Demand-Side Management Annual Status Report

Electric and Natural Gas
Public Service Company of Colorado

April 1, 2019 / Proceeding No. 16A-0512EG

2018

2018 Demand-Side Management Annual Status Report

Public Service Company of Colorado ("Public Service" or "the Company") continues to provide customers the choices and the tools they need to make educated decisions about their electricity use. Public Service helps customers manage their energy consumption through one of the largest energy saving program portfolios in the United States. These energy efficiency programs help customers save money, benefit all of Colorado by avoiding emissions, and reduce the Company's need to purchase, produce, and deliver additional energy. The DSM portfolio continues to be cost-effective while delivering significant energy efficiency savings and demand reductions.

This 2018 Demand-Side Management ("DSM") Annual Status Report summarizes the natural gas and electric energy efficiency achievements made in 2018. This report also explores the challenges and lessons learned from a diverse and varied portfolio of programs, products, and pilots designed to provide customers control of their energy use.

Report Highlights:

- **The electric DSM portfolio exceeded its energy efficiency goal.** In 2018, Public Service's electric energy efficiency portfolio achieved energy savings at 113 percent of the Commission approved goal. At more than 453 GWh, the portfolio surpassed 2017's record setting achievement for electric energy savings. This was accomplished at 93 percent of the filed budget. The natural gas portfolio achieved 106 percent of the target at 121 percent of budget.

- **A total of 331,343 tons of CO2 were avoided in 2018 through the natural gas and electric DSM achievements.** In terms of energy saved, the greatest contributors were Home Lighting & Recycling, Lighting Efficiency, Lighting – Small Business, and New Construction. In addition, the electric and natural gas portfolios avoided 269,918 tons of SOx emissions.

- **Lighting programs continued to contribute to the majority of the electric energy savings achievements**. Lighting programs contributed over 66 percent of the energy savings realized in 2018.

- **The Energy Efficiency portfolio was cost-effective.** Both the Residential Program and Business Program were cost-effective. The Low-Income Program was marginally not cost-effective with a Modified Total Resource Cost ("MTRC") ratio of 0.94.

- **New products and pilots expanded customer choice.** The Company expanded the Thermostat Optimization pilot to a product and included prescriptive rebates for qualifying smart thermostats. The expansion of the pilot offers the opportunity not just to grow energy efficiency savings but to support the Company's demand response ("DR") products by increasing the potential pool of participants.

Looking ahead, the Company will continue to offer more cost-effective choices for customers in an effort to help Coloradans exceed their energy, climate, and sustainability goals. The Company takes pride in its environmental leadership and commitment to managing customer bill impacts responsibly. These achievements also exemplify the Company's commitment to customers and communities by providing a wide variety of choices to meet the diverse energy needs of Coloradans.

2018 Demand-Side Management Annual Status Report

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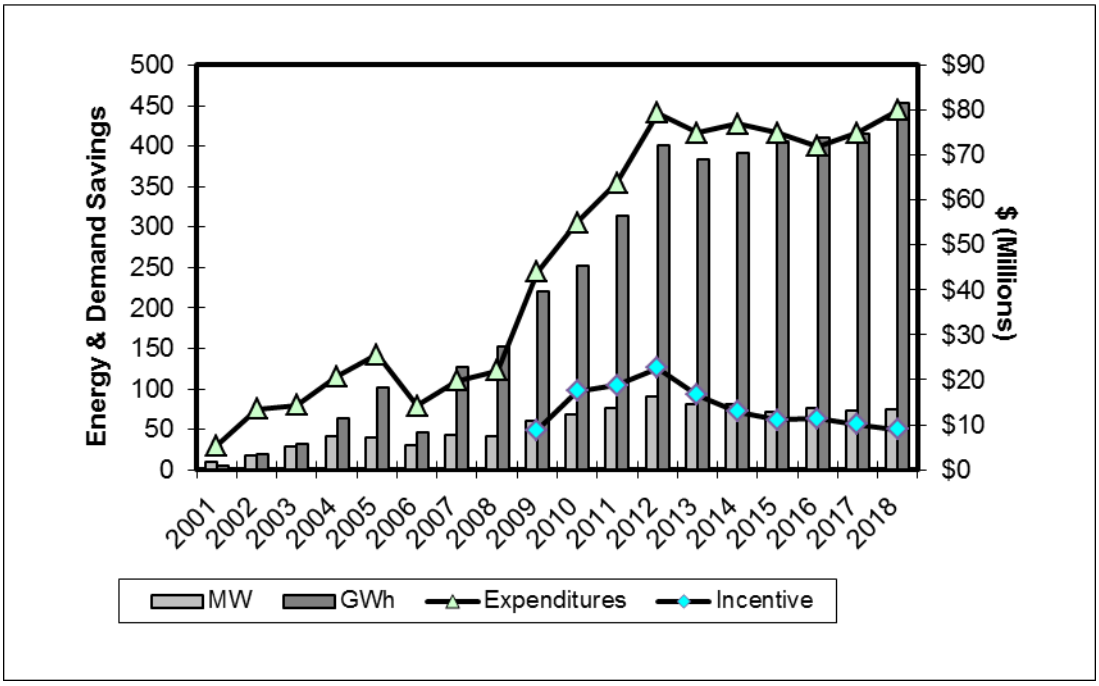
Executive Summary

Public Service Company of Colorado ("Public Service" or the "Company") submits this combined electric and natural gas 2018 Colorado Demand-Side Management ("DSM") Annual Status Report ("Status Report") to the Colorado Public Utilities Commission ("Commission"). In this filing, the Company will report on its electric and natural gas DSM achievements from January 1, 2018 through December 31, 2018.

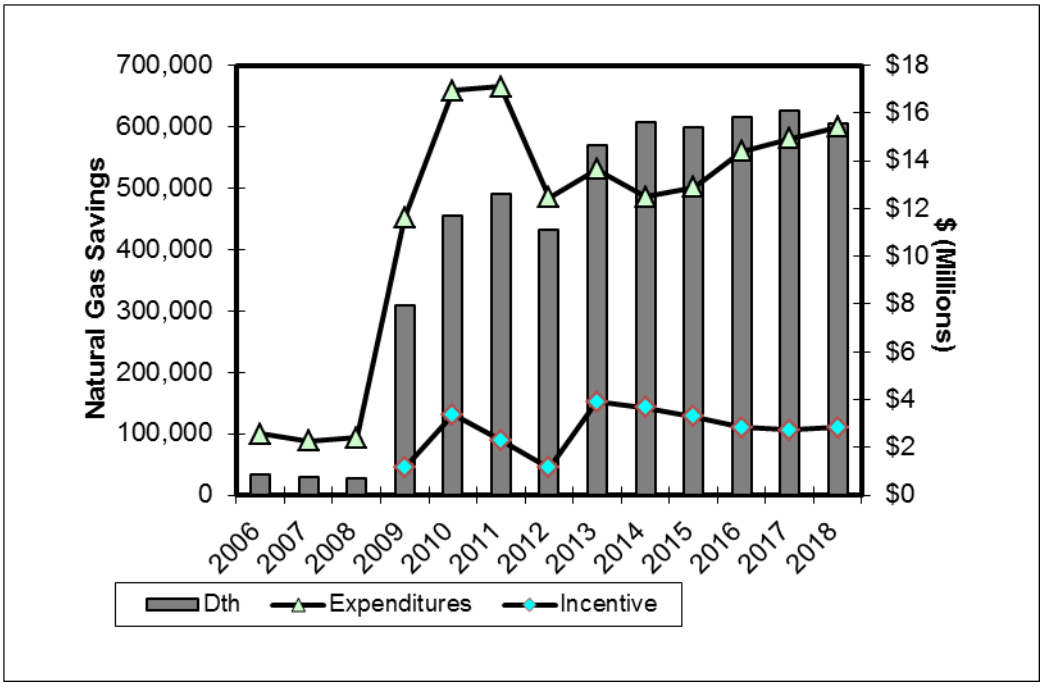
The electric savings of 453 GWh are a significant accomplishment equaling 113 percent of the goal of 400 GWh. Natural gas savings of 604,928 Dth was 106 percent of the goal of 573,136 Dth. To achieve these savings, the Company spent a total of $91,960,619 million ($79.5 million – electric energy efficiency, $12.4 million – demand response) and $15.4 million – natural gas energy efficiency on its electric and natural gas programs. The electric energy efficiency spending was less than the approved electric energy efficiency budget cap of $84.3 million,[1] the demand response spending was less than the approved demand response budget of $20.6 million, and the natural gas energy efficiency spending was more than the minimum natural gas expenditure requirement of $12 million.[2] Below in Figures 1 and 2 are Public Service's historical achievements and expenditures for its electric and natural gas DSM Programs.

