
VFDs		3			87,461.0		13		98%			3,329,116									
Program Summary*											37,063,830	30,428,605	56,285,881						-	-	-

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Unitil Energy Systems Inc Small Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																					
Cooling	3		3	50,000.0		52,963	13	13	100%	100%	1,950,000	-	2,065,556		-				-	-	-
Lighting - Retrofit		50	6		30,690.4	72,679	13	13	100%	107%	-	19,948,747	6,043,078		-				-	-	-
Ext. Lighting		27			15,865.2	-	13	13	100%	103%	-	5,568,668			-				-	-	-
Compressed Air		1			20,387.0	-	13		100%	100%	-	265,031			-				-	-	-
															-				-	-	-
New Equipment & Construction Track						-									-				-	-	-
Lighting	4	5		22,222.2	21,477.6	-	15	15	100%	107%	1,333,333	1,610,820			-				-	-	-
Ext. Lighting		3			40,229.7	-	15	15	100%	103%	-	1,810,335			-				-	-	-
Compressed Air - New		2			17,246.5		15		100%		-	517,395			-				-	-	-
Custom - Compressed Air		2			2,419.5		15		100%		-	72,585			-				-	-	-
HVAC: Air Conditioning		1			3,931.0		15	13	100%	103%	-	58,965			-				-	-	-
HVAC: Mini Split (Heating)		18			1,326.3		12	13	100%	107%	-	286,476			-				-	-	-
HVAC: Mini Split (Cooling)		18			434.8		12	13	100%	100%	-	93,912			-				-	-	-
Lighting: Controls (Dimming, OS)		9			5,978.0		9		100%	100%	-	484,218			-				-	-	-
Refrigeration Evap Fan		1			5,389.0		15		100%	107%	-	80,835			-				-	-	-
Motor control		1			4,192.0		10		100%	107%	-	41,920			-				-	-	-
VFDs		1			32,038.0		13		100%	107%	-	416,494			-				-	-	-
															-				-	-	-
Direct Install Track						-									-				-	-	-
Ext Lighting	20			17,592.6		-	13	13	100%	103%	4,574,073	-			-				-	-	-
Lighting - Direct Install	30		28	33,555.6		41,465	13	13	100%	107%	13,086,668	-	16,089,373		-				-	-	-
SCI-DR: Exterior Lighting			16			37,931		13	100%	103%	-	-	8,102,676		-				-	-	-
SCI-DR: Refrigeration			3			16,954		12	100%	100%	-	-	610,344		-				-	-	-
Program Summary*											20,944,075	31,256,402	32,911,026								

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Unitil Energy Systems Inc Municipal Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Retrofit Track																					
Cooling	3			23,333		-	13		100%	100%	910,000	-	-			-			100%	-	-
Lighting-LED		16			44,093	-	13		100%	107%	-	9,171,344	-			-			100%	-	-
Lighting OS Only		5			4,159	-	9		100%	103%	-	187,173	-			-			100%	-	-
STREET LIGHTS			2			88,889		13	100%	103%	-	-	2,373,511			-			100%	-	-
Lighting-LED	8		5	72,368		16,129	13	13	100%	107%	7,526,316	-	1,117,581			-			100%	-	-
Park Lot Lights	4		5	17,500		24,194	13	13	100%	103%	910,000	-	1,615,040			-			100%	-	-
Lighting: Exterior (Wall packs, Parking Lot)		13			11,114		13		100%			1,878,291									
					-						-	-				-			0%	-	-
					-						-	-				-			0%	-	-
New Equipment & Construction Track																			100%	-	-
Lighting-LED		1			17,246	-	15		100%	107%	-	258,690	-			-			100%	-	-
Process		6			375,060	-	13		100%	100%	-	4,766,813	-			-			100%	-	-
Lighting: Exterior (Wall packs, Parking Lot)		1			30,593	-	15		100%		-	458,895	-			-			0%	-	-
					-						-	-				-			-	-	-
Weatherization Track																					
Weatherization - Other	2		2	-		9,375	20	20	100%	100%	-	-	375,000	150.0		45.0	100%	100%	6,000	-	1,800
					-						-	-				-			-	-	-
					-						-	-				-			-	-	-
Direct Install Track																					
HVAC		1			9,577	-	15		100%	100%	-	143,655	-			-			100%	-	-
Program Summary*											9,346,316	16,864,861	5,481,132						6,000.0	0.0	1,800.0

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

**Unitil Energy System, Inc.
2019 System Benefits Charge ("SBC") Calculation**

Unitil Energy Systems, Inc.
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Year	EE Total Budget	RGGI Revenues	FCM Revenues	Other Revenues	Prior Year Deferral with Interest	Current Year Interest	Projected Ending Balance	SBC Requirement	Forecasted Distribution (kWh)	SBC Rate EE Portion (\$/kWh)	SBC Rate EAP Portion (\$/kWh)	SBC Rate LBR Portion (\$/kWh)	2018 Total SBC Rate (\$/kWh)
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N
2019	\$ 5,422,363	\$ 284,017	\$ 650,000	\$ (375,000)	\$ (751,289)	-	\$ (116,218)	\$ 4,228,275	1,201,214,515	\$0.00352	\$0.00150	\$0.00053	\$0.00555

Col. A: Effective year (January 1, 2019 - December 31, 2019)
Col. B: Company Forecast
Col. C: Company Forecast
Col. D: Company Forecast
Col. E: Company Forecast
Col. F: Page 2, Line 15
Col. G: Page 3, Line 14 (2019)
Col. H: Page 3, Line 15 - Line 14 (2019)
Col. I: Col. B - Col. C - Col. D - Col. E + Col. F - Col. H.
Col. J: Company Forecast
Col. K: Col. I / Col. J
Col. L: EAP Portion of SBC Rate
Col. M: Page 4, Col. G
Col. N: Col. K + Col. L + Col. M

Unitil Energy System, Inc.
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2018 to December 31, 2018

Unitil Energy Systems, Inc.
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	Jan-18 <u>Actual</u>	Feb-18 <u>Actual</u>	Mar-18 <u>Actual</u>	Apr-18 <u>Actual</u>	May-18 <u>Actual</u>	Jun-18 <u>Actual</u>	Jul-18 <u>Estimate</u>	Aug-18 <u>Estimate</u>	Sep-18 <u>Estimate</u>	Oct-18 <u>Estimate</u>	Nov-18 <u>Estimate</u>	Dec-18 <u>Estimate</u>	Total
1 Beginning Balance -- (Over)/Under Recovery	\$ (902,211)	\$ (1,123,339)	\$ (1,372,966)	\$ (1,517,981)	\$ (1,458,772)	\$ (1,570,773)	\$ (1,636,334)	\$ (1,518,546)	\$ (1,417,310)	\$ (1,311,413)	\$ (1,129,810)	\$ (979,521)	
2 Total Costs	192,289	94,952	186,137	440,025	206,876	279,686	459,592	475,140	505,072	501,055	516,603	551,718	\$ 4,409,145
Revenues													
3 Class Sales (inc. LI) -- kWh	118,288,676	101,459,074	96,543,317	90,962,753	89,782,560	99,348,233	106,831,221	118,664,655	102,211,561	99,131,725	90,622,227	101,145,878	1,214,991,881
4 Charge -- \$/kWh	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	\$ 0.00275	
5 Energy Efficiency Revenues	\$ 280,310	\$ 278,976	\$ 265,486	\$ 250,115	\$ 246,857	\$ 273,208	\$ 293,786	\$ 326,328	\$ 281,082	\$ 272,612	\$ 249,211	\$ 278,151	\$ 3,296,122
6 Forward Capacity Market Revenue	\$ 62,392	\$ 61,540	\$ 62,058	\$ 61,507	\$ 66,241	\$ 66,120	\$ 41,667	\$ 41,667	\$ 41,667	\$ 41,667	\$ 41,667	\$ 41,667	\$ 629,858
7 RGGI Funding	\$ 67,066	\$ -	\$ -	\$ 63,698	\$ -	\$ -	\$ -	\$ -	\$ 71,111	\$ -	\$ 71,111	\$ -	\$ 272,987
8 Other Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
9 Total Revenues	\$ 409,768	\$ 340,517	\$ 327,544	\$ 375,321	\$ 313,098	\$ 339,327	\$ 335,453	\$ 367,994	\$ 393,860	\$ 314,279	\$ 361,989	\$ 319,818	\$ 4,198,967
10 (Over)/Under Recovery (excluding interest)	\$ (1,119,690)	\$ (1,368,903)	\$ (1,514,373)	\$ (1,453,277)	\$ (1,564,994)	\$ (1,630,414)	\$ (1,512,195)	\$ (1,411,400)	\$ (1,306,097)	\$ (1,124,638)	\$ (975,196)	\$ (747,622)	
Interest Calculation													
11 Average Monthly Balance	\$ (1,010,950)	\$ (1,246,121)	\$ (1,443,670)	\$ (1,485,629)	\$ (1,511,883)	\$ (1,600,593)	\$ (1,574,264)	\$ (1,464,973)	\$ (1,361,704)	\$ (1,218,026)	\$ (1,052,503)	\$ (863,571)	
12 Interest Rate	4.25%	4.25%	4.25%	4.50%	4.50%	4.50%	4.75%	4.75%	4.75%	5.00%	5.00%	5.00%	
13 Days per Month	31	28	31	30	31	30	31	31	30	31	30	31	365
14 Computed Interest	\$ (3,649)	\$ (4,063)	\$ (3,608)	\$ (5,495)	\$ (5,778)	\$ (5,920)	\$ (6,351)	\$ (5,910)	\$ (5,316)	\$ (5,172)	\$ (4,325)	\$ (3,667)	\$ (59,255)
15 Ending Balance	\$ (1,123,339)	\$ (1,372,966)	\$ (1,517,981)	\$ (1,458,772)	\$ (1,570,773)	\$ (1,636,334)	\$ (1,518,546)	\$ (1,417,310)	\$ (1,311,413)	\$ (1,129,810)	\$ (979,521)	\$ (751,289)	

Line 1: Prior period ending balance
Line 2: Page 1, Col. B
Line 3: Company Forecast
Line 4: Page 1, Col. J
Line 5: Line 3 * Line 4
Line 6: Page 1, Col. D
Line 7: Page 1, Col. C
Line 8: Page 1, Col. E
Line 9: Sum of Lines 5 through 8
Line 10: Line 1 + Line 2 - Line 9
Line 11: (Line 1 + Line 10)/2
Line 12: Prime Rate
Line 14: Line 11 * ((Line 12/# days per year) * Line 13))
Line 15: Line 10 + Line 14

Unitil Energy System, Inc.
Energy Efficiency Expense & SBC Revenue Reconciliation
January 1, 2019 to December 31, 2019

Unitil Energy Systems, Inc.
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	<u>Jan-19</u> <u>Estimate</u>	<u>Feb-19</u> <u>Estimate</u>	<u>Mar-19</u> <u>Estimate</u>	<u>Apr-19</u> <u>Estimate</u>	<u>May-19</u> <u>Estimate</u>	<u>Jun-19</u> <u>Estimate</u>	<u>Jul-19</u> <u>Estimate</u>	<u>Aug-19</u> <u>Estimate</u>	<u>Sep-19</u> <u>Estimate</u>	<u>Oct-19</u> <u>Estimate</u>	<u>Nov-19</u> <u>Estimate</u>	<u>Dec-19</u> <u>Estimate</u>	<u>Total</u>
1 Beginning Balance -- (Over)/Under Recovery	\$ (751,289)	\$ (465,760)	\$ (504,793)	\$ (563,837)	\$ (532,809)	\$ (471,837)	\$ (462,655)	\$ (462,716)	\$ (462,069)	\$ (437,071)	\$ (355,598)	\$ (281,420)	
2 Total Costs	364,712	379,987	407,217	410,539	425,814	453,044	456,365	471,641	498,871	497,100	512,376	544,697	\$ 5,422,363
Revenues													
3 Class Sales (inc. LI) -- kWh	112,908,398	103,123,873	96,257,212	91,788,542	87,655,211	89,992,803	113,721,294	117,860,381	98,538,970	102,210,521	88,557,184	98,600,127	1,201,214,515
4 Charge -- \$/kWh	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	\$ 0.00352	
5 Energy Efficiency Revenues	\$ 397,438	\$ 362,996	\$ 338,825	\$ 323,096	\$ 308,546	\$ 316,775	\$ 400,299	\$ 414,869	\$ 346,857	\$ 359,781	\$ 311,721	\$ 347,072	\$ 4,228,275
6 Forward Capacity Market Revenue	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 54,167	\$ 650,000
7 RGGI Funding	\$ -	\$ -	\$ 71,004	\$ -	\$ -	\$ 71,004	\$ -	\$ -	\$ 71,004	\$ -	\$ 71,004	\$ -	\$ 284,017
8 Other Revenues	\$ (375,000)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (375,000)
9 Total Revenues	\$ 76,604	\$ 417,163	\$ 463,996	\$ 377,262	\$ 362,713	\$ 441,946	\$ 454,466	\$ 469,035	\$ 472,028	\$ 413,948	\$ 436,892	\$ 401,239	\$ 4,787,292
10 (Over)/Under Recovery (excluding interest)	\$ (463,181)	\$ (502,935)	\$ (561,572)	\$ (530,560)	\$ (469,708)	\$ (460,738)	\$ (460,755)	\$ (460,110)	\$ (435,227)	\$ (353,918)	\$ (280,114)	\$ (137,962)	
Interest Calculation													
11 Average Monthly Balance	\$ (607,235)	\$ (484,348)	\$ (533,183)	\$ (547,198)	\$ (501,259)	\$ (466,288)	\$ (461,705)	\$ (461,413)	\$ (448,648)	\$ (395,494)	\$ (317,856)	\$ (209,691)	
12 Interest Rate	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	
13 Days per Month	31	28	31	30	31	30	31	31	30	31	30	31	365
14 Computed Interest	\$ (2,579)	\$ (1,858)	\$ (2,264)	\$ (2,249)	\$ (2,129)	\$ (1,916)	\$ (1,961)	\$ (1,959)	\$ (1,844)	\$ (1,679)	\$ (1,306)	\$ (890)	\$ (22,634)
15 Ending Balance	\$ (465,760)	\$ (504,793)	\$ (563,837)	\$ (532,809)	\$ (471,837)	\$ (462,655)	\$ (462,716)	\$ (462,069)	\$ (437,071)	\$ (355,598)	\$ (281,420)	\$ (138,852)	

Line 1: Prior period ending balance
Line 2: Page 1, Col. B
Line 3: Company Forecast
Line 4: Page 1, Col. J
Line 5: Line 3 * Line 4
Line 6: Page 1, Col. D
Line 7: Page 1, Col. C
Line 8: Page 1, Col. E
Line 9: Sum of Lines 5 through 8
Line 10: Line 1 + Line 2 - Line 9
Line 11: (Line 1 + Line 10)/2
Line 12: Prime Rate
Line 14: Line 11 * ((Line 12/# days per year) * Line 13))
Line 15: Line 10 + Line 14

Unitil Energy System, Inc.
2019 System Benefits Charge Calculation (LBR Component)

Unitil Energy Systems, Inc.
NHPUC Docket No. DE 17-136
Attachment H3 (2019 Update)
Page 4 of 11

Year	Forecasted LBR Revenue	Prior Year Deferral with Interest	Current Year Interest	Total LBR Revenue	Forecasted Distribution (kWh)	SBC Rate LBR Portion (\$/kWh)
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G
2019	\$ 612,601	\$ 26,475	\$ (51)	\$ 639,025	1,201,214,515	\$ 0.00053

Col. A: Effective year (January 1, 2019 - December 31, 2019)
Col. B: Page 5, Line 12, Col. O
Col. C: Prior Year LBR Component Over/(Under) recovery, with interest, Page 6 Line 9
Col. D: Page 7, Col. O, Line 8
Col. E: Col. B + Col. C + Col. D
Col. F: Company Forecast
Col. G: Col. E/Col. F

Unitil Energy System, Inc.
Estimated Monthly and Cumulative Savings (kWh) and Lost Base Revenue
January 1, 2018 to December 31, 2019

Unitil Energy Systems, Inc.
NHPUC Docket No. DE 17-136
Attachment H3 (2019 Update)
Page 5 of 11

Line	Description	12/31/2017	Forecast Jan 2018	Forecast Feb 2018	Forecast Mar 2018	Forecast Apr 2018	Forecast May 2018	Forecast June 2018	Forecast Jul 2018	Forecast Aug 2018	Forecast Sep 2018	Forecast Oct 2018	Forecast Nov 2018	Forecast Dec 2018	2018 Annual Savings
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	Residential Annualized Savings		207,085	216,358	225,630	234,903	244,175	253,448	262,720	271,993	281,265	287,447	296,719	309,083	3,090,828
2	C&I Annualized Savings		376,202	393,046	409,891	426,736	443,581	460,426	477,271	494,115	510,960	522,190	539,035	561,495	5,614,948
3	Total		583,287	609,404	635,522	661,639	687,756	713,874	739,991	766,108	792,226	809,637	835,754	870,578	8,705,776
			Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	June 2018	Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Cumulative LBR Savings
4	Monthly Residential Savings		17,257	18,030	18,803	19,575	20,348	21,121	21,893	22,666	23,439	23,954	24,727	25,757	
5	Cumulative Residential Savings	112,018	129,275	147,305	166,108	185,683	206,031	227,152	249,045	271,711	295,150	319,104	343,830	369,587	2,909,980
6	Average Residential Distribution Rate		0.03682	0.03682	0.03682	0.03682	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	
7	Lost Residential Revenue		\$ 4,760	\$ 5,424	\$ 6,116	\$ 6,837	\$ 7,287	\$ 8,034	\$ 8,809	\$ 9,610	\$ 10,439	\$ 11,287	\$ 12,161	\$ 13,072	\$ 103,837
8	Monthly C&I Savings		31,350	32,754	34,158	35,561	36,965	38,369	39,773	41,176	42,580	43,516	44,920	46,791	
9	Cumulative C&I Savings	500,407	531,757	564,511	598,668	634,230	671,195	709,564	749,336	790,512	833,092	876,608	921,528	968,319	8,849,319
10	Average C&I Distribution Rate		0.03351	0.03351	0.03351	0.03351	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	
11	Lost C&I Revenue		\$ 17,819	\$ 18,917	\$ 20,061	\$ 21,253	\$ 21,559	\$ 22,791	\$ 24,069	\$ 25,391	\$ 26,759	\$ 28,157	\$ 29,599	\$ 31,102	\$ 287,478
12	Total Lost Revenue		\$ 22,579	\$ 24,341	\$ 26,177	\$ 28,090	\$ 28,846	\$ 30,826	\$ 32,877	\$ 35,002	\$ 37,198	\$ 39,443	\$ 41,761	\$ 44,175	\$ 391,315

Line	Description	12/31/2018	Forecast Jan-19	Forecast Feb-19	Forecast Mar-19	Forecast Apr-19	Forecast May-19	Forecast Jun-19	Forecast Jul-19	Forecast Aug-19	Forecast Sep-19	Forecast Oct-19	Forecast Nov-19	Forecast Dec-19	2019 Annual Savings
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N	Col. O
1	Residential Annualized Savings		200,427	209,401	218,376	227,350	236,324	245,299	254,273	263,247	272,222	278,204	287,179	299,145	2,991,446
2	C&I Annualized Savings (2019)		475,384	496,670	517,955	539,241	560,527	581,813	603,099	624,385	645,671	659,861	681,147	709,528	7,095,280
3	Total		675,811	706,071	736,331	766,591	796,851	827,112	857,372	887,632	917,892	938,066	968,326	1,008,673	10,086,726
			Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Cumulative LBR Savings
4	Monthly Residential Savings		16,702	17,450	18,198	18,946	19,694	20,442	21,189	21,937	22,685	23,184	23,932	24,929	
5	Cumulative Residential Savings	369,587	386,289	403,740	421,937	440,883	460,577	481,019	502,208	524,145	546,830	570,014	593,946	618,874	5,950,463
6	Average Residential Distribution Rate		0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	0.03537	
7	Lost Residential Revenue		\$ 13,663	\$ 14,280	\$ 14,924	\$ 15,594	\$ 16,291	\$ 17,014	\$ 17,763	\$ 18,539	\$ 19,341	\$ 20,161	\$ 21,008	\$ 21,890	\$ 210,468
8	Monthly C&I Savings (2017 & 2018)	968,319	968,319	968,319	968,319	968,319	968,319	968,319	968,319	968,319	968,319	968,319	968,319	968,319	
9	Average C&I Distribution Rate		0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	0.03212	
10	Lost C&I Revenue		\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 31,102	\$ 373,229
11	Monthly C&I Savings (2019)		39,615	41,389	43,163	44,937	46,711	48,484	50,258	52,032	53,806	54,988	56,762	59,127	
12	Cumulative C&I Savings	-	39,615	81,004	124,167	169,104	215,815	264,299	314,557	366,589	420,395	475,384	532,146	591,273	
13	Average C&I Distribution Rate		0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	
14	Lost C&I Revenue		\$ 10	\$ 19	\$ 30	\$ 41	\$ 52	\$ 63	\$ 75	\$ 88	\$ 101	\$ 114	\$ 128	\$ 142	\$ 863
15	Monthly C&I kW Savings (2019)		39	39	39	39	39	39	39	39	39	39	39	39	
16	Cumulative C&I kW Savings	-	39	79	118	158	197	237	276	316	355	395	434	474	
17	Average C&I Demand Rate		\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	\$ 9.11	
18	Lost C&I Demand Revenue		\$ 360	\$ 719	\$ 1,079	\$ 1,438	\$ 1,798	\$ 2,157	\$ 2,517	\$ 2,876	\$ 3,236	\$ 3,595	\$ 3,955	\$ 4,314	\$ 28,042
19	Total Lost Revenue		\$ 45,134	\$ 46,121	\$ 47,135	\$ 48,175	\$ 49,242	\$ 50,337	\$ 51,458	\$ 52,605	\$ 53,780	\$ 54,973	\$ 56,193	\$ 57,448	\$ 612,601

2019

Line 1: Estimated Savings per 2019 Core Filing
Line 2: Estimated Savings per 2019 Core Filing
Line 3: Line 1 + Line 2
Line 4: Line 1 / 12
Line 5: Prior Month Line 5 + Current Month Line 4. 12/31/17 Cumulative savings shown in Col. B from 2017 Annual Report.
Line 6: Page 8, Line 1, Col. 5
Line 7: Line 5 x Line 6
Line 8: Prior Month Line 9 + Current Month Line 8. 12/31/17 Cumulative savings shown in Col. B from 2017 Annual Report.
Line 9: Page 8, line 2, column (b)
Line 10: Line 8 x Line 9
Line 11: Line 2/12
Line 12: Prior month Line 12 + current month Line 11
Line 13: Page 8 Line 4, Column (a)
Line 14: Line 12 x Line 13
Line 15: Page 5a Line 29
Line 16: Prior month Line 16 + Current month Line 15
Line 17: Page 8 Line 4 Column 6
Line 18: Line 16 x Line 17
Line 19: Line 7 + Line 10 + Line 14 + Line 18

UNITIL ENERGY SYSTEM, INC.		PROGRAM YEAR 2019	
Electric Savings for LBR Calculation		PLAN SAVINGS	
		Annual kWh	Customer Peak Reduction - kW
1. Residential Programs			
2. Home Energy Assistance		80,819	n/a
3. EnergyStar Homes		65,093	n/a
4. Home Performance w/EnergyStar		87,860	n/a
5. Energy Star Products		1,840,675	n/a
6. Home Energy Reports		917,000	n/a
7. Residential		2,991,446	n/a (1)
8.			
9. Commercial & Industrial Programs			
10. Large Business Energy Solutions		4,148,221	563
11. Small Business Energy Solutions		2,535,530	365
12. Municipal Energy Solutions		411,529	19
13. Commercial & Industrial		7,095,280	947
14.			
15. Total 2019 Portfolio		10,086,726	947

LBR Savings Allocation		Estimate Jan-19	Estimate Feb-19	Estimate Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Estimate Jul-19	Estimate Aug-19	Estimate Sep-19	Estimate Oct-19	Estimate Nov-19	Estimate Dec-19	Total
16. Residential Programs														
17. Annualized kWh by Month	L. 7 * L. 34	200,427	209,401	218,376	227,350	236,324	245,299	254,273	263,247	272,222	278,204	287,179	299,145	2,991,446
18.														
19. Monthly Incremental	L. 17 ÷ 12 Mo.	16,702	17,450	18,198	18,946	19,694	20,442	21,189	21,937	22,685	23,184	23,932	24,929	249,287
20. Monthly Cumulative	Sum of L. 19	16,702	34,152	52,350	71,296	90,990	111,431	132,621	154,558	177,243	200,427	224,358	249,287	1,515,417
21.														
22. Commercial & Industrial Programs														
23. Annualized kWh by Month	L. 13 * L. 34	475,384	496,670	517,955	539,241	560,527	581,813	603,099	624,385	645,671	659,861	681,147	709,528	7,095,280
24. Annualized kW by Mo. -Year 1 @ 50%	L. 13 "kW" * 0.5	474	474	474	474	474	474	474	474	474	474	474	474	474
25.														
26. Monthly Incremental kWh	L. 23 ÷ 12 Mo.	39,615	41,389	43,163	44,937	46,711	48,484	50,258	52,032	53,806	54,988	56,762	59,127	591,273
27. Monthly Cumulative kWh - Current Yr	Sum of L. 26	39,615	81,004	124,167	169,104	215,815	264,299	314,557	366,589	420,395	475,384	532,146	591,273	3,594,351
28.														
29. Monthly Incremental kW	L. 24 ÷ 12 Mo.	39.46	39.46	39.46	39.46	39.46	39.46	39.46	39.46	39.46	39.46	39.46	39.46	473.56
30. Monthly Cumulative kW - Current Yr	Sum of L. 29	39.46	78.93	118.39	157.85	197.32	236.78	276.24	315.71	355.17	394.63	434.10	473.56	-
31.														
32.														
33. Cumulative Annualized kWh by Mo.	Sum L. 17 + L. 23	675,811	1,381,882	2,118,213	2,884,804	3,681,655	4,508,767	5,366,138	6,253,770	7,171,662	8,109,728	9,078,054	10,086,726	
34. Percent of Plan Savings	(L. 17 + L. 23) ÷ L. 14 '	6.7%	7.0%	7.3%	7.6%	7.9%	8.2%	8.5%	8.8%	9.1%	9.3%	9.6%	10.0%	

NOTES:

(1) LBR associated with residential peak reductions is not applicable. LBR associated with C&I peak reductions was calculated as defined in Appendix A of the New Hampshire Energy Efficiency Calculation of Lost Base I For Measures installed beginning in 2019 issued by the NH Lost Base Revenue (LBR) Working Group, Docket No. DE 17-136.

Unitil Energy System, Inc.
Lost Base Revenue Reconciliation
January 1, 2018 to December 31, 2018

Unitil Energy Systems, Inc.
NHPUC Docket No. DE 17-136
Attachment H3 (2019 Update)
Page 6 of 11

Line	Description	Recast Jan-18	Recast Feb-18	Recast Mar-18	Recast Apr-18	Recast May-18	Recast Jun-18	Forecast Jul-18	Forecast Aug-18	Forecast Sep-18	Forecast Oct-18	Forecast Nov-18	Forecast Dec-18	2018 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N
1	Beginning Balance	\$ 227	\$ (986)	\$ (8,107)	\$ (11,900)	\$ (12,057)	\$ (11,088)	\$ (11,106)	\$ (12,448)	\$ (14,286)	\$ (8,818)	\$ (125)	\$ 13,571	
2	Lost Revenues	\$ 22,579	\$ 24,341	\$ 26,177	\$ 28,090	\$ 28,846	\$ 30,826	\$ 32,877	\$ 35,002	\$ 37,198	\$ 39,443	\$ 41,761	\$ 44,175	391,315
	REVENUE													
3	Revenue (\$)	\$ 23,791	\$ 31,447	\$ 29,934	\$ 28,203	\$ 27,833	\$ 30,802	\$ 34,172	\$ 36,786	\$ 31,686	\$ 30,731	\$ 28,093	\$ 31,355	364,832
4	Cumulative Over/(Under) Recovery	\$ (985)	\$ (8,093)	\$ (11,864)	\$ (12,013)	\$ (11,044)	\$ (11,065)	\$ (12,401)	\$ (14,232)	\$ (8,773)	\$ (106)	\$ 13,543	\$ 26,390	
	INTEREST													
5	Average Monthly Balance	\$ (379)	\$ (4,539)	\$ (9,986)	\$ (11,957)	\$ (11,551)	\$ (11,077)	\$ (11,753)	\$ (13,340)	\$ (11,530)	\$ (4,462)	\$ 6,709	\$ 19,980	
6	Interest Rate	4.25%	4.25%	4.25%	4.50%	4.50%	4.50%	4.75%	4.75%	4.75%	5.00%	5.00%	5.00%	5.00%
7	Days per Month	31	28	31	30	31	30	31	31	30	31	30	31	365
8	Computed Interest	\$ (1)	\$ (15)	\$ (36)	\$ (44)	\$ (44)	\$ (41)	\$ (47)	\$ (54)	\$ (45)	\$ (19)	\$ 28	\$ 85	(234)
9	Ending Balance	\$ (986)	\$ (8,107)	\$ (11,900)	\$ (12,057)	\$ (11,088)	\$ (11,106)	\$ (12,448)	\$ (14,286)	\$ (8,818)	\$ (125)	\$ 13,571	\$ 26,475	

Line 1: Prior period ending balance

Line 2: Page 5, Line 12

Line 3: Actual revenue through June 2018. Estimated revenue July through December.

Line 4: Line 1 + Line 2 - Line 3

Line 5: (Line 1 + Line 4)/2

Line 6: Prime Rate

Line 8: Line 7 * ((Line 5/# days per year) * Line 9))

Line 9: Line 4 + Line 8

Unitil Energy System, Inc.
Lost Base Revenue Reconciliation
January 1, 2019 to December 31, 2019

Unitil Energy Systems, Inc.
NHPUC Docket No. DE 17-136
Attachment H3 (2019 Update)
Page 7 of 11

Line	Description	Estimate Jan-19	Estimate Feb-19	Estimate Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Estimate Jul-19	Estimate Aug-19	Estimate Sep-19	Estimate Oct-19	Estimate Nov-19	Estimate Dec-19	2019 Total
	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K	Col. L	Col. M	Col. N
1	Beginning Balance	\$ 26,475	\$ 11,849	\$ 3,344	\$ (532)	\$ (1,008)	\$ 1,779	\$ 4,432	\$ (4,383)	\$ (14,283)	\$ (12,784)	\$ (12,035)	\$ (2,808)	
2	Lost Revenues	\$ 45,134	\$ 46,121	\$ 47,135	\$ 48,175	\$ 49,242	\$ 50,337	\$ 51,458	\$ 52,605	\$ 53,780	\$ 54,973	\$ 56,193	\$ 57,448	612,601
	REVENUE													
3	Revenue (\$)	\$ 59,841	\$ 54,656	\$ 51,016	\$ 48,648	\$ 46,457	\$ 47,696	\$ 60,272	\$ 62,466	\$ 52,226	\$ 54,172	\$ 46,935	\$ 52,258	636,644
4	Cumulative Over/(Under) Recovery	\$ 11,768	\$ 3,315	\$ (538)	\$ (1,005)	\$ 1,777	\$ 4,419	\$ (4,383)	\$ (14,243)	\$ (12,728)	\$ (11,982)	\$ (2,778)	\$ 2,382	
	INTEREST													
5	Average Monthly Balance	\$ 19,121	\$ 7,582	\$ 1,403	\$ (768)	\$ 385	\$ 3,099	\$ 25	\$ (9,313)	\$ (13,505)	\$ (12,383)	\$ (7,406)	\$ (213)	
6	Interest Rate	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
7	Days per Month	31	28	31	30	31	30	31	31	30	31	30	31	365
8	Computed Interest	\$ 81	\$ 29	\$ 6	\$ (3)	\$ 2	\$ 13	\$ 0	\$ (40)	\$ (56)	\$ (53)	\$ (30)	\$ (1)	(51)
9	Ending Balance	\$ 11,849	\$ 3,344	\$ (532)	\$ (1,008)	\$ 1,779	\$ 4,432	\$ (4,383)	\$ (14,283)	\$ (12,784)	\$ (12,035)	\$ (2,808)	\$ 2,381	

Line 1: Prior period ending balance
Line 2: Page 5, Line 12
Line 3: Estimated revenue
Line 4: Line 1 + Line 2 - Line 3
Line 5: (Line 1 + Line 4)/2
Line 6: Prime Rate
Line 8: Line 7 * ((Line 5/# days per year) * Line 9)
Line 9: Line 4 + Line 8

Unitil Energy Systems, Inc.
Calculation of Forecasted Average Distribution Rate for Lost Revenue
Based on Actual Billing Determinants for January - December 2017 and Distribution Rates effective May 1, 2018

	(1)	(2)	(3)	(4)	(5)	(6) = (1) / (4)	(7) = (2) / (5)	(8) = (3) / (5)
	<u>Revenue*</u>			<u>Units</u>				
<u>Rate Class</u>	<u>Demand Charges</u>	<u>kWh Charges</u>	<u>Total Demand and kWh Charges</u>	<u>Delivery kW</u>	<u>Delivery kWh</u>	<u>Average Distribution Rate \$/kW</u>	<u>Average Distribution Rate \$/kWh^(a)</u>	<u>Average Distribution Rate \$/kWh^(b)</u>
1 Residential D	\$ -	\$ 17,131,066	\$ 17,131,066	-	484,338,873	N/A	N/A	\$ 0.03537
2 Regular General G2	\$ 13,997,246	\$ 165,112	\$ 14,162,358	1,341,173	326,470,379	10.44	\$ 0.00051	\$ 0.04338
3 Large General Service Rate G1	<u>\$ 7,615,522</u>	<u>\$ -</u>	<u>\$ 7,615,522</u>	<u>1,032,033</u>	<u>351,603,664</u>	<u>7.38</u>	<u>\$ -</u>	<u>\$ 0.02166</u>
4 Commercial and Industrial	\$ 21,612,769	\$ 165,112	\$ 21,777,881	2,373,206	678,074,043	\$ 9.11	\$ 0.00024	\$ 0.03212

Note: See page 10 for details.

* Revenues include demand charges and kWh charges only.
Customer, meter and per luminaire charges are excluded.

(a) For 2019 C&I Savings.

(b) For 2017 and 2018 C&I Savings (in 2019 calculation).

Bill Impacts of Changes in System Benefits Charge - Unitil Energy Systems, Inc.

	2018	2019
System Benefits Charge (\$/kWh)	\$ 0.00456	0.00555
<u>Bill per month, including UES Default Service Charge</u>		
Residential Rate R (625 kWh/month)	\$ 108.04	\$ 108.66
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)	\$ 1,477.52	\$ 1,487.44
<u>Change from previous rate level - \$ per month</u>		
Residential Rate R (625 kWh/month)		\$ 0.62
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)		\$ 9.92
<u>Change from previous rate level - %</u>		
Residential Rate R (625 kWh/month)		0.6%
General Service Rate G, three-phase service (40 kW, 10,000 kWh/month)		0.7%

Unitil Energy Systems, Inc.
Calculation of Distribution Revenue at the Rate Level Effective January 1, 2017 - December 31, 2017
Based on Billing Determinants for the Twelve Months Ending December 31, 2017

Unitil Energy Systems, Inc.
NHPUC Docket No. DE 17-136
Attachment H3 (2019 Update)
Page 10 of 11

Rate Class	Customer Group		(a)	(b)	(c)			
			5/1/2018 Monthly Distribution Charge (1)	Jan - Dec Billing Determinants (2)	Calculated Revenue = (a) X (b)			
					Customer/ Meter/ Luminaire	Demand	kWh	Total
Residential Rate R	Standard Rate	Customer Charge	\$ 16.12	786,611	\$ 12,680,169			
		All kWh	\$ 0.03537	484,338,873		\$ 17,131,066	\$ 29,811,235	
Total Rate R		Customers		786,611				
		Meters		n/a				
		KWH		484,338,873				
		Revenue		\$ 12,680,169	\$ -	\$ 17,131,066	\$ 29,811,235	
General Rate G2	Standard Rate	Customer Charge	\$ 29.02	122,372	\$ 3,551,235			
		Demand charge (All KW)	\$ 10.45	1,341,173		\$ 14,015,260		
		All KWH	\$ -	320,931,860			\$ -	
		Transformer Ownership Credit, G2	\$ (0.50000)	36,028		\$ (18,014)		\$ 17,548,482
	G2 - kWh Meter	Customer Charge	\$ 18.27	5,062	\$ 92,483			
		All KWH	\$ 0.00878	489,369			\$ 4,297	\$ 96,779
	QR Water Heating and/or Space Heat	Customer Charge	\$ 9.67	3,219	\$ 31,128			
		All KWH	\$ 0.03185	5,049,150			\$ 160,815	\$ 191,943
	Total Rate G2		Customers		130,653			
Meters				n/a				
Billing demand				1,341,173				
KWH				326,470,379				
		Revenue		\$ 3,674,846	\$ 13,997,246	\$ 165,112	\$ 17,837,204	
Large General Rate G1	Standard Rate	Customer Charge Secondary Voltage	\$ 161.23	1,501	\$ 242,006			
		Customer Charge Primary Voltage	\$ 85.99	390	\$ 33,536			
		All kVA	\$ 7.55	1,032,033		\$ 7,791,851		
		All KWH	\$ -	351,603,664			\$ -	
		Transformer Ownership Credit, G1	\$ (0.50000)	352,657		\$ (176,328)		\$ 7,891,065
Total Rate G1		Customers Secondary Voltage		1,501				
		Customers Primary Voltage		390				
		Meters		n/a				
		Billing demand		1,032,033				
		KWH		351,603,664				
		Revenue		\$ 275,542	\$ 7,615,522	\$ -	\$ 7,891,065	

Outdoor Lighting Rate OL

100	Mercury Vapor Street	\$13.20	16,195	\$	213,769
175	Mercury Vapor Street	\$15.66	837	\$	13,112
250	Mercury Vapor Street	\$17.75	887	\$	15,735
400	Mercury Vapor Street	\$21.13	1,608	\$	33,978
1000	Mercury Vapor Street	\$41.95	24	\$	1,007
250	Mercury Vapor Flood	\$18.90	748	\$	14,142
400	Mercury Vapor Flood	\$22.62	1,140	\$	25,785
1000	Mercury Vapor Flood	\$37.48	182	\$	6,823
100	Mercury Vapor Power Bracket	\$13.33	4,504	\$	60,038
175	Mercury Vapor Power Bracket	\$14.79	651	\$	9,630
50	Sodium Vapor Street	\$13.44	42,395	\$	569,792
100	Sodium Vapor Street	\$15.13	1,289	\$	19,508
150	Sodium Vapor Street	\$15.19	4,293	\$	65,217
250	Sodium Vapor Street	\$19.03	13,711	\$	260,923
400	Sodium Vapor Street	\$23.98	2,945	\$	70,610
1000	Sodium Vapor Street	\$41.42	1,705	\$	70,611
150	Sodium Vapor Flood	\$17.51	2,908	\$	50,911
250	Sodium Vapor Flood	\$20.64	3,904	\$	80,586
400	Sodium Vapor Flood	\$23.45	4,860	\$	113,976
1000	Sodium Vapor Flood	\$41.78	2,683	\$	112,106
50	Sodium Vapor Power Bracket	\$12.44	1,382	\$	17,197
100	Sodium Vapor Power Bracket	\$13.96	859	\$	11,997
175	Metal Halide Street	\$19.79	24	\$	475
250	Metal Halide Street	\$21.52	-	\$	-
400	Metal Halide Street	\$22.32	-	\$	-
175	Metal Halide Flood	\$22.87	-	\$	-
250	Metal Halide Flood	\$24.69	-	\$	-
400	Metal Halide Flood	\$24.73	-	\$	-
1000	Metal Halide Flood	\$32.03	-	\$	-
175	Metal Halide Power Bracket	\$18.52	-	\$	-
250	Metal Halide Power Bracket	\$19.69	-	\$	-
400	Metal Halide Power Bracket	\$21.05	456	\$	9,599
42	LED Area Light Fixture	\$13.08	-	\$	-
57	LED Area Light Fixture	\$13.13	-	\$	-
25	LED Cobra Head Fixture	\$13.03	-	\$	-
88	LED Cobra Head Fixture	\$13.22	-	\$	-
108	LED Cobra Head Fixture	\$13.28	-	\$	-
193	LED Cobra Head Fixture	\$13.54	-	\$	-
123	LED Flood Light Fixture	\$13.33	-	\$	-
194	LED Flood Light Fixture	\$13.54	-	\$	-
297	LED Flood Light Fixture	\$13.85	-	\$	-

Total Rate OL

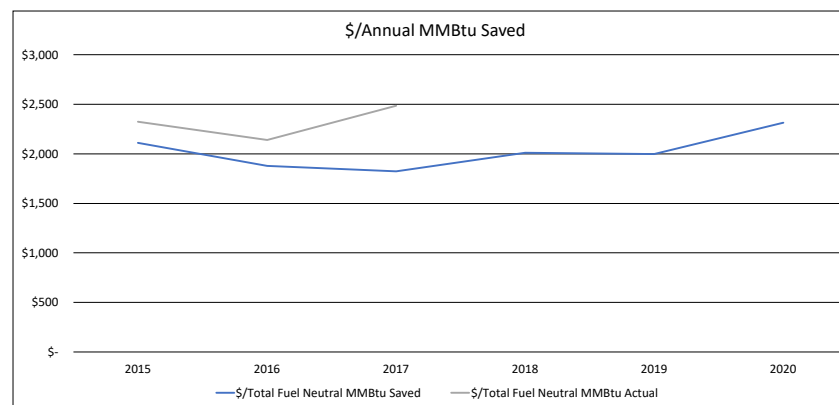
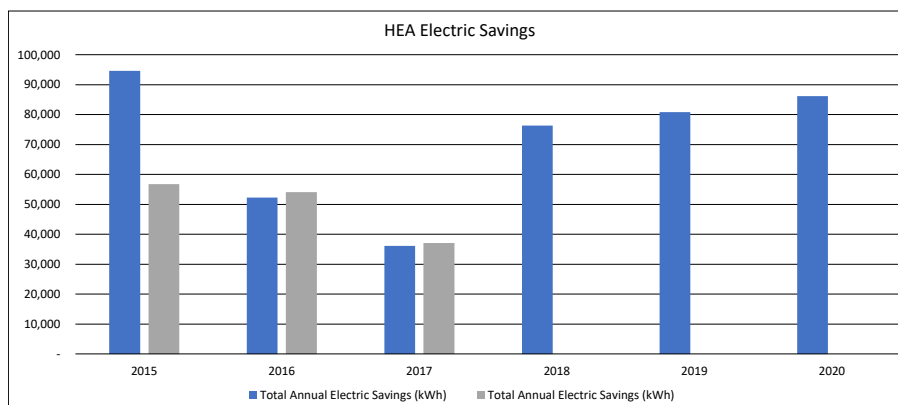
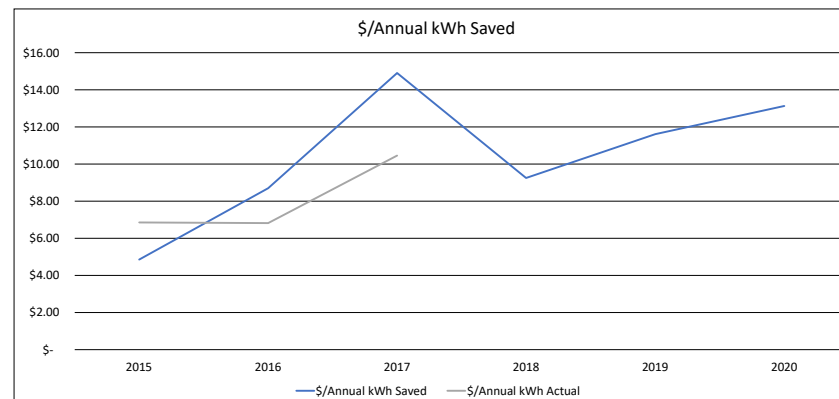
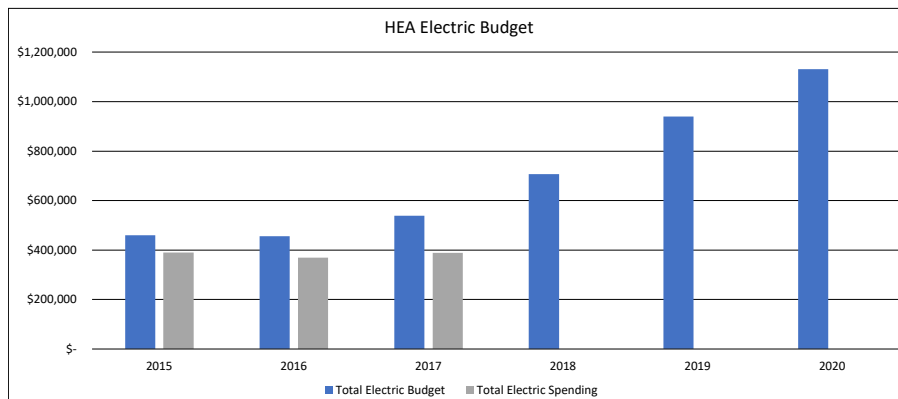
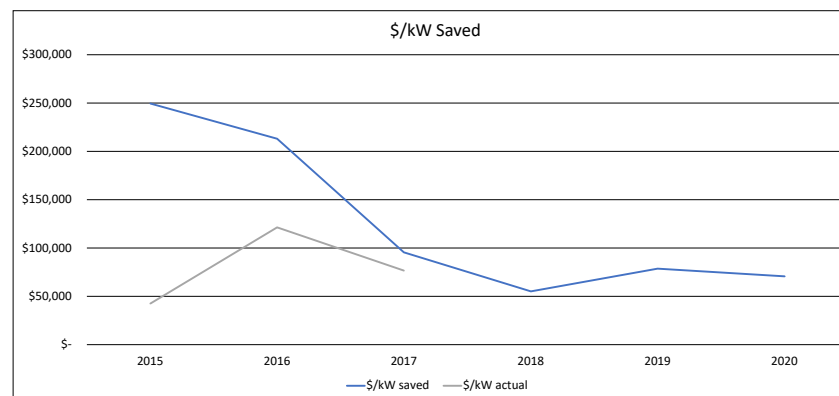
Luminaires			110,191		
Customers		n/a			
Meters		-			
KWH	\$	-	8,073,290		
Revenue				\$	1,847,525
				\$	-
				\$	1,847,525

Total Retail

Customers		918,765			
Meters		n/a			
Luminaires		110,191			
Billing Demand		2,373,206			
KWH		1,170,486,207			
Revenue	\$	16,630,558	\$	23,460,294	\$
				\$	17,296,178
				\$	57,387,030

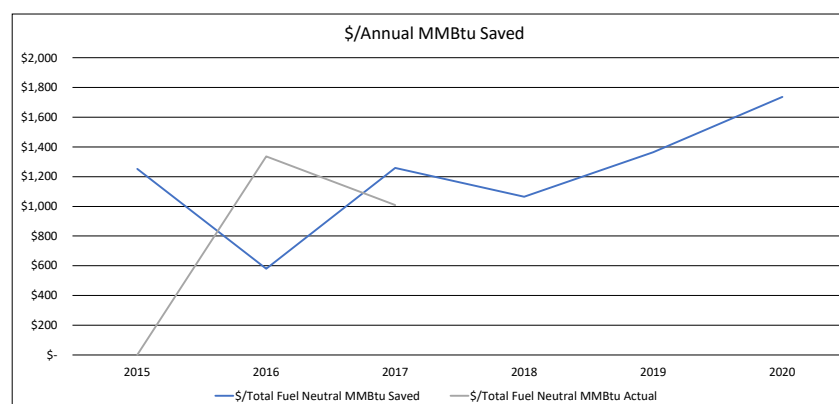
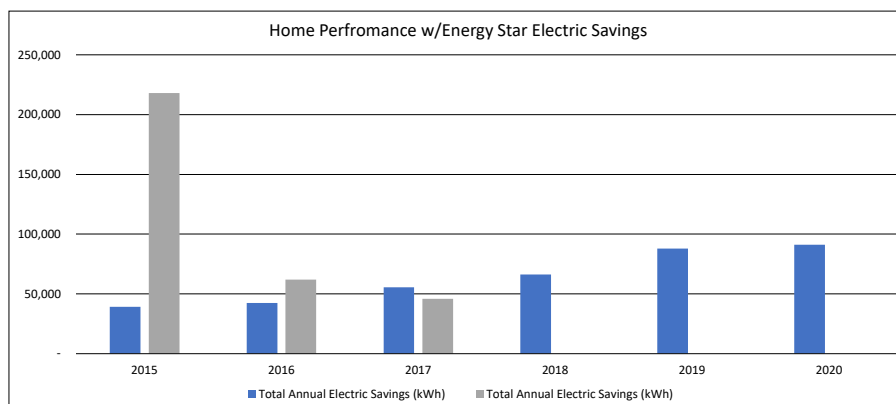
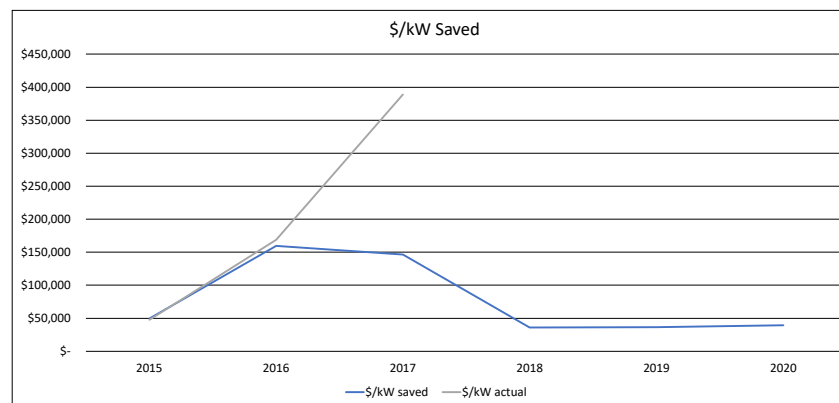
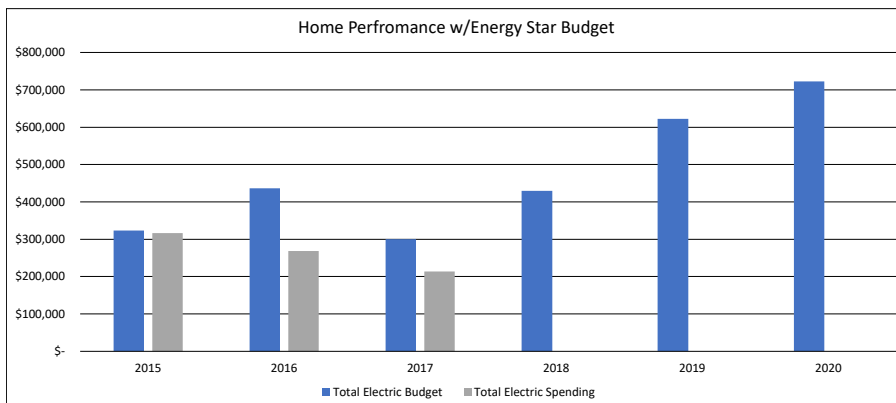
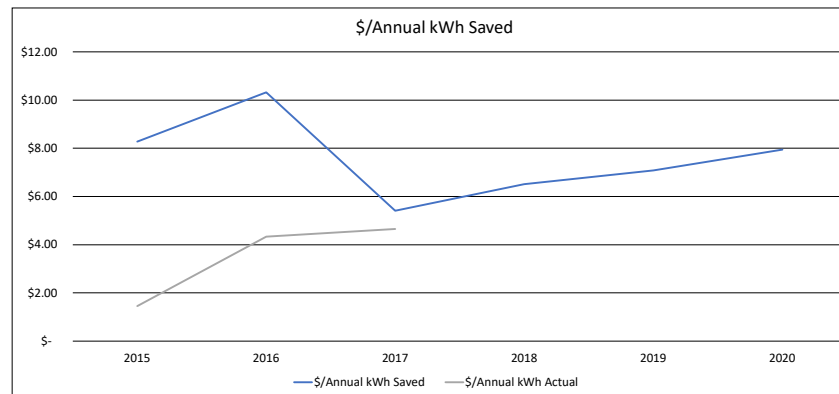
Home Energy Assistance

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 459,624.42	\$ 455,327.00	\$ 538,873.80	\$ 706,636.00	\$ 939,446.04	\$ 1,131,599.00
	Total Annual Electric Savings (kWh)	94,642.13	52,269.64	36,129.45	76,371.20	80,818.74	86,200.00
	\$/Annual kWh Saved	\$ 4.86	\$ 8.71	\$ 14.92	\$ 9.25	\$ 11.62	\$ 13.13
2)	Total Electric Budget	\$ 459,624.42	\$ 455,327.00	\$ 538,873.80	\$ 706,636.00	\$ 939,446.04	\$ 1,131,599.00
	Total kW saved	1.84	2.14	5.65	12.81	11.96	16.00
	\$/kW saved	\$ 249,518.52	\$ 212,854.29	\$ 95,350.21	\$ 55,141.71	\$ 78,572.96	\$ 70,724.94
3)	Total Electric Budget	\$ 2,661,464.00	\$ 2,751,286.00	\$ 3,450,394.00	\$ 4,611,266.00	\$ 5,960,136.00	\$ 7,927,639.00
	Total Fuel Neutral MMBtu Saved	1,261.63	1,465.79	1,892.00	2,293.60	2,981.93	3,423.50
	\$/Total Fuel Neutral MMBtu Saved	\$ 2,109.55	\$ 1,876.99	\$ 1,823.68	\$ 2,010.49	\$ 1,998.75	\$ 2,315.65
Actuals		2015	2016	2017			
1)	Total Electric Spending	\$ 389,541.09	\$ 369,329.15	\$ 388,231.12			
	Total Annual Electric Savings (kWh)	56,811.45	54,123.54	37,139.55			
	\$/Annual kWh Actual	\$ 6.86	\$ 6.82	\$ 10.45			
2)	Total Electric Spending	\$ 389,541.09	\$ 369,329.15	\$ 388,231.12			
	Total kW saved actual	9.19	3.05	5.07			
	\$/kW actual	\$ 42,400.58	\$ 121,244.48	\$ 76,538.42			
3)	Total Electric Spending	\$ 2,602,622.35	\$ 2,630,799.37	\$ 2,630,800.37			
	Total Fuel Neutral MMBtu Actual	1,118.95	1,228.97	1,058.07			
	\$/Total Fuel Neutral MMBtu Actual	\$ 2,325.96	\$ 2,140.65	\$ 2,486.41			



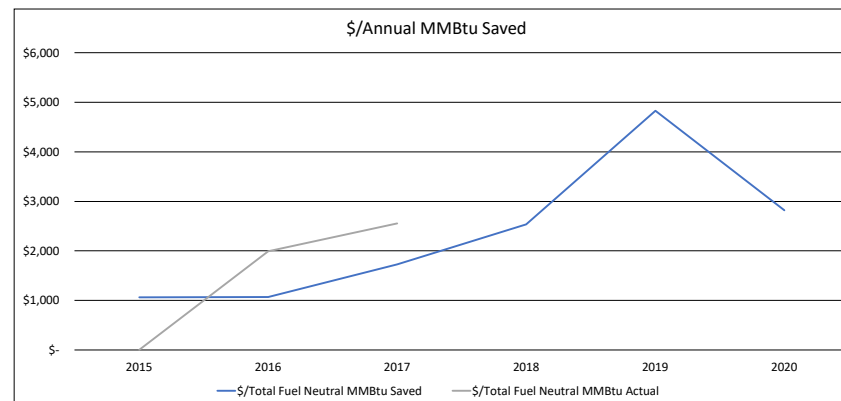
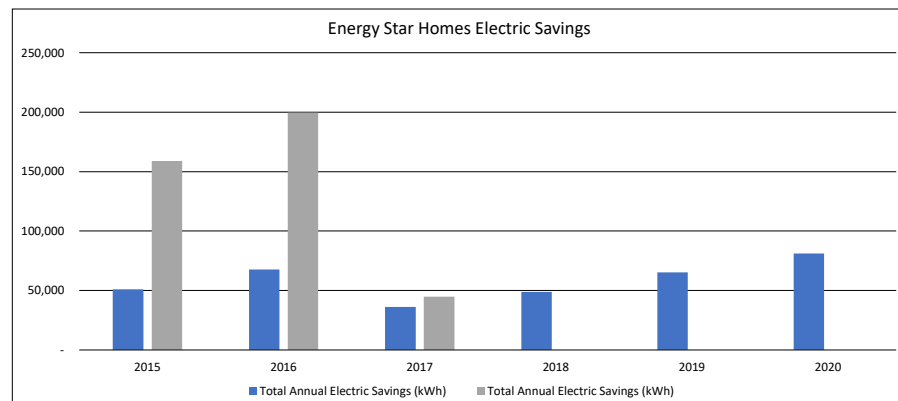
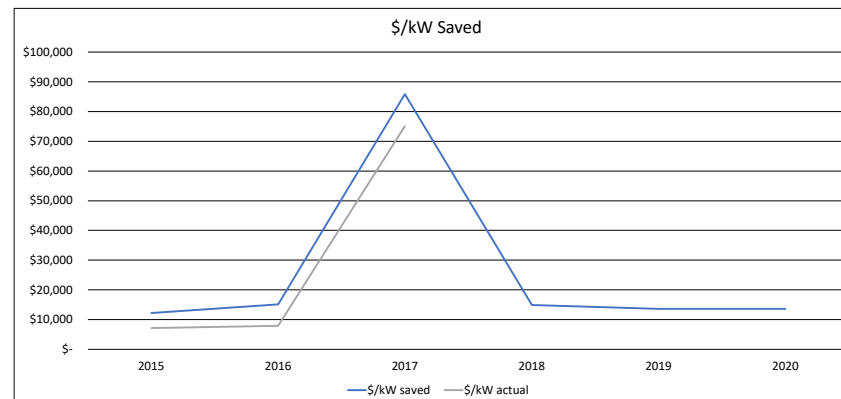
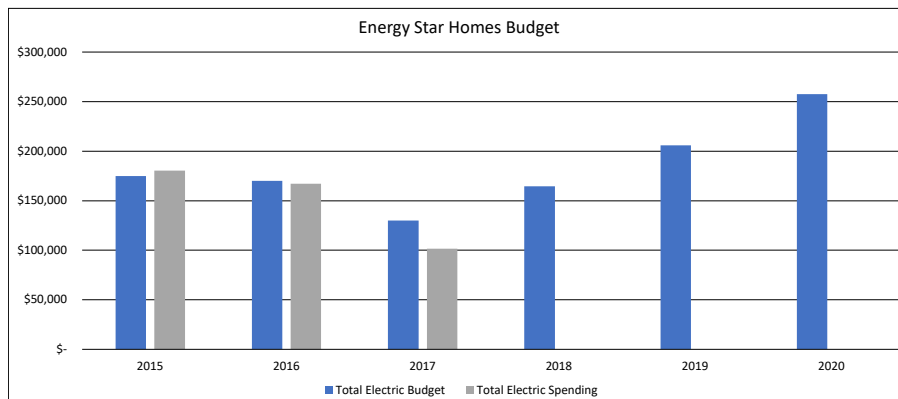
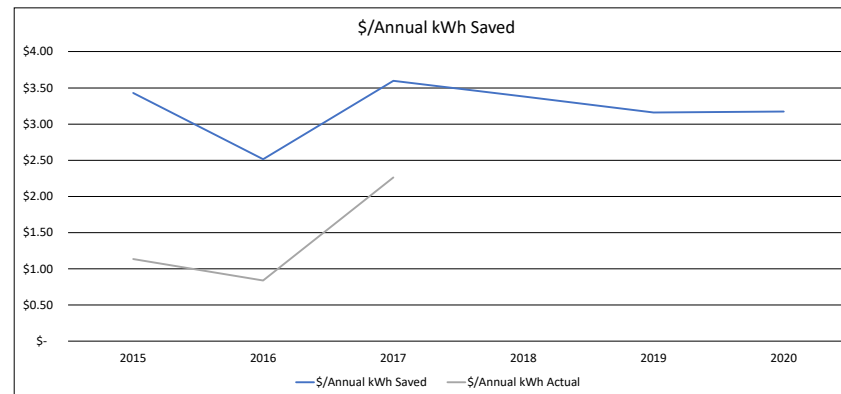
Home Performance w/Energy Star

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 322,989.57	\$ 436,630.68	\$ 299,999.99	\$ 429,999.86	\$ 621,999.65	\$ 722,540.00
	Total Annual Electric Savings (kWh)	39,052.59	42,288.52	55,484.65	66,052.08	87,859.50	91,000.00
	\$/Annual kWh Saved	\$ 8.27	\$ 10.33	\$ 5.41	\$ 6.51	\$ 7.08	\$ 7.94
2)	Total Electric Budget	\$ 322,989.57	\$ 436,630.68	\$ 299,999.99	\$ 429,999.86	\$ 621,999.65	\$ 722,540.00
	Total kW saved	6.53	2.73	2.05	11.94	17.10	18.30
	\$/kW saved	\$ 49,489.06	\$ 159,701.47	\$ 146,686.52	\$ 36,008.82	\$ 36,374.50	\$ 39,483.06
3)	Total Electric Budget	\$ 2,203,268.95	\$ 1,860,400.33	\$ 2,161,078.61	\$ 2,415,741.54	\$ 3,935,216.60	\$ 5,890,311.74
	Total Fuel Neutral MMBtu Saved	1,759.57	3,210.97	1,717.60	2,270.40	2,885.70	3,391.20
	\$/Total Fuel Neutral MMBtu Saved	\$ 1,252.16	\$ 579.39	\$ 1,258.20	\$ 1,064.02	\$ 1,363.70	\$ 1,736.94
Actuals		2015	2016	2017			
1)	Total Electric Spending	\$ 316,628.56	\$ 268,193.38	\$ 213,461.99			
	Total Annual Electric Savings (kWh)	218,041.56	61,812.00	45,885.13			
	\$/Annual kWh Actual	\$ 1.45	\$ 4.34	\$ 4.65			
2)	Total Electric Spending	\$ 316,628.56	\$ 268,193.38	\$ 213,461.99			
	Total kW saved actual	6.63	1.59	0.55			
	\$/kW actual	\$ 47,749.41	\$ 168,737.76	\$ 389,003.51			
3)	Total Electric Spending	\$ 2,349,224.06	\$ 1,599,052.72	\$ 1,599,052.72			
	Total Fuel Neutral MMBtu Actual	1,757.81	1,583.90	1,212.18			
	\$/Total Fuel Neutral MMBtu Actual	\$ 1,336.45	\$ 1,009.57	\$ 1,319.15			



Energy Star Homes

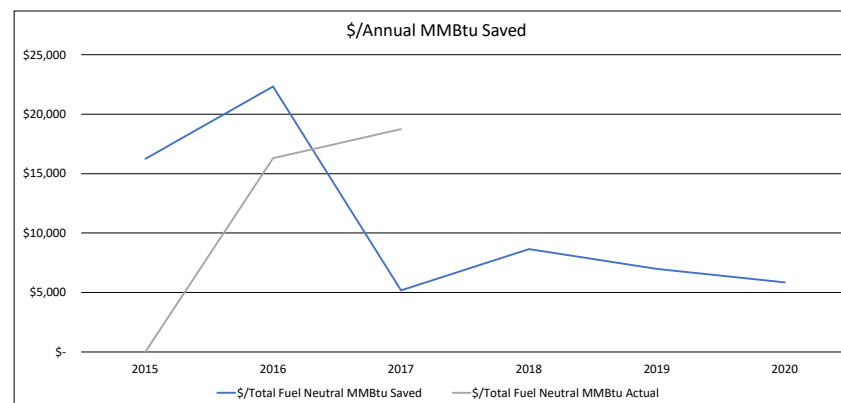
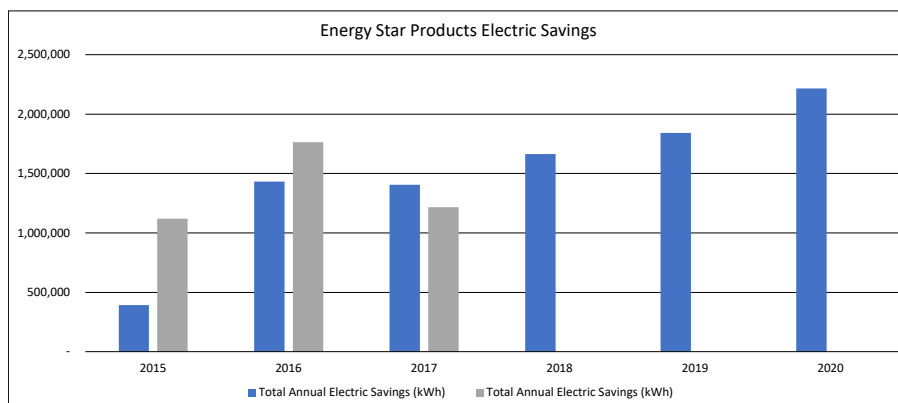
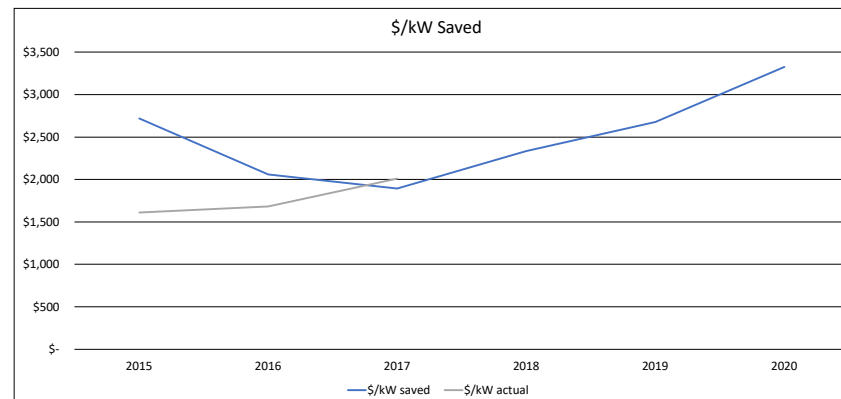
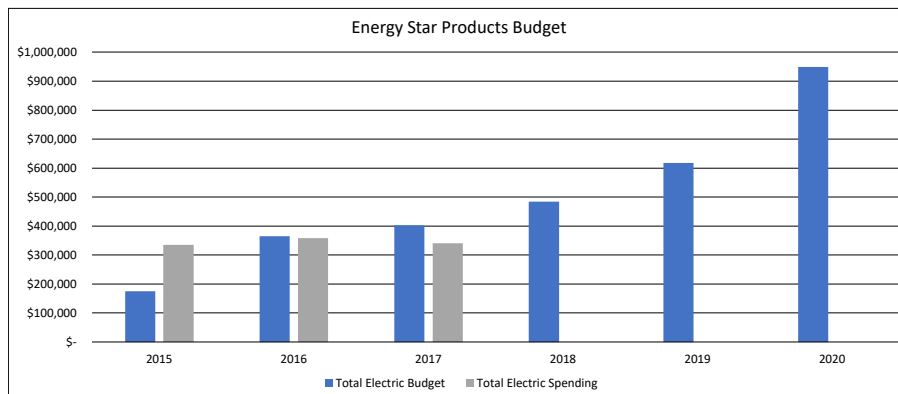
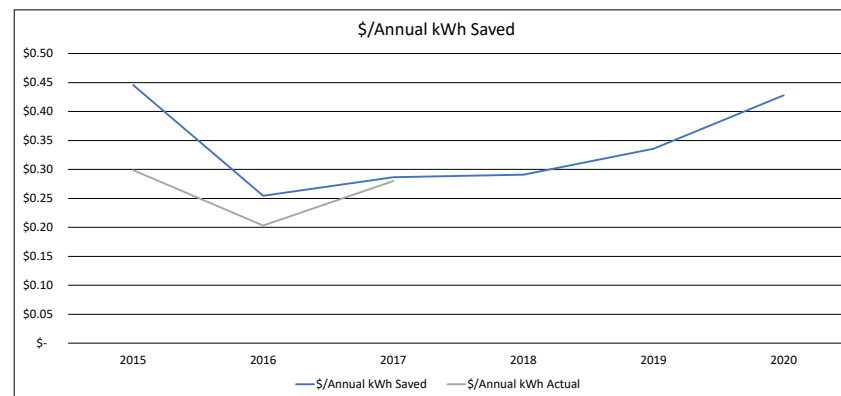
Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 175,000.00	\$ 170,000.00	\$ 130,000.28	\$ 164,703.66	\$ 205,783.48	\$ 257,650.00
	Total Annual Electric Savings (kWh)	51,012.02	67,578.85	36,135.83	48,723.82	65,092.82	81,200.00
	\$/Annual kWh Saved	\$ 3.43	\$ 2.52	\$ 3.60	\$ 3.38	\$ 3.16	\$ 3.17
2)	Total Electric Budget	\$ 175,000.00	\$ 170,000.00	\$ 130,000.28	\$ 164,703.66	\$ 205,783.48	\$ 257,650.00
	Total kW saved	14.34	11.26	1.51	11.06	15.11	19.00
	\$/kW saved	\$ 12,206.20	\$ 15,096.93	\$ 85,871.19	\$ 14,896.90	\$ 13,620.32	\$ 13,560.53
3)	Total Electric Budget	\$ 1,006,618.95	\$ 957,269.48	\$ 1,147,210.86	\$ 1,603,217.35	\$ 2,105,505.53	\$ 2,889,907.63
	Total Fuel Neutral MMBtu Saved	951.23	894.92	665.27	632.42	436.04	1,024.80
	\$/Total Fuel Neutral MMBtu Saved	\$ 1,058.23	\$ 1,069.67	\$ 1,724.43	\$ 2,535.05	\$ 4,828.75	\$ 2,819.97
Actuals		2015	2016	2017			
1)	Total Electric Spending	\$ 180,414.15	\$ 167,126.28	\$ 101,427.40			
	Total Annual Electric Savings (kWh)	159,006.65	199,654.84	44,813.33			
	\$/Annual kWh Actual	\$ 1.13	\$ 0.84	\$ 2.26			
2)	Total Electric Spending	\$ 180,414.15	\$ 167,126.28	\$ 101,427.40			
	Total kW saved actual	25.18	21.15	1.35			
	\$/kW actual	\$ 7,166.00	\$ 7,901.61	\$ 75,145.19			
3)	Total Electric Spending	\$ 1,006,669.85	\$ 1,309,689.49	\$ 1,309,689.49			
	Total Fuel Neutral MMBtu Actual	503.05	512.40	728.51			
	\$/Total Fuel Neutral MMBtu Actual	\$ 1,989.21	\$ 2,555.99	\$ 1,797.77			



Energy Star Products

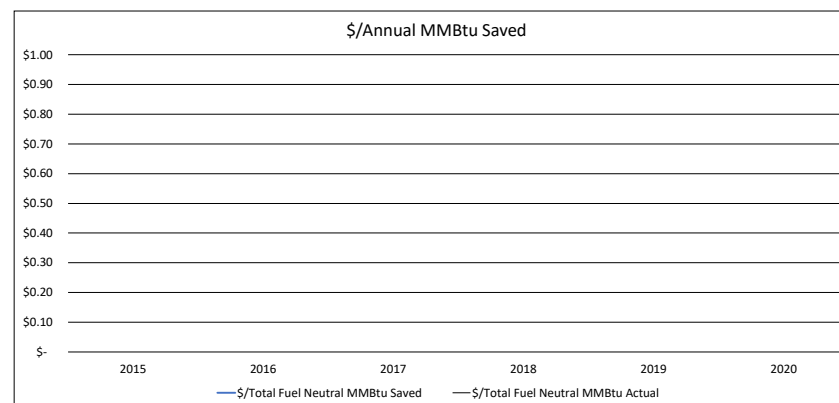
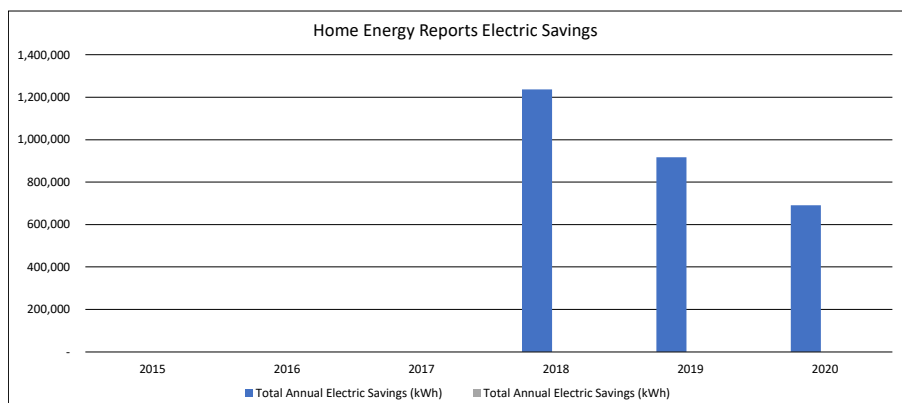
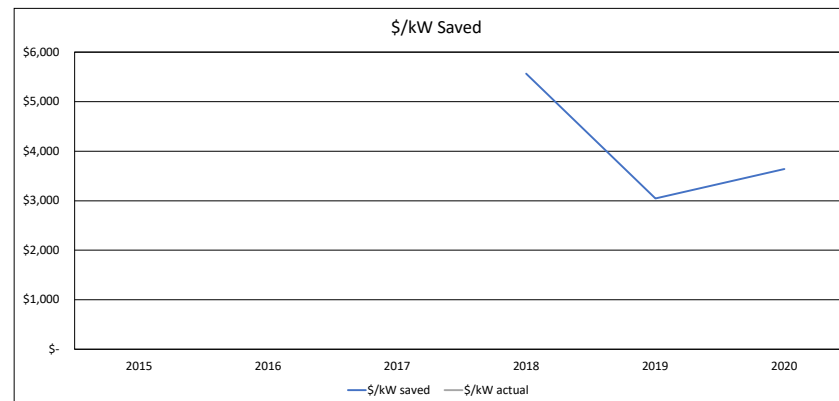
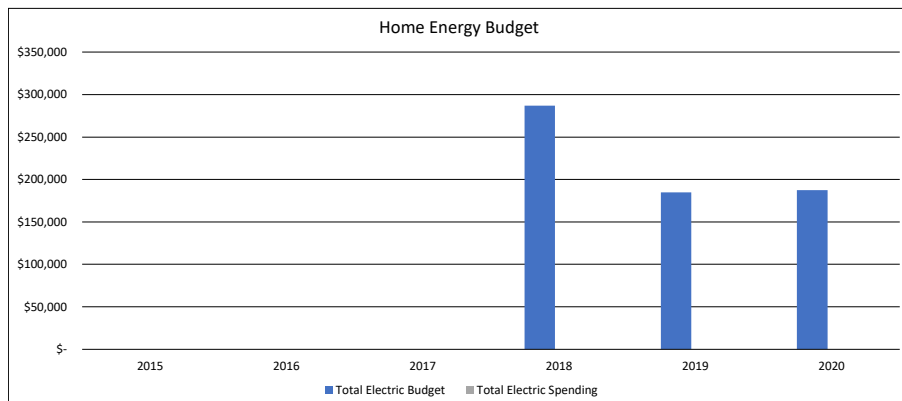
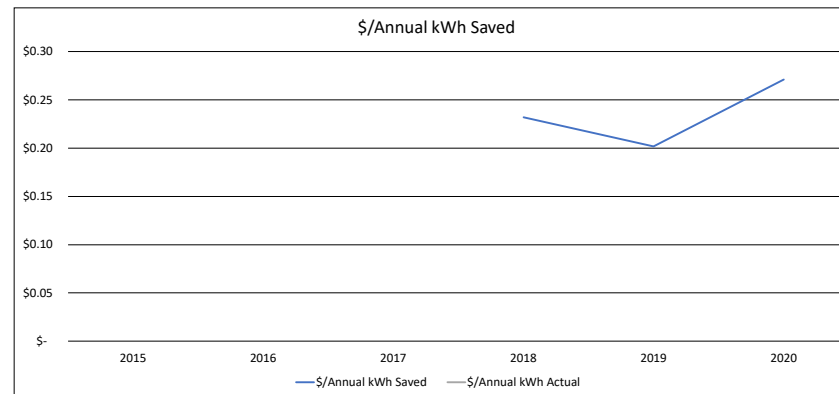
Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 175,000.00	\$ 365,000.00	\$ 402,825.70	\$ 484,188.44	\$ 617,955.09	\$ 949,204.00
	Total Annual Electric Savings (kWh)	392,730.10	1,433,378.24	1,406,463.34	1,662,668.24	1,840,674.95	2,215,800.00
	\$/Annual kWh Saved	\$ 0.45	\$ 0.25	\$ 0.29	\$ 0.29	\$ 0.34	\$ 0.43
2)	Total Electric Budget	\$ 175,000.00	\$ 365,000.00	\$ 402,825.70	\$ 484,188.44	\$ 617,955.09	\$ 949,204.00
	Total kW saved	64.33	177.23	212.54	207.29	230.88	285.40
	\$/kW saved	\$ 2,720.45	\$ 2,059.49	\$ 1,895.31	\$ 2,335.76	\$ 2,676.48	\$ 3,325.87
3)	Total Electric Budget	\$ 2,397,437.10	\$ 1,853,017.79	\$ 2,044,263.55	\$ 3,235,076.39	\$ 3,383,946.99	\$ 3,767,565.68
	Total Fuel Neutral MMBtu Saved	147.48	82.97	394.63	373.88	485.14	645.10
	\$/Total Fuel Neutral MMBtu Saved	\$ 16,256.21	\$ 22,332.83	\$ 5,180.18	\$ 8,652.72	\$ 6,975.20	\$ 5,840.28

Actuals		2015	2016	2017
1)	Total Electric Spending	\$ 334,785.82	\$ 358,236.26	\$ 340,904.97
	Total Annual Electric Savings (kWh)	1,120,563.80	1,764,104.40	1,216,379.86
	\$/Annual kWh Actual	\$ 0.30	\$ 0.20	\$ 0.28
2)	Total Electric Spending	\$ 334,785.82	\$ 358,236.26	\$ 340,904.97
	Total kW saved actual	208.01	212.96	169.71
	\$/kW actual	\$ 1,609.48	\$ 1,682.16	\$ 2,008.79
3)	Total Electric Spending	\$ 2,159,065.92	\$ 1,799,457.82	\$ 1,799,457.82
	Total Fuel Neutral MMBtu Actual	132.37	95.90	231.34
	\$/Total Fuel Neutral MMBtu Actual	\$ 16,310.77	\$ 18,763.68	\$ 7,778.55



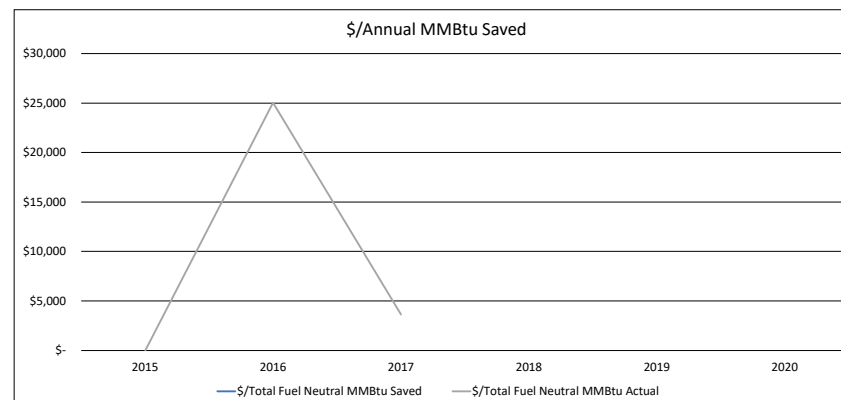
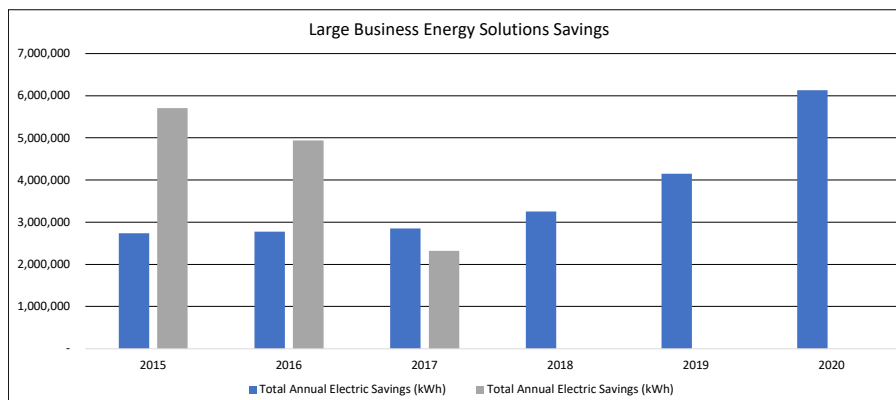
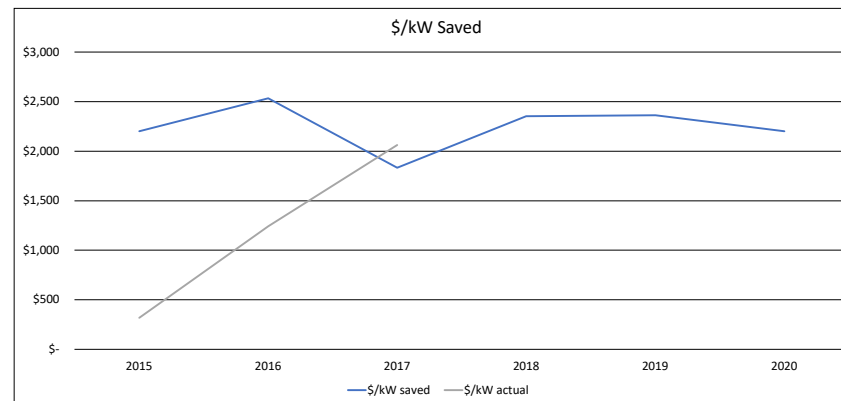
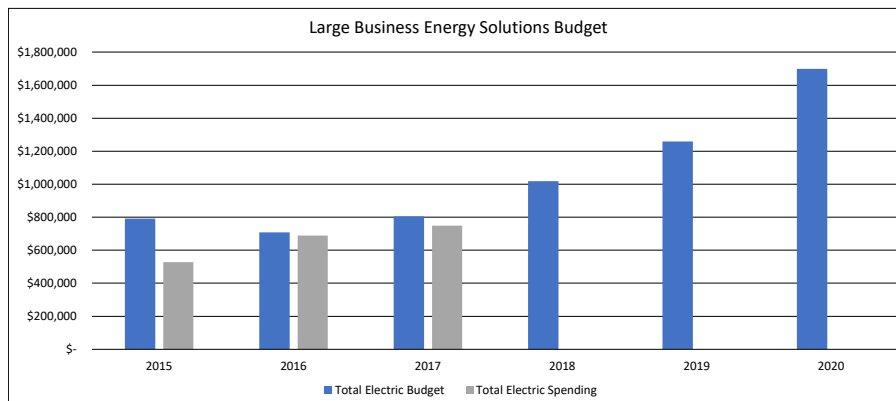
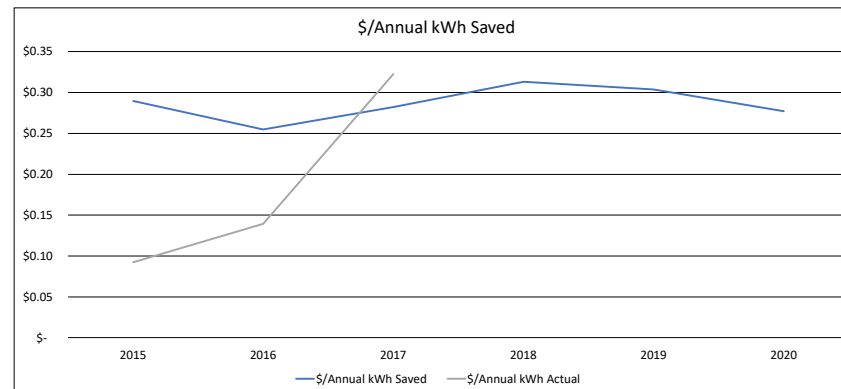
Home Energy Reports

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget				\$ 286,984.00	\$ 184,985.00	\$ 187,500.00
	Total Annual Electric Savings (kWh)				1,237,012.99	917,000.00	691,600.00
	\$/Annual kWh Saved				\$ 0.23	\$ 0.20	\$ 0.27
2)	Total Electric Budget				\$ 286,984.00	\$ 184,985.00	\$ 187,500.00
	Total kW saved				51.54	60.71	51.50
	\$/kW saved				\$ 5,567.94	\$ 3,046.80	\$ 3,640.78
3)	Total Electric Budget	\$ 1,529,834.00	\$ 1,755,680.67	\$ 2,600,000.00	\$ 2,675,775.15	\$ 5,933,600.00	\$ 11,900,800.00
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						
Actuals		2015	2016	2017			
1)	Total Electric Spending						
	Total Annual Electric Savings (kWh)						
	\$/Annual kWh Actual						
2)	Total Electric Spending						
	Total kW saved actual						
	\$/kW actual						
3)	Total Electric Spending	\$ 316,754.26	\$ 231,662.02	\$ 231,662.02			
	Total Fuel Neutral MMBtu Actual						
	\$/Total Fuel Neutral MMBtu Actual						