Figure 1: Historical Electric Program Savings and Expenditures



[1] Decision No. C14-0997 at Paragraph 5.
[2] Decision No. C14-0731 at Paragraph 69.

Figure 2: Historical Natural Gas Program Savings and Expenditures



History of the Plan

Over the last twenty years, Public Service has entered into several regulatory settlements involving demand-side management in conjunction with its integrated resource/least-cost planning process. The following table identifies those significant to demand-side management:

Table 3a: Regulatory Settlements Involving DSM and Resource Planning

Proceeding	Proceeding No.	Decision No.	Summary
1999 Integrated Resource Plan	00A-008E	C00-1057	• 124 MW (~21 MW) of DSM resources • $75 million
2003 Least Cost Resource Plan	04A-214E	C05-0049	• 320 MW (Avg. of 40 MW per year) • 800 GWh (Avg. of 100 GWh per year) • $196 million • 2006 – 2013
2008 CPCN at Fort St. Vrain Generation Station	07A-469E	C08-0369	• Expansion of ISOC and Saver's Switch programs • Initiation of Third-Party Demand Response Program
2011 Electric Resource Plan	11A-869E	C13-0094 & C13-0323	• Informed the methodologies and values for avoided costs

In addition, legislation and the periodically filed Strategic Issues proceedings at the Public Utilities Commission have addressed major policy issues for DSM programs. The following table identifies the applicable legislation and proceedings:

Table 3b: Legislative and Regulatory Policy Directives for DSM

Proceeding	Proceeding No.	Decision No.	Summary
House Bill 07-1037	N/A	N/A	• Established intent of DSM programs • Established ten-year goals for energy and demand
2010 Strategic Issues	10A-554EG	C11-0442	• Established energy and demand savings goals • Established incentive mechanism • Defined program administration requirements
2013 Strategic Issues	13A-0686EG	C14-0731	• Increased energy and demand savings goals • Modified the incentive mechanism • Established a budget cap
House Bill 17-1227	N/A	N/A	• Extended energy and demand savings goals though 2028
2017 Strategic Issues	17A-0462EG	C18-0417	• Increased energy savings goals and budget for 2019 - 2023 • Modified incentive mechanism for 2019 - 2023 • Grandfathering of ISOC customers beginning in 2019

High-Level Achievements

In 2018, Public Service's electric portfolio achieved demand savings of 86,139 net generator kW (105 percent of filed target) and energy savings of 453,894,496 net generator kWh (113 percent of goal, 106 percent of filed target) at a cost of $91,960,619 (93 percent of filed budget). The natural gas portfolio achieved savings of 604,928 Dth (105 percent of filed target) at a cost of $15,424,453 (121 percent of filed budget).

Table 1a below shows the Company's electric portfolio achievements, including Modified Total Resource Cost ("MTRC") Test ratio results at the program level.

Table 1a: High-Level Electric Targets and Achievements for 2018

2018 Programs	Electric Budget	Electric Expenditures (Actual)	Gen. kW Target	Net Gen. Realized kW	Net Gen. kWh Target	Net Gen. Realized kWh	MTRC Target	MTRC (Actual)
Business	$ 42,897,452	$47,917,813	34,950	44,550	257,352,415	299,904,478	1.40	1.51
Residential	$ 23,637,032	$22,087,596	29,121	28,842	163,585,046	144,934,361	1.66	1.77
Low-Income	$ 3,813,087	$3,779,035	751	817	5,544,159	5,999,032	0.79	0.94
Indirect	$ 7,394,094	$5,728,952	848	1,075	2,866,581	3,015,823	0.36	0.30
Demand Response	$ 20,625,501	$12,447,223	16,120	10,854	123,179	40,803	1.55	1.19
2018 TOTAL	**$ 98,367,166**	**$91,960,619**	**81,790**	**86,139**	**429,471,381**	**453,894,496**	**1.40**	**1.48**

Table 1b below shows the Company's natural gas portfolio achievements, including MTRC test ratio results at the program level.

Table 1b: High-Level Natural Gas Targets and Achievements for 2018

2018 Programs	Natural Gas Budget	Natural Gas Expenditures (Actual)	Dth Target	Net. Realized Dth	MTRC Target	MTRC (Actual)
Business	$2,488,524	$2,454,751	143,681	109,396	1.45	1.44
Residential	$5,602,053	$7,979,965	357,816	424,438	1.92	1.68
Low-Income	$3,362,353	$3,829,816	71,280	71,093	1.31	1.13
Indirect	$1,343,737	$1,159,921	359	0	0.21	0.23
2018 TOTAL	**$12,796,667**	$15,424,453	**573,136**	**604,928**	**1.49**	**1.64**

These achievements shown in Tables 1a and 1b have provided electric net benefits of approximately $100 million and natural gas net benefits of $16 million. Based on these achievements and net benefits, the Company has calculated an associated financial incentive of $9 million for its electric portfolio and $2.8 million for its natural gas portfolio. This includes $2,152,049 for the incentive and an acknowledgement of lost revenues ("ALR") associated with gas DSM programs of $671,952. The DSM portfolio's overall costs and benefits, as determined by the MTRC test, along with the Company's lost revenue and incentive resulting from these achievements, is shown in Table 1c below. Additional incentive calculation details are shown in the Financial Incentive Calculation section of this Report.

Table 1c: MTRC Test Results with Financial Incentive

	Electric	Gas
MTRC Benefits w/Adder	$310,112,072	$50,556,079
MTRC Costs	$209,457,048	$34,510,212
MTRC Ratio	1.48	1.46
MTRC Benefits w/Adder	$310,112,072	$50,556,079
Incentive	$9,074,239	$2,152,049
Acknowledgement of Lost Revenue (ALR)	n/a	$671,952
MTRC Costs w/Incentive & ALR	$218,531,287	$37,334,213
MTRC Ratio w/Incentive & ALR	1.42	1.35

Some of the products that are part of the Company's portfolio did not pass the MTRC Test in 2018. While each product listed below is discussed in more detail in the 2018 Status Report section of this report, below is a bulleted summary of the primary reason for the failing of MTRC Test ratios (natural gas and/or electric), and brief discussion of plans to improve the ratios in 2018.

Business Program

- *Cooling Efficiency – Electric (0.78 MTRC)*
    - The product underachieved in prescriptive and custom cooling measures in comparison to the plan.
    - The product's high incremental capital costs directly impact the product's cost-benefits results.

  Efforts to improve for 2019: The Company will evaluate new modeling practices and review incremental cost assumptions to ensure maximum savings are claimed to improve cost effectiveness.

- *Computer Efficiency – Electric (0.95 MTRC)*
    - Participation in upstream measures has declined with the adoption of laptops and other efficient computing devices
    - Increased standards, such as the ENERGY STAR® 6 standard, have reduced the achievable potential

  Efforts to improve for 2019: The Company submitted a 90-Day Notice request to discontinue the Computer Efficiency Product and move cost-effective measures from the Computer Efficiency product into the Data Center Efficiency product.

- *Custom Efficiency – Electric (0.71 MTRC) and Natural Gas (0.06 MTRC)*
    - The product underachieved due to very low participation.

  Efforts to improve for 2019: The Company will work more closely with customers by providing initial Engineering support to help identify potential projects and provide technical support in filling out the rebate application.

- *Heating Efficiency – Natural Gas (0.96 MTRC)*
    - Lower than expected participation in ECM Fan Motors and Unit Heaters impacted energy savings.

  Efforts to improve for 2019: As part of the 2019/2020 DSM Plan, the Company will discontinue the underperforming Boiler Tune-up and Furnace measures. The Company is also including pipe insulation as a direct install measure as-well-as a prescriptive measure and does expect participation in the Ozone Laundry measure.

- *LED Streetlighting – Electric (0.78 MTRC)*
    - The product under achieved its energy savings target in comparison to the plan. Customer interest and the rate of installation for the product slowed significantly in the third and fourth quarters and no units were retrofitted during that time.
    - The product's has high incremental capital costs which negatively impacted the product's cost-benefits results.

  Efforts to improve for 2019: The Company will explore new ways to promote the product to interested communities and work to promote more cost-effective measures.

- *New Construction – Electric (0.96 MTRC)*
    - Administrative costs were greater than forecasted.
    - The average project's incremental capital costs were higher than the previous year.

  Efforts to improve for 2019: In 2019, the Company will be placing heavier scrutiny on both the administrative and incremental capital costs of the program, and encouraging customers to pursue more cost-effective measures in their projects.

Residential Program

- *Home Energy Squad – Electric (0.89 MTRC)*
    - The weighted measure life for LEDs decreased to 6.1 years relative to previous assumptions.
    - Equipment and installation costs continued to be high due to a high penetration of measures per household. The Company made all LED bulb types complimentary, which contributed to high numbers installed per home.
    - The Company incurred high staffing costs to maintain the Squad technician staff during the summer months when customer participation was lagging. This resulted in higher than anticipated administrative costs for the product.