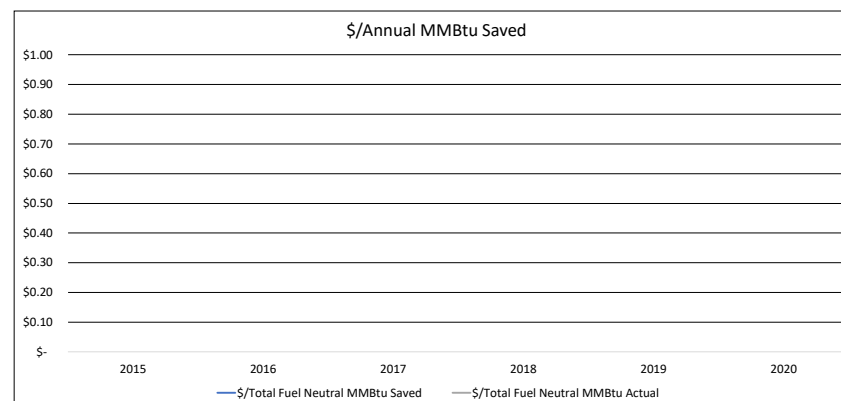
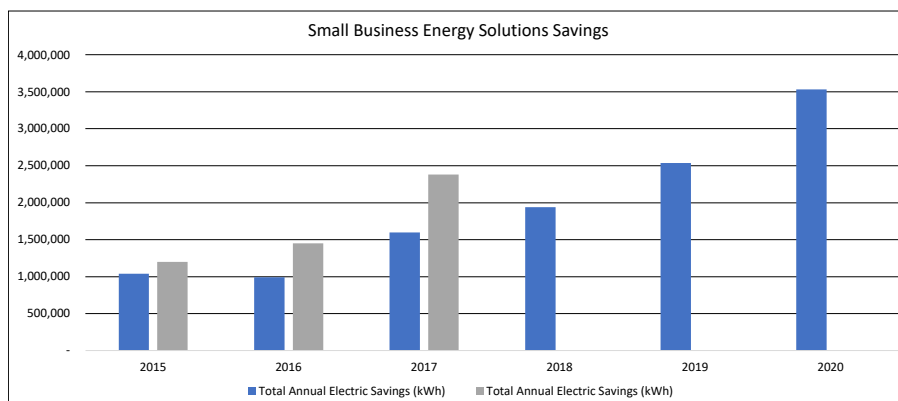
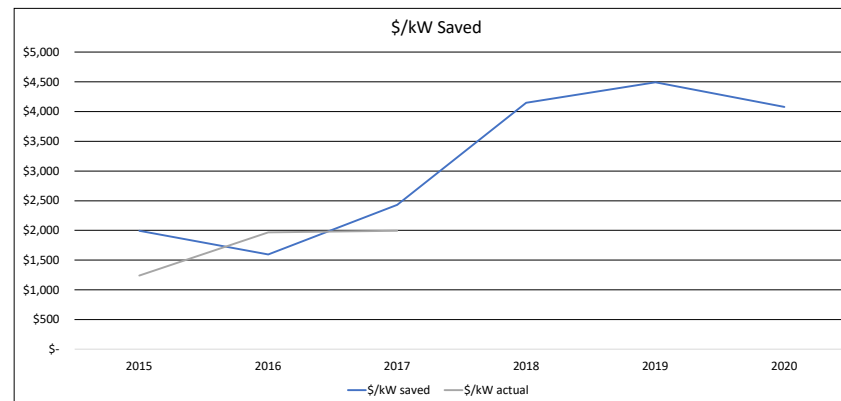
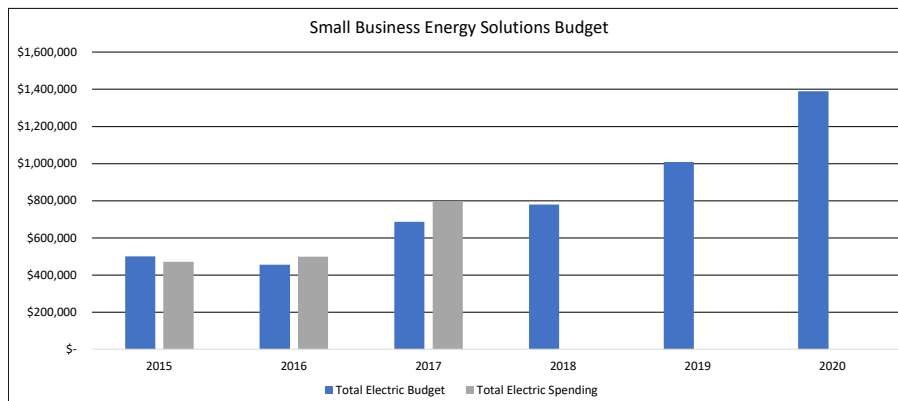
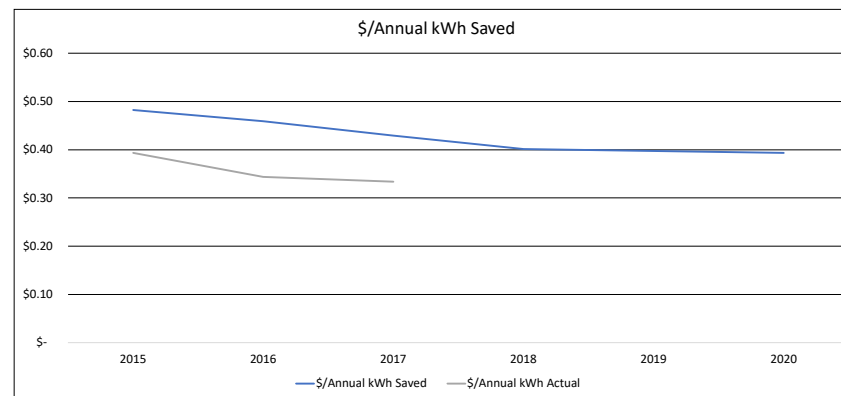
Large Business Energy Solutions

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 792,417.96	\$ 708,103.97	\$ 804,855.80	\$ 1,018,000.00	\$ 1,259,359.06	\$ 1,698,407.00
	Total Annual Electric Savings (kWh)	2,733,709.43	2,778,532.48	2,851,063.83	3,251,317.98	4,148,221.09	6,129,100.00
	\$/Annual kWh Saved	\$ 0.29	\$ 0.25	\$ 0.28	\$ 0.31	\$ 0.30	\$ 0.28
2)	Total Electric Budget	\$ 792,417.96	\$ 708,103.97	\$ 804,855.80	\$ 1,018,000.00	\$ 1,259,359.06	\$ 1,698,407.00
	Total kW saved	360.05	279.38	439.10	432.43	532.63	771.70
	\$/kW saved	\$ 2,200.88	\$ 2,534.56	\$ 1,832.96	\$ 2,354.16	\$ 2,364.44	\$ 2,200.86
3)	Total Electric Budget	\$ 4,858,386.57	\$ 4,704,790.31	\$ 5,257,680.00	\$ 7,291,994.08	\$ 9,477,437.58	\$ 12,710,056.63
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						
Actuals		2015	2016	2017			
1)	Total Electric Spending	\$ 527,212.31	\$ 688,316.04	\$ 748,208.39			
	Total Annual Electric Savings (kWh)	5,704,791.08	4,938,617.74	2,319,910.78			
	\$/Annual kWh Actual	\$ 0.09	\$ 0.14	\$ 0.32			
2)	Total Electric Spending	\$ 527,212.31	\$ 688,316.04	\$ 748,208.39			
	Total kW saved actual	1,660.17	554.89	362.79			
	\$/kW actual	\$ 317.56	\$ 1,240.45	\$ 2,062.36			
3)	Total Electric Spending	\$ 4,674,280.43	\$ 4,476,682.34	\$ 4,476,682.34			
	Total Fuel Neutral MMBtu Actual	186.80	1,239.06				
	\$/Total Fuel Neutral MMBtu Actual	\$ 25,022.91	\$ 3,612.97				



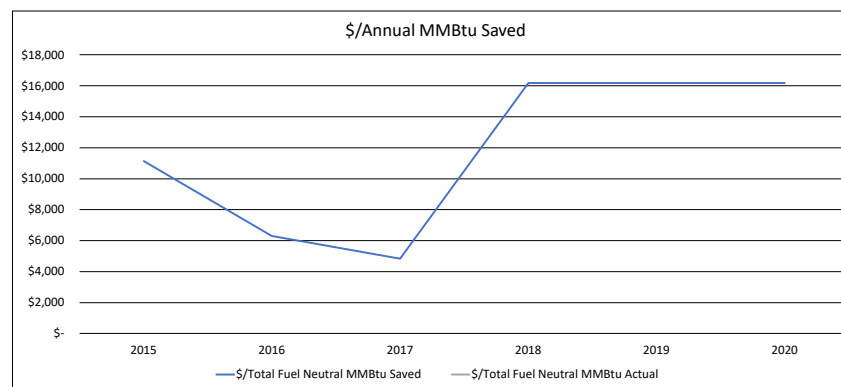
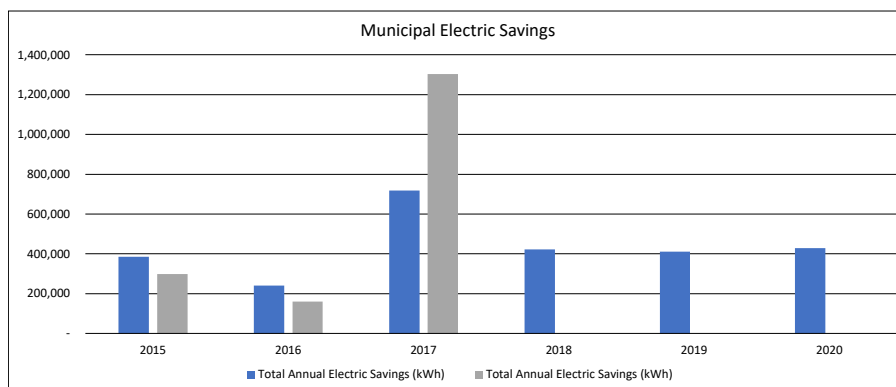
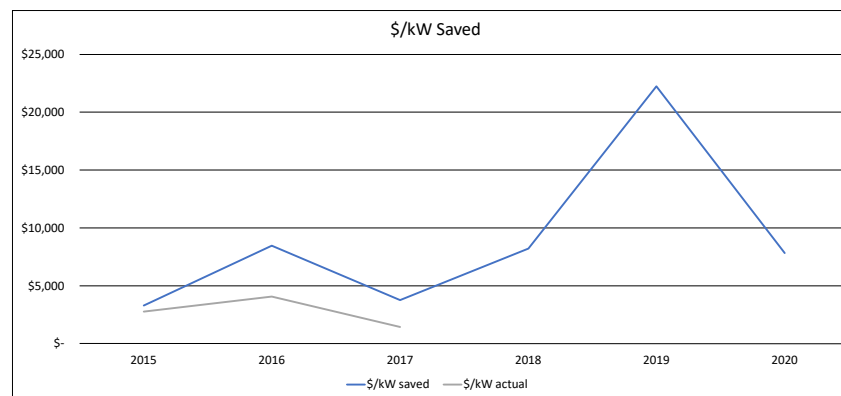
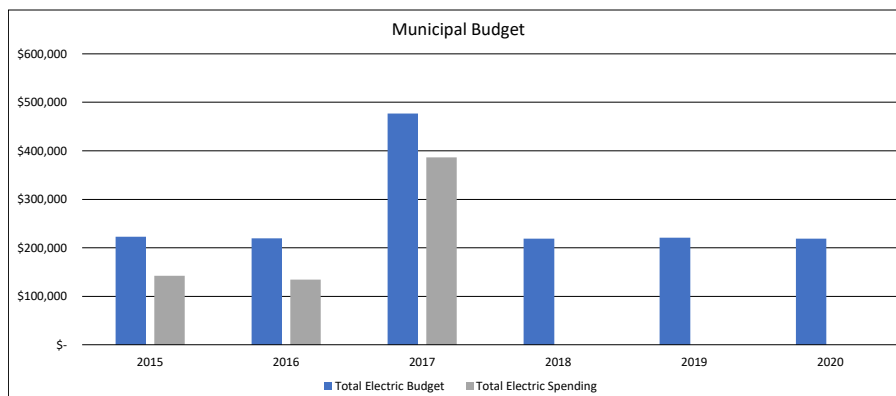
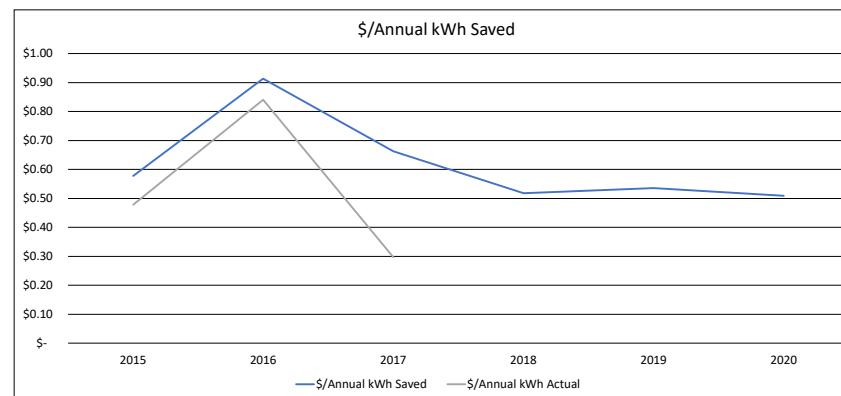
Small Business Energy Solutions

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 500,000.00	\$ 455,000.50	\$ 686,088.31	\$ 779,755.65	\$ 1,008,202.87	\$ 1,390,000.00
	Total Annual Electric Savings (kWh)	1,037,376.46	990,500.00	1,597,407.41	1,941,463.22	2,535,529.86	3,534,500.00
	\$/Annual kWh Saved	\$ 0.48	\$ 0.46	\$ 0.43	\$ 0.40	\$ 0.40	\$ 0.39
2)	Total Electric Budget	\$ 500,000.00	\$ 455,000.50	\$ 686,088.31	\$ 779,755.65	\$ 1,008,202.87	\$ 1,390,000.00
	Total kW saved	250.94	284.84	282.22	187.90	224.44	340.60
	\$/kW saved	\$ 1,992.54	\$ 1,597.39	\$ 2,431.07	\$ 4,149.95	\$ 4,492.02	\$ 4,081.03
3)	Total Electric Budget	\$ 2,729,372.64	\$ 2,205,961.93	\$ 3,104,617.49	\$ 4,184,601.47	\$ 5,422,730.78	\$ 7,269,237.07
	Total Fuel Neutral MMBtu Saved						
	\$/Total Fuel Neutral MMBtu Saved						
Actuals		2015	2016	2017			
1)	Total Electric Spending	\$ 471,603.35	\$ 499,144.45	\$ 794,502.64			
	Total Annual Electric Savings (kWh)	1,198,433.94	1,451,929.00	2,381,724.69			
	\$/Annual kWh Actual	\$ 0.39	\$ 0.34	\$ 0.33			
2)	Total Electric Spending	\$ 471,603.35	\$ 499,144.45	\$ 794,502.64			
	Total kW saved actual	379.92	253.82	398.49			
	\$/kW actual	\$ 1,241.32	\$ 1,966.51	\$ 1,993.77			
3)	Total Electric Spending	\$ 3,059,995.12	\$ 2,401,441.56	\$ 2,401,441.56			
	Total Fuel Neutral MMBtu Actual						
	\$/Total Fuel Neutral MMBtu Actual						



Municipal

Planned		2015	2016	2017	2018	2019	2020
1)	Total Electric Budget	\$ 222,573.69	\$ 219,875.76	\$ 476,528.53	\$ 218,878.38	\$ 220,642.18	\$ 218,878.00
	Total Annual Electric Savings (kWh)	385,143.71	240,506.33	718,947.37	422,166.66	411,529.39	429,700.00
	\$/Annual kWh Saved	\$ 0.58	\$ 0.91	\$ 0.66	\$ 0.52	\$ 0.54	\$ 0.51
2)	Total Electric Budget	\$ 222,573.69	\$ 219,875.76	\$ 476,528.53	\$ 218,878.38	\$ 220,642.18	\$ 218,878.00
	Total kW saved	67.76	26.00	126.85	26.69	9.93	28.00
	\$/kW saved	\$ 3,284.93	\$ 8,458.38	\$ 3,756.54	\$ 8,200.67	\$ 22,229.35	\$ 7,817.07
3)	Total Electric Budget	\$ 1,797,393.00	\$ 1,453,463.00	\$ 1,452,442.83	\$ 1,456,555.00	\$ 1,456,555.00	\$ 1,456,555.00
	Total Fuel Neutral MMBtu Saved	161.40	231.00	300.00	90.00	90.00	90.00
	\$/Total Fuel Neutral MMBtu Saved	\$ 11,136.26	\$ 6,292.05	\$ 4,841.48	\$ 16,183.94	\$ 16,183.94	\$ 16,183.94
Actuals		2015	2016	2017			
1)	Total Electric Spending	\$ 142,709.48	\$ 134,368.59	\$ 386,763.00			
	Total Annual Electric Savings (kWh)	298,503.00	159,791.00	1,303,245.00			
	\$/Annual kWh Actual	\$ 0.48	\$ 0.84	\$ 0.30			
2)	Total Electric Spending	\$ 142,709.48	\$ 134,368.59	\$ 386,763.00			
	Total kW saved actual	51.68	33.15	269.98			
	\$/kW actual	\$ 2,761.20	\$ 4,053.33	\$ 1,432.55			
3)	Total Electric Spending	\$ 1,798,133.05	\$ 1,447,065.12	\$ 1,447,065.12			
	Total Fuel Neutral MMBtu Actual		579.10				
	\$/Total Fuel Neutral MMBtu Actual		\$ 2,498.82				



Program Cost-Effectiveness - 2019 PLAN

	Total Resource Benefit / Cost Ratio	Benefits (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
Home Energy Assistance	1.19	1,555.0	1,310.3	-	47.5	968.2	24.1	-	245	7,637.0	155,506.8
Energy Star Homes	1.26	679.6	421.4	118.3	47.7	1,192.5	4.5	11.6	121	2,576.8	64,419.4
Home Performance with Energy Star	1.41	2,042.5	1,035.8	417.5	178.0	1,147.1	38.0	27.8	692	10,825.2	201,356.8
Energy Star Products	1.14	1,888.1	925.0	735.7	40.6	689.1	20.6	-	1,470	11,990.0	201,701.3
Home Energy Reports	1.02	277.0	270.8	-	-	-	-	-	38,000	7,384.0	27,356.0
Sub-Total Residential	1.23	6,442.1	3,963.2	1,271.5	313.9	3,996.9	87.2	39.3	40,528	40,412.9	650,340.2
Commercial, Industrial & Municipal											
Large Business Energy Solutions	1.79	9,534.6	2,300.3	3,019.7	-	-	-	-	94	65,862.9	1,155,639.6
Small Business Energy Solutions	1.72	3,988.5	1,362.0	952.7	-	-	-	-	771	31,804.2	486,961.8
C&I Education	0.00	-	82.4	-	-	-	-	-	-	-	-
Sub-Total Commercial & Industrial	1.75	13,523.1	3,744.7	3,972.4	-	-	-	-	864	97,667.1	1,642,601.4
Total	1.54	19,965.3	7,707.9	5,243.9	313.9	3,996.9	87.2	39.3	41,392	138,080.0	2,292,941.6

Note: a 10% NEI adder is applied to total benefits, and an additional 10% NEI adder is applied to total benefits of the Home Energy Assistance program, excluding water.

Present Value Benefits - 2019 PLAN

	CAPACITY										ENERGY								Other Non-Resource Benefits
	Total Benefits (\$000)	Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Electric DRIPE	Gas Benefits	Gas DRIPE	Other Fuels Benefits	Fossil Emissions	Water Benefits				
Residential Programs																			
Home Energy Assistance	\$ 1,555	\$ -	\$ -	\$ -	\$ -	\$ 25	\$ 24	\$ 0	\$ 0	\$ 1	\$ 1,091	\$ 36	\$ -	\$ 143	\$ -	\$ 235.30			
Energy Star Homes	\$ 680	\$ 19	\$ -	\$ 19	\$ 17	\$ 17	\$ 23	\$ 7	\$ 9	\$ 5	\$ 431	\$ 12	\$ -	\$ 65	\$ -	\$ 56			
Home Performance with Energy Star	\$ 2,043	\$ 9	\$ -	\$ 15	\$ 13	\$ 25	\$ 21	\$ 9	\$ 8	\$ 5	\$ 1,404	\$ 47	\$ -	\$ 181	\$ 149	\$ 156			
Energy Star Products	\$ 1,888	\$ -	\$ -	\$ -	\$ -	\$ 18	\$ 18	\$ 0	\$ 0	\$ 1	\$ 1,466	\$ 56	\$ -	\$ 173	\$ -	\$ 156			
Home Energy Reports	\$ 277	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 218	\$ 18	\$ -	\$ 17	\$ -	\$ 24			
Sub-Total Residential	\$ 6,442	\$ 27	\$ -	\$ 34	\$ 30	\$ 85	\$ 86	\$ 17	\$ 18	\$ 11	\$ 4,609	\$ 169	\$ -	\$ 580	\$ 149	\$ 626			
Commercial/Industrial Programs																			
Large Business Energy Solutions	\$ 9,535	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,445	\$ 303	\$ -	\$ 1,011	\$ -	\$ 774.83			
Small Business Energy Solutions	\$ 3,989	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,953	\$ 111	\$ -	\$ 417	\$ 202	\$ 306			
C&I Education	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			
Sub-Total Commercial & Industrial	\$ 13,523	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 10,398	\$ 415	\$ -	\$ 1,428	\$ 202	\$ 1,081			
Total	\$ 19,965	\$ 27	\$ -	\$ 34	\$ 30	\$ 85	\$ 86	\$ 17	\$ 18	\$ 11	\$ 15,007	\$ 584	\$ -	\$ 2,008	\$ 351	\$ 1,708			

Performance Incentive Calculation 2019

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.71	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime MMBtu Savings	1,642,601	
4. Threshold Lifetime MMBtu Savings (65%) ²	1,067,691	
5. Implementation Expenses	\$3,744,684	
6. Benefit / Cost Percentage of Implementaton Expenses	2.75%	
7. Lifetime MMBtu Percentage of Implementation Expenses	2.75%	
 8. Commercial & Industrial Performance Incentive	 \$205,958	
9. Maximum Commercial & Industrial Performance Incentive (6.875%)	\$257,447	
 Residential Incentive		
10. Benefit / Cost Ratio	1.18	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime MMBtu Savings	650,340	
13. Threshold Lifetime MMBtu Savings (65%)	422,721	
14. Implementation Expenses	\$3,963,210	
15. Benefit / Cost Percentage of Implementation Expenses	2.75%	
16. Lifetime MMBtu Percentage of Implementation Expenses	2.75%	
 17. Residential Performance Incentive	 \$217,977	
18. Maximum Residential Performance Incentive (6.875%)	\$272,471	
 19. TOTAL PLANNED / EARNED INCENTIVE	 \$423,934	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Actual Lifetime MMBtu Savings for each sector must be greater than or equal to 65% of projected savings.
3. Benefit Cost ratios are Nominal\$/Nominal\$

**Planned Versus Actual Benefit / Cost Ratio by Sector
 2019**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
1. Benefits (Value) From Eligible Programs	\$ 13,523,142	\$ -
2. Implementation Expenses	\$ 3,744,684	\$ -
3. Customer Contribution	\$ 3,972,387	\$ -
4. Performance Incentive	\$ 205,958	\$ -
5. Total Costs	\$ 7,923,028	\$ -
6. Benefit/Cost Ratio - Commercial & Industrial Sector	1.71	
Residential		
7. Benefits (Value) From Eligible Programs	\$ 6,442,145	\$ -
8. Implementation Expenses	\$ 3,963,210	\$ -
9. Customer Contribution	\$ 1,271,476	\$ -
10. Performance Incentive	\$ 217,977	\$ -
11. Total Costs	\$ 5,452,662	\$ -
12. Benefit/Cost Ratio - Residential Sector	1.18	

**Lifetime Energy Savings by Sector and Program
2019**

	Lifetime MMBtu Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
Large Business Energy Solutions	1,155,640	
Small Business Energy Solutions	486,962	
Municipal Energy Solutions	-	
C&I Customer Partnerships	-	
Energy Rewards RFP Program	-	
C&I Customer Engagement Platform	-	
C&I Education	-	
ISO Forward Capacity Market Expenses	-	
Total Commercial & Industrial	1,642,601	
Residential		
Home Energy Assistance	155,507	
Energy Star Homes	64,419	
Home Performance with Energy Star	201,357	
Energy Star Products	201,701	
Home Energy Reports	27,356	
Res Customer Engagement Platform	-	
ISO-NE Forward Capacity Market Expenses	-	
Total Residential	650,340	

Liberty Utilities Gas Home Energy Assistance Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan
Boiler - NG Boiler Replacement AFUE>=90%			20			142.0			20		86.9%			49,359			19.40		100.0%			7,760
Furnace - NG Furnace Replacement AFUE>=90%			20			162.0			18		86.9%			50,680			18.59		100.0%			6,693
Multifamily weatherization	118	146	130	179	19	170.6	21	20	21	100.0%	86.9%	436,989	55,640	400,135	18.30	6.98	8.63	100%	98.1%	44,601	20,541	22,860
Single Family weatherization	80	81	115	368	482	215.6	21	21	21	100.0%	86.9%	577,899	829,072	446,229	39.10	42.69	48.89	100%	98.1%	61,432	73,414	114,219
Thermostat - Standard, 7-Day Programmable			89			18.9			15		86.9%			21,831			3.05		98.1%			3,975
LED lighting			-						5		86.9%								98.1%			
Non-Energy Saving Measures			-						1		86.9%								98.1%			
audits			-						1		86.9%								98.1%			
Program Summary*				50,719	41,806	47,539						1,014,887	884,712	968,234	5,302	4,476	7,623			106,032	93,955	155,507

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings based on recent trends and reflect expected project sizes.
2. US DOE WAP Collaboration: The federal Weatherization Assistance Program is expected to fund additional work and achieve additional MMBTU Savings.
3. For gas heated homes, customer may be served by both gas and electric utilities in this program, but gas companies will pay for the weatherization project up to their cap first and will claim associated MMBTU savings.

Liberty Utilities Gas Home Performance with ENERGY STAR®

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan
Baseload Audit - Thermal Savings			500			-			14		100%			-			7.71		100%			54,345
Single Family Weatherization	207	93	192	895	52	-	21.2	21.8	21	100%	100%	3,707,398	249,500	-	35.58	37.72	34.32	100%	100%	156,463	76,319	140,203
Thermostat - Standard, 7-Day Programmable			67			-			15		100%			-			5.67		100%			5,715
Non-Energy Saving Measures			192			-			1		100%			-			0.00		100%			-
Electric Measures			192			87.7			20		100%			341,365					100%			-
Baseload Audit - Electric Savings			500			322.3			5		100%			805,700					100%			-
Program Summary*				185,370	4,817	16,845						3,707,398	249,500	1,147,065	7,369	3,508	9,723			156,463	76,319	200,263

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings based on recent trends and reflect expected project sizes.

Liberty Utilities Gas ENERGY STAR® Homes Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan
Clothes washer			-			-			11		100%			-			3		75%			-
Water Heating Savings			-			-			20		100%			-				75%				
ES Homes	44	44	-	656	47	-	25	25	25	100%	100%	718,062	51,266	-	42	48		100%	75%	45,716	52,587	
LED lighting			-			-			5		100%			-					75%			
Lighting and Appliances			-			-			20		100%			-					75%			
HERS Raters			-			-			1		100%			-					75%			
Single-Family			21			1,892			25		100%			993,038			34		100%			17,994
Multi-Family			100			80			25		100%			199,487			19		100%			46,425
Program Summary*				28,722	2,051	47,701						718,062	51,266	1,192,524	1,829	2,103	2,577			45,716	52,587	64,419

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings based on recent trends and reflect expected project sizes.

Liberty Utilities Gas ENERGY STAR® Products Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan
Water Heater - Indirect (attached to ES FHW Boiler; Combined eff rating >=85% (EF=.82)	66	30		0	0		20	20		100%		-	-		8.00	8.00		100%		10,560	4,800	
Condensing Boiler w/On-Demand DHW >= 90% AFUE	115	6	40	0	0	0.0	19	19	19	100%	100%	-	-	-	10.30	10.30	10.30	100%	100%	22,481	1,174	7,828
Condensing Boiler w/On-Demand DHW >= 95% AFUE	5	113	160	0	0	0.0	19	19	19	100%	100%	-	-	-	12.80	12.80	12.80	100%	100%	1,216	27,482	38,912
Water Heater - Tankless, On-Demand >=.94	111	333		0	0		19	19		100%		-	-		9.90	9.90		100%		20,879	62,637	
Water Heater - Condensing (EF 0.95)	0	1		0	0		15	15		100%		-	-		0.00	8.50		100%		0	128	
Boiler - Early Replacement, FHW - EE 90 AFUE (80%-90%)	38	25		0	0		10	10		100%		-	-		7.00	7.00		100%		2,660	1,750	
Boiler - Early Replacement, FHW - Retirement: 90 AFUE (65%-90%)	38	25		0	0		20	20		100%		-	-		11.40	11.40		100%		8,664	5,700	
Boiler - Early Replacement, Steam - EE: 82%+ AFUE	2	1		0	0		10	10		100%		-	-		2.90	2.90		100%		58	29	
Boiler - Early Replacement, Steam - Retirement: 82%+ AFUE	2	1		0	0		20	20		100%		-	-		8.00	8.00		100%		320	160	
Boiler Reset Controls	5	1	2	0	0	0.0	15	15	15	100%	100%	-	-	-	4.50	4.50	4.50	100%	100%	338	68	135
Condensing Boiler >= 90% AFUE (Up to 300 MBH)	50	30	60	0	0	0.0	20	20	18	100%	100%	-	-	-	11.40	11.40	11.40	100%	100%	11,400	6,840	12,312
Condensing Boiler >= 95% AFUE (Up to 300 MBH)	45	61	99	0	0	0.0	20	20	19	100%	100%	-	-	-	14.10	14.10	14.10	100%	100%	12,690	17,202	26,575
Furnace 95+ AFUE (<150) w/ECM Motor	145	98	135	168	168	168.0	17	17	17	100%	100%	414,120	279,888	385,560	8.10	8.10	8.10	100%	100%	19,967	13,495	18,590
Furnace 97+ AFUE (<150) w/ECM Motor	90	66	110	168	168	168.0	17	17	17	100%	100%	257,040	188,496	314,160	9.20	9.20	9.20	100%	100%	14,076	10,322	17,204
Heat Recovery Ventilator (-133 kWh penalty)	0	1	4	0	-133	(133.0)	0	20	20	100%	100%	-	(2,660)	(10,640)	0.00	7.00	7.70	100%	100%	0	140	616
Thermostat - Standard, 7-Day Programmable	170	108	110	0	0	0.0	15	15	15	100%	100%	-	-	-	2.30	2.30	3.20	100%	100%	5,865	3,726	5,280
Thermostat - WiFi (Heating Only)	480	524	750	0	0	0.0	15	15	15	100%	100%	-	-	-	6.60	6.60	6.60	100%	100%	47,520	51,876	74,250
Program Summary*				39,480	27,419	40,628						671,160	465,724	689,080	10,384	11,846	11,990			178,693	207,528	201,701

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Liberty Utilities Gas Home Energy Reports Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan
Home Energy Reports	38,000	38,000	38,000	-	-	-	3.4	3.5	3.7	100%	100%	-	-	-	0.26	0.26	0.19	100%	100%	32,600	33,878	27,356
Program Summary*				-	-	-								-	9,700	9,708	7,384			32,600	33,878	27,356

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual MMBtu Savings developed with program implementation support vendor

Liberty Utilities Gas Large Business Energy Solutions Programs

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan
Large Business Custom	39	27	45				13	18	18	100%	100%	-	-	-	1,133.00	1,329.39	1,508.11	100%	91%	572,222	654,147	1,104,835
Condensing Boiler >= 96% AFUE (Up to 300 MBH)	3	0					25	25		0%		-	-		30.60	0.00		100%		2,295	0	
Condensing Boiler >= 90% thermal efficiency (301 to 499 MBH)	2	2	4				25	25	25	100%	100%	-	-		58.40	58.40	28.00	100%	102%	2,920	2,920	2,859
Condensing Boiler >= 90% thermal efficiency (500 to 999 MBH)	5	0	4				25	25	25	100%	100%	-	-		107.30	0.00	51.40	100%	102%	13,413	0	5,248
Condensing Boiler >= 90% thermal efficiency (1000 to 1700 MBH)	3	0	4				25	25	25	100%	100%	-	-	-	197.20	0.00	94.50	100%	102%	14,790	0	9,648
Condensing Boiler >= 90% thermal efficiency (1701 to 2000 MBH)	3	0	4				25	25	25	100%	100%	-	-	-	345.10	0.00	165.30	100%	102%	25,883	0	16,130
Water Heater - Integrated w/Condensing Boiler >= 95% AFUE	0	1					20	20		0%		-	-		31.80	31.80		100%		0	636	
Infrared Heater, Low Intensity (all sizes)			21				17	17	17	100%	100%						12.00	100%	102%			4,374
Steam Trap	140	139	200				6	6	6	100%	100%	-	-		25.70	56.95	12.20	100%	91%	21,588	47,499	12,545
Thermostat - Standard, 7-Day Programmable	30	0					15	15	15	100%	100%	-	-		3.20	0.00		100%		1,440	0	
Kitchen - Combination Oven (>= 44% efficiency)	0	1					12	12	12	100%	100%	-	-		112.00	112.00		100%	102%	0	1,344	
Kitchen - Griddle	0	1					12	12	12	100%	100%	-	-		13.10	13.10		100%	102%	0	157	
Kitchen - Steamer (ES >= 38% efficiency)	0	1					12	12	12	100%	100%	-	-		105.40	105.40		100%	102%	0	1,265	
Program Summary*				-	-	-								-	50,253	44,189	65,863			654,550	707,968	1,155,640

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings based on recent trends and reflect expected project sizes.
2. Approximate number of Steam Traps per project is 17

Liberty Utilities Gas Small Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life			Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan	2017 Actuals	2019 Plan	2017 Plan + Actual	2019 Plan	2017 Plan	2017 Actuals	2019 Plan
Small Business Custom	39	47	120	0	1,914	0	12	18	17	100%	100%	-	1,594,392	-	639.00	104.82	84.23	100%	100%	309,238	87,297	174,268
Aerator	1305	2,704	160	0	0	0	10	10	10	100%	100%	-	-	-	1.70	1.70	1.70	100%	100%	22,185	45,968	2,720
Salon Sprayer	20	87	110	0	0	0	8	5	5	100%	100%	-	-	-	11.40	13.20	13.20	100%	100%	1,824	5,742	7,260
Shower Head	1000	776	25	0	0	0	10	10	10	100%	100%	-	-	-	2.65	2.65	2.65	100%	100%	26,500	20,564	663
Shower Head Hand Handle	16	376	12	0	0	0	10	10	10	100%	100%	-	-	-	2.65	2.65	2.65	100%	100%	424	9,964	318
Evolve Shower Head Base-Model	0	6	-	0	0	-	7	7	-	100%	-	-	-	-	1.66	1.66	-	100%	-	0	70	-
Water Heater - Storage >=75 MBTUH, 90% TE	0	5	28	0	0	0	15	15	15	100%	100%	-	-	-	23.05	23.05	23.05	100%	100%	0	1,729	9,681
Water Heater - Volume >=75 MBTUH, 92% TE	0	2	-	0	0	-	15	15	-	100%	-	-	-	-	233.68	233.68	-	100%	-	0	7,010	-
Water Heater - Indirect (attached to ES FHW Boiler; Combined eff rating >=85% (EF=.82)	0	5	18	0	0	0	15	15	15	100%	100%	-	-	-	19.00	19.00	19.00	100%	100%	0	1,425	5,130
Condensing Boiler w/On-Demand DHW >= 90% AFUE	-	-	3	-	-	0	-	-	20	-	100%	-	-	-	-	-	24.60	-	100%	-	-	1,476
Condensing Boiler w/On-Demand DHW >= 95% AFUE	-	-	3	-	-	0	-	-	20	-	100%	-	-	-	-	-	30.50	-	100%	-	-	1,830
Water Heater - Volume >=75 MBTUH, 92% TE	-	-	31	-	-	0	-	-	15	-	100%	-	-	-	-	-	233.68	-	100%	-	-	108,661
Water Heater - Tankless, On-Demand >=90	0	7	19	0	0	0	20	20	20	100%	100%	-	-	-	9.40	9.40	8.90	100%	100%	0	1,316	3,382
Boiler Reset Controls	4	1	1	0	0	0	15	15	15	100%	100%	-	-	-	35.50	35.50	11.40	100%	100%	2,130	533	171
Condensing Boiler >= 90% AFUE (Up to 300 MBH)	31	15	32	0	0	0	25	25	25	100%	100%	-	-	-	30.60	30.60	14.70	100%	100%	23,715	11,475	11,760
Condensing Boiler >= 90% thermal efficiency (1000 to 1700 MBH)	7	7	6	0	0	0	25	25	25	100%	100%	-	-	-	197.20	303.89	94.50	100%	100%	34,510	53,180	14,175
Condensing Boiler >= 90% thermal efficiency (1701 to 2000 MBH)	5	2	9	0	0	0	25	25	25	100%	100%	-	-	-	345.10	345.10	165.30	100%	100%	43,138	17,255	37,193
Condensing Boiler >= 90% thermal efficiency (301 to 499 MBH)	5	17	9	0	0	0	25	25	25	100%	100%	-	-	-	58.40	58.40	28.00	100%	100%	7,300	24,820	6,300
Condensing Boiler >= 90% thermal efficiency (500 to 999 MBH)	5	14	9	0	0	0	25	25	25	100%	100%	-	-	-	107.30	138.89	51.40	100%	100%	13,413	48,613	11,565
Condensing Boiler >= 96% AFUE (Up to 300 MBH)	6	0	0	0	0	0	25	25	25	100%	100%	-	-	-	27.80	27.80	17.70	100%	100%	4,170	0	0
Furnace 95+ AFUE (<150) w/ECM Motor	5	0	0	168	168	168	18	18	18	100%	100%	15,120	-	-	5.70	5.70	5.70	100%	100%	513	0	0
Furnace 97+ AFUE (<150) w/ECM Motor	3	4	0	168	168	168	18	18	18	100%	100%	9,072	12,096	-	6.70	6.70	6.70	100%	100%	362	482	0
Infrared Heater, Low Intensity (all sizes)	0	70	26	0	0	0	17	17	17	100%	100%	-	-	-	12.00	12.00	12.00	100%	100%	0	14,280	5,304
Steam Trap	60	18	40	0	0	0	6	6	6	100%	100%	-	-	-	25.70	9.62	12.20	100%	100%	9,252	1,039	2,928
Thermostat - Standard, 7-Day Programmable	200	493	-	0	0	-	15	15	-	100%	-	-	-	-	3.20	3.20	-	100%	-	9,600	23,664	-
Thermostat - WiFi (Cooling & Heating)	-	-	120	-	-	0	-	-	15	-	100%	-	-	-	-	-	6.60	-	100%	-	-	11,880
Thermostat - WiFi (Heating Only)	-	-	0	-	-	0	-	-	15	-	100%	-	-	-	-	-	6.60	-	100%	-	-	0
Kitchen - Combination Oven (>= 44% efficiency)	0	1	1	0	0	0	12	12	12	100%	100%	-	-	-	112.00	112.00	110.30	100%	100%	0	1,344	1,324
Kitchen - Convection Oven (>= 44% efficiency)	2	5	25	0	0	0	12	12	12	100%	100%	-	-	-	12.90	32.72	35.70	100%	100%	310	1,963	10,710
Kitchen - Conveyor Oven (>= 44% efficiency)	-	-	1	-	-	0	-	-	12	-	100%	-	-	-	-	-	88.40	-	100%	-	-	1,061
Kitchen - Fryer	0	11	30	0	0	0	12	12	12	100%	100%	-	-	-	50.80	50.80	78.30	100%	100%	0	6,706	28,188
Kitchen - Griddle	0	1	1	0	0	0	12	12	12	100%	100%	-	-	-	13.10	13.10	37.90	100%	100%	0	157	455
Kitchen - Pre Rinse Sprayers	75	133	160	0	0	0	5	5	8	100%	100%	-	-	-	11.40	11.40	11.40	100%	100%	4,275	7,649	14,592
Kitchen - Rack Oven (>= 50% efficiency)	-	-	2	-	-	0	-	-	12	-	100%	-	-	-	-	-	211.30	-	100%	-	-	5,071
Kitchen - Steamer (ES >= 38% efficiency)	-	-	2	-	-	0	-	-	12	-	100%	-	-	-	-	-	370.70	-	100%	-	-	8,897
Water Heater - Integrated w/Condensing Boiler >= 90% AFUE	7	1	-	0	0	-	20	20	-	100%	-	-	-	-	24.60	24.60	-	100%	-	3,444	492	-
Water Heater - Integrated w/Condensing Boiler >= 95% AFUE	2	3	-	0	0	-	20	17	-	100%	-	-	-	-	31.80	27.27	-	100%	-	1,272	1,386	-
Program Summary*				1,344	90,647	-						24,192	1,606,488	-	38,717	25,815	31,804			517,573	396,122	486,962

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings based on recent trends and reflect expected project sizes.
2. Approximate number of Steam Traps per project is 17
3. Approximate number of Aerators per multifamily project is 166
4. Approximate number of Aerators per small direct install project is 5
5. Approximate number of Shower Heads per multifamily project is 116
6. Approximate number of Shower Heads per small direct install project is 1
7. Approximate number of Salon Sprayers per project is 2



REDACTED

STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DG 18-XXX

Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities
Winter 2018/2019 Cost of Gas Filing
Summer 2019 Cost of Gas Filing

DIRECT TESTIMONY
OF
DAVID B. SIMEK
AND
CATHERINE A. MCNAMARA

August 31, 2018

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1 **I. INTRODUCTION**

2 **Q. Please state your full name and business address.**

3 A. (DS) My name is David B. Simek. My business address is 15 Buttrick Road,
4 Londonderry, New Hampshire

5 (CM) My name is Catherine A. McNamara. My business address is 15 Buttrick Road,
6 Londonderry, New Hampshire.

7 **Q. Please state by whom you are employed.**

8 A. We are employed by Liberty Utilities Service Corp. ("Liberty"), which provides service
9 to Liberty Utilities (EnergyNorth Natural Gas) Corp. d/b/a Liberty Utilities
10 ("EnergyNorth" or the "Company").

11 **Q. Please describe your educational background and your business and professional**
12 **experience.**

13 A. (DS) I graduated from Ferris State University in 1993 with a Bachelor of Science in
14 Finance. I received a Master's of Science in Finance from Walsh College in 2000. I also
15 received a Master's of Business Administration from Walsh College in 2001. In 2006, I
16 earned a Graduate Certificate in Power Systems Management from Worcester
17 Polytechnic Institute. In August 2013, I joined Liberty as a Utility Analyst and I was
18 promoted to Manager, Rates and Regulatory Affairs in August 2017. Prior to my
19 employment at Liberty, I was employed by NSTAR Electric & Gas ("NSTAR") as a
20 Senior Analyst in Energy Supply from 2008 to 2012. Prior to my position in Energy

1 Supply at NSTAR, I was a Senior Financial Analyst within the NSTAR Investment
2 Planning group from 2004 to 2008.

3 (CM) I graduated from the University of Massachusetts, Boston, in 1993 with a Bachelor
4 of Science in Management with a concentration in Accounting. In November 2017, I
5 joined Liberty as an Analyst in Rates and Regulatory Affairs. Prior to my employment at
6 Liberty, I was employed by Eversource as a Senior Analyst in the Investment Planning
7 group from 2015 to 2017. From 2008 to 2015, I was a Supervisor in the Plant
8 Accounting department. Prior to my position in Plant Accounting, I was a Financial
9 Analyst/General Ledger System Administrator within the Accounting group from 2000 to
10 2008.

11 **Q. Have you previously testified in regulatory proceedings before the New Hampshire**
12 **Public Utilities Commission (the “Commission”)?**

13 A. (DS) Yes. I have testified on numerous occasions before the Commission.

14 (CM) Yes, I previously testified in EnergyNorth’s Cast Iron/Bare Steel Replacement
15 Program proceeding, Docket No. DG 18-064.

16 **Q. What is the purpose of your testimony?**

17 A. The purpose of our testimony is to explain the Company’s proposed firm sales cost of gas
18 rates for the 2018/19 Winter (Peak) Period and the Company’s proposed 2018/19 Local
19 Delivery Adjustment Clause, both effective November 1, 2018. Our testimony also

explains the Company's proposed firm sales cost of gas rates for the 2019 Summer (Off-Peak) Period.

II. WINTER 2018/19 COST OF GAS FACTOR

Q. What are the proposed firm Winter sales and firm transportation cost of gas rates?

A. The Company proposes a firm sales cost of gas rate of \$0.7411 per therm for residential customers, \$0.7403 per therm for commercial/industrial high winter use customers, and \$0.7456 per therm for commercial/industrial low winter use customers as shown on Proposed First Revised Page 92 (Bates 050). The Company proposes a firm transportation cost of gas rate of \$0.0005 per therm as shown on Proposed First Revised Page 94 (Bates 052).

Q. Please explain tariff page Proposed Original Page 92.1 (Bates 051) and Proposed First Revised Page 92.

A. Proposed Original Page 92.1 and Proposed First Revised Page 92 contain the calculation of the 2018/19 Winter Period Cost of Gas Rate and summarize the Company's forecast of firm gas costs and firm gas sales. As shown on Page 92, the proposed 2018/19 Average Cost of Gas of \$0.7411 per therm is derived by adding the Direct Cost of Gas Rate of \$0.7056 per therm to the Indirect Cost of Gas Rate of \$0.0355 per therm. The estimated total Anticipated Direct Cost of Gas, derived on Page 92.1 and repeated on Page 92, is \$61,003,856. The estimated Indirect Cost of Gas, also derived on Page 92.1 and repeated on Page 92, is \$3,070,244. The Direct Cost of Gas Rate of \$0.7056 and the Indirect Cost

of Gas Rate of \$0.0355 are determined by dividing each of these total cost figures by the projected winter period firm sales volumes of 86,451,254 therms.