  Efforts to improve for 2019: The Company has linked Home Energy Squad visits with other residential products to help drive awareness and participation without adding additional costs. The Company has also worked to redesign staffing and administrative fees to better align with the product's goals. The redesigned administrative cost structure will also enable the product to decrease the cost to customers, which should help to increase participation.

- *Home Performance with ENERGY STAR® – Natural Gas (0.86 MTRC)*
    - The product underachieved due to low participation and high incremental costs.

  Efforts to improve for 2019: The Company is researching the cause(s) for low participation within the product and will redesign the product for 2019/2020 to overcome participation barriers. The Company is aligning the product with Home Energy Squad Plus visits which satisfies the product's audit requirement along with one of the required home improvements. The Company is also partnering with trade partners to encourage customer participation.

- *Insulation and Air Sealing – Natural Gas (0.89 MTRC)*
    - Higher administrative and incremental capital costs impacted the cost effectiveness of the product.

  Efforts to improve for 2019: The Company will review incremental costs and promote more cost effective measures to improve cost effectiveness.

- *Water Heating – Natural Gas (0.82 MTRC)*
    - The high incremental costs for gas measures resulted in the product being not cost-effective.

  Efforts to improve for 2019: Marketing efforts will emphasize the most cost-effective measures within the product. Instant rebates were piloted in 2018 and will be expanded in 2019 as a means of further reducing administrative costs.

Low-Income Program

- *Multifamily Weatherization – Natural Gas (0.77 MTRC)*

- Given the long-term benefit to low-income multifamily building tenants, some rebates were approved for projects that did not pass cost-effectiveness under the standard custom analysis.
- Finding cost effective natural gas measures is becoming more and more difficult, as many properties need new boiler systems that typically have higher incremental costs.
- Additional funding was provided for outreach and customer education efforts.

Efforts to improve for 2019: The Company will continue to seek cost-saving opportunities while ensuring that this customer segment receives necessary assistance. The Company will review its custom analysis tools and approach to ensure that they are adequately representing the savings opportunity for this segment. The Company will also work with its implementer to identify possible administrative cost savings.

- *Non-Profit – Natural Gas (0.66 MTRC)*
  - Low natural gas prices combined with high incremental costs result in many measures not passing under custom cost-effective analyses.
  - Given the long-term benefits for this customer segment and the limited capital available for property owners, the Company elected to approve non-passing measures, in particular boiler replacements, to enable number of projects to move forward.

Efforts to improve for 2019: The Company will continue to seek cost-saving opportunities while ensuring that this customer segment receives necessary assistance. The Company will review its custom analysis tools and approach to ensure that they are adequately representing the savings opportunity for this segment. The Company will also work with its implementer to identify possible administrative cost savings.

- *Single Family Weatherization – Electric (0.70 MTRC)*
  - The Company provided additional funding for marketing and outreach efforts to help expand the Colorado Affordable Residential Energy ("CARE") program and an educational workshop series. This funding greatly benefits the low-income customer segment but is weighted as an administrative cost to the program, thus, hurting cost effectiveness.
  - The majority of participating customers were duel fuel or gas-only so the product saw fewer electric-heated homes receiving shell measures, which are the most cost-effective measures for electric savings.

Efforts to improve for 2019: The Company is working with implementer to help identify electric customers with electric heated homes to increase participation that measure. The Company will continue to watch administrative costs while still ensuring this customer segment receives necessary assistance.

Indirect Products & Services

- *ENERGY STAR® Retail Products Platform Pilot – Electric (0.77 MTRC) & Natural Gas (0.0 MTRC)*
  - Midstream incentives were not eligible for treatment as a rebate cost to customers.
  - Many measures in the pilot have high incremental costs which reduces cost-effectiveness.

Efforts to improve for 2019: The Company will continue to promote the most cost-effective measures.

Summary of Program Changes via 60/90-Day Notice

In recognition of the need to afford the Company discretion to make changes to the Plan in order to achieve the greatest level of energy savings, the 2010 Stipulation and Settlement Agreement provided for a 60/90-Day Notice process to advise interested stakeholders of changes to the Plan. A 60-Day Notice is required for any proposal to add a new DSM product, reduce rebate levels, adopt new or discontinue existing measures, or change technical assumptions or eligibility requirements. DSM roundtable participants have 30 days from the time of the Notice date to provide comments to Public Service on the proposed changes. The Company will have 30 days thereafter to consider comments. A 90-Day Notice is required for any product discontinuation.

Thirteen 60-Day Notices were posted that impacted calendar year 2018, and are shown in Table 2 below; these included the addition of new measures to the portfolio, updates to technical assumptions, and information for stakeholders regarding clarifications and intentions of the Company. One 90-Day Notice was posted in 2018. A detailed description of the changes made via 60/90-Day Notice can be found on the Company's Colorado DSM webpage:
http://www.xcelenergy.com/Company/Rates_&_Regulations/Filings/Colorado_Demand-Side_Management.

Table 2: 60/90-Day Notices Impacting 2018

Product, Pilot, or Measure	Notice Date	Notice Type	
Business Program			
Lighting Efficiency and Lighting – Small Business (2)	11/2/2018	60-Day	Technical Assumptions update
Cooling Efficiency	8/15/2018	60-Day	Comprehensive Evaluation update
Computer Efficiency	8/15/2018	90-Day	Discontinuation of non-cost-effective product
Heating Efficiency	8/15/2018	60-Day	Comprehensive Evaluation update
Refrigeration Efficiency	8/15/2018	60-Day	Comprehensive Evaluation update
New Construction	5/11/2018	60-Day	Program design and delivery update
Lighting Efficiency and Lighting – Small Business (1)	5/11/2018	60-Day	Technical Assumptions, measure offerings, and rebate update
Residential Program			
Thermostat Optimization	8/20/2018	60-Day	New product offering
Residential Heating	8/15/2018	60-Day	Comprehensive Evaluation update
Insulation & Air Sealing	8/15/2018	60-Day	Comprehensive Evaluation update
Refrigerator Recycling	8/15/2018	60-Day	Technical Assumptions and measure offerings update
High Efficiency Air Conditioning	5/11/2018	60-Day	Technical Assumptions and rebate update
Home Performance with ENERGY STAR®	5/11/2018	60-Day	Technical Assumptions and measure offerings update
Water Heating	3/27/2018	60-Day	Technical Assumption update
Low-Income Program			
None	N/A	N/A	N/A
Indirect Products & Services			
None	N/A	N/A	N/A
Demand Response			
Residential Demand Response	8/20/2018	60-Day	Technical Assumptions and rebate update

Additional detail on the impact of these changes can be found in the 2018 Status Report section of this report, within each DSM product summary.

RFP Administrative Costs for Third-Party Implementation

As required in Decision No. C11-0442 (Proceeding No. 10A-554EG),[3] the Company continues to track administrative costs incurred for conducting requests for proposals (RFPs), shown in Table 3 below.

[3] Paragraph 81 of Decision No. C11-0442 in Proceeding No. 10A-554EG, pages 33, states that "…Public Service is directed to quantify and track any additional costs it incurs in the use of third-party DSM providers." The directive is mentioned again on page 52 of the Order.

Table 3: RFP Administrative Costs in 2018

Product	2018 Expenditures
DSM Comprehensive Evaluations	$6,325
Commercial Refrigeration Efficiency	$2,915
Energy Feedback Residential	$16,500
Demand Response/Peak Partner Rewards Services	$5,500
TOTAL	**$31,240**

Program Achievements and Expenditures

Tables 4a and 5a below provide the electric and natural gas savings targets, budgets, and forecasted cost-effectiveness approved in the 2018 DSM Plan. Tables 4b and 5b provide the Company's 2018 achievements, actual expenditures, and cost-effectiveness results by product.

Table 4a: 2018 Electric Program Targets and Budgets

2018	Electric Budget	Net Generator kW	Net Generator kWh	Electric MTRC Test Ratio
Business Program				
Commercial Refrigeration Efficiency	$1,033,938	573	5,679,594	1.46
Compressed Air Efficiency	$765,393	650	4,053,541	1.39
Computer Efficiency	$260,974	293	2,293,385	0.77
Cooling	$4,901,289	4,946	12,641,733	1.25
Custom Efficiency	$1,473,843	1,168	7,112,368	1.41
Data Center Efficiency	$1,377,885	876	9,806,422	1.71
Energy Management Systems	$1,331,211	147	8,823,461	1.16
Heating Efficiency	$10,249	8	49,241	1.79
LED Street Lighting	$43,000	0	9,840,359	0.77
Lighting Efficiency	$12,089,569	12,231	94,358,382	1.46
Lighting - Small Business	$5,529,916	3,131	26,367,554	1.26
Motor & Drive Efficiency	$2,649,794	2,072	12,450,713	1.68
Multifamily Buildings	$1,122,668	718	5,266,068	2.51
New Construction	$6,578,848	4,619	24,013,839	1.14
Process Efficiency	$2,064,792	1,700	18,084,744	1.92
Recommissioning	$681,950	302	6,277,029	1.34
Self Direct	$982,131	1,517	10,233,982	2.03
Business Program Total	**$42,897,452**	**34,950**	**257,352,415**	**1.40**
Residential Program				
Energy Efficient Showerhead	$55,570	80	991,735	11.13
Energy Feedback Residential	$2,944,892	4,356	19,820,695	1.21
ENERGY STAR New Homes	$1,008,992	1,078	3,593,510	1.58
Evaporative Cooling	$2,969,333	5,166	3,444,940	2.94
High Efficiency Air Conditioning	$4,417,131	4,247	3,976,854	1.09
Home Energy Squad	$331,696	267	2,036,383	1.67
Home Lighting & Recyding	$7,925,427	10,925	112,445,526	1.82
Home Performance with ENERGY STAR	$286,478	538	776,425	1.20
Insulation & Air Sealing	$195,707	441	449,623	1.27
Refrigerator & Freezer Recyding	$1,276,056	566	4,954,115	1.67
Residential Heating	$794,880	938	5,320,023	1.60
School Education Kits	$1,403,066	498	5,672,969	1.19
Thermostat Optimzation	$0	0	0	-
Water Heating	$27,804	21	102,246	0.65
Residential Program Total	**$23,637,032**	**29,121**	**163,585,046**	**1.66**
Low-Income Program				
Energy Savings Kit	$326,222	80	908,428	1.01
Multifamily Weatherization	$1,156,816	266	1,900,602	0.71
Non-Profit	$1,107,475	304	1,493,941	0.95
Single-Family Weatherization	$1,222,574	102	1,241,188	0.68
Low-Income Program Total	**$3,813,087**	**751**	**5,544,159**	**0.79**

Table 4a: (Cont.)

2018	Electric Budget	Net Generator kW	Net Generator kWh	Electric MTRC Test Ratio
Indirect Products & Services				
Education/Market Transformation				
Business Education	$176,739			
Business Energy Analysis	$620,966			
Consumer Education	$899,908			
Energy Benchmarking	$89,000			
Energy Efficiency Financing	$56,365			
Home Energy Audit	$417,765			
Education/Market Transformation Total	**$2,260,743**			
Planning and Research				
DSM Planning & Administration	$556,545			
Program Evaluations	$541,444			
Market Research	$372,595			
Measurement & Verification	$10,953			
Product Development	$2,559,750			
ENERGY STAR Retail Products Platform Pilot	$1,092,064	848	2,866,581	0.66
Thermostat Optimzation	$0	0	0	-
Product Development Total	**$3,651,814**	**848**	**2,866,581**	**0.48**
Planning and Research Total	**$5,133,351**	**848**	**2,866,581**	**0.39**
Indirect Products & Services Total	**$7,394,094**	**848**	**2,866,581**	**0.36**
EE PORTFOLIO TOTAL	**$77,741,665**	**65,671**	**429,348,202**	**1.38**
Demand Response Program				
Critical Peak Pricing Pilot	$65,000	0	0	
Peak Partner Rewards	$3,154,472	0	0	
Residential Demand Response	$17,406,029	16,120	123,179	1.70
DR PORTFOLIO TOTAL	**$20,625,501**	**16,120**	**123,179**	**1.55**
PORTFOLIO TOTAL	**$98,367,166**	**81,790**	**429,471,381**	**1.40**

Table 4b: 2018 Electric Program Achievements and Expenditures

2018	Electric Budget	Net Generator kW	Net Generator kWh	Electric MTRC Test Ratio
Business Program				
Commercial Refrigeration Efficiency	$508,936	339	2,929,420	1.48
Compressed Air Efficiency	$458,138	217	1,136,934	1.12
Computer Efficiency	$131,688	208	1,683,839	0.95
Cooling	$7,043,194	2,472	5,979,679	0.77
Custom Efficiency	$643,706	222	571,113	0.71
Data Center Efficiency	$535,635	260	2,671,620	1.27
Energy Management Systems	$1,359,584	151	7,236,300	1.44
Heating Efficiency	$8,269	4	26,829	1.62
LED Street Lighting	$0	0	1,511,056	0.78
Lighting Efficiency	$17,545,995	23,624	170,479,917	1.84
Lighting - Small Business	$7,003,189	5,052	36,431,520	1.50
Motor & Drive Efficiency	$1,933,199	1,564	10,676,508	1.84
Multifamily Buildings	$1,232,569	504	6,019,402	1.64
New Construction	$6,934,332	7,074	29,105,877	0.96
Process Efficiency	$1,774,253	2,246	18,772,782	2.71
Recommissioning	$321,808	40	1,600,236	1.52
Self Direct	$483,317	572	3,071,445	1.35
Business Program Total	**$47,917,813**	**44,550**	**299,904,478**	**1.51**
Residential Program				
Energy Efficient Showerhead	$27,340	45	594,793	13.86
Energy Feedback Residential	$3,098,673	5,715	20,797,392	1.29
ENERGY STAR New Homes	$1,118,776	1,069	3,998,189	1.28
Evaporative Cooling	$2,724,376	4,338	2,902,651	2.21
High Efficiency Air Conditioning	$5,926,999	5,357	4,466,952	1.10
Home Energy Squad	$553,166	217	1,622,598	0.89
Home Lighting & Recycling	$4,424,936	8,886	91,487,553	3.18
Home Performance with ENERGY STAR	$159,311	246	225,567	1.13
Insulation & Air Sealing	$257,624	515	260,884	1.05
Refrigerator & Freezer Recycling	$1,247,658	455	3,984,616	1.43
Residential Heating	$901,835	1,068	5,886,571	1.58
School Education Kits	$1,599,656	742	8,461,522	1.41
Thermostat Optimization	$27,185	173	130,558	1.68
Water Heating	$20,059	17	114,513	1.19
Residential Program Total	**$22,087,596**	**28,842**	**144,934,361**	**1.77**

Table 4b: (Cont.)

2018	Electric Budget	Net Generator kW	Net Generator kWh	Electric MTRC Test Ratio
Low-Income Program				
Energy Savings Kit	$158,949	74	842,299	2.00
Multifamily Weatherization	$1,193,543	304	2,236,422	1.01
Non-Profit	$1,159,033	336	1,610,095	1.00
Single-Family Weatherization	$1,267,510	103	1,310,216	0.70
Low-Income Program Total	**$3,779,035**	**817**	**5,999,032**	**0.94**
Indirect Products & Services				
Education/Market Transformation				
Business Education	$171,775			
Business Energy Analysis	$360,237			
Consumer Education	$854,160			
Energy Benchmarking	$64,927			
Energy Efficiency Financing	$55,224			
Home Energy Audit	$342,159			
Education/Market Transformation Total	**$1,848,482**			
Planning and Research				
DSM Planning & Administration	$567,085			
Program Evaluations	$534,559			
Market Research	$255,508			
Measurement & Verification	$9,848			
Product Development	$1,244,872			
ENERGY STAR Retail Products Platform Pilot	$1,268,597	1,075	3,015,823	0.77
Thermostat Optimization	$0	0	0	0.00
Product Development Total	**$2,513,469**	**1,075**	**3,015,823**	**0.52**
Planning and Research Total	**$3,880,470**	**1,075**	**3,015,823**	**0.38**
Indirect Products & Services Total	**$5,728,952**	**1,075**	**3,015,823**	**0.30**
EE PORTFOLIO TOTAL	**$79,513,396**	**75,285**	**453,853,694**	**1.50**
Demand Response Program				
Critical Peak Pricing Pilot	$68,126	1,167	1,537	0.00
Peak Partner Rewards	$702,399	3,883	0	0.00
Residential Demand Response	$11,676,699	5,804	39,266	1.23
DR PORTFOLIO TOTAL	**$12,447,223**	**10,854**	**40,803**	**1.19**
PORTFOLIO TOTAL	**$91,960,619**	**86,139**	**453,894,496**	**1.48**