To calculate the total Anticipated Direct Cost of Gas, the Company adds a list of allowable adjustments from deferred gas cost accounts to the projected demand and commodity costs for the winter period supply portfolio. These allowable adjustments, shown on Page 92.1, total \$656,690. These adjustments are added to the Unadjusted Anticipated Cost of Gas of \$60,347,166 to determine the Total Anticipated Direct Cost of Gas of \$61,003,856.

Q. What are the components of the Unadjusted Anticipated Cost of Gas?

A. The Unadjusted Anticipated Cost of Gas shown on Proposed Original Page 92.1 consists of the following components:

1. Purchased Gas Demand Costs	\$10,308,483
2. Purchased Gas Commodity Costs	41,318,346
3. Storage Demand and Capacity Costs	922,462
4. Storage Commodity Costs	5,125,663
5. Produced Gas Cost	<u>2,672,211</u>
Total	<u>\$60,347,166*</u>

*\$1 difference due to rounding

Q. What are the components of the allowable adjustments to the Cost of Gas?

A. The allowable adjustments to gas costs, listed on Proposed Original Page 92.1, are as follows:

1. Deferred Gas Cost Prior Period Under Collection	\$2,599,354
2. Interest	63,196

1	3.	Fuel Inventory Revenue Requirement	351,017
2	4.	Broker Revenues	(497,759)
3	5.	Transportation COG Revenue	(26,381)
4	6.	Capacity Release Margin	(1,877,737)
5	7.	Fixed Price Administrative Cost	<u>45,000</u>
6		Total Adjustments	<u>\$656,690</u>

7 These allowable adjustments are standard adjustments made to the deferred gas cost
8 balance through the operation of the Company's cost of gas adjustment clause. We
9 discuss the factors contributing to the prior period under collection later in this testimony.

10 **Q. How does the proposed average cost of gas rate in this filing compare to the average**
11 **cost of gas rate approved by the Commission in Docket No. DG 17-135 for the**
12 **2017/18 Winter Period?**

13 A. The average cost of gas rate proposed in this filing of \$0.7411 per therm is \$0.0966 per
14 therm more than the initial rate of \$0.6445¹ per therm approved by the Commission in
15 Order No. 26,066 (October 31, 2017) in Docket No. DG 17-135. The \$0.0966 per therm
16 increase in the rate reflects a \$2,530,984 increase in the Total Unadjusted Cost of Gas.

17 **Q. How does the proposed firm transportation winter cost of gas rate compare to the**
18 **rate approved by the Commission for the 2017/18 winter period?**

19 A. The proposed firm transportation winter cost of gas rate is \$0.0005 per therm. The rate
20 approved in Docket No. DG 17-135 was \$0.0027 per therm. The decrease in the rate
21 relates to an estimated \$88,304 decrease in costs due to the difference between the winter

¹ For comparison purposes, by the end of the 2017/18 Winter Period, the residential cost of gas rate increased to \$0.8056 per therm through the operation of the monthly adjustment mechanism.

1 season 2017/2018 beginning balance of \$28,808 (an over-collection) and the winter
2 season 2018/2019 beginning balance of (\$59,496) (an under-collection).

3 **Q. In the calculation of its firm transportation winter cost of gas rate, has the Company**
4 **updated the estimated percentage used for pressure support purposes?**

5 A. Yes. The Company used, for pressure support purposes, a rate of 8.7% based on the
6 marginal cost study used for the rate design approved in Docket No. DG 17-048.
7 Previously the Company used an estimated percentage of 9.9% for pressure support
8 purposes.

9 **Q. Did the Company include a fuel inventory revenue requirement calculation in this**
10 **filing?**

11 A. Yes (Bates 192). The Company is proposing to collect \$351,017 in fuel inventory
12 revenue requirement consistent with Order No. 26,156 dated July 10, 2018, in Docket
13 No. DG 17-048. The rate of \$0.0041 per therm is determined by dividing the \$351,017
14 by the estimated November 2018 through October 2019 COG sales volumes of
15 86,451,254 therms.

16 **Q. How was the statutory tax rate of 27.24% calculated (Bates 192)?**

17 A. The statutory rate of 27.24% was calculated by using a 21% federal tax rate and a 7.9%
18 tax rate for the State of New Hampshire $(0.21 + 0.079 - (0.21 \times 0.079) = 0.2724)$.

1 **Q. How was the common equity pre-tax rate of 6.290% calculated (Bates 192)?**

2 A. The common equity pre-tax rate of 6.290% was calculated by dividing the 9.30% rate of
3 return on common equity, approved in Docket No. DG 17-048, by 0.7276 (1 – 0.2724
4 [statutory tax rate – see previous question]) and multiplied by 49.20% (equity component
5 of the capital structure approved in DG 17-048) [$0.930 / 0.7276 \times 0.4920 = 0.0629$].

6 **Q. Has the bad debt percentage in this filing of 1.7% changed from the bad debt
7 percentage calculated in the Winter 2017/2018 Cost of Gas Reconciliation?**

8 A. Yes, the bad debt percentage of 1.7% used in this filing is the calculated rate for the
9 period of May 2017–April 2018. The Winter 2017/2018 Cost of Gas Reconciliation
10 included a calculated rate of 1.1%, which was inadvertently carried forward from the
11 prior period of May 2016–April 2017.

12 **Q. What was the actual weighted average firm sales cost of gas rate for the 2017/18
13 winter period?**

14 A. The weighted average cost of gas rate was \$0.7321 per therm (Bates 095 Line 54). This
15 was calculated by applying the actual monthly cost of gas rates for November 2017
16 through April 2018 to the monthly therm usage of an average residential heating
17 customer using 778 therms per year, or 636 therms for the six winter period months.

18 **III. PRIOR WINTER PERIOD UNDER-COLLECTION**

19 **Q. Please explain the prior period under collection of \$2,459,330.**

20 A. The prior period under-collection is also detailed in the 2017/18 Winter Period
21 Reconciliation that was filed with the Commission on July 27, 2018. The \$2,459,330

under-collection is the sum of the deferred gas cost, bad debt, and working capital over- and under-collection balances as of April 30, 2018. The under-collection was driven mainly by the lag in the timing of monthly cost of gas rate adjustments as compared to changes in the underlying costs. For three months within the six-month winter period the calculated COG rate adjustment was higher than the allowable 25% price increase so the Company held the rate constant at the maximum allowable rate of \$0.8056 per therm.

IV. FIXED PRICE OPTION

Q. Has the Company established a winter period fixed price pursuant to its Fixed Price Option Program?

A. Yes. Pursuant to Order No. 24,515 in Docket No. DG 05-127, the Fixed Price Option Program ("FPO") rates are set at \$0.0200 per therm higher than the initial proposed COG rate. Proposed First Revised Page 91 (Bates 049) contains the FPO rate for the 2018/19 Winter period, which is \$0.7611 per therm for residential customers. This compares to the FPO rate approved for the 2017/18 winter period of \$0.6645 per therm for residential customers. This represents a \$0.0966 per therm, or 14.5% increase in the residential FPO rate. The total bill impact on the winter period bills for an average FPO heating customer using 636 therms is an increase of approximately \$122.86 or 14.25% compared to last winter. The total bill impact reflects the implementation of the increases approved in Docket Nos. DG 17-048 effective May 1, 2018, and DG 18-064 effective July 1, 2018, relating to permanent distribution rates and the cast iron/bare steel main replacement program, respectively. The estimated winter period bill for an average residential heating customer opting for the FPO would be approximately \$12.71 (or 1.3%) higher than the

bill under the proposed cost of gas rates, assuming no monthly adjustments to the COG rate during the course of the winter. Schedule 23 (Bates 189) contains the historical results of the FPO program.

V. LOCAL DELIVERY ADJUSTMENT CLAUSE (“LDAC”)

Q. What are the surcharges that will be billed under the LDAC?

A. As shown on Proposed First Revised Page 97 (Bates 055), the Company is submitting for approval an LDAC of \$0.0836 per therm for the residential non-heating class and residential heating class, and \$0.0772 per therm for the commercial/industrial bundled sales classes, effective November 1, 2018. The surcharges proposed to be billed under the LDAC are the Energy Efficiency Charge, the Revenue Decoupling Adjustment Clause, the Energy Efficiency Resource Standard Lost Revenue Adjustment Mechanism, the Environmental Surcharge for Manufactured Gas Plant (“MGP”) remediation, the Residential Low Income Assistance Program charge, and the rate case expense reconciliation surcharge from Docket No. DG 17-048.

Q. Which customers are billed an LDAC?

A. All EnergyNorth customers including those in Keene are billed an LDAC charge. When calculating the LDAC charge, the November 1, 2018, through October 31, 2019, forecasted Keene therm sales of 1,451,361 are added to the EnergyNorth therm sales forecast of 183,203,513 for a total therm sales forecast of 184,654,874.

Q. Please explain the Energy Efficiency Charge.

A. The Energy Efficiency Charge is designed to recover the projected expenses associated with the Company's energy efficiency programs for Calendar Year 2019 that will be filed with the Commission in the near future. In the calculation of the Energy Efficiency Charge, the Company has also included the projected prior period over-recovery of the Company's residential and commercial energy efficiency programs as of October 2018. As shown on Schedule 19 Energy Efficiency (Bates 125-127), the proposed Energy Efficiency charge is \$0.0450 per therm for Residential customers and \$0.0387 per therm for commercial and industrial customers.

Q. Please explain the Revenue Decoupling Adjustment Clause ("RDAC").

A. The first RDAC will not take effect until November 1, 2019, after the first decoupling year is complete. It is designed to recover, on an annual basis, the difference between the Actual Base Revenue per Customer and the Benchmark Base Revenue per Customer. The Actual Base Revenue per Customer is calculated after the first decoupling year. Schedule 19 RDAC (Bates 122) shows the proposed Benchmark Base Revenue per Customer calculation effective November 1, 2018, through October 31, 2019.

Q. Please explain the Energy Efficiency Resource Standard Lost Revenue Adjustment Mechanism ("LRAM").

A. As shown on Schedule 19 LRAM (Bates 120-121), the proposed LRAM charge is \$0.0003 per therm for residential customers and \$0.0001 per therm for commercial and industrial customers. It is designed to recover lost revenues associated with energy

1 efficiency measures installed under the EERS programs. Since the Company is
2 implementing decoupling effective November 1, 2018, the Company will continue to
3 implement its Lost Revenue Adjustment only as a prior period true-up mechanism
4 effective November 1, 2018, and ending October 31, 2019.

5 **Q. What is the proposed Residential Low Income Assistance Program (“RLIAP”)**
6 **charge?**

7 A. As shown on Schedule 19 RLIAP (Bates 123-124), the proposed RLIAP charge is
8 \$0.0130 per therm. It is designed to recover administrative costs, revenue shortfall, and
9 the prior period reconciliation adjustment relating to this program. For the 2018/19
10 Winter Period, the Company is providing a 60% base rate discount, consistent with the
11 settlement agreement approved by the Commission in Order No. 24,669 (Sept. 22, 2006)
12 in Docket No. DG 06-120. The current RLIAP charge is designed to recover \$2,409,164,
13 of which \$1,864,087 is for the revenue shortfall resulting from 5,056 customers receiving
14 a 60% discount off their base rates, and \$545,077 for the prior year reconciling
15 adjustment.

16 **Q. In Order No. 24,824 (Feb. 29, 2008) in Docket No. DG 06-122 relating to short-term**
17 **debt issues, the Company agreed to adjust its short-term debt limits each year as**
18 **part of the Company’s Winter Period Cost of Gas filing. Did the Company**

1 **calculate the short-term debt limit for fuel and non-fuel purposes in accordance**
2 **with this settlement?**

3 A. Yes, the Company included in Schedule 24 (Bates 190) the short-term debt limit for fuel
4 and non-fuel purposes for the 2018/19 period. As shown, the short-term debt limit for
5 fuel inventory financing for the period November 1, 2018, through October 31, 2019, is
6 calculated to be \$19,222,230 and the limit for non-fuel purposes is calculated to be
7 \$94,878,262.

8 **Q. Has the Company updated the Environmental Surcharge (Tariff Page 95)?**

9 A. Yes, it has. The costs submitted for recovery through the MGP remediation cost recovery
10 mechanism, as well as the third party recoveries, are included in the Environmental Cost
11 Summary in Schedule 20 (Bates 128) of this filing. The environmental investigation and
12 remediation costs that underlie these expenses are the result of efforts by the Company to
13 respond to its legal obligations with regard to these sites, as described by Ms. Casey in
14 her pre-filed direct testimony in this proceeding and as set forth in the MGP site
15 summaries included in this filing under Schedule 20. The Summary included in Schedule
16 20 shows the remediation cost pools for the Concord Pond, Concord MGP, Manchester,
17 Nashua, and Laconia sites, and a General Pool for costs that cannot be directly assigned
18 to a specific site.

19 A summary sheet and detailed backup spreadsheets that support the 2017/18 costs are
20 provided in Schedule 20 of this filing. Consistent with past practice, the Company met
21 with the Commission Staff and OCA in August of this year to provide an update on the

status of environmental matters. Ms. Casey's testimony describes the Company's activities with regard to all five sites.

Q. Please describe how the Company calculated the Environmental Surcharge included in this filing.

A. The proposed Manufactured Gas Plant Remediation surcharge for the period beginning November 1, 2018, and ending October 31, 2019, is \$0.0161 per therm. This surcharge will recover a total of \$2,970,867 in amortized remediation costs. The costs submitted for recovery are shown in the Environmental Cost Summary included in Schedule 20 of this filing.

Q. Did the Company include a Rate Case Expense (RCE) surcharge in this filing?

A. Yes. As shown on Schedule 19 RCE (Bates 118-119), the Company is proposing to collect \$1,706,158 in uncollected rate case and recoupment expense consistent with Order No. 26,122 dated April 27, 2018, in Docket No. DG 17-048. The RCE rate of \$0.0092 per therm is determined by dividing the \$1,706,154 by the estimated November 2018 through October 2019 sales volumes of 184,654,874 therms.

Q. Has the Company also updated its Company Allowance percentage for the period November 2018 through October 2019 in accordance with Section 8 of the Company's Delivery Terms and Condition?

A. Yes, in Schedule 25 (Bates 191) the Company has recalculated its Company Allowance for the period November 2018 through October 2019. The Company calculated the Company Allowance of 1.80% based on sendout and throughput data for the twelve-

month period ending June 2018. The Company proposes to apply this recalculated Company Allowance to all supplier deliveries beginning in November 2018.

VI. CUSTOMER BILL IMPACTS

Q. What are the estimated impacts of the proposed firm sales cost of gas rate and proposed LDAC surcharges on an average heating customer's winter bill as compared to the winter rates in effect last year?

A. The bill impact analysis is presented in Schedule 8 (Bates 095) of this filing. These bill impacts reflect the implementation of the increases approved in Docket Nos. DG 17-048 effective May 1, 2018, and DG 18-064 effective July 1, 2018, relating to permanent distribution rate increases and the cast iron/bare steel main replacement program. The total bill impact over the winter period for an average residential heating customer is an increase of approximately \$67.17, or 7.42%. The total bill impact over the winter period for an average commercial/industrial G-41 customer is an increase of approximately \$86.13, or 3.38% (Bates 096). Schedule 8 of this filing provides more detail of the impact of the proposed rate adjustments on heating customers.

VII. OTHER TARIFF CHANGES

Q. Is the Company updating its Delivery Terms and Conditions in the filing?

A. Yes. The Company is submitting Proposed First Revised Page 147 (Bates 056) relating to Supplier Balancing and Peaking Demand Charges and Proposed First Revised Page 148 (Bates 057) relating to Capacity Allocation.

1 **Q. Please describe the changes to tariff Page 147.**

2 A. In Proposed First Revised Page 147, the Company is updating the Peaking Demand
3 Charge from \$20.06 per MMBtu of Peak MDQ to \$20.41 per MMBtu of Peak MDQ.
4 This calculation is also presented in Schedule 21 (Bates 180).

5 **Q. Please describe the changes to tariff Page 148.**

6 A. Proposed First Revised Page 148 updates the Capacity Allocator percentages used to
7 allocate pipeline, storage, and local peaking capacity to high and low load factor
8 customers under the mandatory capacity assignment requirement for firm transportation
9 service. Schedule 22 (Bates 183-188) contains the six-page worksheet that backs up the
10 calculations for the updated allocators.

11 **VIII. SUMMER 2019 COST OF GAS FACTOR**

12 **Q. What are the proposed 2019 summer firm sales cost of gas rates?**

13 A. The Company proposes a firm sales cost of gas rate of \$0.4445 per therm for residential
14 customers, \$0.4417 per therm for commercial/industrial high winter use customers, and
15 \$0.4506 per therm for commercial/industrial low winter use customers as shown on
16 Proposed Seventh Revised Page 89 (Bates 200).

17 **Q. Please explain tariff pages Proposed First Revised Page 88 and Proposed Seventh**
18 **Revised Page 89.**

19 A. Proposed First Revised Page 88 (Bates 199) and Proposed Seventh Revised Page 89
20 contain the calculation of the 2019 Summer Period Cost of Gas Rate and summarize the
21 Company's forecast of firm gas sales, firm gas sendout, and gas costs. On Proposed

Seventh Revised Page 89, the 2019 Average Cost of Gas of \$0.4445 per therm is derived by adding the Direct Cost of Gas Rate of \$0.4354 per therm to the Indirect Cost of Gas Rate of \$0.0091 per therm. The estimated total Anticipated Direct Cost of gas is \$8,661,183 and the estimated Indirect Cost of Gas is \$181,903. The Direct Cost of Gas Rate and the Indirect Cost of Gas Rates are determined by dividing each of these total cost figures by the projected Summer firm sales volumes of 19,890,267 therms. Proposed Seventh Revised Page 89 further shows that the Residential Cost of Gas Rate of \$0.4445 per therm is equal to the Average Cost of Gas for all firm sales customers. It also shows the calculation of the Commercial/Industrial High Winter Use Cost of Gas Rate of \$0.4417 per therm and the Commercial/Industrial Low Winter Use Cost of Gas Rate of \$0.4506 per therm.

The calculation of the Anticipated Direct Cost of Gas is shown on Proposed First Revised Page 88. To derive the total Anticipated Direct Cost of Gas of \$8,661,183, the Company starts with the Unadjusted Anticipated Cost of Gas of \$8,002,703 and adds the Net Adjustment totaling \$658,480.

Q. What are the components of the Unadjusted Anticipated Cost of Gas?

A. The Unadjusted Anticipated Cost of Gas consists of the following:

1. Purchased Gas Demand Costs	\$4,372,669
2. Purchased Gas Supply Costs	3,602,943
3. Produced Gas Costs	<u>27,091</u>
Total Unadjusted Anticipated Cost of Gas	<u>\$8,002,703</u>

Q. What are the components of the adjustments to the cost of gas?

A. The adjustments to gas costs, listed on proposed First Revised Page 88, are as follows:

1. Prior Period (Over)/Under Collection	\$617,043
2. Interest	<u>41,437</u>
Total Adjustments	<u>\$658,480</u>

Q. How does the proposed average Residential Summer cost of gas rate in this filing compare to the initial cost of gas rate approved by the Commission for the 2018 Summer Period?

A. The cost of gas rate proposed in this filing is \$0.1312 per therm higher than the initial rate approved by the Commission for the 2018 Summer Period (\$0.4445 vs. \$0.3133) (Schedule 8, Bates 224). This increase is primarily due to an \$874 thousand anticipated increase to the Supply Costs.

Q. Does this conclude your testimony?

A. Yes, it does.

**NHPUC NO. 10 - GAS
LIBERTY UTILITIES**

**Proposed First Revised Page 97
Superseding Original Page 97**

Local Delivery Adjustment Clause Calculation

			Sales Customers	Transportation Customers	
<u>Residential Non Heating Rates - R-1</u>					
Energy Efficiency Charge	\$0.0516		\$0.0450		
Demand Side Management Charge	0.0000		0.0000		
Conservation Charge (CCx)		\$0.0516		\$0.0450	
Relief Holder and pond at Gas Street, Concord, NH	0.0000		0.0000		
Manufactured Gas Plants	0.0163		0.0161		
Environmental Surcharge (ES)		0.0163		0.0161	
Interruptible Transportation Margin Credit (ITMC)		0.0000		0.0000	
Cost Allowance Adjustment Factor		0.0019		0.0003	
Rate Case Expense Factor (RCEF)		0.0062		0.0092	
Residential Low Income Assistance Program (RLIAP)		0.0096		0.0130	
LDAC		\$0.0856		\$0.0836	per therm

<u>Residential Heating Rates - R-3, R-4, R-6, R-7</u>					
Energy Efficiency Charge	\$0.0516		\$0.0450		
Demand Side Management Charge	0.0000		0.0000		
Conservation Charge (CCx)		\$0.0516		\$0.0450	
Relief Holder and pond at Gas Street, Concord, NH	0.0000		0.0000		
Manufactured Gas Plants	0.0163		0.0161		
Environmental Surcharge (ES)		0.0163		0.0161	
Cost Allowance Adjustment Factor		0.0019		0.0003	
Rate Case Expense Factor (RCEF)		0.0062		0.0092	
Residential Low Income Assistance Program (RLIAP)		0.0096		0.0130	
LDAC		\$0.0856		\$0.0836	per therm

<u>Commercial/Industrial Low Annual Use Rates - G-41, G-51, G-44, G-55</u>					
Energy Efficiency Charge	\$0.0332		\$0.0387		
Demand Side Management Charge	0.0000		0.0000		
Conservation Charge (CCx)		\$0.0332		\$0.0387	\$0.0387
Relief Holder and pond at Gas Street, Concord, NH	0.0000		0.0000		
Manufactured Gas Plants	0.0163		0.0161		
Environmental Surcharge (ES)		0.0163		0.0161	
Cost Allowance Adjustment Factor		0.0021		0.0001	
Gas Restructuring Expense Factor (GREF)		0.0000		0.0000	
Rate Case Expense Factor (RCEF)		0.0062		0.0092	
Residential Low Income Assistance Program (RLIAP)		0.0096		0.0130	
LDAC		\$0.0674		\$0.0772	\$0.0772 per therm

<u>Commercial/Industrial Medium Annual Use Rates - G-42, G-52, G-45, G-56</u>					
Energy Efficiency Charge	\$0.0332		\$0.0387		
Demand Side Management Charge	0.0000		0.0000		
Conservation Charge (CCx)		\$0.0332		\$0.0387	\$0.0387
Relief Holder and pond at Gas Street, Concord, NH	0.0000		0.0000		
Manufactured Gas Plants	0.0163		0.0161		
Environmental Surcharge (ES)		0.0163		0.0161	
Cost Allowance Adjustment Factor		0.0021		0.0001	
Gas Restructuring Expense Factor (GREF)		0.0000		0.0000	
Rate Case Expense Factor (RCEF)		0.0062		0.0092	
Residential Low Income Assistance Program (RLIAP)		0.0096		0.0130	
LDAC		\$0.0674		\$0.0772	\$0.0772 per therm

<u>Commercial/Industrial Large Annual Use Rates - G-43, G-53, G-54, G-46, G-56, G-57, G-58</u>					
Energy Efficiency Charge	\$0.0332		\$0.0387		
Demand Side Management Charge	0.0000		0.0000		
Conservation Charge (CCx)		\$0.0332		\$0.0387	\$0.0387
Relief Holder and pond at Gas Street, Concord, NH	0.0000		0.0000		
Manufactured Gas Plants	0.0163		0.0161		
Environmental Surcharge (ES)		0.0163		0.0161	
Cost Allowance Adjustment Factor		0.0021		0.0001	
Gas Restructuring Expense Factor (GREF)		0.0000		0.0000	
Rate Case Expense Factor (RCEF)		0.0062		0.0092	
Residential Low Income Assistance Program (RLIAP)		0.0096		0.0130	
LDAC		\$0.0674		\$0.0772	\$0.0772 per therm

Issued: ~~November 9, 2017~~ October xx, 2018

Effective: ~~November 1, 2017~~ November 1, 2018

Issued in compliance with NHPUC Order No. xx,xxx dated xxxx xx, 2018 in Docket DG 18-xxx.

~~Issued in compliance with NHPUC Order No. 26,066 dated October 31, 2017 in Docket DG 17-135.~~

Issued by: _____
Susan L. Fleck
Title: President

Liberty Utilities (Energy North Natural Gas) Corp. d/b/a Liberty Utilities
Lost Revenue Adjustment Factor (LRAM)
For LDAC effective November 1, 2018 - October 31, 2019

Schedule 19
LRAM
Page 1 of 2

Residential

1	October 31, 2018 Projected Balance (LRAM true-up)	\$18,706
2	Calculated Lost Distribution Revenue - November 2018 through October 2019	\$0
3	Calculated Interest - November 2018 through October 2019	<u>\$957</u>
4		
5	Total to be recovered	\$19,663
6		
7	Estimated November 2018 - October 2019 Sales (therms)	66,050,202
8		
9	LRAM residential rate per therm November 2018 - October 2019	\$0.0003

Commercial & Industrial

10	October 31, 2018 Projected Balance (LRAM true-up)	\$13,218
11	Calculated Lost Distribution Revenue - November 2018 through October 2019	\$0
12	Calculated Interest - November 2018 through October 2019	<u>\$676</u>
13		
14	Total to be recovered	\$13,894
15		
16	Estimated November 2018 - October 2019 Sales (therms)	118,604,671
17		
18	LRAM C&I rate per therm November 2018 - October 2019	\$0.0001

Liberty Utilities (EnergyNorth Natural Gas) Corp.

NOVEMBER 2018 THROUGH OCTOBER 2019
Lost Revenue Adjustment Mechanism

	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)	(Estimate)		
1	FOR THE MONTH OF:	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Total
2	DAYS IN MONTH	30	31	31	28	31	30	31	30	31	31	30	31	

RESIDENTIAL

3	Beginning Balance (LRAM true-up)	\$ 18,706	\$ 18,783	\$ 18,863	\$ 18,943	\$ 19,015	\$ 19,096	\$ 19,175	\$ 19,256	\$ 19,335	\$ 19,417	\$ 19,500	\$ 19,580	\$ 229,669
4														
5	Add: Lost Distribution Revenues	-	-	-	-	-	-	-	-	-	-	-	-	-
6														
7	Less: Lost Distribution Revenue Collections	-	-	-	-	-	-	-	-	-	-	-	-	-
8														
9	Add: Other	-	-	-	-	-	-	-	-	-	-	-	-	-
10														
11	Ending Balance Pre-Interest	\$ 18,706	\$ 18,783	\$ 18,863	\$ 18,943	\$ 19,015	\$ 19,096	\$ 19,175	\$ 19,256	\$ 19,335	\$ 19,417	\$ 19,500	\$ 19,580	\$ 229,669
12														
13	Month's Average Balance	\$ 18,706	\$ 18,783	\$ 18,863	\$ 18,943	\$ 19,015	\$ 19,096	\$ 19,175	\$ 19,256	\$ 19,335	\$ 19,417	\$ 19,500	\$ 19,580	
14														
15	Interest Rate	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	
16														
17	Interest Applied	\$ 77	\$ 80	\$ 80	\$ 73	\$ 81	\$ 78	\$ 81	\$ 79	\$ 82	\$ 82	\$ 80	\$ 83	957
18														
19	Ending Balance	\$ 18,783	\$ 18,863	\$ 18,943	\$ 19,015	\$ 19,096	\$ 19,175	\$ 19,256	\$ 19,335	\$ 19,417	\$ 19,500	\$ 19,580	\$ 19,663	

COMMERCIAL & INDUSTRIAL

3	Beginning Balance	\$ 13,218	\$ 13,272	\$ 13,328	\$ 13,385	\$ 13,436	\$ 13,493	\$ 13,549	\$ 13,606	\$ 13,662	\$ 13,720	\$ 13,778	\$ 13,835	\$ 162,283
4														
5	Add: Lost Distribution Revenues	-	-	-	-	-	-	-	-	-	-	-	-	-
6														
7	Less: Lost Distribution Revenue Collections	-	-	-	-	-	-	-	-	-	-	-	-	-
8														
9	Add: Other	-	-	-	-	-	-	-	-	-	-	-	-	-
10														
11	Ending Balance Pre-Interest	\$ 13,218	\$ 13,272	\$ 13,328	\$ 13,385	\$ 13,436	\$ 13,493	\$ 13,549	\$ 13,606	\$ 13,662	\$ 13,720	\$ 13,778	\$ 13,835	\$ 162,283
12														
13	Month's Average Balance	\$ 13,218	\$ 13,272	\$ 13,328	\$ 13,385	\$ 13,436	\$ 13,493	\$ 13,549	\$ 13,606	\$ 13,662	\$ 13,720	\$ 13,778	\$ 13,835	
14														
15	Interest Rate	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	5 00%	
16														
17	Interest Applied	\$ 54	\$ 56	\$ 57	\$ 51	\$ 57	\$ 55	\$ 58	\$ 56	\$ 58	\$ 58	\$ 57	\$ 59	676
18														
19	Ending Balance	\$ 13,272	\$ 13,328	\$ 13,385	\$ 13,436	\$ 13,493	\$ 13,549	\$ 13,606	\$ 13,662	\$ 13,720	\$ 13,778	\$ 13,835	\$ 13,894	

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Energy Efficiency Programs
For Residential Non-Heating and Heating Classes
November 1, 2018 - October 31, 2019
Energy Efficiency Charge

Schedule 19
Energy Efficiency
Page 1 of 3

Month	Actual or Forecast	Beginning Balance (Over)/Under	Residential DSM Rate Per Therm	DSM Collections	Forecasted DSM Expenditures	Actual DSM Expenditures		Incentive	Ending Balance (Over)/Under	Average Balance (Over)/Under	Interest Monthly Federal Prime Rate	Interest @ Fed Reserve Bank Loan Rate	Ending Bal. Plus Interest (Over)/Under	Forecasted Residential Therm Sales	Residential Therm Sales	# of Days
						Residential	Low-Income									
May 18	Actual	(2,240,400)	(\$0.0516)	(227,299)	265,627	169,251	35,820	12,775	(2,249,854)	(2,245,127)	4.75%	(6,227)	(2,256,081)	3,349,634	4,405,040	31
June 18	Actual	(2,256,081)	(\$0.0516)	(92,112)	265,627	148,594	32,579	12,775	(2,154,245)	(2,205,163)	4.75%	(6,267)	(2,160,512)	1,984,898	1,785,463	30
July 18	Forecast	(2,160,512)	(\$0.0516)	(64,816)	265,627	101,545	8,281	12,775	(2,102,728)	(2,131,620)	5.00%	(3,349)	(2,106,077)	1,252,661	1,256,417	31
August 18	Forecast	(2,106,077)	(\$0.0516)	(54,524)	265,627	0	0		(1,894,974)	(2,000,525)	5.00%	(8,495)	(1,903,469)	1,056,675	0	31
September 18	Forecast	(1,903,469)	(\$0.0516)	(58,985)	265,627	0	0		(1,696,827)	(1,800,148)	5.00%	(7,398)	(1,704,225)	1,143,113	0	30
October 18	Forecast	(1,704,225)	(\$0.0516)	(87,386)	265,627	0	0		(1,525,984)	(1,615,104)	5.00%	(6,859)	(1,532,843)	1,693,533	0	31
November 18	Forecast	(1,532,843)	(\$0.0450)	(195,314)	265,627	0	0		(1,462,529)	(1,497,686)	5.00%	(6,155)	(1,468,684)	4,340,302	0	30
December 18	Forecast	(1,468,684)	(\$0.0450)	(357,114)	265,627	0	0		(1,560,171)	(1,514,428)	5.00%	(6,431)	(1,566,602)	7,935,861	0	31
January 19	Forecast	(1,566,602)	(\$0.0450)	(509,038)	404,158	0	0		(1,671,483)	(1,619,043)	5.00%	(6,875)	(1,678,358)	11,311,961	0	31
February 19	Forecast	(1,678,358)	(\$0.0450)	(549,085)	404,158	0	0		(1,823,286)	(1,750,822)	5.00%	(6,715)	(1,830,001)	12,201,886	0	28
March 19	Forecast	(1,830,001)	(\$0.0450)	(467,012)	404,158	0	0		(1,892,856)	(1,861,428)	5.00%	(7,905)	(1,900,760)	10,378,048	0	31
April 19	Forecast	(1,900,760)	(\$0.0450)	(318,535)	404,158	0	0		(1,815,138)	(1,857,949)	5.00%	(7,635)	(1,822,773)	7,078,549	0	30
May 19	Forecast	(1,822,773)	(\$0.0450)	(184,988)	404,158	0	0		(1,603,603)	(1,713,188)	5.00%	(7,275)	(1,610,878)	4,110,836	0	31
June 19	Forecast	(1,610,878)	(\$0.0450)	(89,586)	404,158	0	0		(1,296,307)	(1,453,593)	5.00%	(5,974)	(1,302,280)	1,990,802	0	30
July 19	Forecast	(1,302,280)	(\$0.0450)	(50,671)	404,158	0	0		(948,794)	(1,125,537)	5.00%	(4,780)	(953,574)	1,126,024	0	31
August 19	Forecast	(953,574)	(\$0.0450)	(49,093)	404,158	0	0		(598,509)	(776,041)	5.00%	(3,296)	(601,805)	1,090,959	0	31
September 19	Forecast	(601,805)	(\$0.0450)	(72,834)	404,158	0	0		(270,481)	(436,143)	5.00%	(1,792)	(272,273)	1,618,528	0	30
October 19	Forecast	(272,273)	(\$0.0450)	(128,990)	404,158	0	0		2,894	(134,690)	5.00%	(572)	2,322	2,866,447	0	31
November 19	Forecast	2,322	(\$0.0450)	(195,314)	404,158	0	0		211,166	106,744	5.00%	439	211,605	4,340,302	0	30
December 19	Forecast	211,605	(\$0.0450)	(357,114)	404,158	0	0		258,648	235,127	5.00%	998	259,647	7,935,861	0	31

Estimated Residential Conservation Charge		
Effective November 1, 2018 - October 31, 2019		
Beginning Balance	\$	(1,532,843)
Program Budget Nov 18-Oct 19		4,572,829
Projected Interest		(65,405)
Projected Budget with Interest	\$	2,974,581
Total Charges	\$	2,974,581
Projected Therm Sales		66,050,202
Residential Rate		\$0.0450
Total Charges with Interest	\$	2,972,259
Projected Therm Sales		66,050,202
Residential Rate		\$0.0450

Residential Non Heating Therm Sales	0%	778,066	642,126	0%
Residential Heating Therm Sales	35%	65,862,804	65,408,076	35%
C&I Therm Sales	62%	115,871,154	118,604,671	64%
Total Thermes	100%	186,909,214	184,654,874	100%
		Budget	Budget	
		2018	2019	
Low-Income Program Budget		\$ 1,217,300	\$ 1,310,342	
Other Refund		-	-	
Total Shared Budget		\$ 1,005,700	\$ 1,310,342	
Residential Program Budget		\$ 2,362,534	\$ 4,163,210	
Residential Program Incentive @ 70%		\$ 196,891	\$ 217,977	
Total Residential Program Budget		\$ 2,559,425	\$ 4,381,187	
Commercial/Industrial Program Budget		\$ 3,580,741	\$ 4,419,684	
Commercial/Industrial Program Incentive at 70%		\$ 196,941	\$ 205,958	
Total Commercial/Industrial Program Budget		\$ 3,777,682	\$ 4,625,642	
Total Program Budget		\$ 7,554,407	\$ 10,317,171	
Shared Expenses Allocation to Residential		\$ 436,990	\$ 468,703	
Shared Expenses Allocation to C&I		780,310	841,639	
Total Allocated Shared Expenses		\$ 1,217,300	\$ 1,310,342	
Total Residential (including allocation of Shared Budget)		\$ 2,996,415	\$ 4,849,890	
Total C&I (including allocation of Shared Budget)		4,557,992	5,467,281	
Total Budget		\$ 7,554,407	\$ 10,317,171	

Estimated Residential Conservation Charge
Effective November 1, 2018 - October 31, 2019

Beginning Balance	\$	(1,532,842.79)
Program Budget Nov 18-Oct 19	\$	4,182,242.33
Projected Interest	\$	(61,190.00)
Projected Budget with Interest	\$	2,588,209.55
Total Charges	\$	2,588,209.55

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Liberty Utilities (Energy/North Natural Gas) Corp.
 Energy Efficiency Programs
 For Commercial/Industrial Classes
 November 1, 2018 - October 31, 2019
 Energy Efficiency Charge

Schedule 19
 Energy Efficiency
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Month	Actual or Forecast	Beginning Balance (Over)/Under	DSM Rate Per Therm	DSM Collections	Forecasted DSM Expenditures	Actual DSM Expenditures		Incentive	Ending Balance (Over)/Under	Average Balance (Over)/Under	Interest Fed Reserve Prime Rate	Interest @ Fed Reserve Bank Loan Rate	Ending Bal. Plus Interest (Over)/Under	Forecasted Commercial/Industrial Therm Sales	Actual Commercial/Industrial Therm Sales	# of Days
						C&I	Low-Income									
May 18	Actual	(1,094,665)	(\$0.0219)	(158,066)	245,987	106,016	43,216	9,778	(1,093,721)	(1,094,193)	4.75%	(3,717)	(1,097,438)	6,537,363	7,299,008	31
June 18	Actual	(1,097,438)	(\$0.0219)	(131,661)	245,987	198,094	13,943	9,778	(1,007,284)	(1,052,361)	4.75%	(3,676)	(1,010,960)	5,092,563	6,011,635	30
July 18	Forecast	(1,010,960)	(\$0.0219)	(87,792)	245,987	0	0		(852,765)	(931,862)	5.00%	(3,957)	(856,722)	4,008,754	0	31
August 18	Forecast	(856,722)	(\$0.0219)	(84,349)	245,987	0	0		(695,084)	(775,903)	5.00%	(3,295)	(698,379)	3,851,567	0	31
September 18	Forecast	(698,379)	(\$0.0219)	(91,025)	245,987	0	0		(543,418)	(620,898)	5.00%	(2,552)	(545,969)	4,156,413	0	30
October 18	Forecast	(545,969)	(\$0.0219)	(109,234)	245,987	0	0		(409,216)	(477,593)	5.00%	(2,028)	(411,245)	4,987,864	0	31
November 18	Forecast	(411,245)	(\$0.0387)	(363,835)	245,987	0	0		(529,092)	(470,168)	5.00%	(1,932)	(531,025)	9,401,414	0	30
December 18	Forecast	(531,025)	(\$0.0387)	(504,619)	245,987	0	0		(789,657)	(660,341)	5.00%	(2,804)	(792,461)	13,039,253	0	31
January 19	Forecast	(792,461)	(\$0.0387)	(659,998)	455,607	0	0		(996,852)	(894,657)	5.00%	(3,799)	(1,000,651)	17,054,214	0	31
February 19	Forecast	(1,000,651)	(\$0.0387)	(688,909)	455,607	0	0		(1,233,953)	(1,117,302)	5.00%	(4,286)	(1,238,239)	17,801,261	0	28
March 19	Forecast	(1,238,239)	(\$0.0387)	(603,328)	455,607	0	0		(1,385,960)	(1,312,099)	5.00%	(5,572)	(1,391,532)	15,589,859	0	31
April 19	Forecast	(1,391,532)	(\$0.0387)	(477,319)	455,607	0	0		(1,413,244)	(1,402,388)	5.00%	(5,763)	(1,419,007)	12,333,818	0	30
May 19	Forecast	(1,419,007)	(\$0.0387)	(318,833)	455,607	0	0		(1,282,233)	(1,350,620)	5.00%	(5,736)	(1,287,969)	8,238,574	0	31
June 19	Forecast	(1,287,969)	(\$0.0387)	(221,442)	455,607	0	0		(1,053,803)	(1,170,886)	5.00%	(4,812)	(1,058,615)	5,722,003	0	30
July 19	Forecast	(1,058,615)	(\$0.0387)	(168,174)	455,607	0	0		(771,183)	(914,899)	5.00%	(3,885)	(775,068)	4,345,591	0	31
August 19	Forecast	(775,068)	(\$0.0387)	(163,556)	455,607	0	0		(483,018)	(629,043)	5.00%	(2,671)	(485,689)	4,226,257	0	31
September 19	Forecast	(485,689)	(\$0.0387)	(179,980)	455,607	0	0		(210,062)	(347,876)	5.00%	(1,430)	(211,492)	4,650,649	0	30
October 19	Forecast	(211,492)	(\$0.0387)	(240,009)	455,607	0	0		4,106	(103,693)	5.00%	(440)	3,666	6,201,778	0	31
November 19	Forecast	3,666	(\$0.0387)	(363,835)	455,607	0	0		95,437	49,552	5.00%	204	95,641	9,401,414	0	30
December 19	Forecast	95,641	(\$0.0387)	(504,619)	455,607	0	0		46,629	71,135	5.00%	302	46,931	13,039,253	0	31

Total 11/2018 - 10/2019 \$ (4,590,001) \$ 5,048,041 0 \$ (43,130) 118,604,671 0

Estimated C&I Conservation Charge November 1, 2018 - October 31, 2019	
Beginning Balance	(411,245)
Program Budget Nov 18-Oct 19	5,048,041
Projected Interest	(43,107)
Program Budget with Interest	4,593,690
Total Charges	\$4,593,690
Projected Therm Sales	118,604,671
C&I Rate	\$0.0387
Total Charges with Interest	\$4,590,001
Projected Therm Sales	118,604,671
C&I Rate	\$0.0387
C&I Rate from Prior Programs	\$0.0000
Combined C&I Rate	\$0.0387

Liberty Utilities (EnergyNorth Natural Gas) Corp.
Energy Efficiency Programs
For Residential and Commercial/Industrial Classes
November 1, 2018 - October 31, 2019
Energy Efficiency Charge