Table 5a: 2018 Natural Gas Program Targets and Budgets

2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Business Program					
Commercial Refrigeration Efficiency	$11,918	2,434	204,214	$269,213	8.76
Compressed Air Efficiency					
Computer Efficiency					
Cooling					
Custom Efficiency	$83,538	3,768	45,109	$128,319	1.77
Data Center Efficiency					
Energy Management Systems	$52,595	8,878	168,791	$252,447	1.59
Heating Efficiency	$488,280	18,119	37,107	$64,987	1.05
LED Street Lighting					
Lighting Efficiency					
Lighting - Small Business	$17,940	3,497	194,907	$104,768	5.95
Motor & Drive Efficiency					
Multifamily Buildings	$687,416	26,912	39,150	$1,871,914	2.45
New Construction	$1,087,593	76,624	70,452	$763,545	1.17
Process Efficiency					
Recommissioning	$59,244	3,450	58,232	$14,595	1.13
Self Direct					
Business Program Total	**$2,488,524**	**143,681**	**57,737**	**$3,469,787**	**1.45**
Residential Program					
Energy Efficient Showerhead	$473,661	52,190	110,185	$6,311,701	10.42
Energy Feedback Residential	$484,764	64,550	133,157	$177,748	1.37
ENERGY STAR New Homes	$2,232,379	94,878	42,501	$2,180,723	1.42
Evaporative Cooling					
High Efficiency Air Conditioning					
Home Energy Squad	$351,408	13,423	38,197	$301,829	1.51
Home Lighting & Recycling					
Home Performance with ENERGY STAR	$560,434	26,853	47,915	-$292,182	0.86
Insulation & Air Sealing	$385,385	20,687	53,678	-$32,346	0.98
Refrigerator & Freezer Recycling					
Residential Heating	$540,988	47,981	88,692	$329,075	1.12
School Education Kits	$451,103	34,972	77,525	$4,082,228	7.45
Thermostat Optimzation	$0	0	0	$0	-
Water Heating	$121,930	2,283	18,723	-$68,012	0.72
Residential Program Total	**$5,602,053**	**357,816**	**63,872**	**$12,990,764**	**1.92**

Table 5a: (Cont.)

2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Low-Income Program					
Energy Savings Kit	$117,642	8,005	68,044	$974,022	7.12
Multifamily Weatherization	$592,539	10,835	18,286	-$215,050	0.83
Non-Profit	$293,986	3,821	12,996	-$94,777	0.82
Single-Family Weatherization	$2,358,186	48,620	20,617	$1,275,891	1.30
Low-Income Program Total	**$3,362,353**	**71,280**	**21,200**	**$1,940,086**	**1.31**
Indirect Products & Services					
Education/Market Transformation					
Business Education	$19,638				
Business Energy Analysis	$65,548				
Consumer Education	$133,323				
Energy Benchmarking	$31,000				
Energy Efficiency Financing	$60,000				
Home Energy Audit	$544,637				
Education/Market Transformation Total	**$854,146**			**$0**	
Planning and Research					
DSM Planning & Administration	$61,895				
Program Evaluations	$143,864				
Market Research	$108,380				
Measurement & Verification	$1,217				
Product Development	$145,061				
ENERGY STAR Retail Products Platform Pilot	$29,174	359	12,309	-$152,760	0.22
Thermostat Optimzation	$0	0	0	$0	-
Product Development Total	**$174,235**	**359**	**2,061**	**-$152,760**	**0.13**
Planning and Research Total	**$489,591**	**359**	**733**	**-$152,760**	**0.06**
Indirect Products & Services Total	**$1,343,737**	**359**	**267**	**-$152,760**	**0.21**
EE PORTFOLIO TOTAL	**$12,796,667**	**573,136**	**44,788**	**$18,247,878**	**1.49**

Table 5b: 2018 Natural Gas Program Achievements and Expenditures

2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Business Program					
Commercial Refrigeration Efficiency	$10,129	845	83,424	$96,770	9.40
Compressed Air Efficiency	$0	0			
Computer Efficiency	$0	0			
Cooling	$0	0			
Custom Efficiency	$57,502	52	903	-$54,904	0.06
Data Center Efficiency	$0	0			
Energy Management Systems	$38,376	4,219	109,929	$84,140	1.41
Heating Efficiency	$882,961	24,675	27,946	-$79,280	0.96
LED Street Lighting	$0	0			
Lighting Efficiency	$0	0			
Lighting - Small Business	$19,323	2,618	135,486	$343,134	18.41
Motor & Drive Efficiency	$0	0			
Multifamily Buildings	$706,533	26,952	38,146	$2,269,177	3.16
New Construction	$705,694	48,713	69,028	$525,382	1.13
Process Efficiency	$0	0			
Recommissioning	$34,233	1,323	38,647	$6,746	1.17
Self Direct	$0	0			
Business Program Total	**$2,454,751**	**109,396**	**44,565**	**$3,191,166**	**1.44**
Residential Program					
Energy Efficient Showerhead	$293,554	36,213	123,359	$4,368,265	12.28
Energy Feedback Residential	$449,735	86,503	192,343	$441,669	1.98
ENERGY STAR New Homes	$2,472,658	113,489	45,897	$2,476,446	1.40
Evaporative Cooling	$0	0			
High Efficiency Air Conditioning	$0	0			
Home Energy Squad	$308,988	5,871	18,999	$92,160	1.30
Home Lighting & Recycling	$0	0			
Home Performance with ENERGY STAR	$225,580	10,538	46,714	-$115,111	0.86
Insulation & Air Sealing	$599,625	25,911	43,213	-$223,064	0.89
Refrigerator & Freezer Recycling	$0	0			
Residential Heating	$2,921,542	93,194	31,899	$762,649	1.10
School Education Kits	$562,649	42,986	76,399	$5,075,240	7.82
Thermostat Optimzation	$21,825	3,941	180,562	$46,867	1.41
Water Heating	$123,809	5,793	46,791	-$89,076	0.82
Residential Program Total	**$7,979,965**	**424,438**	**53,188**	**$12,836,045**	**1.68**

Table 5b: (Cont.)

2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Low-Income Program					
Energy Savings Kit	$58,467	5,531	94,608	$689,729	10.10
Multifamily Weatherization	$1,113,148	13,485	12,114	-$482,597	0.77
Non-Profit	$299,450	3,839	12,821	-$219,162	0.66
Single-Family Weatherization	$2,358,751	48,238	20,451	$916,697	1.21
Low-Income Program Total	**$3,829,816**	**71,093**	**18,563**	**$904,666**	**1.13**
Indirect Products & Services					
Education/Market Transformation					
Business Education	$16,013				
Business Energy Analysis	$40,784				
Consumer Education	$113,238				
Energy Benchmarking	$21,232				
Energy Efficiency Financing	$45,325				
Home Energy Audit	$452,868				
Education/Market Transformation Total	**$689,461**				
Planning and Research					
DSM Planning & Administration	$121,206				
Program Evaluations	$133,149				
Market Research	$101,912				
Measurement & Verification	$1,055				
Product Development	$114,169				
Energy Star Retail Products Platform Pilot	-$1,031	0	0	$0	-
Thermostat Optimzation	$0	0	0	$0	-
Product Development Total	**$113,138**	**0**	**1,102**	**0**	**0.03**
Planning and Research Total	**$470,460**	**0**	**381**	**0**	**0.01**
Indirect Products & Services Total	**$1,159,921**	**0**	**160**	**0**	**0.23**
EE PORTFOLIO TOTAL	**$15,424,453**	**604,928**	**41,989**	**$16,931,877**	**1.64**

Table 6 below provides the CO_2 and SO_X emissions avoided for 2018 and cumulatively over the lifetime for each product.

Table 6: 2018 Emissions Avoided

	Annual				Cumulative over Lifetime			
	Tons CO_2			lbs SOx	Tons CO_2			lbs SOx
2018	**Electric**	**Gas**	**Total**	**Electric**	**Electric**	**Gas**	**Total**	**Electric**
Business Program								
Commercial Refrigeration Efficiency	2,138	51	2,190	1,742	27,207	500	27,707	13,574
Compressed Air Efficiency	830	0	830	676	12,971	0	12,971	6,235
Computer Efficiency	1,229	0	1,229	1,001	6,146	0	6,146	3,255
Cooling	4,365	0	4,365	3,556	80,135	0	80,135	38,564
Custom Efficiency	417	3	420	340	8,338	63	8,401	3,880
Data Center Efficiency	1,950	0	1,950	1,589	30,442	0	30,442	14,883
Energy Management Systems	5,282	255	5,538	4,303	79,237	3,828	83,066	38,562
Heating Efficiency	20	1,493	1,512	16	294	23,669	23,963	143
LED Street Lighting	1,103	0	1,103	899	16,546	0	16,546	8,052
Lighting Efficiency	124,450	0	124,450	101,380	1,945,275	0	1,945,275	951,661
Lighting - Small Business	26,595	158	26,753	21,665	433,419	1,584	435,003	210,116
Motor & Drive Efficiency	7,794	0	7,794	6,349	117,037	0	117,037	56,958
Multifamily Buildings	4,394	1,631	6,025	3,580	80,298	17,798	98,096	38,822
New Construction	21,247	2,947	24,194	17,308	424,946	58,943	483,888	197,720
Process Efficiency	13,704	0	13,704	11,164	245,804	0	245,804	120,263
Recommissioning	1,168	80	1,248	952	8,177	560	8,737	4,157
Self Direct	2,242	0	2,242	1,827	40,359	0	40,359	19,513
Business Program Total	**218,930**	**6,618**	**225,549**	**178,345**	**3,556,633**	**106,945**	**3,663,579**	**1,726,358**
Residential Program								
Energy Efficient Showerhead	434	2,191	2,625	354	4,342	21,909	26,251	2,076
Energy Feedback Residential	15,182	5,233	20,416	12,368	45,546	15,700	61,247	25,654
ENERGY STAR New Homes	2,919	6,866	9,785	2,378	50,876	137,306	188,181	24,892
Evaporative Cooling	2,119	0	2,119	1,726	31,784	0	31,784	15,468
High Efficiency Air Conditioning	3,261	0	3,261	2,656	28,630	0	28,630	14,652
Home Energy Squad	1,184	355	1,540	965	7,537	3,468	11,004	3,884
Home Lighting & Recycling	66,786	0	66,786	54,405	367,893	0	367,893	194,821
Home Performance with ENERGY STAR	165	638	802	134	2,347	10,508	12,855	1,161
Insulation & Air Sealing	190	1,568	1,758	155	3,073	24,535	27,608	1,494
Refrigerator & Freezer Recycling	2,909	0	2,909	2,370	23,468	0	23,468	11,672
Residential Heating	4,297	5,638	9,935	3,501	77,253	101,489	178,741	37,797
School Education Kits	6,177	2,601	8,778	5,032	41,702	26,006	67,708	20,589
Thermostat Optimization	95	238	334	78	953	2,384	3,337	456
Water Heating	84	350	434	68	836	6,518	7,354	400
Residential Program Total	**105,802**	**25,679**	**131,481**	**86,188**	**686,238**	**349,823**	**1,036,062**	**355,015**
Low-Income Program								
Energy Savings Kit	615	335	950	501	4,442	3,347	7,789	2,240
Multifamily Weatherization	1,633	816	2,448	1,330	17,958	8,974	26,932	8,731
Non-Profit	1,175	232	1,408	957	19,981	3,949	23,930	9,776
Single-Family Weatherization	956	2,918	3,875	779	10,253	48,160	58,413	4,901
Low-Income Program Total	**4,379**	**4,301**	**8,680**	**3,567**	**52,635**	**64,429**	**117,064**	**25,648**
Indirect Products & Services								
ENERGY STAR Retail Prod Platform Pilot	2,202	0	2,202	1,793	24,018	0	24,018	10,589
Thermostat Optimization	0	0	0	0	0	0	0	0
Indirect Products & Services Total	**2,202**	**0**	**2,202**	**1,793**	**24,018**	**0**	**24,018**	**10,589**
EE PORTFOLIO TOTAL	**331,313**	**36,598**	**367,911**	**269,894**	**4,319,524**	**521,197**	**4,840,722**	**2,117,609**
Demand Response Program								
Critical Peak Pricing Pilot	1	0	1	1	0	0	0	0
Peak Partner Rewards	0	0	0	0	0	0	0	0
Residential Demand Response	29	0	29	23	366	0	366	183
DR PORTFOLIO TOTAL	**30**	**0**	**30**	**24**	**366**	**0**	**366**	**183**
PORTFOLIO TOTAL	**331,343**	**36,598**	**367,941**	**269,918**	**4,319,890**	**521,197**	**4,841,087**	**2,117,791**

Program Costs by Budget Category

The Company uses the following six budget categories to track and report its annual expenditures for DSM programs and products within its portfolio:

1. **Program Planning and Design**
   Expenditures for:
   - Labor for new pilot/product development and management.
   - Expenditures related to product development, planning, and design.

2. **Administration and Program Delivery**
   Expenditures for:
   - Labor for program managers, sales representatives, call center, rebate processing, technical consulting, and other fulfillment activities associated with delivering a product directly to the customer.
   - Labor for installation contractors, vendors, technical consultants, fulfillment contractors, and alternative providers that the Company contracts with to provide DSM services.
   - Project fulfillment, implementation and program support activities associated with delivering a program directly to the customer.

3. **Advertising / Promotion / Customer Education**
   Expenditures for:
   - Labor for communications staff and others.
   - TV, radio, newspaper, and print media; direct promotion and sales support materials; postage, promotional events; contracted outbound telephone sales.
   - Customer education through seminars, pamphlets, videos, and computer games.

4. **Participant Rebates and Incentives**
   Expenditures for:
   - Customer rebates, finance interest subsidies, subsidies for engineering studies, trade incentives, and incentives given in the form of subsidized products or equipment.

5. **Equipment and Installation**
   Expenditures for:
   - The costs to purchase energy efficient equipment and to install efficiency equipment at the customer site.

6. **Measurement and Verification**
   Expenditures for:
   - Labor for market research and load research.
   - Labor for product development staff, product development, external consultants, and product development research activities.
   - Customer surveys and program evaluation expenses.

Table 7a: 2018 Electric Program Costs by Category (Budget)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Business Program							
Commercial Refrigeration Efficiency	$12,000	$593,766	$38,048	$369,524	$0	$20,600	$1,033,938
Compressed Air Efficiency	$8,000	$168,763	$35,683	$528,947	$0	$24,000	$765,393
Computer Efficiency	$0	$253,224	$1,500	$6,250	$0	$0	$260,974
Cooling	$0	$2,844,205	$86,634	$1,960,450	$0	$10,000	$4,901,289
Custom Efficiency	$0	$710,952	$186,758	$507,633	$0	$68,500	$1,473,843
Data Center Efficiency	$0	$123,565	$103,971	$1,125,349	$0	$25,000	$1,377,885
Energy Management Systems	$0	$481,422	$63,217	$746,322	$13,000	$27,250	$1,331,211
Heating Efficiency	$0	$5,375	$2,000	$2,874	$0	$0	$10,249
LED Street Lighting	$0	$43,000	$0	$0	$0	$0	$43,000
Lighting Efficiency	$30,000	$2,958,624	$427,301	$8,617,244	$0	$56,400	$12,089,569
Lighting - Small Business	$0	$2,540,671	$526,165	$2,417,080	$0	$46,000	$5,529,916
Motor & Drive Efficiency	$0	$523,059	$113,431	$1,988,727	$0	$24,577	$2,649,794
Multifamily Buildings	$0	$162,843	$0	$527,747	$432,078	$0	$1,122,668
New Construction	$10,000	$2,280,919	$281,770	$3,438,832	$0	$567,327	$6,578,848
Process Efficiency	$0	$407,853	$4,000	$1,620,679	$0	$32,260	$2,064,792
Recommissioning	$18,000	$222,272	$70,946	$364,732	$0	$6,000	$681,950
Self Direct	$0	$100,107	$3,477	$877,547	$0	$1,000	$982,131
Business Program Total	**$78,000**	**$14,420,620**	**$1,944,901**	**$25,099,939**	**$445,078**	**$908,914**	**$42,897,452**
Residential Program							
Energy Efficiency Showerhead	$0	$37,008	$2,369	$15,991	$0	$202	$55,570
Energy Feedback Residential	$2,500	$2,934,392	$8,000	$0	$0	$0	$2,944,892
ENERGY STAR New Homes	$0	$198,665	$861	$686,485	$0	$122,981	$1,008,992
Evaporative Cooling	$0	$822,565	$341,088	$1,780,600	$0	$25,080	$2,969,333
High Efficiency Air Conditioning	$0	$330,436	$0	$4,039,695	$0	$47,000	$4,417,131
Home Energy Squad	$0	$42,902	$100,486	$18,000	$164,058	$6,250	$331,696
Home Lighting & Recycling	$0	$1,015,515	$1,000,412	$5,899,500	$0	$10,000	$7,925,427
Home Performance with ENERGY STAR	$0	$149,160	$4,919	$102,399	$0	$30,000	$286,478
Insulation & Air Sealing	$0	$22,389	$870	$162,448	$0	$10,000	$195,707
Refrigerator & Freezer Recycling	$0	$672,041	$219,015	$375,000	$0	$10,000	$1,276,056
Residential Heating	$0	$65,625	$54,155	$661,600	$0	$13,500	$794,880
School Education Kits	$0	$522,769	$5,000	$875,297	$0	$0	$1,403,066
Thermostat Optimzation	$0	$0	$0	$0	$0	$0	$0
Water Heating	$0	$304	$0	$22,500	$0	$5,000	$27,804
Residential Program Total	**$2,500**	**$6,813,771**	**$1,737,175**	**$14,639,515**	**$164,058**	**$280,013**	**$23,637,032**