Schedule 19
Energy Efficiency
Page 3 of 3

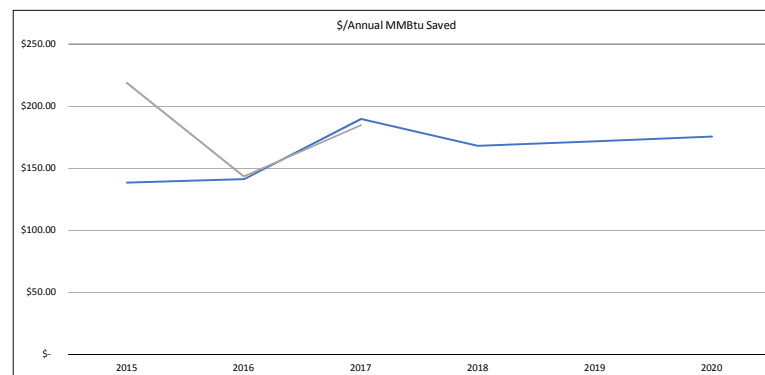
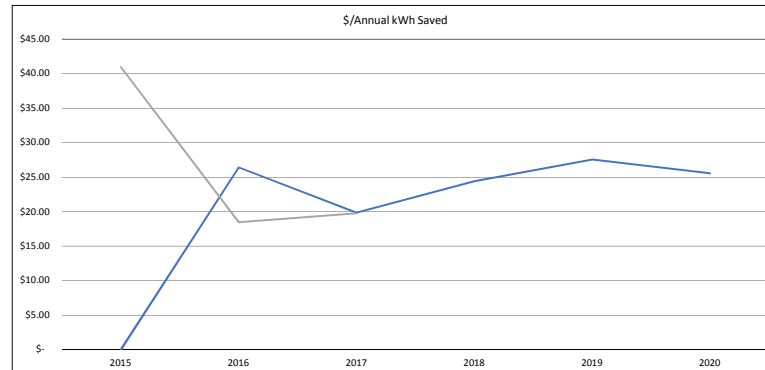
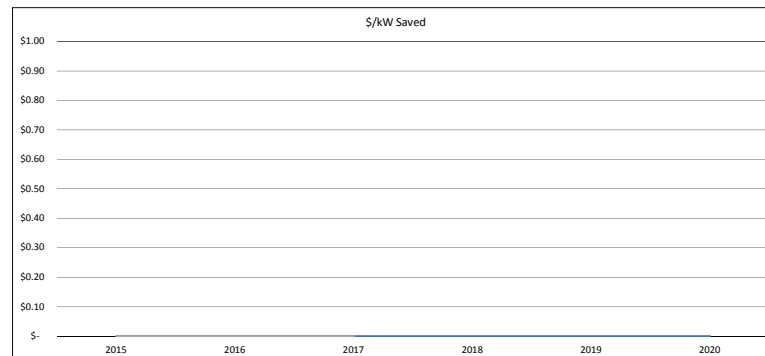
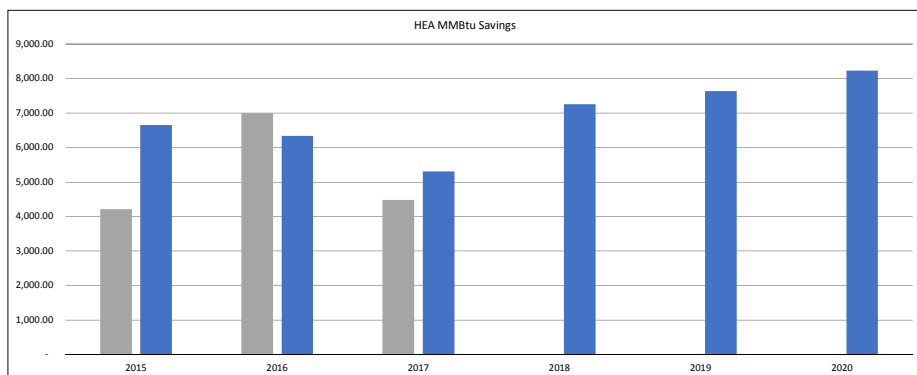
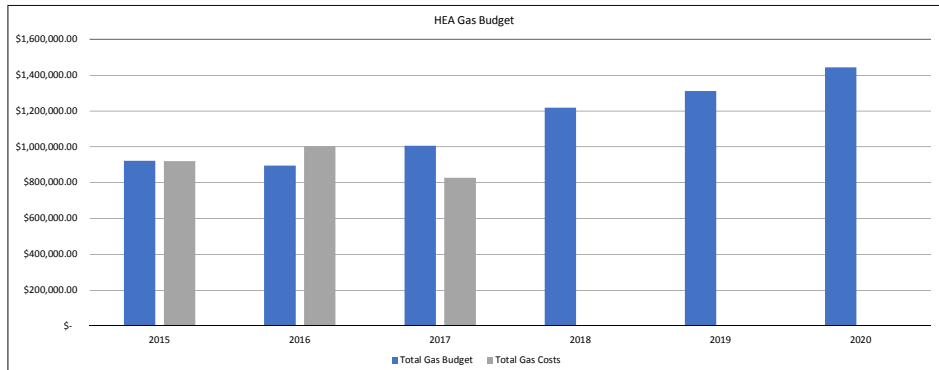
Month	Actual or Forecast	Beginning Balance (Over)/Under	DSM Rate Per Therm	DSM Collections	Forecasted DSM Expenditures	Actual DSM Expenditures				Incentive	Ending Balance (Over)/Under	Average Balance (Over)/Under	Interest Plus Interest Prime Rate	Interest @ Fed Reserve Bank Loan Rate	Ending Bal. Plus Interest (Over)/Under	Forecasted Therm Sales	Actual Therm Sales	# of Days
						Residential	C&I	Low-Income	Total									
May 18	Actual	(3,335,065)	n/a	(385,365)	511,614	169,251	106,016	79,036	354,303	22,553	(3,343,575)	(3,339,320)	4.75%	(13,472)	(3,357,046)	9,886,997	11,704,048	31
June 18	Actual	(3,353,519)	n/a	(223,773)	511,614	148,594	198,094	46,522	393,210	22,553	(3,161,529)	(3,257,524)	4.75%	(12,718)	(3,174,247)	7,077,460	7,797,098	30
July 18	Forecast	(3,171,472)	n/a	(152,607)	511,614	101,545	0	8,281	109,825		(3,214,254)	(3,192,863)	5.00%	(13,559)	(3,227,813)	5,261,414	1,256,417	31
August 18	Forecast	(2,962,798)	n/a	(138,874)	511,614	0	0	0	0		(2,590,058)	(2,776,428)	5.00%	(11,790)	(2,601,848)	4,908,241	0	31
September 18	Forecast	(2,601,848)	n/a	(150,010)	511,614	0	0	0	0		(2,240,245)	(2,421,047)	5.00%	(9,950)	(2,250,194)	5,299,526	0	30
October 18	Forecast	(2,250,194)	n/a	(196,621)	511,614	0	0	0	0		(1,935,201)	(2,092,697)	5.00%	(8,887)	(1,944,087)	6,681,398	0	31
November 18	Forecast	(1,944,087)	n/a	(559,148)	511,614	0	0	0	0		(1,991,622)	(1,967,855)	5.00%	(8,087)	(1,999,709)	13,741,716	0	30
December 18	Forecast	(1,999,709)	n/a	(861,733)	511,614	0	0	0	0		(2,349,828)	(2,174,768)	5.00%	(9,235)	(2,359,063)	20,975,114	0	31
January 19	Forecast	(2,359,063)	n/a	(1,169,036)	859,764	0	0	0	0		(2,668,335)	(2,513,699)	5.00%	(10,675)	(2,679,010)	28,366,175	0	31
February 19	Forecast	(2,679,010)	n/a	(1,237,994)	859,764	0	0	0	0		(3,057,239)	(2,868,124)	5.00%	(11,001)	(3,068,240)	30,003,147	0	28
March 19	Forecast	(3,068,240)	n/a	(1,070,340)	859,764	0	0	0	0		(3,278,816)	(3,173,528)	5.00%	(13,477)	(3,292,292)	25,967,908	0	31
April 19	Forecast	(3,292,292)	n/a	(795,853)	859,764	0	0	0	0		(3,228,381)	(3,260,337)	5.00%	(13,399)	(3,241,780)	19,412,367	0	30
May 19	Forecast	(3,241,780)	n/a	(503,820)	859,764	0	0	0	0		(2,885,836)	(3,063,808)	5.00%	(13,011)	(2,898,847)	12,349,409	0	31
June 19	Forecast	(2,898,847)	n/a	(311,028)	859,764	0	0	0	0		(2,350,110)	(2,624,479)	5.00%	(10,786)	(2,360,896)	7,712,805	0	30
July 19	Forecast	(2,360,896)	n/a	(218,845)	859,764	0	0	0	0		(1,719,977)	(2,040,436)	5.00%	(8,665)	(1,728,642)	5,471,615	0	31
August 19	Forecast	(1,728,642)	n/a	(212,649)	859,764	0	0	0	0		(1,081,527)	(1,405,084)	5.00%	(5,967)	(1,087,494)	5,317,216	0	31
September 19	Forecast	(1,087,494)	n/a	(252,814)	859,764	0	0	0	0		(480,543)	(784,018)	5.00%	(3,222)	(483,765)	6,269,177	0	30
October 19	Forecast	(483,765)	n/a	(368,999)	859,764	0	0	0	0		7,000	(238,383)	5.00%	(1,012)	5,988	9,068,225	0	31
November 19	Forecast	5,988	n/a	(559,149)	859,764	0	0	0	0		306,603	156,296	5.00%	642	307,246	13,741,716	0	30
December 19	Forecast	307,246	n/a	(861,733)	859,764	0	0	0	0		305,277	306,261	5.00%	1,301	306,578	20,975,114	0	31

Total 11/2018 - 10/2019

Residential (R-1 & R-3) and C & I Conservation Charge November 1, 2018 - October 31, 2019		
Beginning Balance	\$	(1,944,087)
Program Budget Nov 18-Oct 19	\$	9,620,871
Projected Interest	\$	(108,512)
Program Budget with Interest	\$	7,568,271
Total Charges		\$7,568,271

Home Energy Assistance

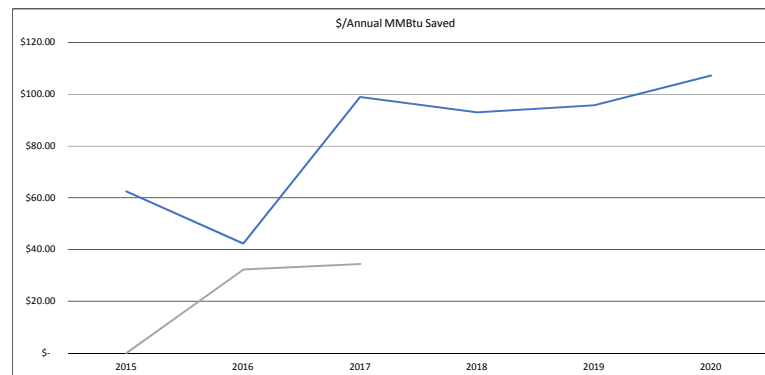
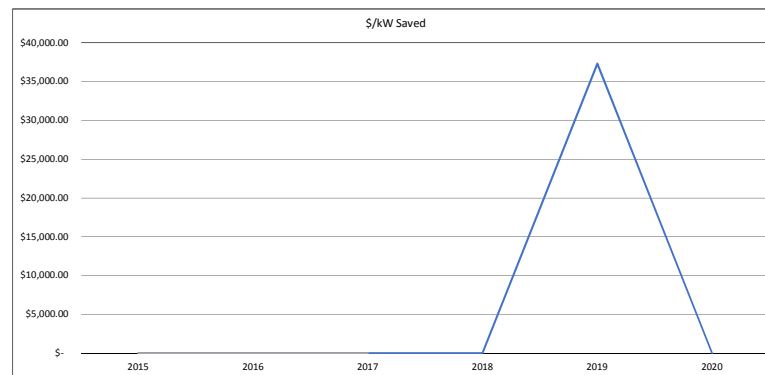
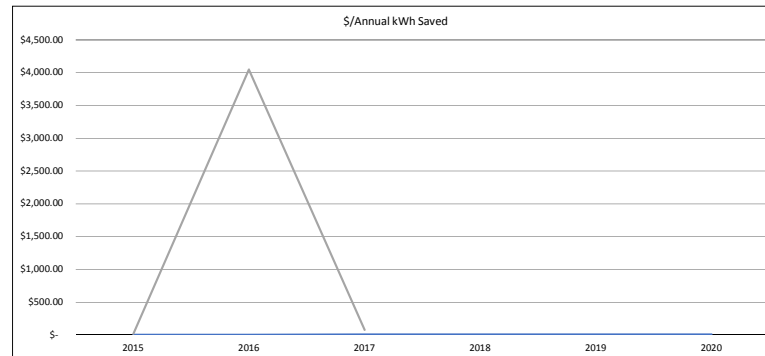
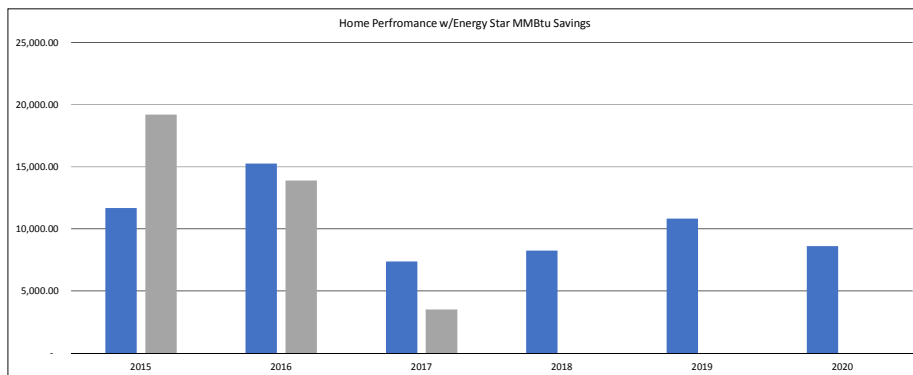
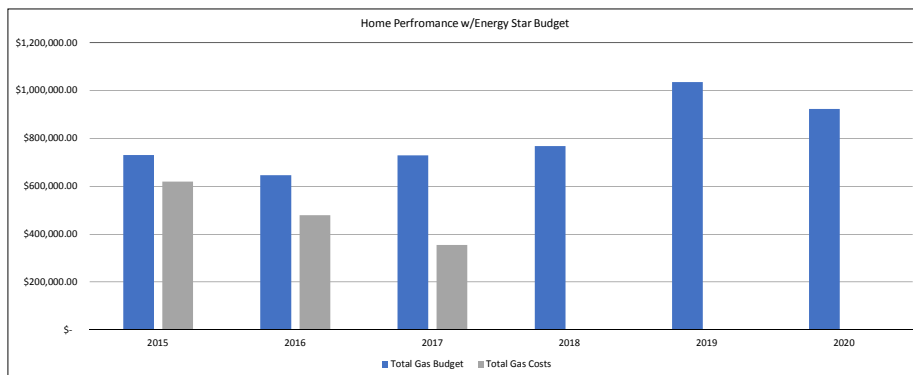
Planned		2015	2016	2017	2018	2019	2020
1)	Total Gas Budget	\$ 921,250.00	\$ 895,000.00	\$ 1,005,700.00	\$ 1,217,300.00	\$ 1,310,342.19	\$ 1,443,218.36
	Annual Electric Savings Plan (kWh)	\$ -	\$ 33,878.44	\$ 50,719.26	\$ 49,935.01	\$ 47,538.87	\$ 56,468.30
	\$/Annual kWh Plan	\$ -	\$ 26.42	\$ 19.83	\$ 24.38	\$ 27.56	\$ 25.56
2)	Total Gas Budget	\$ 921,250.00	\$ 895,000.00	\$ 1,005,700.00	\$ 1,217,300.00	\$ 1,310,342.19	\$ 1,443,218.36
	Total summer peak kW Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	\$/kW Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3)	Total Gas Budget	\$ 921,250.00	\$ 895,000.00	\$ 1,005,700.00	\$ 1,217,300.00	\$ 1,310,342.19	\$ 1,443,218.36
	Total Annual MMBtu Plan	\$ 6,650.66	\$ 6,338.51	\$ 5,302.03	\$ 7,252.46	\$ 7,636.96	\$ 8,227.99
	\$/Annual MMBtu Plan	\$ 138.52	\$ 141.20	\$ 189.68	\$ 167.85	\$ 171.58	\$ 175.40
Home Energy Assistance							
Actuals		2015	2016	2017			
1)	Total Gas Costs	\$ 919,750.53	\$ 1,003,642.21	\$ 826,371.23			
	Annual Electric Savings Actual (kWh)	\$ 22,452.20	\$ 54,303.44	\$ 41,805.90			
	\$/Annual kWh Actual	\$ 40.96	\$ 18.48	\$ 19.77			
2)	Total Gas Costs	\$ 919,750.53	\$ 1,003,642.21	\$ 826,371.23			
	Total summer peak kW Actual	\$ -	\$ -	\$ -			
	\$/kW Actual	\$ -	\$ -	\$ -			
3)	Total Gas Costs	\$ 919,750.53	\$ 1,003,642.21	\$ 826,371.23			
	Total Annual MMBtu Actual	\$ 4,206.13	\$ 6,997.88	\$ 4,476.14			
	\$/Annual MMBtu Actual	\$ 218.67	\$ 143.42	\$ 184.62			



Home Performance w/Energy Star

Planned		2015	2016	2017	2018	2019	2020
1)	Total Gas Budget	\$ 730,157.00	\$ 645,815.00	\$ 729,200.00	\$ 767,160.00	\$ 1,035,751.28	\$ 923,161.78
	Annual Electric Savings Plan (kWh)	-	-	185,369.92	119,725.12	177,985.24	125,568.00
	\$/Annual kWh Plan	\$ -	\$ -	\$ 3.93	\$ 6.41	\$ 5.82	\$ 7.35
2)	Total Gas Budget	\$ 730,157.00	\$ 645,815.00	\$ 729,200.00	\$ 767,160.00	\$ 1,035,751.28	\$ 923,161.78
	Total summer peak kW Plan	-	-	-	-	27.77	-
	\$/kW Plan	\$ -	\$ -	\$ -	\$ -	\$ 37,302.35	\$ -
3)	Total Gas Budget	\$ 730,157.00	\$ 645,815.00	\$ 729,200.00	\$ 767,160.00	\$ 1,035,751.28	\$ 923,161.78
	Total Annual MMBtu Plan	11,681.19	15,257.70	7,369.27	8,247.88	10,825.20	8,610.24
	\$/Annual MMBtu Plan	\$ 62.51	\$ 42.33	\$ 98.95	\$ 93.01	\$ 95.68	\$ 107.22

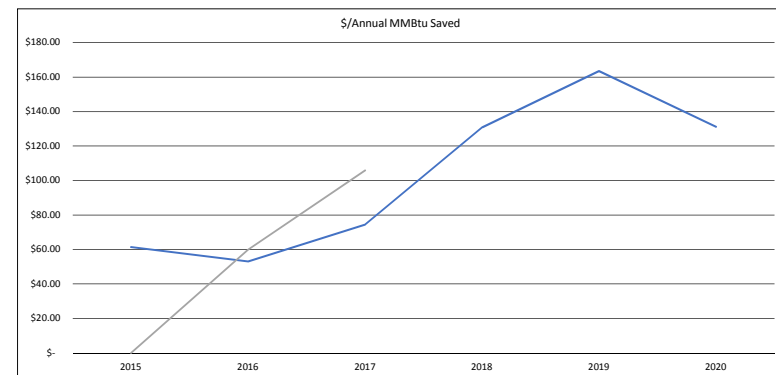
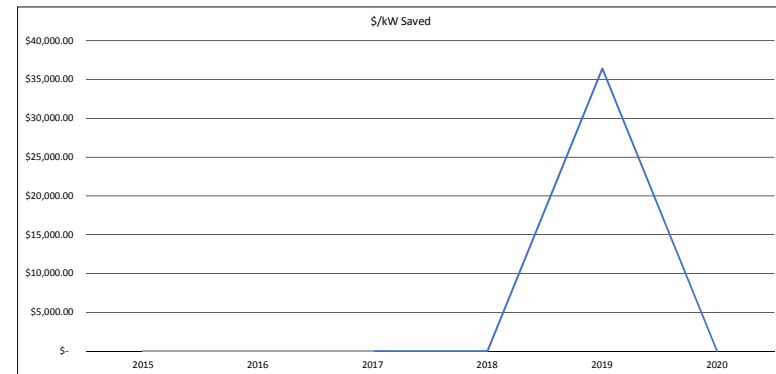
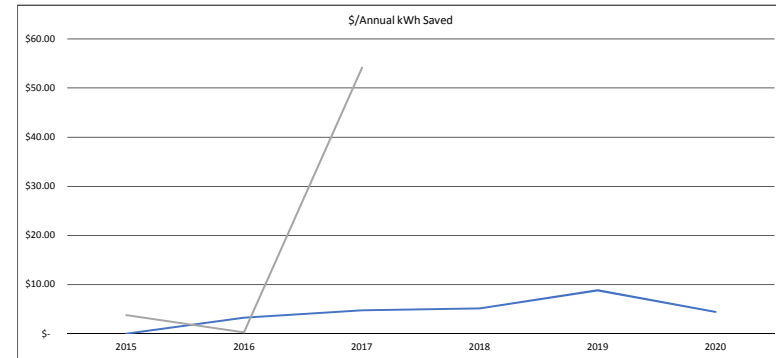
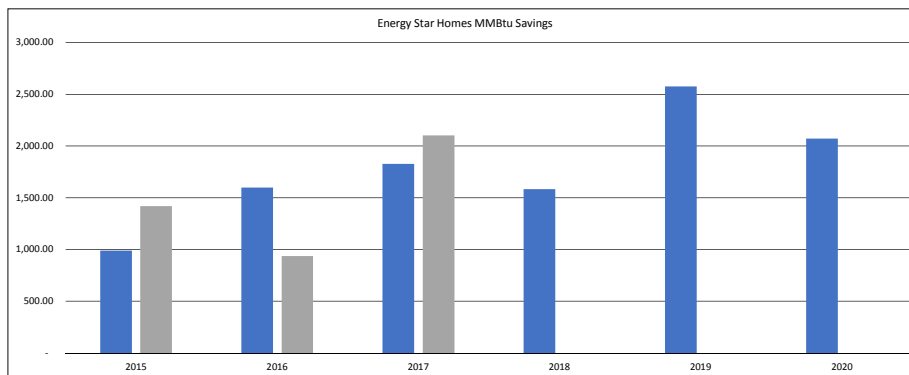
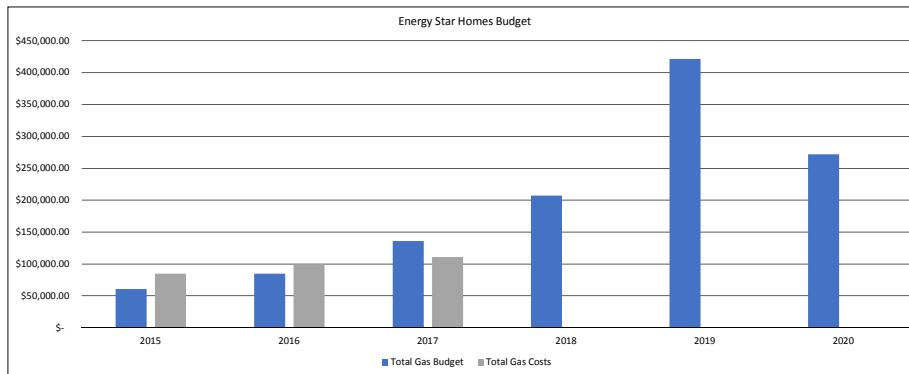
Home Performance w/Energy Star Actuals		2015	2016	2017
1)	Total Gas Costs	\$ 619,872.77	\$ 478,819.12	\$ 354,067.20
	Annual Electric Savings Actual (kWh)	45,640.00	118.28	4,817.00
	\$/Annual kWh Actual	\$ 13.58	\$ 4,048.30	\$ 73.50
2)	Total Gas Costs	\$ 619,872.77	\$ 478,819.12	\$ 354,067.20
	Total summer peak kW Actual	-	-	-
	\$/kW Actual	\$ -	\$ -	\$ -
3)	Total Gas Costs	\$ 619,872.77	\$ 478,819.12	\$ 354,067.20
	Total Annual MMBtu Actual	19,203.20	13,900.99	3,507.99
	\$/Annual MMBtu Actual	\$ 32.28	\$ 34.44	\$ 100.93



Energy Star Homes

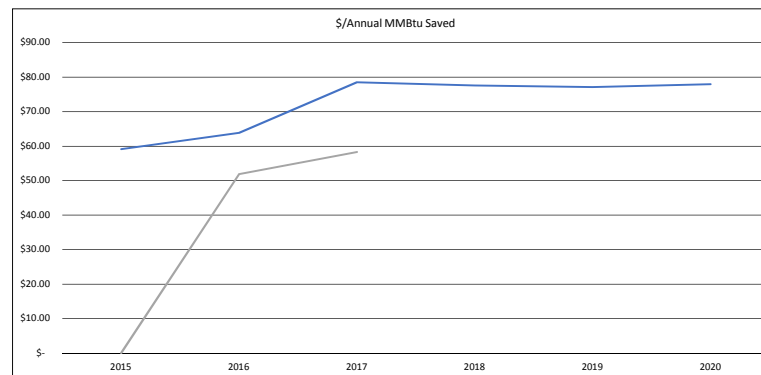
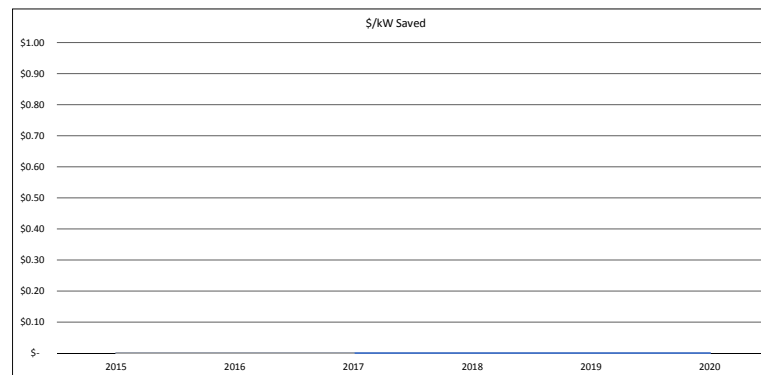
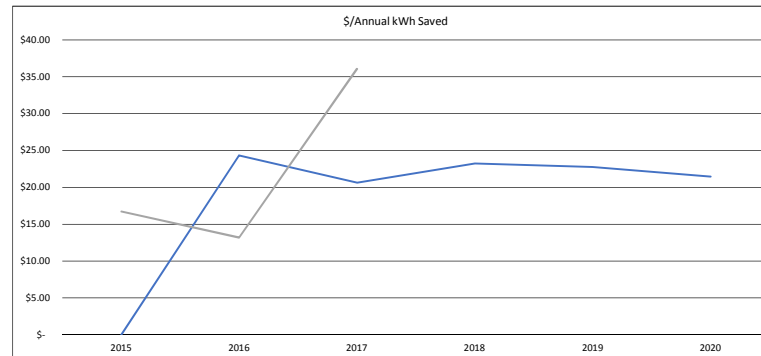
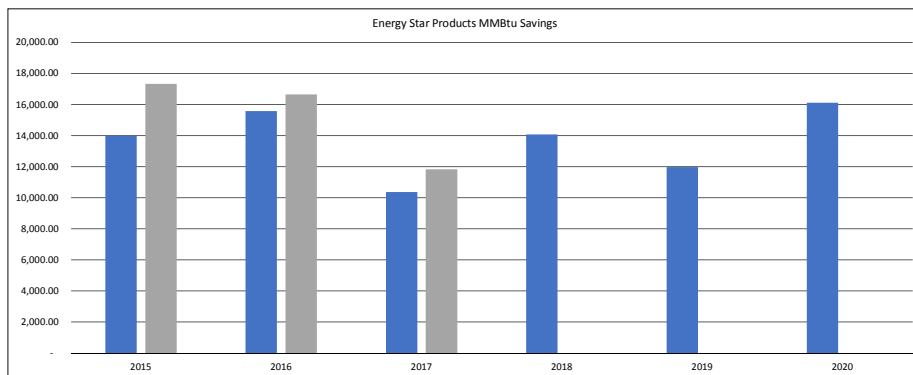
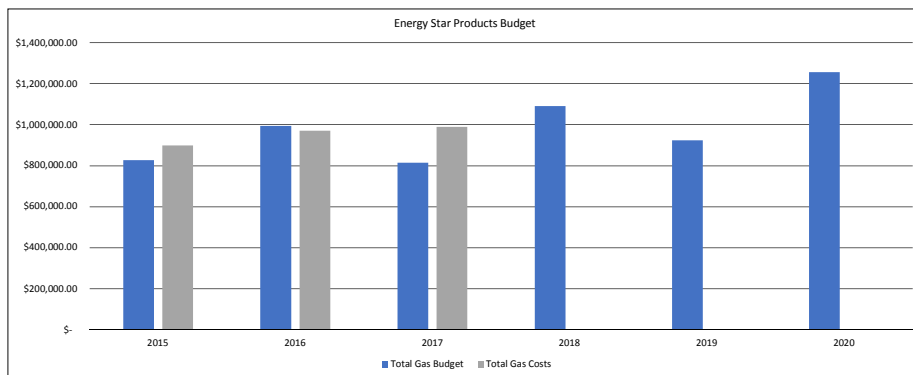
Planned		2015	2016	2017	2018	2019	2020
1)	Total Gas Budget	\$ 60,800.00	\$ 85,000.00	\$ 136,000.00	\$ 207,100.00	\$ 421,351.15	\$ 272,132.22
	Annual Electric Savings Plan (kWh)	-	26,098.44	28,722.49	40,277.27	47,700.96	61,482.42
	\$/Annual kWh Plan	\$ -	\$ 3.26	\$ 4.73	\$ 5.14	\$ 8.83	\$ 4.43
2)	Total Gas Budget	\$ 60,800.00	\$ 85,000.00	\$ 136,000.00	\$ 207,100.00	\$ 421,351.15	\$ 272,132.22
	Total summer peak kW Plan	-	-	-	-	11.57	-
	\$/kW Plan	\$ -	\$ -	\$ -	\$ -	\$ 36,404.46	\$ -
3)	Total Gas Budget	\$ 60,800.00	\$ 85,000.00	\$ 136,000.00	\$ 207,100.00	\$ 421,351.15	\$ 272,132.22
	Total Annual MMBtu Plan	989.66	1,599.35	1,828.65	1,582.72	2,576.78	2,073.04
	\$/Annual MMBtu Plan	\$ 61.44	\$ 53.15	\$ 74.37	\$ 130.85	\$ 163.52	\$ 131.27

Energy Star Homes Actuals		2015	2016	2017
1)	Total Gas Costs	\$ 84,958.18	\$ 99,239.80	\$ 111,025.37
	Annual Electric Savings Actual (kWh)	22,296.00	348,784.00	2,050.64
	\$/Annual kWh Actual	\$ 3.81	\$ 0.28	\$ 54.14
2)	Total Gas Costs	\$ 84,958.18	\$ 99,239.80	\$ 111,025.37
	Total summer peak kW Actual	-	-	-
	\$/kW Actual	\$ -	\$ -	\$ -
3)	Total Gas Costs	\$ 84,958.18	\$ 99,239.80	\$ 111,025.37
	Total Annual MMBtu Actual	1,419.50	937.50	2,103.50
	\$/Annual MMBtu Actual	\$ 59.85	\$ 105.86	\$ 52.78



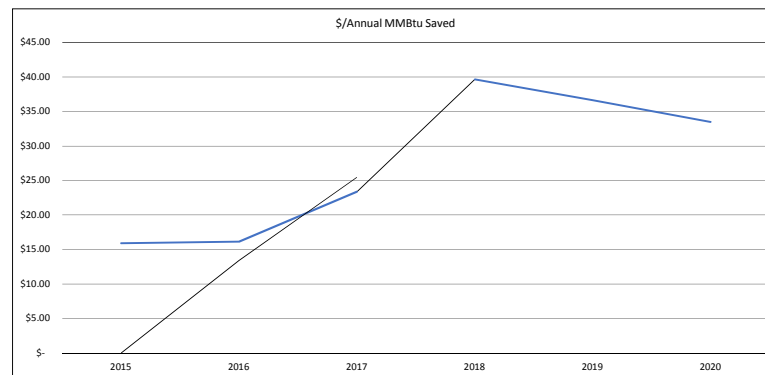
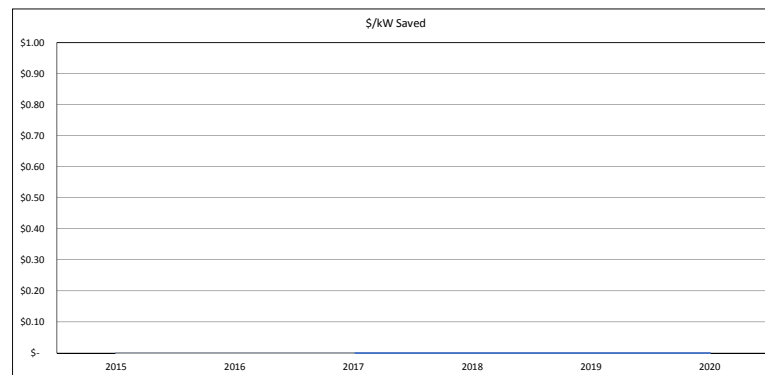
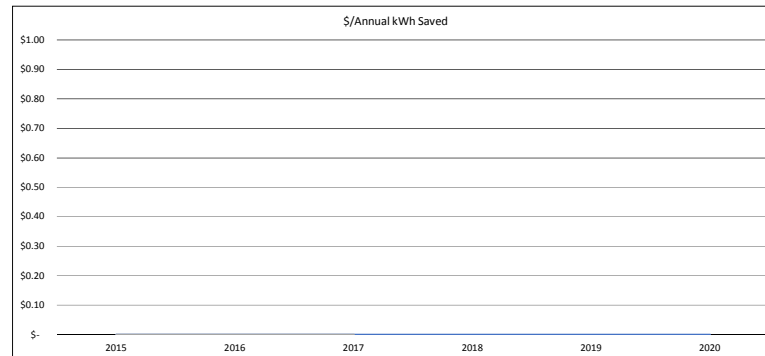
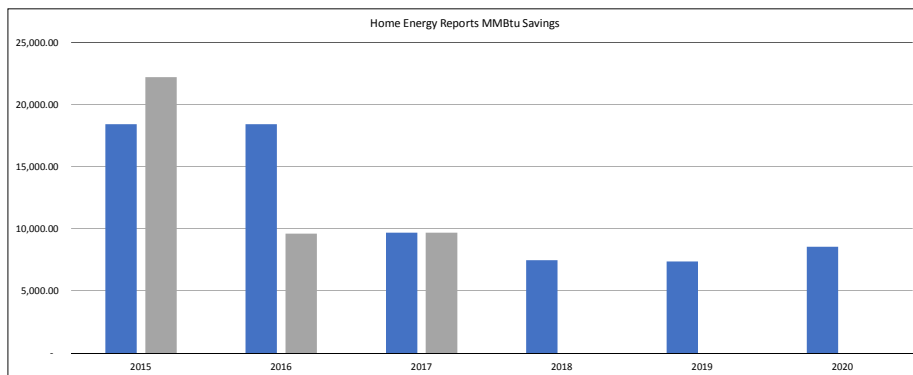
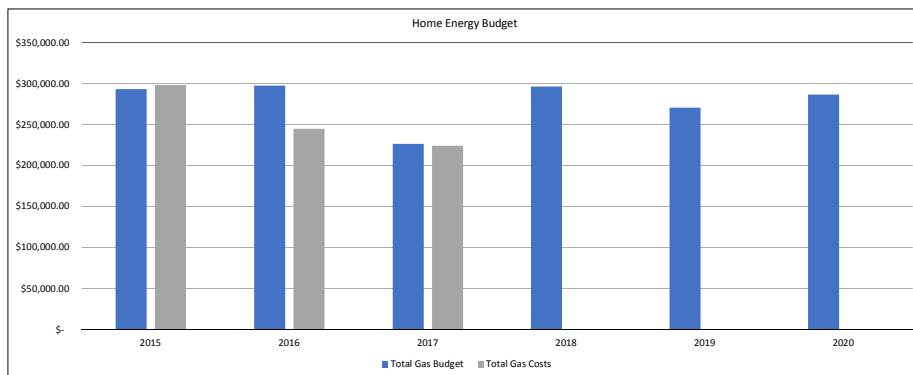
Energy Star Products

Planned		2015		2016		2017		2018		2019		2020	
1)	Total Gas Budget	\$	828,043.00	\$	995,000.00	\$	815,220.00	\$	1,091,674.00	\$	925,001.00	\$	1,257,176.00
	Annual Electric Savings Plan (kWh)		-		40,875.38		39,480.00		46,959.26		40,628.00		58,588.00
	\$/Annual kWh Plan	\$	-	\$	24.34	\$	20.65	\$	23.25	\$	22.77	\$	21.46
2)	Total Gas Budget	\$	828,043.00	\$	995,000.00	\$	815,220.00	\$	1,091,674.00	\$	925,001.00	\$	1,257,176.00
	Total summer peak kW Plan		-		-		-		-		-		-
	\$/kW Plan	\$	-	\$	-	\$	-	\$	-	\$	-	\$	-
3)	Total Gas Budget	\$	828,043.00	\$	995,000.00	\$	815,220.00	\$	1,091,674.00	\$	925,001.00	\$	1,257,176.00
	Total Annual MMBtu Plan		14,005.99		15,590.22		10,383.60		14,078.80		11,989.98		16,126.80
	\$/Annual MMBtu Plan	\$	59.12	\$	63.82	\$	78.51	\$	77.54	\$	77.15	\$	77.96
Energy Star Products													
Actuals		2015		2016		2017		2018		2019		2020	
1)	Total Gas Costs	\$	899,813.80	\$	970,998.20	\$	989,619.28						
	Annual Electric Savings Actual (kWh)		53,802.80		73,636.72		27,419.00						
	\$/Annual kWh Actual	\$	16.72	\$	13.19	\$	36.09						
2)	Total Gas Costs	\$	899,813.80	\$	970,998.20	\$	989,619.28						
	Total summer peak kW Actual		-		-		-						
	\$/kW Actual	\$	-	\$	-	\$	-						
3)	Total Gas Costs	\$	899,813.80	\$	970,998.20	\$	989,619.28						
	Total Annual MMBtu Actual		17,351.10		16,657.70		11,845.70						
	\$/Annual MMBtu Actual	\$	51.86	\$	58.29	\$	83.54						



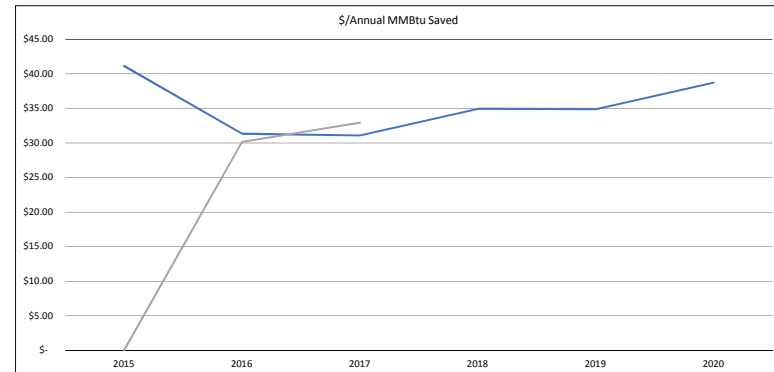
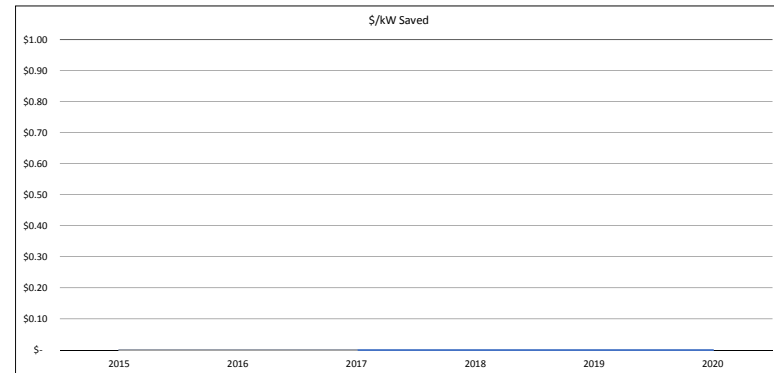
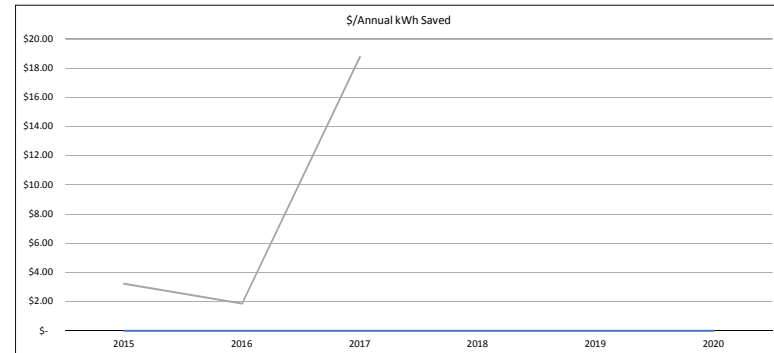
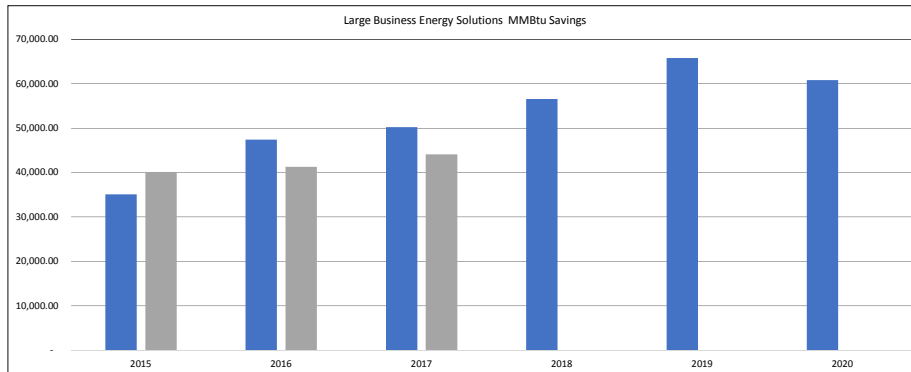
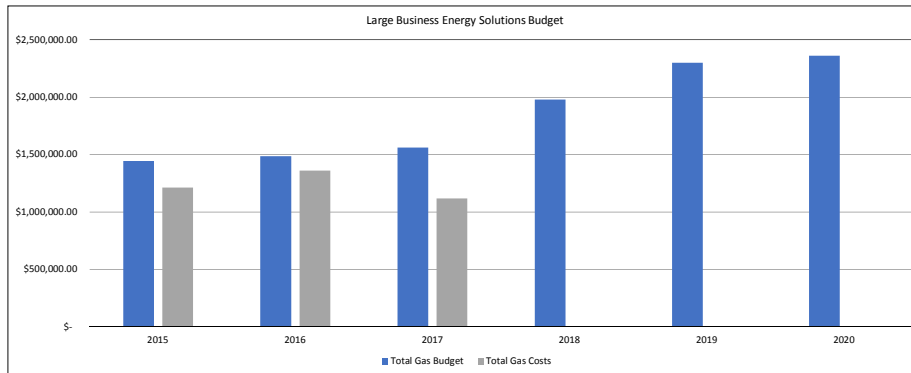
Home Energy Reports

Planned		2015	2016	2017	2018	2019	2020
1)	Total Gas Budget	\$ 293,550.00	\$ 298,000.00	\$ 227,000.00	\$ 296,600.00	\$ 270,764.00	\$ 286,994.54
	Annual Electric Savings Plan (kWh)	-	-	-	-	-	-
	\$/Annual kWh Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2)	Total Gas Budget	\$ 293,550.00	\$ 298,000.00	\$ 227,000.00	\$ 296,600.00	\$ 270,764.00	\$ 286,994.54
	Total summer peak kW Plan	-	-	-	-	-	-
	\$/kW Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3)	Total Gas Budget	\$ 293,550.00	\$ 298,000.00	\$ 227,000.00	\$ 296,600.00	\$ 270,764.00	\$ 286,994.54
	Total Annual MMBtu Plan	18,440.10	18,440.10	9,700.00	7,480.00	7,384.00	8,560.00
	\$/Annual MMBtu Plan	\$ 15.92	\$ 16.16	\$ 23.40	\$ 39.65	\$ 36.67	\$ 33.53
Home Energy Reports		2015	2016	2017			
1)	Total Gas Costs	\$ 298,541.76	\$ 245,049.37	\$ 224,349.60			
	Annual Electric Savings Actual (kWh)	-	-	-			
	\$/Annual kWh Actual	\$ -	\$ -	\$ -			
2)	Total Gas Costs	\$ 298,541.76	\$ 245,049.37	\$ 224,349.60			
	Total summer peak kW Actual	-	-	-			
	\$/kW Actual	\$ -	\$ -	\$ -			
3)	Total Gas Costs	\$ 298,541.76	\$ 245,049.37	\$ 224,349.60			
	Total Annual MMBtu Actual	22,213.10	9,622.40	9,708.30			
	\$/Annual MMBtu Actual	\$ 13.44	\$ 25.47	\$ 23.11			