Table 7a: (Cont.)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Low-Income Program							
Energy Savings Kit	$0	$101,352	$45,920	$176,450	$0	$2,500	$326,222
Multifamily Weatherization	$0	$81,761	$40,000	$1,019,704	$0	$15,351	$1,156,816
Non-Profit	$0	$104,198	$45,000	$930,452	$0	$27,825	$1,107,475
Single-Family Weatherization	$0	$94,932	$167,690	$914,240	$0	$45,712	$1,222,574
Low-Income Program Total	**$0**	**$382,243**	**$298,610**	**$3,040,846**	**$0**	**$91,388**	**$3,813,087**
Indirect Products & Services							
Education/Market Transformation							
Business Education	$0	$0	$176,739	$0	$0	$0	$176,739
Business Energy Analysis	$30,000	$117,120	$97,850	$375,996	$0	$0	$620,966
Consumer Education	$0	$369,188	$530,720	$0	$0	$0	$899,908
Energy Benchmarking	$4,000	$75,000	$10,000	$0	$0	$0	$89,000
Energy Efficiency Financing	$0	$31,561	$14,804	$10,000	$0	$0	$56,365
Home Energy Audit	$0	$182,040	$11,330	$186,996	$0	$37,399	$417,765
Education/Market Transformation Total	**$34,000**	**$774,909**	**$841,443**	**$572,992**	**$0**	**$37,399**	**$2,260,743**
Planning and Research							
DSM Planning & Administration	$0	$553,545	$3,000	$0	$0	$0	$556,545
Program Evaluations	$1,000	$45,000	$0	$0	$0	$495,444	$541,444
Market Research	$2,000	$370,595	$0	$0	$0	$0	$372,595
Measurement & Verification	$0	$10,953	$0	$0	$0	$0	$10,953
Product Development	$462,000	$1,327,840	$17,710	$489,700	$162,500	$100,000	$2,559,750
ENERGY STAR Retail Products Platform Pilot	$0	$64,232	$4,355	$988,333	$0	$35,144	$1,092,064
Thermostat Optimzation	$0	$0	$0	$0	$0	$0	$0
Product Development Total	**$462,000**	**$1,392,072**	**$22,065**	**$1,478,033**	**$162,500**	**$135,144**	**$3,651,814**
Planning and Research Total	**$465,000**	**$2,372,165**	**$25,065**	**$1,478,033**	**$162,500**	**$630,588**	**$5,133,351**
Indirect Products & Services Total	**$499,000**	**$3,147,074**	**$866,508**	**$2,051,025**	**$162,500**	**$667,987**	**$7,394,094**
EE PORTFOLIO TOTAL	**$579,500**	**$24,763,708**	**$4,847,194**	**$44,831,325**	**$771,636**	**$1,948,302**	**$77,741,665**
Demand Response Program							
Critical Peak Pricing Pilot	$0	$22,800	$0	$0	$29,700	$12,500	$65,000
Peak Partner Rewards	$0	$560,289	$25,000	$2,242,000	$302,183	$25,000	$3,154,472
Residential Demand Response	$0	$5,677,669	$2,523,360	$9,080,000	$0	$125,000	$17,406,029
DR PORTFOLIO TOTAL	**$0**	**$6,260,758**	**$2,548,360**	**$11,322,000**	**$331,883**	**$162,500**	**$20,625,501**
PORTFOLIO TOTAL	**$579,500**	**$31,024,466**	**$7,395,554**	**$56,153,325**	**$1,103,519**	**$2,110,802**	**$98,367,166**

Table 7b: 2018 Electric Program Costs by Category (Actual Expenditures)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Business Program							
Commercial Refrigeration Efficiency	$0	$336,701	$2,536	$154,182	$0	$15,516	$508,936
Compressed Air Efficiency	$0	$209,062	$24,392	$217,092	$0	$7,591	$458,138
Computer Efficiency	$0	$48,721	$2,000	$0	$0	$0	$131,688
Cooling	$0	$2,276,742	$66,292	$2,447,511	$0	$18,800	$7,043,194
Custom Efficiency	$0	$416,569	$88,627	$136,986	$0	$1,524	$643,706
Data Center Efficiency	$0	$271,571	$84,598	$177,021	$0	$2,445	$535,635
Energy Management Systems	$0	$450,651	$50,115	$842,938	$0	$15,880	$1,359,584
Heating Efficiency	$0	$5,802	$0	$2,467	$0	$0	$8,269
LED Street Lighting	$0	$0	$0	$0	$0	$0	$0
Lighting Efficiency	$0	$2,467,422	$106,795	$14,941,720	$0	$30,057	$17,545,995
Lighting - Small Business	$0	$2,462,206	$79,278	$4,437,990	$0	$23,716	$7,003,189
Motor & Drive Efficiency	$0	$425,209	$84,728	$1,405,267	$0	$17,995	$1,933,199
Multifamily Buildings	$0	$413,310	$25,217	$781,832	$12,210	$0	$1,232,569
New Construction	$0	$1,942,784	$87,232	$4,172,294	$0	$400,211	$6,934,332
Process Efficiency	$0	$410,427	$2,282	$1,359,657	$0	$1,887	$1,774,253
Recommissioning	$0	$189,018	$16,687	$116,103	$0	$0	$321,808
Self Direct	$0	$151,860	$10,362	$321,095	$0	$0	$483,317
Business Program Total	**$0**	**$12,478,056**	**$731,142**	**$31,514,156**	**$12,210**	**$535,622**	**$47,917,813**
Residential Program							
Energy Efficiency Showerhead	$0	$11,006	$7,986	$8,348	$0	$0	$27,340
Energy Feedback Residential	$0	$3,098,673	$0	$0	$0	$0	$3,098,673
ENERGY STAR New Homes	$0	$208,027	$10,903	$779,134	$0	$120,713	$1,118,776
Evaporative Cooling	$0	$382,393	$274,127	$1,761,869	$0	$20,125	$2,724,376
High Efficiency Air Conditioning	$0	$216,828	$939	$5,430,200	$0	$40,945	$5,926,999
Home Energy Squad	$0	$173,372	$80,116	$3,138	$296,541	$0	$553,166
Home Lighting & Recycling	$0	$948,475	$568,143	$2,905,318	$0	$3,000	$4,424,936
Home Performance with ENERGY STAR	$0	$53,060	$73	$78,032	$0	$20,874	$159,311
Insulation & Air Sealing	$0	$11,682	$155	$235,787	$0	$10,000	$257,624
Refrigerator & Freezer Recycling	$0	$646,441	$231,867	$366,350	$0	$3,000	$1,247,658
Residential Heating	$0	$91,508	$77,228	$722,525	$0	$10,575	$901,835
School Education Kits	$0	$707,713	$2,802	$889,142	$0	$0	$1,599,656
Thermostat Optimzation	$0	$1,230	$0	$25,955	$0	$0	$27,185
Water Heating	$0	$3,209	$0	$13,500	$0	$3,350	$20,059
Residential Program Total	**$0**	**$6,553,615**	**$1,254,339**	**$13,219,298**	**$296,541**	**$232,581**	**$22,087,596**

Table 7b: (Cont.)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Low-Income Program							
Energy Savings Kit	$0	$54,648	$7,266	$92,785	$0	$4,250	$158,949
Multifamily Weatherization	$0	$121,907	$33,438	$1,020,324	$0	$17,875	$1,193,543
Non-Profit	$0	$151,931	$33,176	$947,055	$0	$26,871	$1,159,033
Single-Family Weatherization	$0	$86,655	$154,045	$981,725	$0	$45,084	$1,267,510
Low-Income Program Total	**$0**	**$415,141**	**$227,925**	**$3,041,889**	**$0**	**$94,080**	**$3,779,035**
Indirect Products & Services							
Education/Market Transformation							
Business Education	$0	$78,605	$93,171	$0	$0	$0	$171,775
Business Energy Analysis	$0	$290,729	$63,638	$5,870	$0	$0	$360,237
Consumer Education	$0	$558,653	$295,508	$0	$0	$0	$854,160
Energy Benchmarking	$0	$64,762	$165	$0	$0	$0	$64,927
Energy Efficiency Financing	$0	$51,516	$3,708	$0	$0	$0	$55,224
Home Energy Audit	$0	$141,999	$9,117	$160,434	$1,240	$29,370	$342,159
Education/Market Transformation Total	**$0**	**$1,186,263**	**$465,306**	**$166,304**	**$1,240**	**$29,370**	**$1,848,482**
Planning and Research							
DSM Planning & Administration	$0	$567,085	$0	$0	$0	$0	$567,085
Program Evaluations	$0	$34,680	$0	$0	$0	$499,879	$534,559
Market Research	$0	$255,319	$189	$0	$0	$0	$255,508
Measurement & Verification	$0	$9,848	$0	$0	$0	$0	$9,848
Product Development	$0	$1,235,168	$0	$0	$0	$9,703	$1,244,872
ENERGY STAR Retail Products Platform Pilot	$0	$1,268,597	$0	$0	$0	$0	$1,268,597
Thermostat Optimzation	$0	$0	$0	$0	$0	$0	$0
Product Development Total	**$0**	**$2,503,766**	**$0**	**$0**	**$0**	**$9,703**	**$2,513,469**
Planning and Research Total	**$0**	**$3,370,698**	**$189**	**$0**	**$0**	**$509,583**	**$3,880,470**
Indirect Products & Services Total	**$0**	**$4,556,961**	**$465,495**	**$166,304**	**$1,240**	**$538,952**	**$5,728,952**
EE PORTFOLIO TOTAL	**$0**	**$24,003,773**	**$2,678,901**	**$47,941,646**	**$309,991**	**$1,401,236**	**$79,513,396**
Demand Response Program							
Critical Peak Pricing Pilot	$0	$68,126	$0	$0	$0	$0	$68,126
Peak Partner Rewards	$0	$247,108	$84,750	$370,541	$0	$0	$702,399
Residential Demand Response	$0	$2,764,391	$765,949	$8,146,359	$0	$0	$11,676,699
DR PORTFOLIO TOTAL	**$0**	**$3,079,625**	**$850,699**	**$8,516,900**	**$0**	**$0**	**$12,447,223**
PORTFOLIO TOTAL	**$0**	**$27,083,397**	**$3,529,600**	**$56,458,546**	**$309,991**	**$1,401,236**	**$91,960,619**