Large Business Energy Solutions

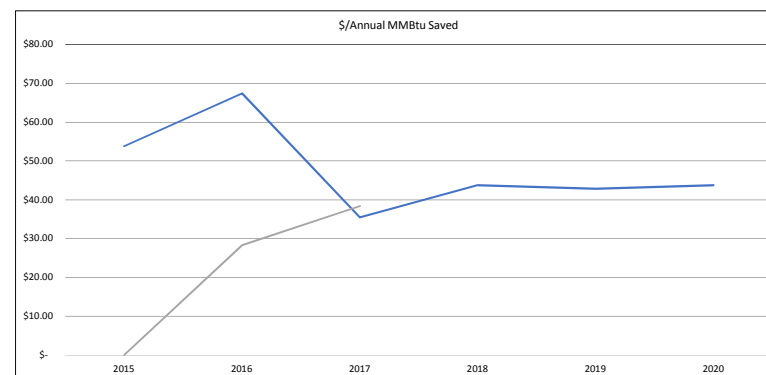
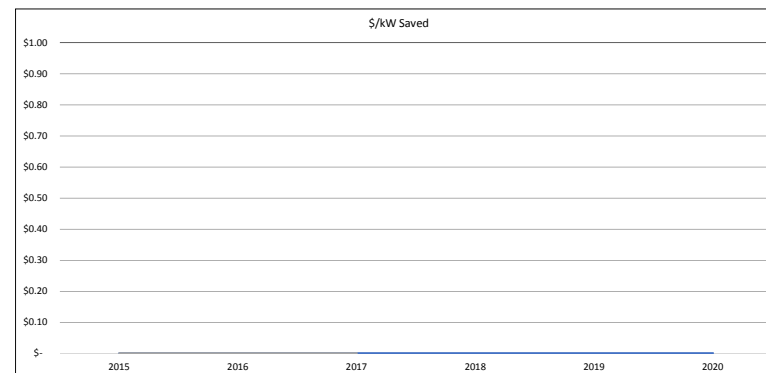
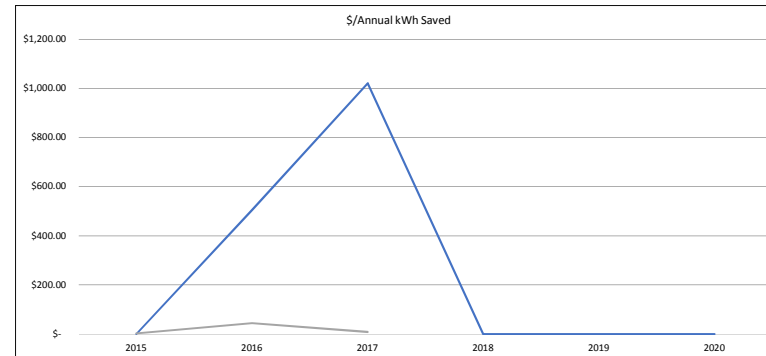
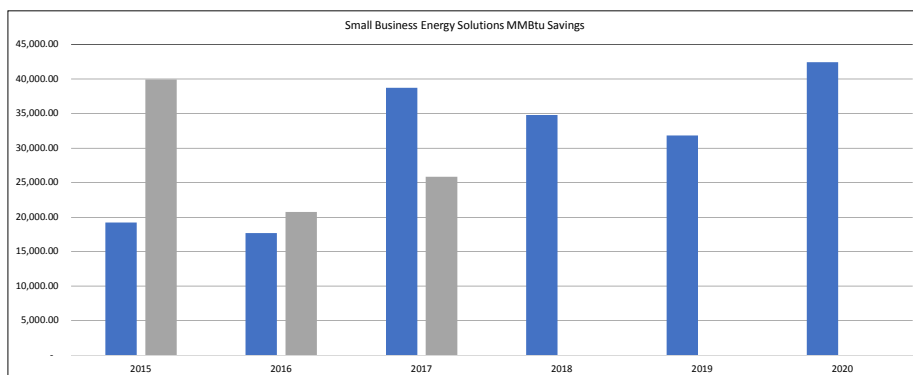
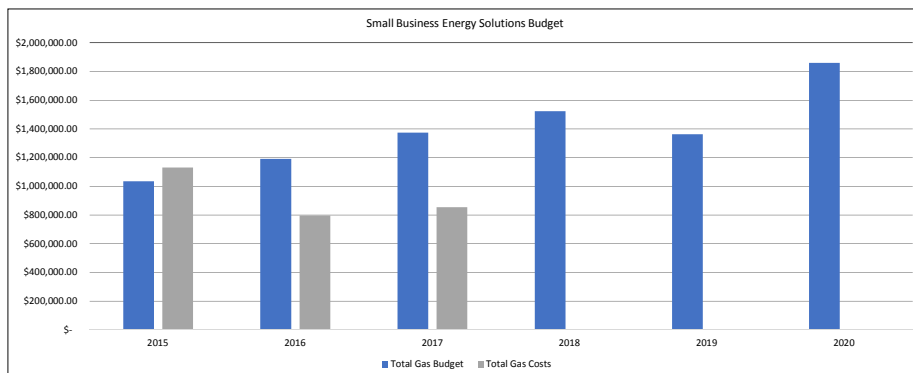
Planned		2015	2016	2017	2018	2019	2020
1)	Total Gas Budget	\$ 1,445,300.00	\$ 1,488,000.00	\$ 1,563,100.00	\$ 1,981,418.00	\$ 2,300,303.00	\$ 2,360,607.00
	Annual Electric Savings Plan (kWh)	-	-	-	-	-	-
	\$/Annual kWh Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2)	Total Gas Budget	\$ 1,445,300.00	\$ 1,488,000.00	\$ 1,563,100.00	\$ 1,981,418.00	\$ 2,300,303.00	\$ 2,360,607.00
	Total summer peak kW Plan	-	-	-	-	-	-
	\$/kW Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3)	Total Gas Budget	\$ 1,445,300.00	\$ 1,488,000.00	\$ 1,563,100.00	\$ 1,981,418.00	\$ 2,300,303.00	\$ 2,360,607.00
	Total Annual MMBtu Plan	35,112.28	47,470.90	50,253.00	56,640.57	65,862.90	60,902.63
	\$/Annual MMBtu Plan	\$ 41.16	\$ 31.35	\$ 31.10	\$ 34.98	\$ 34.93	\$ 38.76
Large Business Energy Solutions							
Actuals		2015	2016	2017			
1)	Total Gas Costs	\$ 1,213,707.03	\$ 1,362,062.88	\$ 1,118,669.97			
	Annual Electric Savings Actual (kWh)	376,025.00	730,766.77	59,599.14			
	\$/Annual kWh Actual	\$ 3.23	\$ 1.86	\$ 18.77			
2)	Total Gas Costs	\$ 1,213,707.03	\$ 1,362,062.88	\$ 1,118,669.97			
	Total summer peak kW Actual	-	-	-			
	\$/kW Actual	\$ -	\$ -	\$ -			
3)	Total Gas Costs	\$ 1,213,707.03	\$ 1,362,062.88	\$ 1,118,669.97			
	Total Annual MMBtu Actual	40,175.50	41,329.60	44,189.10			
	\$/Annual MMBtu Actual	\$ 30.21	\$ 32.96	\$ 25.32			



Small Business Energy Solutions

Planned		2015	2016	2017	2018	2019	2020
1)	Total Gas Budget	\$ 1,032,710.00	\$ 1,190,000.00	\$ 1,373,000.00	\$ 1,521,323.00	\$ 1,361,981.00	\$ 1,858,158.00
	Annual Electric Savings Plan (kWh)	-	2,352.00	1,344.00	-	-	-
	\$/Annual kWh Plan	\$ -	\$ 505.95	\$ 1,021.58	\$ -	\$ -	\$ -
2)	Total Gas Budget	\$ 1,032,710.00	\$ 1,190,000.00	\$ 1,373,000.00	\$ 1,521,323.00	\$ 1,361,981.00	\$ 1,858,158.00
	Total summer peak kW Plan	-	-	-	-	-	-
	\$/kW Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3)	Total Gas Budget	\$ 1,032,710.00	\$ 1,190,000.00	\$ 1,373,000.00	\$ 1,521,323.00	\$ 1,361,981.00	\$ 1,858,158.00
	Total Annual MMBtu Plan	19,194.68	17,647.10	38,717.41	34,789.57	31,804.20	42,428.29
	\$/Annual MMBtu Plan	\$ 53.80	\$ 67.43	\$ 35.46	\$ 43.73	\$ 42.82	\$ 43.80

Small Business Energy Solutions Actuals		2015	2016	2017
1)	Total Gas Costs	\$ 1,129,097.52	\$ 795,988.77	\$ 852,560.30
	Annual Electric Savings Actual (kWh)	316,732.00	17,924.79	90,646.55
	\$/Annual kWh Actual	\$ 3.56	\$ 44.41	\$ 9.41
2)	Total Gas Costs	\$ 1,129,097.52	\$ 795,988.77	\$ 852,560.30
	Total summer peak kW Actual	-	-	-
	\$/kW Actual	\$ -	\$ -	\$ -
3)	Total Gas Costs	\$ 1,129,097.52	\$ 795,988.77	\$ 852,560.30
	Total Annual MMBtu Actual	39,916.08	20,731.54	25,814.51
	\$/Annual MMBtu Actual	\$ 28.29	\$ 38.40	\$ 33.03



Program Cost-Effectiveness - 2019 PLAN

	Total Resource Benefit / Cost Ratio	Benefit (\$000)	Utility Costs (\$000)	Customer Costs (\$000)	Annual MWh Savings	Lifetime MWh Savings	Winter kW Savings	Summer kW Savings	Number of Customers Served	Annual MMBTU Savings	Lifetime MMBTU Savings
Residential Programs											
Home Energy Assistance	1.04	388.3	374.026	-	11.8	114.2	1.2	0.9	62	1,947.4	39,469.7
Energy Star Homes	1.10	303.6	191.400	85.0	5.4	37.5	2.1	0.8	43	1,440.5	35,260.0
Home Performance with Energy Star	1.00	299.9	204.237	95.8	24.4	279.7	2.2	3.0	100	1,655.2	28,946.4
Energy Star Products	1.19	642.2	315.236	224.1	22.6	351.9	11.5	-	502	4,032.4	68,316.2
Home Energy Reports	1.06	86.7	81.756	-	-	-	-	-	11,600	3,252.0	8,745.6
Sub-Total Residential	1.09	1,720.8	1,166.655	404.9	64.3	783.3	16.9	4.7	12,307	12,327.5	180,737.9
Commercial, Industrial & Municipal											
Large Business Energy Solutions	1.84	1,961.4	623.035	442.3	-	-	-	-	72	16,150.3	236,973.5
Small Business Energy Solutions	1.71	1,059.6	380.546	239.4	1.5	27.2	0.1	-	317	8,229.1	130,383.7
Education	-	-	18.370	-	-	-	-	-	-	-	-
Sub-Total Commercial & Industrial	1.77	3,020.9	1,021.951	681.7	1.5	27.2	0.1	-	389	24,379.4	367,357.2
Total	1.45	4,741.7	2,188.606	1,086.7	65.8	810.5	17.0	4.7	12,696	36,706.9	548,095.1

Note: a 10% NEI adder is applied to total benefits excluding water for all programs except HEA, which receives a 20% adder.

Present Value Benefits - 2019 PLAN

	CAPACITY								ENERGY								Other Non-Resource Benefit							
	Total Benefits (\$000)	Summer Generation	Winter Generation	Transmission	Distribution	Winter Peak	Winter Off Peak	Summer Peak	Summer Off Peak	Electric DRIPE	Total Electric Benefit	Gas Benefit	Gas DRIPE	Total Gas Benefit	Other Fuels	Fossil Emissions	Water Benefit	Other Non-Resource Benefit						
Residential Programs																								
Home Energy Assistance	\$ 388.3	\$ 1.0	\$ -	\$ 1.1	\$ 1.0	\$ 2.4	\$ 2.1	\$ 0.8	\$ 0.7	\$ 0.4	\$ 9.6	\$ 273.4	\$ 8.6	\$ 282.1	\$ -	\$ 37.0	\$ 1.3	\$ 58.3						
Energy Star Homes	\$ 303.6	\$ 0.4	\$ -	\$ 0.5	\$ 0.5	\$ 0.9	\$ 0.6	\$ 0.3	\$ 0.2	\$ 0.2	\$ 3.6	\$ 234.0	\$ 6.4	\$ 240.4	\$ -	\$ 35.1	\$ -	\$ 24.4						
Home Performance with Energy Star	\$ 299.9	\$ 3.4	\$ -	\$ 3.8	\$ 3.4	\$ 5.1	\$ 5.2	\$ 2.0	\$ 2.0	\$ 1.3	\$ 26.2	\$ 203.9	\$ 7.0	\$ 211.0	\$ -	\$ 25.8	\$ 13.2	\$ 23.7						
Energy Star Products	\$ 642.2	\$ -	\$ -	\$ -	\$ -	\$ 10.0	\$ 9.1	\$ 0.1	\$ 0.2	\$ 0.4	\$ 19.8	\$ 492.2	\$ 18.3	\$ 510.5	\$ -	\$ 58.9	\$ -	\$ 53.0						
Home Energy Reports	\$ 86.7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 68.4	\$ 5.6	\$ 74.0	\$ -	\$ 5.3	\$ -	\$ 7.4						
Sub-Total Residential	\$ 1,720.8	\$ 4.7	\$ -	\$ 5.5	\$ 4.9	\$ 18.3	\$ 17.1	\$ 3.3	\$ 3.1	\$ 2.3	\$ 59.2	\$ 1,272.0	\$ 46.0	\$ 1,318.0	\$ -	\$ 162.1	\$ 14.5	\$ 166.9						
Commercial/Industrial Programs																								
Large Business Energy Solutions	\$ 1,961.4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,535.3	\$ 69.9	\$ 1,605.2	\$ -	\$ 195.7	\$ -	\$ 160.5						
Small Business Energy Solutions	\$ 1,059.6	\$ -	\$ -	\$ -	\$ -	\$ 0.6	\$ 0.9	\$ -	\$ 0.0	\$ 0.0	\$ 1.5	\$ 811.5	\$ 33.4	\$ 844.8	\$ -	\$ 113.3	\$ 15.3	\$ 84.6						
Sub-Total Commercial & Industrial	\$ 3,020.9	\$ -	\$ -	\$ -	\$ -	\$ 0.6	\$ 0.9	\$ -	\$ 0.0	\$ 0.0	\$ 1.5	\$ 2,346.7	\$ 103.3	\$ 2,450.0	\$ -	\$ 308.9	\$ 15.3	\$ 245.1						
Total	\$ 4,741.7	\$ 4.7	\$ -	\$ 5.5	\$ 4.9	\$ 18.9	\$ 18.0	\$ 3.3	\$ 3.1	\$ 2.3	\$ 60.7	\$ 3,618.8	\$ 149.2	\$ 3,768.0	\$ -	\$ 471.1	\$ 29.9	\$ 412.0						

Performance Incentive Calculation 2019

	<u>Planned</u>	<u>Actual</u>
Commercial/Industrial Incentive		
1. Benefit/Cost Ratio	1.72	
2. Threshold Benefit / Cost Ratio ¹	1.00	
3. Lifetime MMBtu Savings	367,357	
4. Threshold Lifetime MMBtu Savings (65%) ²	238,782	
5. Implementation Expenses	\$1,021,951	
6. Benefit / Cost Percentage of Implementaton Expenses	2.75%	
7. Lifetime MMBtu Percentage of Implementation Expenses	2.75%	
 8. Commercial & Industrial Performance Incentive	 \$56,207	
9. Maximum Commercial & Industrial Performance Incentive (6.875%)	\$70,259	
 Residential Incentive		
10. Benefit / Cost Ratio	1.05	
11. Threshold Benefit / Cost Ratio ¹	1.00	
12. Lifetime MMBtu Savings	180,738	
13. Threshold Lifetime MMBtu Savings (65%) ²	117,480	
14. Implementation Expenses	\$1,166,655	
15. Benefit / Cost Percentage of Implementation Expenses	2.75%	
16. Lifetime MMBtu Percentage of Implementation Expenses	2.75%	
 17. Residential Performance Incentive	 \$64,166	
18. Maximum Residential Performance Incentive (6.875%)	\$80,208	
 19. TOTAL PLANNED / EARNED INCENTIVE	 \$120,373	

Notes

1. Actual Benefit / Cost Ratio for each sector must be greater than or equal to 1.0.
2. Benefit Cost ratios are Nominal\$/Nominal\$

**Planned Versus Actual Benefit / Cost Ratio by Sector
2019**

	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
1. Benefits (Value) From Eligible Programs	\$ 3,020,924	
2. Implementation Expenses	\$ 1,021,951	
3. Customer Contribution	\$ 681,747	
4. Performance Incentive	\$ 56,207	
5. Total Costs	\$ 1,759,906	
6. Benefit/Cost Ratio - Commercial & Industrial Sector	1.72	
Residential		
7. Benefits (Value) From Eligible Programs	\$ 1,720,761	
8. Implementation Expenses	\$ 1,166,655	
9. Customer Contribution	\$ 404,916	
10. Performance Incentive	\$ 64,166	
11. Total Costs	\$ 1,635,737	
12. Benefit/Cost Ratio - Residential Sector	1.05	

**Lifetime Energy Savings by Sector and Program
2019**

	Lifetime MMBtu Savings	
	<u>Planned</u>	<u>Actual</u>
Commercial & Industrial		
Large Business Energy Solutions	236,973,528	
Small Business Energy Solutions	130,383,663	
Total Commercial & Industrial	367,357,190	
Residential		
Home Energy Assistance	39,469,684	
Energy Star Homes	35,260,000	
Home Performance with Energy Star	28,946,400	
Energy Star Products	68,316,200	
Home Energy Reports	8,745,594	
Total Residential	180,737,878	

Northern Utilities Inc. Home Energy Assistance Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Boiler - NG Boiler Replacement AFUE>=90%		7	1			142	20	20	87%	87%	-	-	2,468		25.4	19	100%	100%	-	3,555	388
Furnace - NG Furnace Replacement AFUE>=90%	3		3	168		168	18	18	87%	87%	7,884	-	7,884	22.0		21	100%	100%	1,188	-	1,118
Direct Install Water Measures	10	39	75	-		-	7	7	87%	87%	-	-	-	1.0	0.6	1	100%	100%	70	169	525
Heating System Tune-up		2	6			-	1	1	87%	87%	-	-	-		3.8	10	100%	98%	-	8	59
Multifamily weatherization	17		19	231		38	20	20	87%	87%	68,303	-	12,548	23.0		24	100%	98%	7,820	-	8,947
Single Family weatherization	25	31	43	367	149	58	20	20	87%	87%	159,375	80,278	43,346	28.0	27.93	28	100%	98%	14,000	17,317	23,622
Thermostat - Standard, 7-Day Programmable	6	4	16			-	15	15	87%	87%	-	-	-	6.6	2.3	7	100%	98%	594	138	1,554
LED lighting	252		195	37		50	8	5	83%	87%	61,506	-	42,364			-	100%	98%	-	-	-
DHW Pipe Wrap - Nat Gas		16					15								0.4		100%				
Program Summary*											297,068	80,278	108,609						23,672	21,186	36,213

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Northern Utilities Inc. ENERGY STAR® Homes Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Clothes washer	5			123.9		123.9	11	11	100%	100%	6,815	-		3.3		3	100%	100%	182	-	
Water Heating Savings	42	52	43	100.0	364.8	-	20	20	100%	100%	84,000	379,392	-		1.3	3.5	100%	100%	-	1,342	3,010
ES Homes	42	52	43	850.0	578.5	-	25	25	100%	100%	892,500	752,025	-	30.0	17.5	30	100%	100%	31,500	22,800	32,250
LED lighting	252	288	317	24.6	24.6	15.0	8	5	100%	100%	49,674	56,678	23,775			0	100%	100%	-	-	-
Lighting and Appliances	42	52	43	(100.0)	37.9	16.0	15	20	100%	100%	(63,000)	29,562	13,760			0	100%	100%	-	-	-
Refrigerator		5			39.6		12		100%	100%	-	2,376	-				100%	100%	-		
Cooling Savings		41			171.0		14		100%	100%	-	98,154	-				100%	100%	-		
											-	-	-						-	-	-
Program Summary*											969,989	1,318,187	37,535						31,682	24,142	35,260

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Northern Utilities Inc. ENERGY STAR® Products Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Water Heater - Indirect (attached to ES FHW Boiler; Combined eff rating >=85% (EF=.82)	30	25	25			-		20	100%	100%	-	-	-	8.0	8.0	8.00	100%	100%	-	-	4,000
Water Heater - Integrated w/Condensing Boiler >= 9	18		6			-		19	100%	100%	-	-	-	10.3	10.3	10.3	100%	100%	-	-	1,174
Water Heater - Integrated w/Condensing Boiler >= 9	10		20			-		19	100%	100%	-	-	-	12.8	12.8	12.8	100%	100%	-	-	4,864
Water Heater - Tankless, On-Demand >=.94	20	22	-			-		19	100%	100%	-	-	-	9.9	9.9	9.9	100%	100%	-	-	-
Boiler Reset Controls	3		5			-	15	15	100%	100%	-	-	-	4.5	4.5	4.5	100%	100%	203	-	338
Condensing Boiler >= 90% AFUE (Up to 300 MBH)	5	16	20			-	20	18	100%	100%	-	-	-	11.4	11.4	11.4	100%	100%	1,140	3,648	4,104
Condensing Boiler >= 95% AFUE (Up to 300 MBH)	12	82	70			-	20	19	100%	100%	-	-	-	14.1	14.1	14.1	100%	100%	3,384	23,124	18,753
Furnace 95+ AFUE (<150) w/ECM Motor	12	17	25	168.0	168.0	168.0	17	17	100%	100%	34,272	48,552	71,400	8.1	8.1	8.1	100%	100%	1,652	2,341	3,443
Furnace 97+ AFUE (<150) w/ECM Motor	21	12	20	168.0	168.0	168.0	17	17	100%	100%	59,976	34,272	57,120	9.2	9.2	9.2	100%	100%	3,284	1,877	3,128
Heat Recovery Ventilator (-133 kWh penalty)		3	4	(133.0)	(133.0)	(133.0)	20	20	100%	100%	-	(7,980)	(10,640)	7.7	7.7	7.7	100%	100%	-	462	616
Thermostat - Standard, 7-Day Programmable	31	24	14			-	15	15	100%	100%	-	-	-	3.2	3.2	3.2	100%	100%	1,488	1,152	672
Thermostat - WiFi (Cooling & Heating)	125	113	150	104.0	104.0	104.0	15	15	100%	100%	195,000	176,280	234,000	6.6	6.6	6.6	100%	100%	12,375	11,187	14,850
Thermostat - WiFi (Heating Only)	90	90	125			-	15	15	100%	100%	-	-	-	6.6	6.6	6.6	100%	100%	8,910	8,910	12,375
Discontinued measures																					
Water Heater - Tankless, On-Demand >=.82	20						19.0		100%	100%				9.4	9.4		100%	100%			
Program Summary*											289,248	251,124	351,880						32,436	52,701	68,316

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Northern Utilities Inc. Home Energy Reports Program

	Quantity	Gross Annual Savings per Unit (kWh)	Measure Life	Installation or Electric Realization Rate	Net Total Lifetime Savings (kWh)	Gross Annual Savings Per Unit (MMBTU)	Non-Electric Realization Rate	Net Total Lifetime Savings (MMBTU)
Measure	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan	2019 Plan
Behavioral Savings	11,600		3		-	0.28	100%	8,735
Program Summary*								8,735

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Northern Utilities Inc. Home Performance with ENERGY STAR®

	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
Measure	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
Direct Install Water Measures	8	8	72		32.3	-	7	8	100%	100%	-	1,809	-	2.0		4.15	100%	100%	112	-	2,390
Single Family weatherization			37			250.0		20	100%	100%	-	-	185,000		26	100%	100%	-	-	19,240	
Thermostat - Standard, 7-Day Programmable	4	2	11		-	-	15	15	100%	100%	-	-	-	3.2	1.85	3.2	100%	100%	192	56	528
Thermostat - WiFi (heating and cooling)			12			-		15	100%	100%	-	-	-			6.6	100%	100%	-	-	1,188
Multifamily weatherization			16			80.0		20	100%	100%	-	-	25,600			17.5	100%	100%	-	-	5,600
LED lighting	120		576	37.0		24.0	8	5	100%	100%	35,478	-	69,120			0	100%	100%	-	-	-
Air Sealing, Natural Gas	30	36		40.0			15		100%		18,000	-	-	16.0	10.57		100%		7,200	5,708	-
Insulation, Natural Gas	30	37		75.0			25		100%		56,250	-	-	24.0	15.38		100%		18,000	14,227	-
Pipe Wrap - Natural Gas		2			814.5				100%		-	-	-		0.06		100%		-	-	-
Wxn Heating Ancillary Savings	30	27		75.0	22.9		25		100%		56,250	15,458	-				100%		-	-	-
Cooling system Ancillary Savings	20	11		35.0	69.1		25		100%		17,500	19,003	-				100%		-	-	-
											-	-	-						-	-	-
Program Summary*											183,478	36,269	279,720						25,504	19,990	28,946

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Northern Utilities Inc. Large Business Energy Solutions Programs

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
ALL																					
Custom	5	1					13.0		100%	100%	-	-	-	4,068.2	1,024.0		100%		264,433	13,312	-
Retrofit Track									100%	100%	-	-	-						-	-	-
Large Business Custom		6	7		(18,183.0)	-	15.0	14.0	100%	100%	-	(1,636,470)	-		2,662.5	2013	100%	91%	-	239,625	180,308
Custom Envelope		8	-			-	14.0	-	100%	100%	-	-	-		85	0	100%	100%	-	9,520	-
			-			-		-	100%	100%	-	-	-			0	100%	100%	-	-	-
New Equipment & Construction Track			-			-		-	100%	100%	-	-	-			0	100%	100%	-	-	-
Upstream Water Heater - Condensing > 75 MBTUh (EF 0.90)		1	10			-	15	15	100%	100%	-	-	-		23.1	23.05	100%	102%	-	346	3,530
Upstream Water Heater - Indirect .90 EF)	4	1				-	15	15	100%	100%	-	-	-	19.0	19.0	19	100%	102%	1,140	-	
Boiler Reset Controls		1	-		28,356	-	15	15	100%	100%	-	425,340	-		9.4	8.89	100%	102%	-	188	
Condensed Unit Heater >= 90% thermal efficiency (up to 300 MBH)	5	-	-			-	18	18	100%	100%	-	-	-	40.9	40.9	40.9	100%	102%	3,681	-	-
Condensing Boiler >= 90% AFUE (Up to 300 MBH)		-	-			-	25	25	100%	100%	-	-	-			14.7	100%	102%	-	-	-
Condensing Boiler >= 90% thermal efficiency (1000 to 1700 MBH)	1	4	2			-	25	25	100%	100%	-	-	-	197.2	197.2	94.5	100%	102%	4,930	19,720	4,824
Condensing Boiler >= 90% thermal efficiency (1701 to 2000 MBH)			3			-	25	25	100%	100%	-	-	-			165.3	100%	102%	-	-	12,658
Condensing Boiler >= 90% thermal efficiency (301 to 499 MBH)	1	1	3			-	25	25	100%	100%	-	-	-	58.4	58.4	28	100%	102%	1,460	1,460	2,144
Condensing Boiler >= 90% thermal efficiency (500 to 999 MBH)	1	1	2			-	25	25	100%	100%	-	-	-	107.3	107.3	51.4	100%	102%	2,683	2,683	2,624
Infrared Heater, Low Intensity (all sizes)			5			-	17	17	100%	100%	-	-	-			12	100%	102%	-	-	1,041
Steam Trap	7		12			-	6	6	100%	100%	-	-	-	25.7	25.7	12.2	100%	102%	1,079	-	897
Thermostat - WiFi (Cooling & Heating)		-	-			-	15	15	100%	100%	-	-	-			6.6	100%	102%	-	-	-
Thermostat - WiFi (Heating Only)	12	-	-			-	15	15	100%	100%	-	-	-	6.6	6.6	6.6	100%	102%	1,188	-	-
Kitchen - Combination Oven (>= 44% efficiency)		-	-			-	12	12	100%	100%	-	-	-			112	100%	102%	-	-	-
Kitchen - Convection Oven (>= 44% efficiency)			2			-	12	12	100%	100%	-	-	-			12.9	100%	102%	-	-	316
Kitchen - Conveyor Oven (>= 44% efficiency)		-	-			-	12	12	100%	100%	-	-	-			88.4	100%	102%	-	-	-
Kitchen - Fryer		-	-			-	12	12	100%	100%	-	-	-			50.8	100%	102%	-	-	-
Kitchen - Griddle		-	-			-	12	12	100%	100%	-	-	-			13.1	100%	102%	-	-	-
Kitchen - Pre Rinse Sprayers	7	-	-			-	8	8	100%	100%	-	-	-	11.4	11.4	11.4	100%	102%	-	-	-
Kitchen - Rack Oven (>= 50% efficiency)		-	-			-	12	12	100%	100%	-	-	-			211.3	100%	102%	-	-	-
Kitchen - Steamer (ES >= 38% efficiency)		-	-			-	12	12	100%	100%	-	-	-			105.4	100%	102%	-	-	-
Upstream Volume Water Heater >75 MBTUh 92%			8			-	15	15	100%	100%	-	-	-			233.68	100%	102%	-	-	-
Program Summary*											-	(1,211,130)	-						280,594	356,521	208,343

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Planning Assumptions

1. Annual Savings were updated based on recent trends and reflect expected project sizes.

Northern Utilities Inc. Small Business Energy Solutions Program

Measure	Quantity			Gross Annual Savings per Unit (kWh)			Measure Life		Installation or Electric Realization Rate		Net Total Lifetime Savings (kWh)			Gross Annual Savings Per Unit (MMBTU)			Non-Electric Realization Rate		Net Total Lifetime Savings (MMBTU)		
	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017	2019	2017 Plan	2017 Actual	2019 Plan	2017 Plan	2017 Actual	2019 Plan	2017	2019	2017 Plan	2017 Actual	2019 Plan
ALL																					
Small Business Custom	4	3	7			-	22	15.0	100%	100%	-	-	-	318.5	134.6	292.6	100%	100%	25,482	8,981	30,727
New Equipment and Construction																					
Aerator		93	-		-	-	10	10	100%	100%	-	-	-		1.7	1.7	100%	100%	-	1,581	-
Salon Sprayer			-		-	-	5	5	100%	100%	-	-	-			11.4	100%	100%	-	-	-
Shower Head		24	-		-	-	10	10	100%	100%	-	-	-		5.2	2.7	100%	100%	-	1,248	-
Shower Head Hand Handle			-		-	-	10	10	100%	100%	-	-	-			2.7	100%	100%	-	-	-
Upstream Water Heater - Indirect			20		-	-	15	15	100%	100%	-	-	-			19.0	100%	100%	-	-	5,700
Water Heater - Integrated w/Condensing Boiler >= 90% AFUE			2		-	-	20	20	100%	100%	-	-	-			24.6	100%	100%	-	-	984
Water Heater - Integrated w/Condensing Boiler >= 95% AFUE			3		-	-	20	20	100%	100%	-	-	-			30.5	100%	100%	-	-	1,830
Upstream Water Heater - Tankless, On-Demand >=.94 (< 200 MBTUh .90 EF)		2	50		-	-	20	20	100%	100%	-	-	-		9	8.9	100%	100%	-	360	8,890
Boiler Reset Controls			9		-	-	15	15	100%	100%	-	-	-			11.4	100%	100%	-	-	1,539
Condensed Unit Heater >= 90% thermal efficiency (up to 300 MBH)			2		-	-	18	18	100%	100%	-	-	-			40.9	100%	100%	-	-	1,472
Condensing Boiler >= 90% AFUE (Up to 300 MBH)	1		11		-	-	25	25	100%	100%	-	-	-	30.6		14.7	100%	100%	765	-	4,043
Condensing Boiler >= 90% thermal efficiency (1000 to 1700 MBH)	5	2	2		-	-	25	25	100%	100%	-	-	-	197.2	197.2	94.5	100%	100%	24,650	9,860	4,725
Condensing Boiler >= 90% thermal efficiency (1701 to 2000 MBH)		1	2		-	-	25	25	100%	100%	-	-	-		345.1	165.3	100%	100%	-	8,628	8,265
Condensing Boiler >= 90% thermal efficiency (301 to 499 MBH)	10	2	2		-	-	25	25	100%	100%	-	-	-	58.4	58.4	28.0	100%	100%	14,600	2,920	1,400
Condensing Boiler >= 90% thermal efficiency (500 to 999 MBH)	5	5	13		-	-	25	25	100%	100%	-	-	-	107.3	107.3	51.4	100%	100%	13,413	13,413	16,705
Condensing Boiler >= 96% AFUE (Up to 300 MBH)	5	3	4		-	-	25	25	100%	100%	-	-	-	27.8	27.8	17.7	100%	100%	3,475	2,085	1,770
Furnace 95+ AFUE (<150) w/ECM Motor		5	4			168	18	18	100%	100%	-	-	12,096		5.7	5.7	100%	100%	-	513	410
Furnace 97+ AFUE (<150) w/ECM Motor			5			168	18	18	100%	100%	-	-	15,120			6.7	100%	100%	-	-	603
Infrared Heater, Low Intensity (all sizes)		7	6		-	-	17	17	100%	100%	-	-	-		12	12.0	100%	100%	-	1,428	1,224
Kitchen - Pre Rinse Sprayers	35	15	40		-	-	5	8	100%	100%	-	-	-	11.4	11.4	11.4	100%	100%	1,995	855	3,648
Steam Trap			15		-	-	6	6	100%	100%	-	-	-			12.2	100%	100%	-	-	1,098
Thermostat - WiFi (Cooling & Heating)			67		-	-	15	15	100%	100%	-	-	-			6.6	100%	100%	-	-	6,633
Thermostat - WiFi (Heating Only)		2	29		-	-	15	15	100%	100%	-	-	-		6.6	6.6	100%	100%	-	198	2,871
Kitchen - Combination Oven (>= 44% efficiency)	1		-		-	-	12	12	100%	100%	-	-	-	112.0		112.0	100%	100%	1,344	-	-
Kitchen - Convection Oven (>= 44% efficiency)		2	2		-	-	12	12	100%	100%	-	-	-		12.9	12.9	100%	100%	-	310	310
Kitchen - Conveyor Oven (>= 44% efficiency)	1		7		-	-	12	12	100%	100%	-	-	-	88.4		88.4	100%	100%	1,061	-	7,426
Kitchen - Fryer	5	11	4		-	-	12	12	100%	100%	-	-	-	50.8	50.8	50.8	100%	100%	3,048	6,706	2,438
Kitchen - Griddle			3		-	-	12	12	100%	100%	-	-	-			13.1	100%	100%	-	-	472
Kitchen - Rack Oven (>= 50% efficiency)			4		-	-	12	12	100%	100%	-	-	-			211.3	100%	100%	-	-	10,142
Kitchen - Steamer (ES >= 38% efficiency)			4		-	-	12	12	100%	100%	-	-	-			105.4	100%	100%	-	-	5,059
Upstream Volume Water Heater >75 MBTUh 92%		2	-		-	-	15	15	100%	100%	-	-	-		326.76	233.7	100%	100%	-	9,803	-
Thermostat - Standard, 7-Day Programmable		27					15		100%		-				3.3		100%		-	1,337	-
Retrofit																					
Custom		2					15		100%						316.25		100%		-	9,488	
Water Heating - Pipe Wrap		2					15		100%						1.26		100%		-	38	
Program Summary*											-	-	27,216						89,833	79,748	130,384

*Program Summary Total Savings Values are Net (Multiplied by the Realization Rate)

Northern Utilities, Inc. -- New Hampshire Division

EEC Budget				
	Residential	Low-Income	Gen Service	Total
July-18	\$48,836	\$32,944	\$83,458	\$165,238
August-18	\$55,890	\$37,702	\$95,513	\$189,105
September-18	\$62,402	\$42,094	\$114,392	\$218,888
October-18	\$69,456	\$46,853	\$118,695	\$235,004
November-18	\$76,510	\$51,612	\$130,750	\$258,872
December-18	\$83,564	\$56,370	\$150,557	\$290,491
January-19	\$10,304	\$4,862	\$13,047	\$28,213
February-19	\$20,608	\$9,725	\$26,093	\$56,426
March-19	\$30,120	\$14,213	\$42,729	\$87,061
April-19	\$40,424	\$19,075	\$51,183	\$110,682
May-19	\$50,728	\$23,938	\$64,229	\$138,895
June-19	\$61,032	\$28,800	\$81,868	\$171,701
July-19	\$71,337	\$33,662	\$90,322	\$195,321
August-19	\$81,641	\$38,525	\$103,369	\$223,534
September-19	\$91,152	\$43,013	\$120,004	\$254,170
October-19	\$101,457	\$47,875	\$128,458	\$277,790
Total	\$955,462	\$531,263	\$1,414,667	\$2,901,392

**Budget with Low-Income Costs Allocated
to Residential and General Service Classes**

	Residential	Low-Income	Gen Service	Total
July-18	\$53,594	0	\$111,644	\$165,238
August-18	\$61,044	0	\$128,061	\$189,105
September-18	\$68,394	0	\$150,495	\$218,888
October-18	\$76,171	0	\$158,833	\$235,004
November-18	\$88,970	0	\$169,902	\$258,872
December-18	\$99,642	0	\$190,849	\$290,491
January-19	\$11,789	0	\$16,424	\$28,213
February-19	\$23,667	0	\$32,759	\$56,426
March-19	\$34,271	0	\$52,791	\$87,061
April-19	\$45,928	0	\$64,754	\$110,682
May-19	\$56,443	0	\$82,452	\$138,895
June-19	\$67,546	0	\$104,155	\$171,701
July-19	\$76,431	0	\$118,890	\$195,321
August-19	\$86,898	0	\$136,636	\$223,534
September-19	\$97,130	0	\$157,040	\$254,170
October-19	\$108,469	0	\$169,321	\$277,790
Total	\$1,056,387	\$0	\$1,845,005	\$2,901,392

EEC Charge Factor Calculation

EEC Charge Factors for Residential Customers

EEC Reconciliation Adjustment	\$113,528	Attachment J3 Page 3 Nov '18 - Oct '19 Totals- November 2017 Beginning Balance bef
Funds Shift to On Bill Financing Mechanism - Residential	\$30,000	Adjustment
Revised EEC Reconciliation Adjustment	<u>\$143,528</u>	
EEC Costs	\$718,878	Attachment J3 Page 3 Nov '18 - Oct '19 Totals- Column 2
EEC Performance Incentive	\$43,623	Attachment J3 Page 3 Nov '18 - Oct '19 Totals- Column 3
EEC Low-Income Costs	\$78,306	Attachment J3 Nov '18 - Oct '19 Totals- Column 4
EEC Allocated Low-Income Performance Incentive	\$4,657	Attachment J3 Page 3 Nov '18 - Oct '19 Totals- Column 5
Total	<u>\$988,992</u>	

Forecasted Annual Throughput Volumes for Residential Customers	19,742,688	Attachment J3 Page 3 Nov '18 - Oct '19 Totals- Column 6
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Energy Efficiency Charge Factor for Residential Customers	\$0.0501
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EEC Charge Factors for Commercial and Industrial Customers (C&I)

EEC Reconciliation Adjustment	\$43,740	Attachment J3 Page 4 Nov '18 - Oct '19 Totals- November 2018 Beginning Balance Bel
Funds Shift to On Bill Financing Mechanism - C&I	\$53,000	Adjustment
Revised EEC Reconciliation Adjustment	<u>\$96,740</u>	
EEC Costs	\$1,002,609	Attachment J3 Page 4 Nov '18 - Oct '19 Totals- Column 2
EEC Performance Incentive	\$54,741	Attachment J3 Page 4 Nov '18 - Oct '19 Totals- Column 3
EEC Low-Income Costs	\$293,364	Attachment J3 Page 4 Nov '18 - Oct '19 Totals- Column 4
EEC Allocated Low-Income Performance Incentive	\$15,598	Attachment J3 Page 4 Nov '18 - Oct '19 Totals- Column 5
Total	<u>\$1,559,792</u>	

Forecasted Annual Throughput Volumes for C&I Customers	55,326,580	Attachment J3 Page 4 Nov '18 - Oct '19 Totals- Column 6
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Energy Efficiency Charge Factor for C&I Customers	\$0.0264
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<p style="text-align: center;">Northern Utilities, Inc. New Hampshire Division Calculation of the EEC Charge, a Component of the Local Distribution Adjustment Charge To Be Effective November 1, 2018 through October 31, 2019 Residential Customers</p>															
		Beginning Balance (Over)/Under	EEC Rate per Therm	EEC Collections	EEC Costs	DSM PI	Allocated Low Income Costs	Allocated Low Income PI	Ending Balance (Over)/Under	Average Balance (Over)/Under	Interest Prime Rate	Interest @ Prime Rate	Ending Balance plus Interest (Over)/Under	Therm Sales	# of Days
August-17	Actual	(\$1,056)	\$0.0331	\$11,629	\$28,218	\$2,326	\$920	\$80	\$18,858	\$8,901	4.00%	\$30	\$18,888	351,435	31
September-17	Actual	\$18,888	\$0.0331	\$12,576	\$80,046	\$2,326	\$5,783	\$503	\$94,970	\$56,929	4.00%	\$187	\$95,157	380,460	30
October-17	Actual	\$95,157	\$0.0331	\$14,773	\$49,801	\$2,326	\$7,887	\$686	\$141,084	\$118,121	4.25%	\$426	\$141,510	446,553	31
November-17	Actual	\$141,510	\$0.0433	\$36,818	\$58,033	\$2,326	\$4,650	\$404	\$170,105	\$155,808	4.25%	\$544	\$170,649	972,322	30
December-17	Actual	\$170,649	\$0.0433	\$114,292	\$7,578	\$14,857	(\$1,742)	(\$151)	\$76,900	\$123,775	4.25%	\$904	\$77,804	2,639,565	31
January-18	Actual	\$77,804	\$0.0433	\$178,562	\$20,657	\$3,647	\$10,082	\$587	(\$65,785)	\$6,009	4.25%	\$22	(\$65,763)	4,123,832	31
February-18	Actual	(\$65,763)	\$0.0433	\$135,594	\$42,714	\$3,647	\$1,848	\$108	(\$153,040)	(\$109,402)	4.25%	(\$357)	(\$153,397)	3,131,798	28
March-18	Actual	(\$153,397)	\$0.0433	\$110,848	\$24,224	\$3,647	\$2,241	\$130	(\$234,002)	(\$193,700)	4.25%	(\$699)	(\$234,701)	2,560,049	31
April-18	Actual	(\$234,701)	\$0.0433	\$98,906	\$99,903	(\$13,276)	\$6,723	\$391	(\$239,867)	(\$237,284)	4.50%	(\$1,814)	(\$241,681)	2,284,269	30
May-18	Actual	(\$241,681)	\$0.0433	\$47,801	\$54,894	\$3,647	\$1,480	\$86	(\$229,375)	(\$235,528)	4.50%	(\$922)	(\$230,297)	1,103,933	31
June-18	Actual	(\$230,297)	\$0.0433	\$23,655	\$156,648	\$3,647	\$3,085	\$180	(\$90,392)	(\$160,345)	4.50%	(\$593)	(\$90,985)	688,778	30
July-18	Forecast	(\$90,985)	\$0.0433	\$16,689	\$48,836	\$3,647	\$4,758	\$225	(\$50,209)	(\$70,597)	4.75%	(\$285)	(\$50,493)	385,426	31
August-18	Forecast	(\$50,493)	\$0.0433	\$16,261	\$55,890	\$3,647	\$5,154	\$213	(\$1,850)	(\$26,172)	4.75%	(\$106)	(\$1,956)	375,540	31
September-18	Forecast	(\$1,956)	\$0.0433	\$16,600	\$62,402	\$3,647	\$5,992	\$222	\$53,706	\$25,875	4.75%	\$101	\$53,807	383,364	30
October-18	Forecast	\$53,807	\$0.0433	\$20,675	\$69,456	\$3,647	\$6,715	\$223	\$113,174	\$83,491	5.00%	\$355	\$113,528	477,483	31
November-18	Forecast	\$143,528	\$0.0501	\$75,625	\$76,510	\$3,647	\$12,460	\$376	\$160,896	\$152,212	5.00%	\$626	\$161,522	1,509,473	30
December-18	Forecast	\$161,522	\$0.0501	\$118,946	\$83,564	\$3,647	\$16,078	\$444	\$146,309	\$153,915	5.00%	\$654	\$146,962	2,374,168	31
January-19	Forecast	\$146,962	\$0.0501	\$182,347	\$10,304	\$3,633	\$1,485	\$523	(\$19,439)	\$63,761	5.00%	\$271	(\$19,169)	3,639,654	31
February-19	Forecast	(\$19,169)	\$0.0501	\$185,426	\$20,608	\$3,633	\$3,059	\$539	(\$176,756)	(\$97,962)	5.00%	(\$376)	(\$177,132)	3,701,124	28
March-19	Forecast	(\$177,132)	\$0.0501	\$136,961	\$30,120	\$3,633	\$4,151	\$501	(\$275,688)	(\$226,410)	5.00%	(\$961)	(\$276,649)	2,733,747	31
April-19	Forecast	(\$276,649)	\$0.0501	\$111,879	\$40,424	\$3,633	\$5,504	\$495	(\$338,473)	(\$307,561)	5.00%	(\$1,264)	(\$339,737)	2,233,117	30
May-19	Forecast	(\$339,737)	\$0.0501	\$58,944	\$50,728	\$3,633	\$5,715	\$409	(\$338,196)	(\$338,966)	5.00%	(\$1,439)	(\$339,635)	1,176,527	31
June-19	Forecast	(\$339,635)	\$0.0501	\$34,767	\$61,032	\$3,633	\$6,514	\$388	(\$302,835)	(\$321,235)	5.00%	(\$1,320)	(\$304,155)	693,947	30
July-19	Forecast	(\$304,155)	\$0.0501	\$21,340	\$71,337	\$3,633	\$5,095	\$259	(\$245,172)	(\$274,664)	5.00%	(\$1,166)	(\$246,338)	425,956	31
August-19	Forecast	(\$246,338)	\$0.0501	\$18,972	\$81,641	\$3,633	\$5,257	\$234	(\$174,546)	(\$210,442)	5.00%	(\$894)	(\$175,439)	378,689	31
September-19	Forecast	(\$175,439)	\$0.0501	\$18,574	\$91,152	\$3,633	\$5,978	\$238	(\$93,012)	(\$134,226)	5.00%	(\$552)	(\$93,564)	370,740	30
October-19	Forecast	(\$93,564)	\$0.0501	\$25,328	\$101,457	\$3,633	\$7,012	\$251	(\$6,539)	(\$50,052)	5.00%	(\$213)	(\$6,752)	505,546	31

Nov 18 thru Oct 19 Totals	\$989,109	\$718,878	\$43,623	\$78,306	\$4,657
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19,742,688

Forecast therm Sales from Company Forecast as seen in Attachment 2 to Schedule 10 B, Page 2 of 3, filed on September 17, 2018 in this Cost of Gas Docket.

Actual Performance Incentives includes reconciliations from prior year(s).

(1) Includes \$30,000 adjustment for Funds Shift for On Bill Financing Mechanism

<p style="text-align: center;">Northern Utilities, Inc. New Hampshire Division Calculation of the EEC Charge, a Component of the Local Distribution Adjustment Charge To Be Effective November 1, 2018 through October 31, 2019 General Service Customers</p>															
		Beginning Balance (Over)/Under	EEC Rate per Therm	EEC Collections	EEC Costs	DSM PI	Allocated Low Income Costs	Allocated Low Income PI	Ending Balance (Over)/Under	Average Balance (Over)/Under	Interest Prime Rate	Interest @ Prime Rate	Ending Balance plus Interest (Over)/Under	Therm Sales	# of Days
August-17	Actual	(\$257,774)	\$0.0142	\$31,855	\$29,344	\$3,069	\$5,965	\$519	(\$250,733)	(\$254,254)	4.00%	(\$864)	(\$251,596)	2,279,220	31
September-17	Actual	(\$251,596)	\$0.0142	\$31,802	\$26,598	\$3,069	\$34,044	\$2,960	(\$216,728)	(\$234,162)	4.00%	(\$770)	(\$217,497)	2,239,720	30
October-17	Actual	(\$217,497)	\$0.0142	\$38,153	\$90,926	\$3,069	\$47,456	\$4,127	(\$110,073)	(\$163,785)	4.25%	(\$591)	(\$110,664)	2,686,992	31
November-17	Actual	(\$110,664)	\$0.0184	\$68,258	\$81,783	\$3,069	\$18,764	\$1,632	(\$73,673)	(\$92,169)	4.25%	(\$322)	(\$73,995)	3,923,395	30
December-17	Actual	(\$73,995)	\$0.0184	\$117,670	\$222,221	\$803	(\$8,192)	(\$712)	\$22,424	(\$25,786)	4.25%	(\$948)	\$21,476	6,397,669	31
January-18	Actual	\$21,476	\$0.0184	\$163,821	\$13,805	\$3,951	\$21,767	\$1,267	(\$101,555)	(\$40,039)	4.25%	(\$145)	(\$101,700)	8,903,348	31
February-18	Actual	(\$101,700)	\$0.0184	\$129,978	\$34,638	\$3,951	\$4,171	\$243	(\$188,675)	(\$145,188)	4.25%	(\$473)	(\$189,149)	7,066,647	28
March-18	Actual	(\$189,149)	\$0.0184	\$116,588	\$45,632	\$3,951	\$5,547	\$323	(\$250,284)	(\$219,717)	4.25%	(\$793)	(\$251,077)	6,337,701	31
April-18	Actual	(\$251,077)	\$0.0184	\$101,796	\$17,914	\$3,951	\$20,440	\$1,190	(\$309,379)	(\$280,228)	4.50%	(\$100)	(\$309,479)	5,547,153	30
May-18	Actual	(\$309,479)	\$0.0184	\$65,696	\$16,294	\$3,951	\$4,766	\$277	(\$349,887)	(\$329,683)	4.50%	(\$1,260)	(\$351,147)	3,555,624	31
June-18	Actual	(\$351,147)	\$0.0184	\$46,264	\$40,361	\$3,951	\$10,664	\$621	(\$341,815)	(\$346,481)	4.50%	(\$1,282)	(\$343,097)	2,380,668	30
July-18	Forecast	(\$343,097)	\$0.0184	\$42,013	\$83,458	\$3,951	\$28,186	\$1,331	(\$268,184)	(\$305,640)	4.75%	(\$1,233)	(\$269,417)	2,283,323	31
August-18	Forecast	(\$269,417)	\$0.0184	\$43,639	\$95,513	\$3,951	\$32,548	\$1,343	(\$179,700)	(\$224,559)	4.75%	(\$906)	(\$180,606)	2,371,702	31
September-18	Forecast	(\$180,606)	\$0.0184	\$42,504	\$114,392	\$3,951	\$36,103	\$1,335	(\$67,330)	(\$123,968)	4.75%	(\$484)	(\$67,814)	2,309,983	30
October-18	Forecast	(\$67,814)	\$0.0184	\$52,512	\$118,695	\$3,951	\$40,138	\$1,333	\$43,791	(\$12,012)	5.00%	(\$51)	\$43,740	2,853,901	31
November-18	Forecast	\$96,740	\$0.0264	\$125,224	\$130,750	\$3,951	\$39,152	\$1,181	\$146,550	\$121,645	5.00%	\$500	\$147,050	4,743,334	30
December-18	Forecast	\$147,050	\$0.0264	\$157,072	\$150,557	\$3,951	\$40,292	\$1,112	\$185,890	\$166,470	5.00%	\$707	\$186,597	5,949,685	31
January-19	Forecast	\$186,597	\$0.0264	\$218,634	\$13,047	\$4,684	\$3,378	\$1,191	(\$9,738)	\$88,429	5.00%	\$376	(\$9,362)	8,281,593	31
February-19	Forecast	(\$9,362)	\$0.0264	\$212,940	\$26,093	\$4,684	\$6,666	\$1,175	(\$183,684)	(\$96,523)	5.00%	(\$370)	(\$184,054)	8,065,912	28
March-19	Forecast	(\$184,054)	\$0.0264	\$174,939	\$42,729	\$4,684	\$10,062	\$1,214	(\$300,305)	(\$242,179)	5.00%	(\$1,028)	(\$301,333)	6,626,460	31
April-19	Forecast	(\$301,333)	\$0.0264	\$145,362	\$51,183	\$4,684	\$13,571	\$1,220	(\$376,037)	(\$338,685)	5.00%	(\$1,392)	(\$377,429)	5,506,128	30
May-19	Forecast	(\$377,429)	\$0.0264	\$99,046	\$64,229	\$4,684	\$18,223	\$1,305	(\$388,034)	(\$382,732)	5.00%	(\$1,625)	(\$389,659)	3,751,759	31
June-19	Forecast	(\$389,659)	\$0.0264	\$62,681	\$81,868	\$4,684	\$22,286	\$1,327	(\$342,175)	(\$365,917)	5.00%	(\$1,504)	(\$343,679)	2,374,269	30
July-19	Forecast	(\$343,679)	\$0.0264	\$63,053	\$90,322	\$4,684	\$28,568	\$1,455	(\$281,703)	(\$312,691)	5.00%	(\$1,328)	(\$283,031)	2,388,382	31
August-19	Forecast	(\$283,031)	\$0.0264	\$63,258	\$103,369	\$4,684	\$33,267	\$1,480	(\$203,489)	(\$243,260)	5.00%	(\$1,033)	(\$204,522)	2,396,136	31
September-19	Forecast	(\$204,522)	\$0.0264	\$60,640	\$120,004	\$4,684	\$37,035	\$1,476	(\$101,962)	(\$153,242)	5.00%	(\$630)	(\$102,592)	2,296,955	30
October-19	Forecast	(\$102,592)	\$0.0264	\$77,774	\$128,458	\$4,684	\$40,863	\$1,463	(\$4,898)	(\$53,745)	5.00%	(\$228)	(\$5,126)	2,945,966	31

Nov 18 thru Oct 19 Totals	\$1,460,623	\$1,002,609	\$54,741	\$293,364	\$15,598	55,326,579
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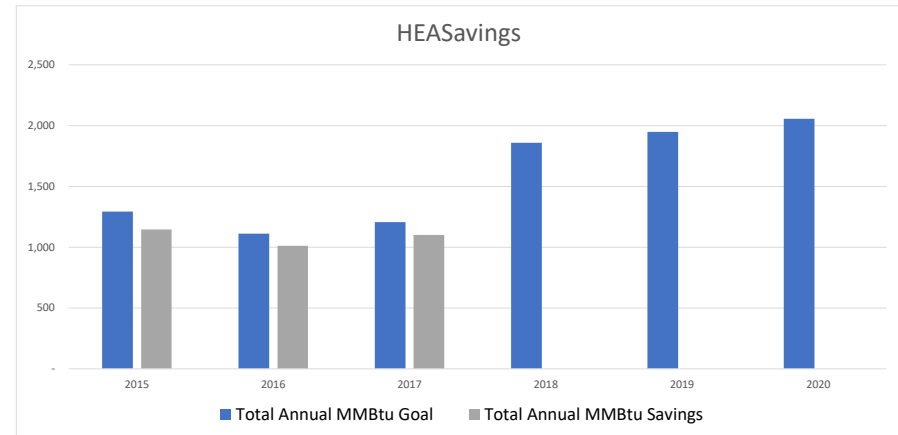
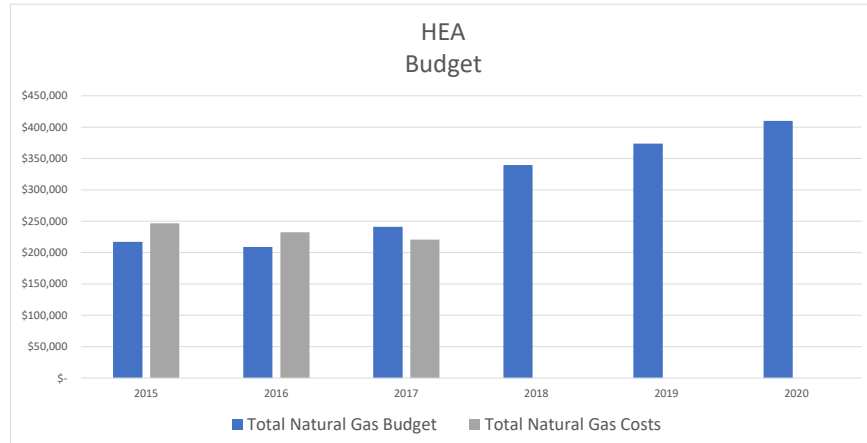
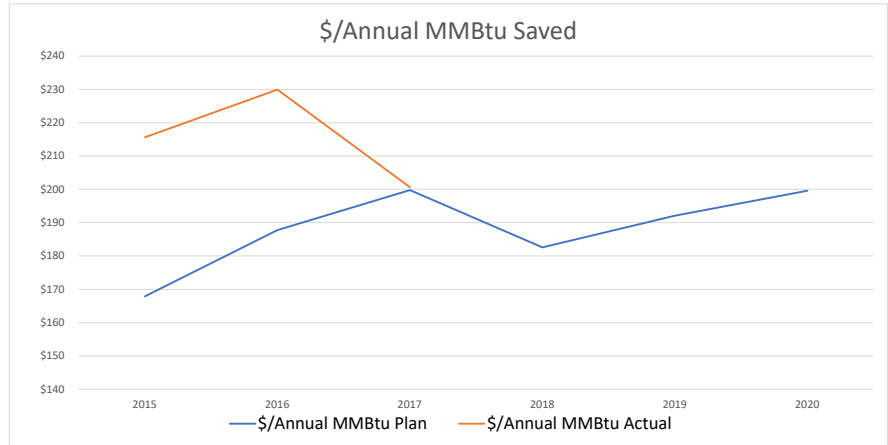
Forecast therm Sales from Company Forecast as seen in Attachment 2 to Schedule 10 B, Page 2 of 3, filed on September 17, 2018 in this Cost of Gas Docket. Does not include Special Contracts.

Actual Performance Incentives includes reconciliations from prior year(s).

(1) Includes \$53,000 adjustment for Funds Shift for On Bill Financing Mechanism

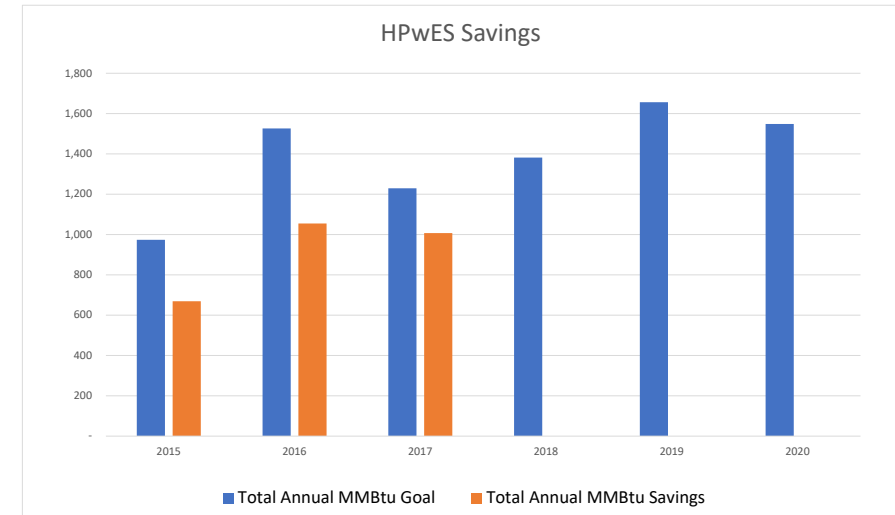
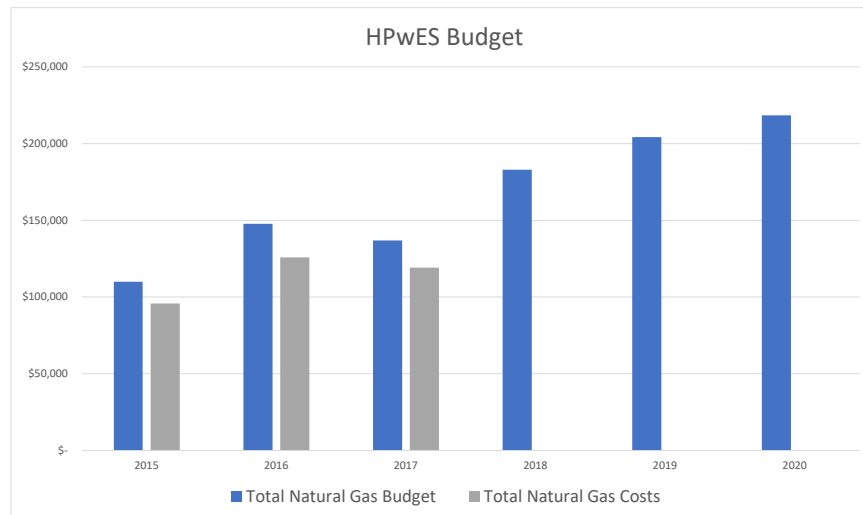
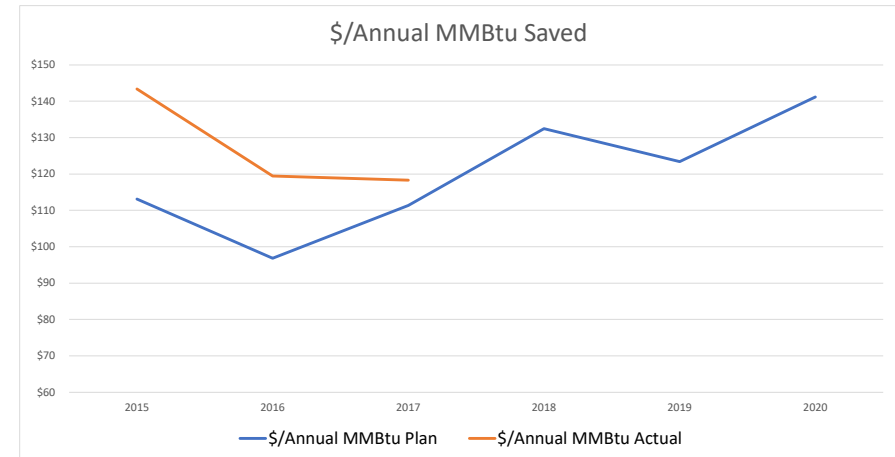
Home Energy Assistance

Home Energy Assistance									
Planned		2015	2016	2017	2018	2019	2020		
1)	Total Natural Gas Budget	\$ 217,299	\$ 208,884	\$ 241,100	\$ 339,500	\$ 374,026	\$ 410,200		
	Total Annual MMBtu Goal	\$ 1,294	\$ 1,112	\$ 1,207	\$ 1,859	\$ 1,947	\$ 2,055		
	\$/Annual MMBtu Plan	\$ 168	\$ 188	\$ 200	\$ 183	\$ 192	\$ 200		
Home Energy Assistance									
Actuals		2,015	2,016	2,017					
1)	Total Natural Gas Costs	\$ 246,875	\$ 232,459	\$ 221,118					
	Total Annual MMBtu Savings	\$ 1,145	\$ 1,011	\$ 1,102					
	\$/Annual MMBtu Actual	\$ 216	\$ 230	\$ 201					



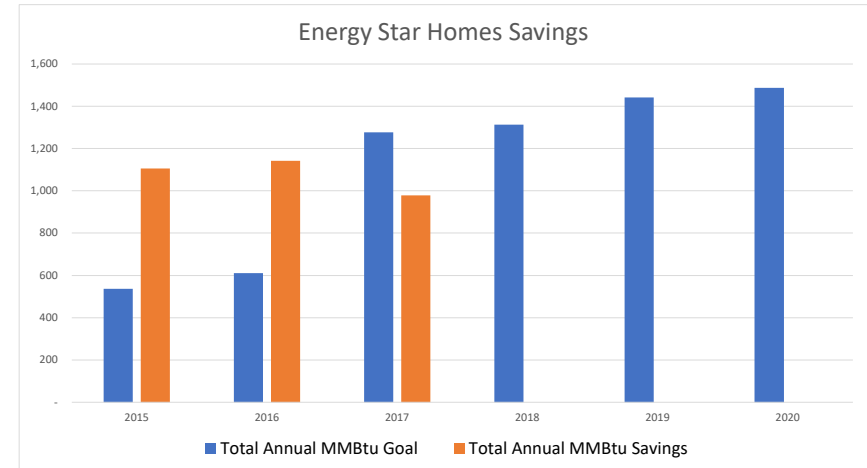
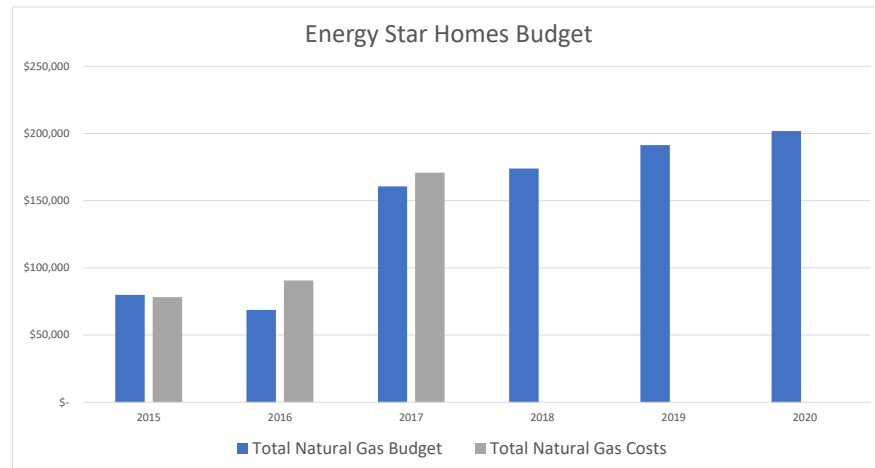
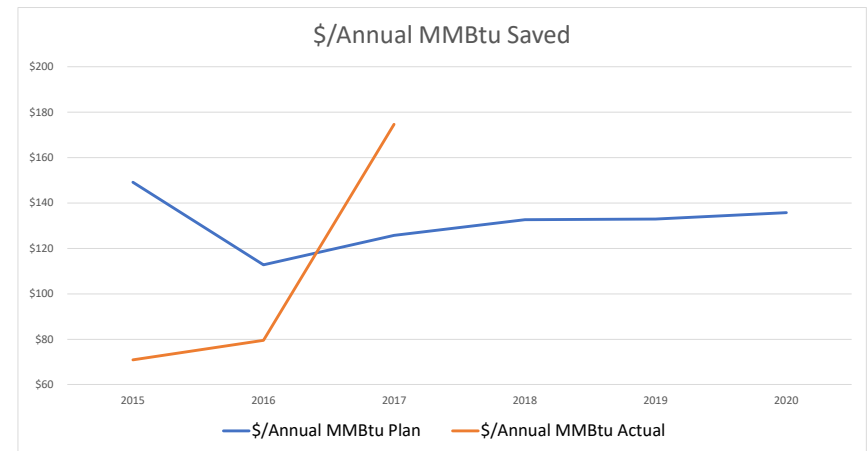
Home Performance w/Energy Star

Home Performance w/Energy Star							
Planned		2015	2016	2017	2018	2019	2020
3)	Total natural gas budget	\$ 110,000.00	\$ 147,740.00	\$ 136,800.00	\$ 183,000.00	\$ 204,236.93	\$ 218,400.00
	Total Annual MMBtu Goal	972.51	1,525.46	1,228.80	1,381.30	1,655.20	1,547.10
	\$/Annual MMBtu Plan	\$ 113.11	\$ 96.85	\$ 111.33	\$ 132.48	\$ 123.39	\$ 141.17
Home Performance w/Energy Star							
Actuals		2015	2016	2017			
3)	Total Natural Gas Costs	\$ 95,886.98	\$ 125,902.87	\$ 119,165.42			
	Total Annual MMBtu Savings	668.83	1,053.80	1,007.09			
	\$/Annual MMBtu Actual	\$ 143.37	\$ 119.48	\$ 118.33			



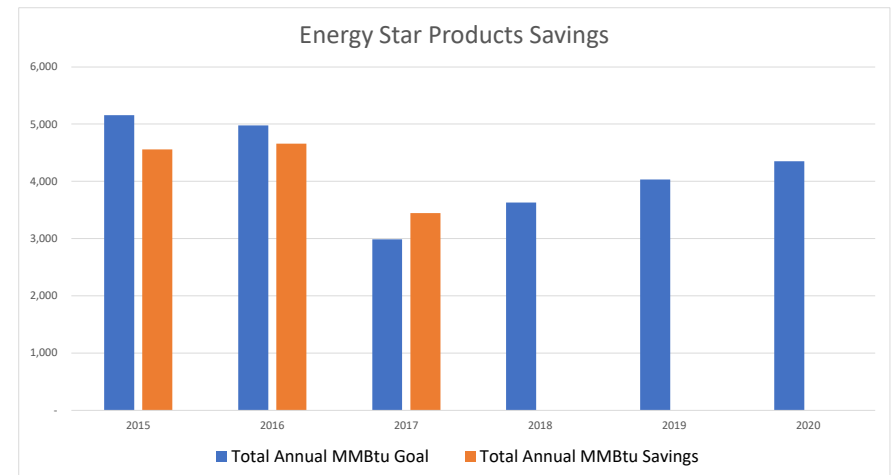
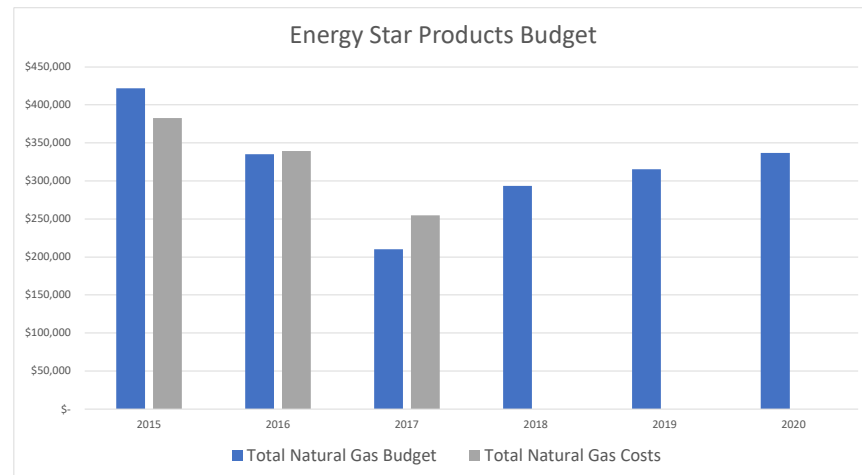
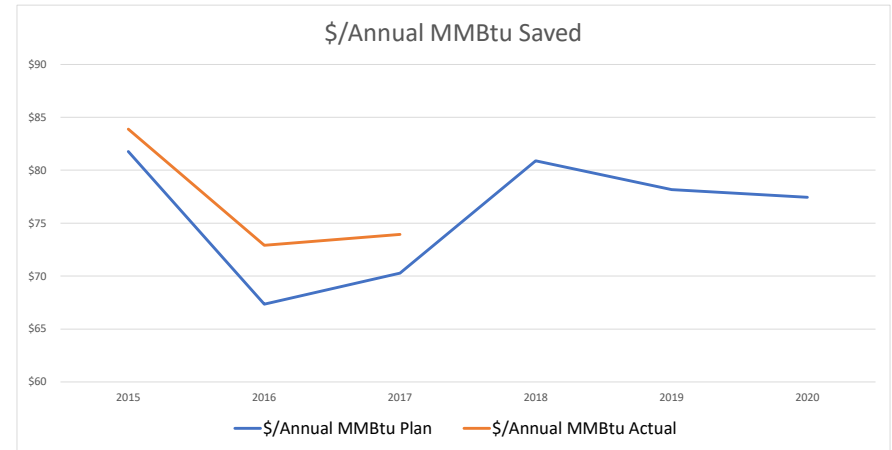
Energy Star Homes

Planned		Energy Star Homes					
		2015	2016	2017	2018	2019	2020
3)	Total natural gas budget	\$ 80,000.00	\$ 68,750.00	\$ 160,500.00	\$ 174,000.00	\$ 191,400.00	\$ 201,700.00
	Total Annual MMBtu Goal	536.48	610.00	1,276.50	1,312.50	1,440.50	1,486.00
	\$/Annual MMBtu Plan	\$ 149.12	\$ 112.70	\$ 125.73	\$ 132.57	\$ 132.87	\$ 135.73
Actuals		Energy Star Homes					
		2015	2016	2017			
3)	Total Natural Gas Costs	\$ 78,324.02	\$ 90,656.30	\$ 170,911.27			
	Total Annual MMBtu Savings	1,104.98	1,141.00	979.00			
	\$/Annual MMBtu Actual	\$ 70.88	\$ 79.45	\$ 174.58			



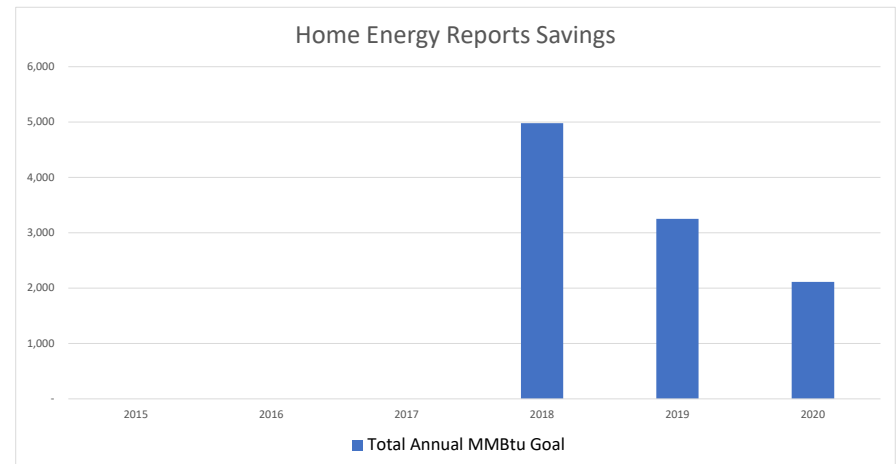
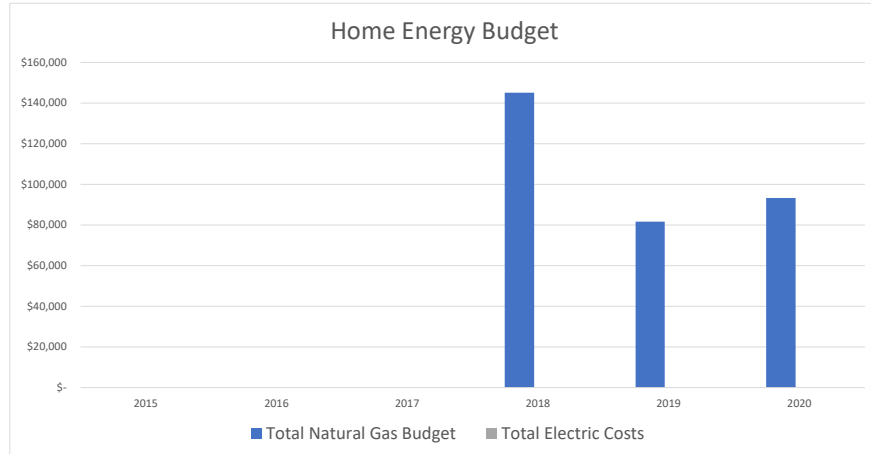
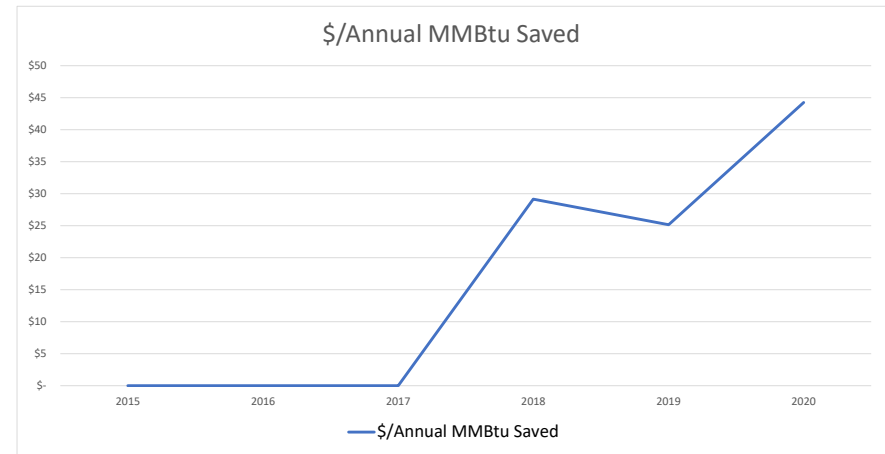
Energy Star Products

Planned		2015	2016	2017	2018	2019	2020
3) Total natural gas budget		\$ 421,694.96	\$ 335,242.65	\$ 210,000.00	\$ 293,600.00	\$ 315,235.70	\$ 337,000.00
Total Annual MMBtu Goal		5,157.75	4,977.47	2,987.70	3,629.40	4,032.40	4,351.30
\$ /Annual MMBtu Plan		\$ 81.76	\$ 67.35	\$ 70.29	\$ 80.89	\$ 78.18	\$ 77.45
Actuals		2015	2016	2017			
3) Total Natural Gas Costs		\$ 382,505.12	\$ 339,472.62	\$ 254,638.91			
Total Annual MMBtu Savings		4,559.70	4,655.70	3,444.20			
\$ /Annual MMBtu Actual		\$ 83.89	\$ 72.92	\$ 73.93			



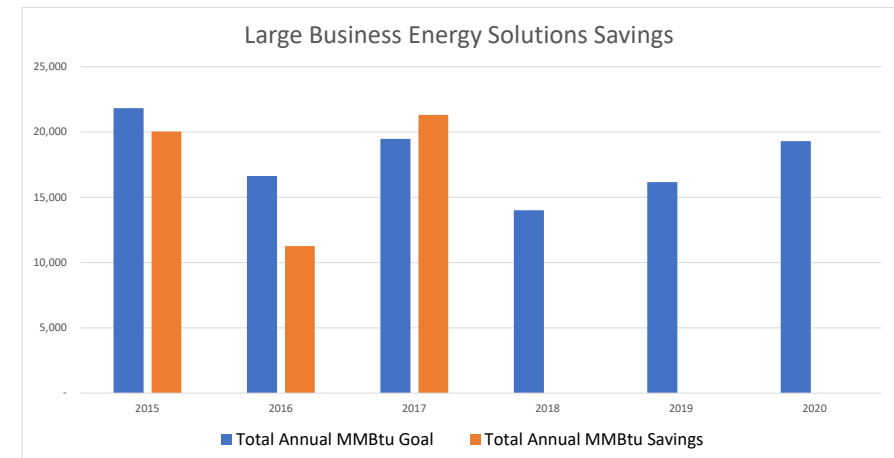
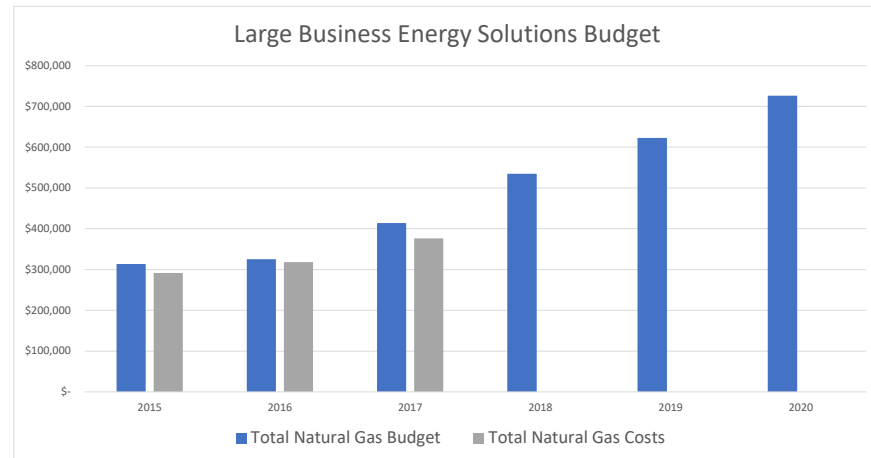
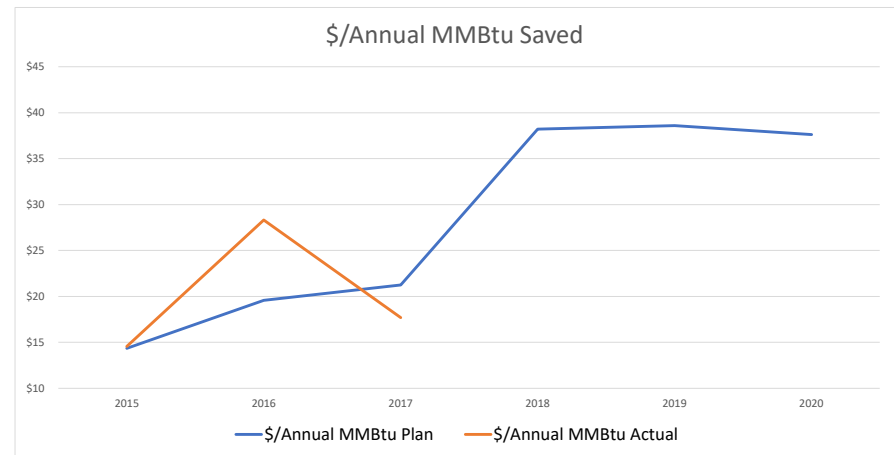
Home Energy Reports

Home Energy Reports						
Planned	2015	2016	2017	2018	2019	2020
3)	Total natural gas budget					
	\$ 145,100.00					
	\$ 81,756.00					
	\$ 93,300.00					
	Total Annual MMBtu Goal					
	4,980.00					
	3,252.00					
	2,110.00					
	\$/Annual MMBtu Saved					
	\$ 29.14					
	\$ 25.14					
	\$ 44.22					
Actuals	2015	2016	2017	2018	2019	2020
3)	Total Natural Gas Costs					
	Total Annual MMBtu Savings					
	\$/Annual MMBtu Actual					



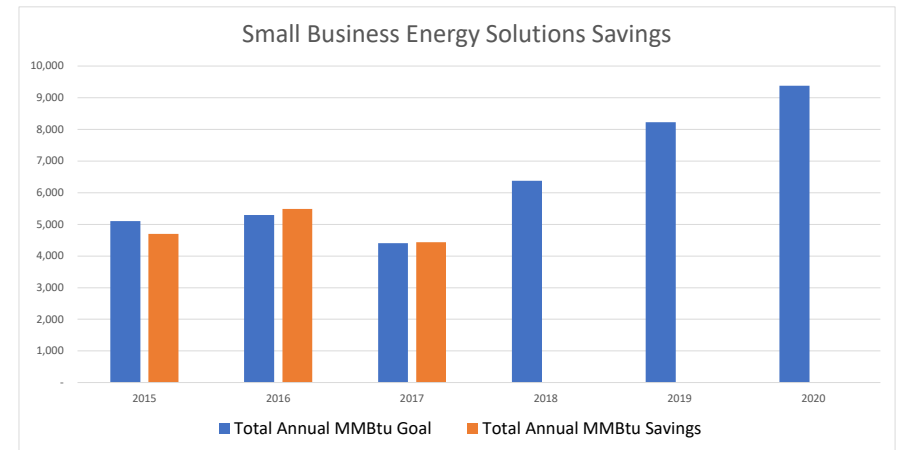
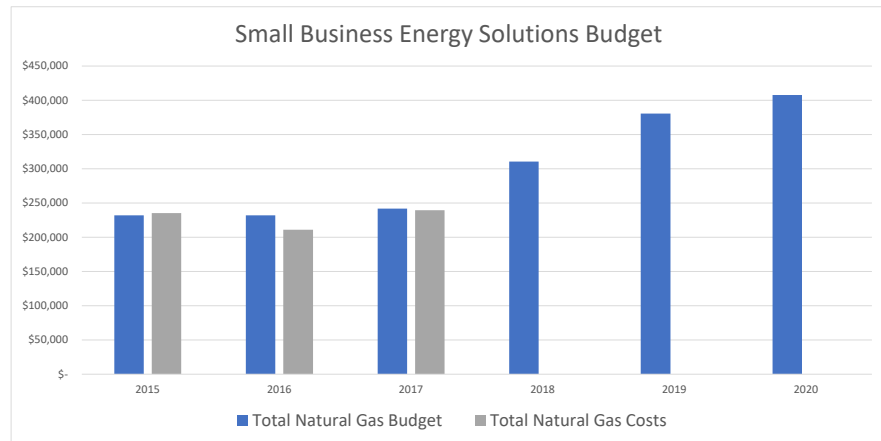
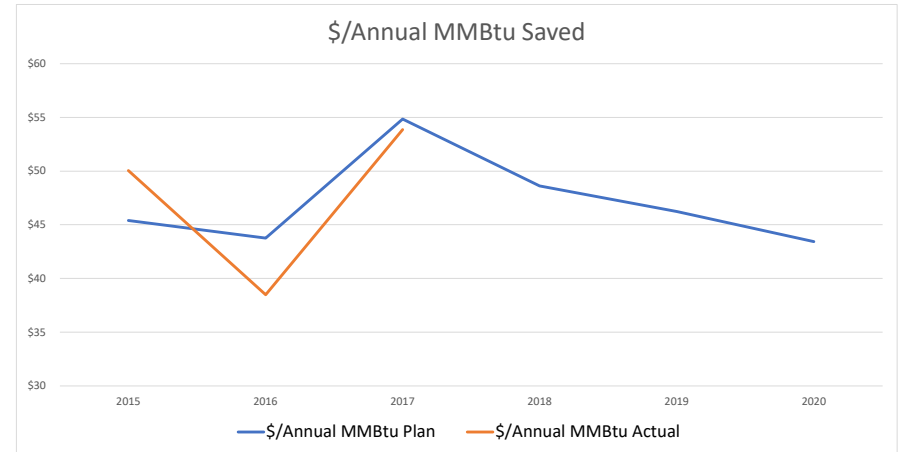
Large Business Energy Solutions

Large Business Energy Solutions													
Planned		2015		2016		2017		2018		2019		2020	
3)	Total natural gas budget	\$	313,214.41	\$	325,307.89	\$	413,800.00	\$	535,000.00	\$	623,034.90	\$	726,100.00
	Total Annual MMBtu Goal		21,825.29		16,625.84		19,472.30		14,000.20		16,150.29		19,311.00
	\$/Annual MMBtu Plan	\$	14.35	\$	19.57	\$	21.25	\$	38.21	\$	38.58	\$	37.60
Large Business Energy Solutions													
Actuals		2015		2016		2017							
3)	Total Natural Gas Costs	\$	291,699.33	\$	318,457.75	\$	376,625.30						
	Total Annual MMBtu Savings		20,038.00		11,251.91		21,305.39						
	\$/Annual MMBtu Actual	\$	14.56	\$	28.30	\$	17.68						



Small Business Energy Solutions

Small Business Energy Solutions							
Planned		2015	2016	2017	2018	2019	2020
3)	Total natural gas budget	\$ 231,722.47	\$ 231,722.47	\$ 241,500.00	\$ 310,300.00	\$ 380,546.00	\$ 407,500.00
	Total Annual MMBtu Goal	5,102.50	5,296.72	4,403.60	6,380.90	8,229.14	9,382.70
	\$/Annual MMBtu Plan	\$ 45.41	\$ 43.75	\$ 54.84	\$ 48.63	\$ 46.24	\$ 43.43
Small Business Energy Solutions							
Actuals		2015	2016	2017			
3)	Total Natural Gas Costs	\$ 234,948.98	\$ 210,948.60	\$ 239,187.58			
	Total Annual MMBtu Savings	4,694.80	5,482.74	4,439.84			
	\$/Annual MMBtu Actual	\$ 50.04	\$ 38.48	\$ 53.87			



<p style="text-align: center;">Northern Utilities, Inc. Calculation of Lost Revenue Rate (LRR) Effective November 1, 2018</p>			
Line	Sector		Reference
Residential Classes- R5, R6, R10, R11			
1	Sector Ending Balance-October 31, 2018	\$ 6,231	Page 2, Ln 2, Nov-2018
2	Lost Distribution Revenue-November 2018 through October 2019	\$ 120,535	Page 2, Ln 12, Total
3	Interest- November 2018 through October 2019	\$ (436)	Page 2, Ln 25, Total
4	Total to be recovered	\$ 126,330	Line 1+ Line 2+Line 3
5	Sector Sales - Therms- November 2018 through October 2019	19,742,687	Page 2, Line 15
6	Lost Revenue Rate (\$ per therm)	\$0.0064	Line 4 / Line 5
<hr/>			
Commercial & Industrial Classes-G40/T40, G50/T50, G41/T41, G51/T51, G42/T42, G-52/T52			
7	Sector Ending Balance-October 31, 2018	(5,050)	Page 2, Ln 29, Nov-2018
8	Lost Distribution Revenue-November 2018 through October 2019	\$ 85,893	Page 2, Ln 40, Total
9	Interest- November 2018 through October 2019	\$ (713)	Page 2, Ln 53, Total
10	Total to be recovered	\$ 80,130	Line 7+Line 8+Line 9
11	Sector Sales - Therms- November 2018 through October 2019	55,326,577	Page 2, Line 43
12	Lost Revenue Rate (\$ per therm)	\$0.0014	Line 10 / Line 11

Northern Utilities, Inc.
Lost Revenue Reconciliation
2019

Line	Sector / Description	Unit	Estimate Nov-18	Estimate Dec-18	Estimate Jan-19	Estimate Feb-19	Estimate Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Estimate Jul-19	Estimate Aug-19	Estimate Sep-19	Estimate Oct-19	Total
1	RESIDENTIAL														
2	Beginning Balance - (Over)/Under	\$'s	\$ 6,231	\$ 6,454	\$ 1,957	\$ (10,769)	\$ (23,916)	\$ (30,886)	\$ (34,627)	\$ (32,811)	\$ (27,835)	\$ (21,065)	\$ (13,900)	\$ (6,582)	
3	COSTS														
4	Incremental Annualized Savings	Therms	16,984	18,550	160	321	468	629	789	949	1,109	1,270	1,418	1,578	44,225
5	Incremental Monthly Savings	Therms	1,415	1,546	13	27	39	52	66	79	92	106	118	132	3,685
6															-
7	Cumulative Savings - Current	Therms	1,415	2,961	2,975	3,001	3,040	3,093	3,158	3,238	3,330	3,436	3,554	3,685	36,886
8	Cumulative Savings - Prior	Therms	12,973	12,973	12,973	12,973	12,973	12,973	12,973	12,973	12,973	12,973	12,973	12,973	129,727
9	Cumulative LBR Savings	Therms	14,388	15,934	15,947	15,974	16,013	16,065	16,131	16,210	16,303	16,408	16,527	16,658	192,558
10															
11	Average Distribution Rate	\$/Therm	\$ 0.6655	\$ 0.6655	\$ 0.6655	\$ 0.6655	\$ 0.6655	\$ 0.6655	\$ 0.5880	\$ 0.5880	\$ 0.5880	\$ 0.5880	\$ 0.5880	\$ 0.5880	
12	Lost Distribution Revenue	\$'s	\$ 9,576	\$ 10,605	\$ 10,613	\$ 10,631	\$ 10,657	\$ 10,692	\$ 9,485	\$ 9,531	\$ 9,585	\$ 9,648	\$ 9,717	\$ 9,794	\$ 120,535
13															
14	REVENUE														
15	Sector Sales	Therms	1,509,473	2,374,168	3,639,654	3,701,124	2,733,747	2,233,117	1,176,527	693,947	425,956	378,689	370,740	505,546	19,742,687
16	Lost Revenue Rate	\$/Therm	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	<u>\$0.0064</u>	
17	Revenue	\$'s	\$ 9,661	\$ 15,195	\$ 23,294	\$ 23,687	\$ 17,496	\$ 14,292	\$ 7,530	\$ 4,441	\$ 2,726	\$ 2,424	\$ 2,373	\$ 3,235	\$ 126,353
18															
19	(Over)/Under-Recovery (Exc interest)		\$ 6,146	\$ 1,864	\$ (10,724)	\$ (23,825)	\$ (30,755)	\$ (34,486)	\$ (32,673)	\$ (27,721)	\$ (20,976)	\$ (13,841)	\$ (6,555)	\$ (23)	
20															
21	INTEREST														
22	Average Monthly Balance		\$ 6,189	\$ 4,159	\$ (4,383)	\$ (17,297)	\$ (27,336)	\$ (32,686)	\$ (33,650)	\$ (30,266)	\$ (24,406)	\$ (17,453)	\$ (10,228)	\$ (3,303)	
23	Interest Rate-WSJ Prime Rate	Annual %	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	Total
24	Days per Month		30	31	31	28	31	30	31	30	31	31	30	31	365
25	Computed Interest	\$'s	\$ 307	\$ 93	\$ (46)	\$ (91)	\$ (131)	\$ (142)	\$ (139)	\$ (114)	\$ (89)	\$ (59)	\$ (27)	\$ (0)	\$ (436)
26															
27	Ending Balance	\$'s	\$ 6,454	\$ 1,957	\$ (10,769)	\$ (23,916)	\$ (30,886)	\$ (34,627)	\$ (32,811)	\$ (27,835)	\$ (21,065)	\$ (13,900)	\$ (6,582)	\$ (24)	
28	COMMERCIAL & INDUSTRIAL														
29	Beginning Balance - (Over)/Under	\$'s	\$ (5,050)	\$ (4,337)	\$ (4,725)	\$ (8,136)	\$ (11,152)	\$ (12,011)	\$ (11,095)	\$ (10,884)	\$ (8,545)	\$ (5,998)	\$ (3,200)	\$ 30	
30															
31	COSTS														
32	Incremental Annualized Savings	Therms	34,773	37,979	3,206	6,412	9,371	12,578	15,784	18,990	22,196	25,402	28,361	31,567	246,619
33	Incremental Monthly Savings	Therms	2,898	3,165	267	534	781	1,048	1,315	1,583	1,850	2,117	2,363	2,631	20,552
34															-
35	Cumulative Savings - Current	Therms	2,898	6,063	6,330	6,864	7,645	8,693	10,009	11,591	13,441	15,558	17,921	20,552	127,563
36	Cumulative Savings - Prior	Therms	36,620	36,620	36,620	36,620	36,620	36,620	36,620	36,620	36,620	36,620	36,620	36,620	366,199
37	Cumulative LBR Savings	Therms	39,518	42,683	42,950	43,484	44,265	45,313	46,629	48,211	50,061	52,178	54,541	57,172	567,002
38															
39	Average Distribution Rate	\$/Therm	\$ 0.1913	\$ 0.1913	\$ 0.1913	\$ 0.1913	\$ 0.1913	\$ 0.1913	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1182	
40	Lost Distribution Revenue	\$'s	\$ 7,561	\$ 8,166	\$ 8,217	\$ 8,319	\$ 8,469	\$ 8,669	\$ 5,510	\$ 5,697	\$ 5,916	\$ 6,166	\$ 6,445	\$ 6,756	\$ 85,893
41															
42	REVENUE														
43	Sector Sales	Therms	4,743,334	5,949,685	8,281,593	8,065,912	6,626,460	5,506,128	3,751,759	2,374,269	2,388,382	2,396,136	2,296,955	2,945,966	55,326,577
44	Lost Revenue Rate	\$/Therm	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	<u>\$0.0014</u>	
45	Revenue	\$'s	\$ 6,641	\$ 8,330	\$ 11,594	\$ 11,292	\$ 9,277	\$ 7,709	\$ 5,252	\$ 3,324	\$ 3,344	\$ 3,355	\$ 3,216	\$ 4,124	\$ 77,457
46															
47	(Over)/Under-Recovery (Exc interest)	\$'s	\$ (4,130)	\$ (4,500)	\$ (8,102)	\$ (11,109)	\$ (11,960)	\$ (11,050)	\$ (10,837)	\$ (8,510)	\$ (5,973)	\$ (3,187)	\$ 30	\$ 2,662	
48															
49	INTEREST														
50	Average Monthly Balance		\$ (4,590)	\$ (4,418)	\$ (6,414)	\$ (9,623)	\$ (11,556)	\$ (11,530)	\$ (10,966)	\$ (9,697)	\$ (7,259)	\$ (4,592)	\$ (1,585)	\$ 1,346	
51	Interest Rate-WSJ Prime Rate	Annual %	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	Total
52	Days per Month		30	31	31	28	31	30	31	30	31	31	30	31	365
53	Computed Interest	\$'s	\$ (207)	\$ (225)	\$ (34)	\$ (43)	\$ (51)	\$ (45)	\$ (46)	\$ (35)	\$ (25)	\$ (14)	\$ 0	\$ 11	\$ (713)
54															
55	Ending Balance	\$'s	\$ (4,337)	\$ (4,725)	\$ (8,136)	\$ (11,152)	\$ (12,011)	\$ (11,095)	\$ (10,884)	\$ (8,545)	\$ (5,998)	\$ (3,200)	\$ 30	\$ 2,673	

NOTES:
Line 11 and Line 39, see page 3.
Line 4 and Line 32, see Page 4.

Northern Utilities, Inc.

Summary of Average Distribution Rate for Lost Revenue

Calculation of Average Distribution Rate for Lost Revenue (Detail)

	(1) Number of Customers	(2) Customer Charge	(3)=(1)X(2) Calculated Customer	(4) Billing Determinants - Winter		(5) Winter Distribution Rates		(6) = (4) X (5) Winter Distribution	(7) Billing Determinants - Summer		(8) Summer Distribution Rates		(9) = (7) X (8) Summer Distribution
				First	Excess	First	Excess		First	Excess	First	Excess	
				Therms	Therms	Therms \$/thm	Therms \$/thm		Therms	Therms	Therms \$/thm	Therms \$/thm	
R-5 Residential, Heating	276,624	\$21.36	\$5,908,689	6,004,830	7,696,559	\$ 0.6660	\$ 0.6660	\$9,125,125	2,787,733	404,009	\$ 0.5870	\$ 0.5870	\$1,873,553
R-10 Residential Heating, Low Income	9,283	\$8.54	\$79,277	218,844	207,950	\$ 0.6660	\$ 0.6660	\$284,245	83,384	11,668	\$ 0.5870	\$ 0.5870	\$55,796
R-6 Residential, Non-Heating	16,385	\$21.36	\$349,984	54,507	97,776	\$ 0.6227	\$ 0.6227	\$94,827	55,088	36,667	\$ 0.6227	\$ 0.6227	\$57,136
Total Residential Service	302,292		\$6,337,949	6,278,181	8,002,285			\$9,504,197	2,895,717	452,344			\$1,986,484
G-40 Low Annual, High Winter Use	60,096	\$72.26	\$4,342,537	1,911,562	6,729,793	\$ 0.1795	\$ 0.1795	\$1,551,123	740,593	701,803	\$ 0.1795	\$ 0.1795	\$258,910
G-50 Low Annual, Low Winter Use	9,672	\$72.26	\$698,899	223,046	707,885	\$ 0.1795	\$ 0.1795	\$167,102	220,235	600,792	\$ 0.1795	\$ 0.1795	\$147,374
G-41 Medium Annual, High Winter Use	7,657	\$214.26	\$1,640,589	10,225,592		\$ 0.2334		\$2,386,653	2,464,309		\$ 0.1824		\$449,490
G-51 Medium Annual, Low Winter Use	3,118	\$214.26	\$668,063	1,632,744	973,871	\$ 0.1648	\$ 0.1346	\$400,159	1,266,445	679,409	\$ 0.1287	\$ 0.1046	\$234,058
G-42 High Annual, High Winter Use	394	\$1,285.55	\$506,507	4,787,340		\$ 0.1909		\$913,903	1,601,048		\$ 0.1161		\$185,882
G-52 High Annual, Low Winter Use	397	\$1,285.55	\$510,363	8,385,776		\$ 0.1655		\$1,387,846	7,095,551		\$ 0.0762		\$540,681
Total General Service	81,334		\$8,366,957	27,166,060	8,411,549			\$6,806,787	13,388,181	1,982,004			\$1,816,395
Total Company	383,626		\$14,704,906	33,444,241	16,413,834			\$16,310,983	16,283,898	2,434,348			\$3,802,879

Notes:

Column (1), Column (4) and Column (7): 2017 actual billing determinants.

Column (2), Column (5) and Column (8): Winter and Summer distribution rates effective May 1, 2018.

R-11 Rate Class is closed May 1, 2017. R-11 Rate Class Customers migrated to R-6 Rate Class.

Calculation of Average Distribution Rate for Lost Revenue Winter and Summer (Summary)

	(10)=(3)	(11) = (6) + (9)	12=(10)+(11)	(13)=(4)+(7)
	Total Calculated Customer	Total Volumetric Revenue	Total Distribution Revenue	Total Annual Therms
R-5	\$5,908,689	\$10,998,678	\$16,907,366	16,893,131
R-10	\$79,277	\$340,040	\$419,317	521,846
R-6	\$349,984	\$151,962	\$501,946	244,038
Total Residential Service	\$6,337,949	\$11,490,680	\$17,828,629	17,659,015
G-40	\$4,342,537	\$1,810,033	\$6,152,570	10,083,751
G-50	\$698,899	\$314,476	\$1,013,375	1,751,958
G-41	\$1,640,589	\$2,836,143	\$4,476,732	12,689,901
G-51	\$668,063	\$634,217	\$1,302,280	4,552,469
G-42	\$506,507	\$1,099,785	\$1,606,292	6,388,388
G-52	\$510,363	\$1,928,527	\$2,438,890	15,481,327
Total General Service	\$8,366,957	\$8,623,182	\$16,990,139	50,947,794
Total Company	\$14,704,906	\$20,113,862	\$34,818,768	68,606,809

Based on Actual Billing Determinants for 2017 at Current Distribution Rates- Winter

	(1) Total Volumetric Revenue	(2) Total Winter therms	(3)=(1)X(2) Average Distribution Rate \$/therm
R-5	\$9,125,125	13,701,389	\$0.6660
R-10	\$284,245	426,794	\$0.6660
R-6	\$94,827	152,283	\$0.6227
Total Residential Service	\$9,504,197	14,280,466	\$0.6655
G-40	\$1,551,123	8,641,355	\$0.1795
G-50	\$167,102	930,931	\$0.1795
G-41	\$2,386,653	10,225,592	\$0.2334
G-51	\$400,159	2,606,615	\$0.1535
G-42	\$913,903	4,787,340	\$0.1909
G-52	\$1,387,846	8,385,776	\$0.1655
Total General Service	\$6,806,787	35,577,609	\$0.1913

Based on Actual Billing Determinants for 2017 at Current Distribution Rates- Summer

	(1) Total Volumetric Revenue	(2) Total Summer therms	(3)=(1)X(2) Average Distribution Rate \$/therm
R-5	\$1,873,553	3,191,742	\$0.5870
R-10	\$55,796	95,052	\$0.5870
R-6	\$57,136	91,755	\$0.6227
Total Residential Service	\$1,986,484	3,378,549	\$0.5880
G-40	\$258,910	1,442,396	\$0.1795
G-50	\$147,374	821,027	\$0.1795
G-41	\$449,490	2,464,309	\$0.1824
G-51	\$234,058	1,945,854	\$0.1203
G-42	\$185,882	1,601,048	\$0.1161
G-52	\$540,681	7,095,551	\$0.0762
Total General Service	\$1,816,395	15,370,185	\$0.1182

**Northern Utilities, Inc.
Gas Savings for LRR Calculation**

Planned Gas Savings - 2019		Annual
		Therms
1. Residential Programs		
2. Home Energy Assistance		1,947
3. EnergyStar® Homes		1,441
4. Home Perf w/ EnergyStar®		1,655
5. EnergyStar® Appliances		4,032
6. Home Energy Reports		3,252
7. Residential		12,327
8.		
9. Commercial & Industrial Programs		
10. Large Business Energy Solutions		16,150
11. Small Business Energy Solutions		8,229
12. Education (Gas)		-
13. Commercial & Industrial		24,379

LBR Savings Allocation		Unit	Estimate Nov-18	Estimate Dec-18	Estimate Jan-19	Estimate Feb-19	Estimate Mar-19	Estimate Apr-19	Estimate May-19	Estimate Jun-19	Estimate Jul-19	Estimate Aug-19	Estimate Sep-19	Estimate Oct-19	Estimate Nov-19	Estimate Dec-19	Nov-17 to Oct- 18 Total	Jan 18 to Dec- 18 Total
14.	Residential Programs	Therms	<u>14.1%</u>	<u>15.4%</u>	<u>1.3%</u>	<u>2.6%</u>	<u>3.8%</u>	<u>5.1%</u>	<u>6.4%</u>	<u>7.7%</u>	<u>9.0%</u>	<u>10.3%</u>	<u>11.5%</u>	<u>12.8%</u>	<u>14.1%</u>	<u>15.4%</u>	<u>100.0%</u>	<u>100.0%</u>
15.	Annualized Therms		16,984	18,550	160	321	468	629	789	949	1,109	1,270	1,418	1,578	1,738	1,898	44,225	12,327
16.																		
17.	Monthly Incremental		Therms	1,415	1,546	13	27	39	52	66	79	92	106	118	132	145	158	
18.	Monthly Cumulative	Therms	14,388	15,934	15,947	15,974	16,013	16,066	16,131	16,210	16,303	16,409	16,527	16,658	16,803	16,961	192,560	196,003
19.																		
20.	Commercial & Industrial Programs	Therms	<u>12%</u>	<u>25%</u>	<u>1.3%</u>	<u>2.6%</u>	<u>3.8%</u>	<u>5.1%</u>	<u>6.4%</u>	<u>7.7%</u>	<u>9.0%</u>	<u>10.3%</u>	<u>11.5%</u>	<u>12.8%</u>	<u>14.1%</u>	<u>15.4%</u>		
21.	Annualized Therms		34,773	37,979	3,206	6,412	9,371	12,578	15,784	18,990	22,196	25,402	28,361	31,567	34,773	37,979	246,619	246,619
22.																		
23.	Monthly Incremental		Therms	2,898	3,165	267	534	781	1,048	1,315	1,583	1,850	2,117	2,363	2,631	2,898	3,165	20,552
24.	Monthly Cumulative	Therms	39,518	42,683	42,950	43,484	44,265	45,313	46,629	48,211	50,061	52,178	54,541	57,172	60,069	63,234	567,004	608,106

Northern Utilities, Inc.
Lost Revenue Reconciliation
2018

Northern Utilities, Inc. - NH
NHPUC Docket No. DE 17-136

Attachment J5 (2019 Update)
Page 5 of 6

Line	Sector / Description	Unit	Recast Jan-18	Recast Feb-18	Recast Mar-18	Recast Apr-18	Recast May-18	Recast Jun-18	Estimate Jul-18	Estimate Aug-18	Estimate Sep-18	Estimate Oct-18	Total
1	RESIDENTIAL												
2	Beginning Balance - (Over)/Under	\$'s	\$ (1,945)	\$ (9,971)	\$ (15,078)	\$ (18,309)	\$ (20,467)	\$ (18,979)	\$ (15,464)	\$ (11,002)	\$ (5,884)	\$ (86)	
3	COSTS												
4	Incremental Annualized Savings	Therms	1,566	3,132	4,577	6,143	7,709	9,275	10,841	12,407	13,852	15,418	84,920
5	Incremental Monthly Savings	Therms	131	261	381	512	642	773	903	1,034	1,154	1,285	7,077
6													
7	Cumulative Savings - Current	Therms	131	392	773	1,285	1,927	2,700	3,604	4,638	5,792	7,077	28,317
8	Cumulative Savings - Prior	Therms	5,896	5,896	5,896	5,896	5,896	5,896	5,896	5,896	5,896	5,896	58,960
9	Cumulative LBR Savings	Therms	6,027	6,288	6,669	7,181	7,823	8,596	9,500	10,534	11,688	12,973	87,277
10													
11	Average Distribution Rate	\$/Therm	\$ 0.59030	\$ 0.59030	\$ 0.59030	\$ 0.59030	\$ 0.58797	\$ 0.58797	\$ 0.58797	\$ 0.58797	\$ 0.58797	\$ 0.58797	
12	Lost Distribution Revenue (Actual thru June)	\$'s	\$ 3,557	\$ 3,712	\$ 3,937	\$ 4,239	\$ 4,600	\$ 5,054	\$ 5,585	\$ 6,193	\$ 6,872	\$ 7,628	\$ 51,377
13													
14	REVENUE												
15	Sector Sales	Therms	4,123,832	3,131,798	2,560,049	2,284,269	1,103,933	546,360	385,426	375,540	383,364	477,483	15,372,054
16	Lost Revenue Rate	\$/Therm	\$0.0028	\$0.0028	\$0.0028	\$0.0028	\$0.0028	\$0.0028	\$0.0028	\$0.0028	\$0.0028	\$0.0028	
17	Revenue	\$'s	\$ 11,548	\$ 8,769	\$ 7,167	\$ 6,395	\$ 3,090	\$ 1,525	\$ 1,079	\$ 1,052	\$ 1,073	\$ 1,337	\$ 43,035
18													
19	(Over)/Under-Recovery (Exc interest)		\$ (9,936)	\$ (15,029)	\$ (18,308)	\$ (20,465)	\$ (18,958)	\$ (15,449)	\$ (10,958)	\$ (5,860)	\$ (85)	\$ 6,205	
20													
21	INTEREST												
22	Average Monthly Balance		\$ (5,940)	\$ (12,500)	\$ (16,693)	\$ (19,387)	\$ (19,712)	\$ (17,214)	\$ (13,211)	\$ (8,431)	\$ (2,985)	\$ 3,060	
23	Interest Rate-WSJ Prime Rate	Annual %	4.25%	4.25%	4.25%	4.50%	4.50%	4.50%	4.75%	4.75%	4.75%	5.00%	Total
24	Days per Month		31	28	31	30	31	30	31	31	30	31	365
25	Computed Interest	\$'s	\$ (36)	\$ (49)	\$ (1)	\$ (2)	\$ (21)	\$ (15)	\$ (44)	\$ (24)	\$ (0)	\$ 26	\$ (166)
26													
27	Ending Balance	\$'s	\$ (9,971)	\$ (15,078)	\$ (18,309)	\$ (20,467)	\$ (18,979)	\$ (15,464)	\$ (11,002)	\$ (5,884)	\$ (86)	\$ 6,231	
28	COMMERCIAL & INDUSTRIAL												
29	Beginning Balance - (Over)/Under	\$'s	\$ (1,656)	\$ (6,208)	\$ (8,815)	\$ (10,554)	\$ (11,255)	\$ (11,825)	\$ (11,111)	\$ (9,517)	\$ (8,184)	\$ (6,502)	
30													
31	COSTS												
32	Incremental Annualized Savings	Therms	3,206	6,412	9,371	12,578	15,784	18,990	22,196	25,402	28,361	31,567	173,867
33	Incremental Monthly Savings	Therms	267	534	781	1,048	1,315	1,583	1,850	2,117	2,363	2,631	14,489
34													
35	Cumulative Savings - Current	Therms	267	802	1,582	2,631	3,946	5,528	7,378	9,495	11,858	14,489	57,976
36	Cumulative Savings - Prior	Therms	22,131	22,131	22,131	22,131	22,131	22,131	22,131	22,131	22,131	22,131	221,310
37	Cumulative LBR Savings	Therms	22,398	22,933	23,713	24,762	26,077	27,659	29,509	31,626	33,989	36,620	279,286
38													
39	Average Distribution Rate	\$/Therm	\$ 0.19530	\$ 0.19530	\$ 0.19530	\$ 0.19530	\$ 0.11818	\$ 0.11818	\$ 0.11818	\$ 0.11818	\$ 0.11818	\$ 0.11818	
40	Lost Distribution Revenue	\$'s	\$ 4,374	\$ 4,479	\$ 4,631	\$ 4,836	\$ 3,082	\$ 3,269	\$ 3,487	\$ 3,737	\$ 4,017	\$ 4,328	\$ 40,240
41													
42	REVENUE												
43	Sector Sales	Therms	8,903,349	7,066,648	6,337,701	5,547,153	4,641,583	2,514,296	1,855,055	2,371,702	2,309,983	2,853,901	44,401,371
44	Lost Revenue Rate	\$/Therm	\$0.0010	\$0.0010	\$0.0010	\$0.0010	\$0.0010	\$0.0010	\$0.0010	\$0.0010	\$0.0010	\$0.0010	
45	Lost Distribution Revenue (Actual thru June)	\$'s	\$ 8,904	\$ 7,057	\$ 6,332	\$ 5,496	\$ 3,606	\$ 2,514	\$ 1,855	\$ 2,372	\$ 2,310	\$ 2,854	\$ 43,300
46													
47	(Over)/Under-Recovery (Exc interest)	\$'s	\$ (6,186)	\$ (8,786)	\$ (10,516)	\$ (11,214)	\$ (11,779)	\$ (11,070)	\$ (9,479)	\$ (8,151)	\$ (6,477)	\$ (5,029)	
48													
49	INTEREST												
50	Average Monthly Balance		\$ (3,921)	\$ (7,497)	\$ (9,665)	\$ (10,884)	\$ (11,517)	\$ (11,447)	\$ (10,295)	\$ (8,834)	\$ (7,331)	\$ (5,766)	
51	Interest Rate-WSJ Prime Rate	Annual %	4.25%	4.25%	4.25%	4.50%	4.50%	4.50%	4.75%	4.75%	4.75%	5.00%	Total
52	Days per Month		31	28	31	30	31	30	31	31	30	31	365
53	Computed Interest	\$'s	\$ (22)	\$ (29)	\$ (38)	\$ (41)	\$ (45)	\$ (41)	\$ (38)	\$ (33)	\$ (25)	\$ (21)	\$ (334)
54													
55	Ending Balance	\$'s	\$ (6,208)	\$ (8,815)	\$ (10,554)	\$ (11,255)	\$ (11,825)	\$ (11,111)	\$ (9,517)	\$ (8,184)	\$ (6,502)	\$ (5,050)	

Note: Recast denotes change from accounting records. Savings recast to match original budget. Lost revenue is calculated based on original estimated savings. The final reconciliation using actual savings will be provided in the June 2019 filing. The Average Distribution rate for Residential and C&I Classes for the months of January through April 2018 are from the 2017 Annual Report (LRR Page 4 of 22) in Docket No. DE 14-216 on June 1, 2018.

000257

Northern Utilities, Inc.
Lost Revenue Reconciliation
2018

Northern Utilities, Inc. - NH
NHPUC Docket No. DE 17-136
Attachment J5 (2019 Update)
Page 5 of 6

Line	Sector / Description	Unit	Recast Jan-18	Recast Feb-18	Recast Mar-18	Recast Apr-18	Recast May-18	Recast Jun-18	Estimate Jul-18	Estimate Aug-18	Estimate Sep-18	Estimate Oct-18	Total
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Calculation of Lost Revenues - Northern Utilities, Inc.
Year 2019

Savings and lost revenues are estimated based on a calendar year. Does not include prior cumulative savings.

	Annualized	"Installed" Savings													
	Therm Savings	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Residential															
Jan	160	13	13	13	13	13	13	13	13	13	13	13	13	160	
Feb	321		27	27	27	27	27	27	27	27	27	27	27	294	
Mar	468			39	39	39	39	39	39	39	39	39	39	390	
Apr	629				52	52	52	52	52	52	52	52	52	472	
May	789					66	66	66	66	66	66	66	66	526	
Jun	949						79	79	79	79	79	79	79	554	
Jul	1,109							92	92	92	92	92	92	555	
Aug	1,270								106	106	106	106	106	529	
Sep	1,418									118	118	118	118	473	
Oct	1,578										131	131	131	394	
Nov	1,738											145	145	290	
Dec	1,898												158	158	
Total	12,328	13	40	79	131	197	276	369	475	593	724	869	1,027	4,794	
		13	53	133	264	461	738	1,106	1,581	2,174	2,898	3,767	4,794		
Proposed Distribution Rate		\$ 0.6655	\$ 0.6655	\$ 0.6655	\$ 0.6655	\$ 0.5880	\$ 0.5880	\$ 0.5880	\$ 0.5880	0.5880	\$ 0.5880	\$ 0.6655	\$ 0.6655		
Lost Revenue		\$ 9	\$ 36	\$ 88	\$ 176	\$ 271	\$ 434	\$ 651	\$ 930	\$ 1,278	\$ 1,704	\$ 2,507	\$ 3,191	\$ 11,273	
C&I															
Jan	3,206	267	267	267	267	267	267	267	267	267	267	267	267	3,206	
Feb	6,412		534	534	534	534	534	534	534	534	534	534	534	5,878	
Mar	9,371			781	781	781	781	781	781	781	781	781	781	7,810	
Apr	12,578				1,048	1,048	1,048	1,048	1,048	1,048	1,048	1,048	1,048	9,433	
May	15,784					1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	10,522	
Jun	18,990						1,582	1,582	1,582	1,582	1,582	1,582	1,582	11,077	
Jul	22,196							1,850	1,850	1,850	1,850	1,850	1,850	11,098	
Aug	25,402								2,117	2,117	2,117	2,117	2,117	10,584	
Sep	28,361									2,363	2,363	2,363	2,363	9,454	
Oct	31,567										2,631	2,631	2,631	7,892	
Nov	34,773											2,898	2,898	5,796	
Dec	37,979												3,165	3,165	
Total	246,618	267	802	1,582	2,631	3,946	5,528	7,378	9,495	11,858	14,489	17,387	20,552	95,914	
		267	1,069	2,651	5,282	9,228	14,756	22,134	31,629	43,487	57,976	75,362	95,914		
Proposed Distribution Rate		\$ 0.1913	\$ 0.1913	\$ 0.1913	\$ 0.1913	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1182	\$ 0.1913	\$ 0.1913		
Lost Revenue		\$ 51	\$ 204	\$ 507	\$ 1,011	\$ 1,090	\$ 1,744	\$ 2,616	\$ 3,738	\$ 5,139	\$ 6,851	\$ 14,418	\$ 18,350	\$ 55,721	
Total Lost Revenue															\$ 66,994

THE STATE OF NEW HAMPSHIRE
BEFORE THE PUBLIC UTILITIES COMMISSION
JOINT PREPARED TESTIMONY OF
KAREN M. ASBURY, CHRISTOPHER J. GOULDING,
AND HEATHER M. TEBBETTS, AND CAROL M. WOODS
PROPOSED 2019 SYSTEM BENEFITS CHARGE RATE CHANGE
AND
GAS INFORMATIONAL ENERGY EFFICIENCY CHARGE AND LOST REVENUE
RATE

Docket No. DE 17-136

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, by whom you are employed and in what capacity.

A. Karen M. Asbury: I am the Director of Regulatory Services for Unitil Service Corp., an affiliate of Northern Utilities, Inc. (“Northern”) and Unitil Energy Systems, Inc. (Unitil), which are all subsidiaries of Unitil Corporation. My primary responsibilities are directing rate and regulatory filings.

Christopher J. Goulding: I am the Manager of New Hampshire Revenue Requirements for Eversource Energy Service Company. My primary responsibilities are the coordination and implementation of revenue requirements calculations for Eversource in New Hampshire.

1 Heather M. Tebbetts: I am a Senior Analyst for Liberty Utilities Service Corp. and in this
2 capacity, am responsible for providing regulatory services for the Liberty Utilities
3 operating companies.

4 Carol M. Woods: I am an Energy Solutions Executive for New Hampshire Electric
5 Cooperative. My responsibilities include management of planning and regulatory
6 support for the company's energy efficiency programs.

7 **Q. Have you previously testified before the Commission?**

8 A. Yes, we have.

9 **Q. What is the purpose of your testimony?**

10 A. The purpose of our testimony is: (1) to present and support the calculation of the Energy
11 Efficiency ("EE") component of the System Benefits Charge ("SBC") proposed for effect
12 January 1, 2019; and (2) to present and support the calculation of the lost base revenue
13 ("LBR") component of the SBC proposed for effect January 1, 2019. Our testimony
14 explains what is contained in Attachments E3, F3, G3, and H3, which provide the
15 calculations of the EE and LBR rate components for each electric distribution utility.
16 The testimony provides a detailed explanation of the changes made to the LBR rate
17 component starting on January 1, 2019 in order to address the Settlement approved by the
18 Commission in Order No. 26,095 in Docket DE 17-136. In addition, the testimony will
19 also present the Energy Efficiency Charge ("EEC") and Lost Revenue Rate ("LRR") for
20 Northern. These rate calculations are presented in Attachments J3 (EEC) and J5 (LRR)
21 and are being provided for informational purposes. The proposed EEC and LRR will be

1 filed in Northern's upcoming annual Cost of Gas filing that will be submitted to the
2 Commission on or before September 17, 2018.

3 EnergyNorth is providing a reconciliation of lost revenues in Attachment I3 as the
4 Company's decoupling mechanism approved in Order No. 26,122 in Docket No. DG 17-
5 048, thus the lost revenue mechanism is no longer effective outside of the reconciliation
6 of previous periods.

7 **II. EE COMPONENT OF THE SBC**

8 **Q. What is the proposed EE Component of the SBC?**

9 A. The proposed statewide EE rate for effect January 1, 2019 is \$0.00352 per kWh. This is
10 an increase of \$0.00077 per kWh from the current statewide EE rate of \$0.00275 per
11 kWh.

12
13 **Q. How was the EE rate calculated?**

14 A. With a statewide savings target of 1.00% in 2019, translating to 107,830 MWh in
15 expected savings, and an overall average cost to achieve the kWh savings of \$0.440, the
16 total required funding is \$47.412 million. Of this amount, an estimated \$9.646 million
17 will be funded through proceeds from the Forward Capacity Market, RGGI, and unspent
18 funds from previous program years. The remaining balance of \$37.766 million divided
19 by the forecasted delivery sales of 10,729,062 MWh results in a statewide EE rate of
20 \$0.00352 per kWh. These calculations are further broken down by each utility on page 1
21 of Attachments E3 (Eversource), F3 (Liberty), G3 (NHEC), and H3 (Unitil). Page 2

provides actual and forecasted monthly revenues and expenses for the 2018 program year while Page 3 provide the forecasted monthly revenue and expenses for the 2019 program year.

III. LBR COMPONENT OF THE SBC

Q. What is the proposed LBR Component of the SBC?

A. The proposed LBR rates differ by utility. Eversource's proposed LBR rate is \$0.00062 per kWh, which is an increase from the current rate of \$0.00030 per kWh. Liberty's proposed LBR rate is \$0.00011 per kWh, which is an increase/decrease from the current rate of \$0.0032 per kWh. Unitil's proposed LBR rate is \$0.00053 per kWh, which is an increase per kWh from the current rate of \$0.00031 per kWh. Lost revenues do not apply to NHEC; therefore, an LBR rate is not utilized by NHEC.

Q. How was the LBR rate calculated?

A. As shown on Page 4 of Attachments E3 (Eversource), G3 (Liberty), and H3 (Unitil), the sum of the forecast lost base revenue, plus the prior year balance, plus current year interest, is divided by the forecast deliveries to arrive at the proposed rate. Page 5 provides the supporting savings calculations for the 2019 lost revenues. Page 6 provides a reconciliation of the actual and forecasted monthly revenues collected from the LBR rate during 2018. Page 7 provides a reconciliation of monthly revenues collected from the LBR rate and estimated lost revenue for 2019. Page 8 provides a computation of the average sector distribution rates for use in the lost revenue calculation. Additional details supporting the average rate calculation starts on Page 10.

1 **Q. Are there changes in the way that lost base revenue is calculated in 2019?**

2 A. Yes. Page 15 of Order No. 26,095 in Docket DE 17-136, establishing the working
3 groups, states, “Concerning Lost Base Revenue, the Settlement adopts the method of
4 calculating the average distribution rate proposed by the Utilities (where the average
5 distribution rate used in the calculation blends the kW and kWh rate components) for
6 energy efficiency upgrades installed in 2017 and 2018. For upgrades installed in 2019
7 and thereafter, the method proposed by Staff will be used (where the average distribution
8 rate is disaggregated into kW and kWh components). The kW values to be used in that
9 calculation will be examined by an LBR working group in 2018 to determine the general
10 impact of customer peak load and the general impact demand charge ratchets on those
11 kW values.” The working group convened in 2018 and provided a final report on its
12 findings.

13 **Q. Please describe how 2017 and 2018 lost base revenue is calculated.**

14 A. Measures installed in 2017 and 2018 currently have their lost base revenue calculated by
15 multiplying the kWh savings by the “combined” LBR Average Distribution Rate. This
16 rate is a single weighted average rate comprised of all kWh and kW charges across the
17 sector. For all measures installed prior to January 1, 2019, this method will be used to
18 calculate lost base revenue for the life of the measure.

19 **Q. Please describe how lost base revenue will be calculated for measures installed**
20 **beginning in 2019.**

1 A. As demonstrated on Page 5 of Attachments E3 (Eversource), G3 (Liberty), and H3
2 (Unitil), measures installed after 2018 will have their lost base revenue calculated by
3 adding two “separate” calculations; the kWh savings will be multiplied by the sector’s
4 kWh LBR Average Distribution Rate, then the kW savings will be multiplied by the
5 sector’s kW LBR Average Distribution Rate. The addition of these two calculations will
6 result in the total lost base revenue for measures installed. For all measures installed on or
7 after January 1, 2019, this method will be used to calculate lost base revenue for the life
8 of the measure. Further details are provided within the NH LBR Working Group Report.

9 **Q. How will kW be calculated for LBR for measures installed in 2019 and later?**

10 A. The LBR Working Group Report explains in detail how the kW savings will be
11 calculated for measures installed in 2019 or later. Using this methodology, kW savings
12 will be correlated to the customers’ average monthly peak. For an overview, the high-
13 level formula for calculating kW savings is as follows:

$$\text{LBR kW Savings} = \text{Connected Load kW Savings} * \text{Customer Peak Coincident Factor} * \\ \text{Net to Gross Percentage} * \text{In Service Rate} * \text{Realization Rate} - \text{Retirement Adjustment}$$

14
15
16 **Q. What is the impact of ratchets on lost base revenue?**

17 A. Upon review of the impact of ratchets on billing demand, each utility determined that the
18 impact of ratchets on lost base revenue is minimal, and that no adjustment is necessary to
19 reflect their impact. Further details and the analyses performed are provided within the
20 LBR Working Group Report.

1 **Q. Why hasn't Granite State Electric included cumulative savings in its lost base**
2 **revenue calculation?**

3 A. Granite State Electric will be filing a rate case in 2019 with a test year of 2018, and as
4 discussed in Docket No. DE 15-137, cumulative savings will reset during a test year.

5 **IV. TOTAL SBC AND BILL IMPACTS**

6 **Q. What is the total proposed SBC?**

7 A. As shown on Attachments E3 (Eversource), F3 (Liberty), G3 (NHEC), and H3 (Unitil).
8 the total proposed SBC is \$0.00565 per kWh for Eversource, \$0.00513 per kWh for
9 Liberty, \$0.00502 per kWh for NHEC, and \$0.00555 per kWh for Unitil. The SBC
10 consist of the EE and LBR rate components discussed above and the Electric Assistance
11 rate component of \$0.00150.

12 **Q. Have you provided bill impacts associated with the proposed SBC?**

13 A. Yes. The bill impact for a typical residential and C&I customer is provided on Page 9 of
14 Attachments E3 (Eversource), F3 (Liberty), G3 (NHEC), and H3 (Unitil).

15 **Q. Do the utilities require Commission approval of the SBC billed to customers by a**
16 **specific date?**

17 A. Yes, the utilities request approval of the SBC by December 21, 2018, in order to
18 implement the new rate for service rendered on and after January 1, 2019.

19 **V. NORTHERN'S EEC AND LRR**

1 **Q. Turning to gas, what is Northern presenting for the EEC and LRR?**

2 A. Northern is presenting the EEC and LRR in Attachments J3 (EEC) and J5 (LRR). These
3 attachments are being provided for informational purposes only at this time. The final
4 proposed rates will be filed in Northern’s upcoming Annual Cost of Gas filing due on or
5 before September 17, 2018.

6 **Q. What is the purpose of the EEC?**

7 A. The purpose of the EEC is to recover from firm ratepayers Energy Efficiency program
8 costs and performance incentives.

9 **Q. What are the changes to the EEC?**

10 A. The EEC for the residential classes is projected to increase from \$0.0433 per therm to
11 \$0.0501 per therm, and the EEC is projected to increase from \$0.0184 per therm to
12 \$0.0264 per therm for the commercial and industrial customer classes effective
13 November 1, 2018. The rate calculation is provided on Attachment J3, Page 2 of 4.

14 **Q. What is the purpose of the “Funds Shift to On Bill Financing Mechanism” line items**
15 **for Residential and C&I Customers as shown in the rate calculation on Attachment**
16 **J3, Page 2 of 4?**

17 A. These funds, \$30,000 for Residential Customers and \$53,000 for C&I Customers, is to
18 seed a new on-bill financing effort to cover customers’ share of Energy Efficiency costs.

19 **Q. Please describe the reason for these changes to and describe the derivation of the**
20 **EEC.**

1 A. The changes to the EEC are necessitated by the implementation of Northern's calendar
2 year 2019 energy efficiency program budget. That budget is provided in Attachment J3,
3 Page 1 of 4. The EEC is provided on Page 2 of 4. As shown, the rate is derived by
4 customer class and includes an annual reconciliation of the program costs and
5 performance incentives with an adjustment for the low-income discount costs. The
6 projected reconciliation of costs and revenues is provided on Pages 3 and 4 for the
7 residential classes and commercial and industrial classes, respectively.

8 Q. **What is the LRR calculated for effect November 1, 2018?**

9 A. The calculated LRR for the residential classes is \$0.0064 per therm and the LRR for the
10 Commercial classes is \$0.0014. This is an increase of \$0.0036 from the currently
11 effective rate of \$0.0028 for Residential Customers and an increase of \$0.0004 from the
12 currently effective rate of \$0.0010 for C&I Customers.

13 Q. **Please explain the calculation of the proposed LRR?**

14 A. The calculation of the LRR is provided on Attachment J5. As shown on Page 1 of 6, the
15 LRR for each sector (residential and commercial/industrial) is derived by dividing the
16 projected annual lost revenue, plus the reconciliation balance, plus projected interest, by
17 forecast firm annual throughput. Page 2 of 6 provides the projected reconciliation of
18 costs and revenue for the period November 2018 through October 2019. This page also
19 provides the calculation of estimated lost distribution revenue based on estimated
20 savings. Page 3 of 6 provides the calculation of the Company's average distribution rates
21 by sector that is used in the calculation of estimated lost revenue beginning May 1,

1 2018. Page 4 of 6 provides further detail for the estimated savings that are used in the
2 calculation of lost revenue on Page 2 of 6. Page 5 of 6 reconciles lost revenue for the
3 term January 2018 through June 2018 and provides estimates for the term July 2018
4 through October 2018.¹ Page 6 of 6 is the calculation of lost revenues for calendar year
5 2019. This does not include prior cumulative savings.

6 **Q. Will Northern be updating the EEC and LRR?**

7 **A.** Yes. As previously indicated, Northern is providing the EEC and LRR schedules for
8 informational purposes only and is not seeking approval the EEC and LLR through this
9 docket. The EEC and LRR will be filed in the upcoming Annual 2018 Cost of Gas Filing
10 that will be submitted to the Commission on, or before, September 17, 2018.

11 **VI. CONCLUSION**

12 **Q. Does this conclude your testimony?**

13 **A.** Yes, it does.

¹ Northern is booking lost revenue based on original estimated savings. The final reconciliation of lost revenue using actual savings will be provided in the June 2019 filing.