Table 8a: 2018 Gas Program Costs by Category (Budget)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Business Program							
Commercial Refrigeration Efficiency	$0	$4,922	$0	$6,996	$0	$0	$11,918
Compressed Air Efficiency	$0	$0	$0	$0	$0	$0	$0
Computer Efficiency	$0	$0	$0	$0	$0	$0	$0
Cooling	$0	$0	$0	$0	$0	$0	$0
Custom Efficiency	$0	$66,462	$56	$17,020	$0	$0	$83,538
Data Center Efficiency	$0	$0	$0	$0	$0	$0	$0
Energy Management Systems	$0	$25,334	$600	$26,661	$0	$0	$52,595
Heating Efficiency	$0	$199,951	$12,078	$248,251	$0	$28,000	$488,280
LED Street Lighting	$0	$0	$0	$0	$0	$0	$0
Lighting Efficiency	$0	$0	$0	$0	$0	$0	$0
Lighting - Small Business	$0	$14,724	$0	$3,216	$0	$0	$17,940
Motor & Drive Efficiency	$0	$0	$0	$0	$0	$0	$0
Multifamily Buildings	$0	$226,000	$0	$306,108	$155,308	$0	$687,416
New Construction	$0	$558,024	$11,523	$433,046	$0	$85,000	$1,087,593
Process Efficiency	$0	$0	$0	$0	$0	$0	$0
Recommissioning	$0	$12,567	$3,000	$43,677	$0	$0	$59,244
Self Direct	$0	$0	$0	$0	$0	$0	$0
Business Program Total	**$0**	**$1,107,984**	**$27,257**	**$1,084,975**	**$155,308**	**$113,000**	**$2,488,524**
Residential Program							
Energy Efficiency Showerhead	$0	$237,711	$20,820	$212,448	$0	$2,682	$473,661
Energy Feedback Residential	$3,858	$472,408	$3,642	$0	$0	$4,856	$484,764
ENERGY STAR New Homes	$0	$438,031	$69,832	$1,496,122	$0	$228,394	$2,232,379
Evaporative Cooling	$0	$0	$0	$0	$0	$0	$0
High Efficiency Air Conditioning	$0	$0	$0	$0	$0	$0	$0
Home Energy Squad	$0	$47,621	$105,391	$94,500	$97,646	$6,250	$351,408
Home Lighting & Recycling	$0	$0	$0	$0	$0	$0	$0
Home Performance with ENERGY STAR	$0	$104,759	$5,852	$419,823	$0	$30,000	$560,434
Insulation & Air Sealing	$0	$49,006	$9,938	$306,441	$0	$20,000	$385,385
Refrigerator & Freezer Recycling	$0	$0	$0	$0	$0	$0	$0
Residential Heating	$0	$71,783	$80,745	$378,960	$0	$9,500	$540,988
School Education Kits	$0	$266,871	$2,661	$181,571	$0	$0	$451,103
Thermostat Optimization	$0	$0	$0	$0	$0	$0	$0
Water Heating	$0	$33,930	$2,000	$67,000	$0	$19,000	$121,930
Residential Program Total	**$3,858**	**$1,722,120**	**$300,881**	**$3,156,866**	**$97,646**	**$320,682**	**$5,602,053**

Table 8a: (Cont.)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Low-Income Program							
Energy Savings Kit	$0	$51,298	$22,451	$41,393	$0	$2,500	$117,642
Multifamily Weatherization	$0	$72,436	$20,000	$487,038	$0	$13,065	$592,539
Non-Profit	$0	$80,656	$15,000	$181,272	$0	$17,058	$293,986
Single-Family Weatherization	$0	$209,930	$125,861	$1,926,090	$0	$96,305	$2,358,186
Low-Income Program Total	**$0**	**$414,320**	**$183,312**	**$2,635,793**	**$0**	**$128,928**	**$3,362,353**
Indirect Products & Services							
Education/Market Transformation							
Business Education	$0	$4,200	$15,438	$0	$0	$0	$19,638
Business Energy Analysis	$3,000	$14,548	$0	$48,000	$0	$0	$65,548
Consumer Education	$0	$47,191	$86,132	$0	$0	$0	$133,323
Energy Benchmarking	$1,000	$25,000	$5,000	$0	$0	$0	$31,000
Energy Efficiency Financing	$0	$32,000	$28,000	$0	$0	$0	$60,000
Home Energy Audit	$0	$237,024	$50,133	$221,000	$0	$36,480	$544,637
Education/Market Transformation Total	**$4,000**	**$359,963**	**$184,703**	**$269,000**	**$0**	**$36,480**	**$854,146**
Planning and Research							
DSM Planning & Administration	$0	$61,820	$75	$0	$0	$0	$61,895
Program Evaluations	$0	$20,000	$0	$0	$0	$123,864	$143,864
Market Research	$0	$108,380	$0	$0	$0	$0	$108,380
Measurement & Verification	$0	$1,217	$0	$0	$0	$0	$1,217
Product Development	$101,000	$42,865	$1,196	$0	$0	$0	$145,061
ENERGY STAR Retail Products Platform Pilot	$0	$1,040	$70	$27,800	$0	$264	$29,174
Thermostat Optimization	$0	$0	$0	$0	$0	$0	$0
Product Development Total	**$101,000**	**$43,905**	**$1,266**	**$27,800**	**$0**	**$264**	**$174,235**
Planning and Research Total	**$101,000**	**$235,322**	**$1,341**	**$27,800**	**$0**	**$124,128**	**$489,591**
Indirect Products & Services Total	**$105,000**	**$595,285**	**$186,044**	**$296,800**	**$0**	**$160,608**	**$1,343,737**
EE PORTFOLIO TOTAL	**$108,858**	**$3,839,709**	**$697,494**	**$7,174,434**	**$252,954**	**$723,218**	**$12,796,667**

Table 8b: 2018 Gas Program Costs by Category (Actual Expenditures)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Business Program							
Commercial Refrigeration Efficiency	$0	$10,129	$0	$0	$0	$0	$10,129
Compressed Air Efficiency	$0	$0	$0	$0	$0	$0	$0
Computer Efficiency	$0	$0	$0	$0	$0	$0	$0
Cooling	$0	$0	$0	$0	$0	$0	$0
Custom Efficiency	$0	$56,325	$938	$239	$0	$0	$57,502
Data Center Efficiency	$0	$0	$0	$0	$0	$0	$0
Energy Management Systems	$0	$20,325	$0	$18,051	$0	$0	$38,376
Heating Efficiency	$0	$277,299	$1,650	$581,762	$0	$22,250	$882,961
LED Street Lighting	$0	$0	$0	$0	$0	$0	$0
Lighting Efficiency	$0	$0	$0	$0	$0	$0	$0
Lighting - Small Business	$0	$18,919	$0	$404	$0	$0	$19,323
Motor & Drive Efficiency	$0	$0	$0	$0	$0	$0	$0
Multifamily Buildings	$0	$323,413	$24,847	$372,275	-$14,002	$0	$706,533
New Construction	$0	$266,753	$19,310	$295,298	$0	$78,133	$705,694
Process Efficiency	$0	$0	$0	$0	$0	$0	$0
Recommissioning	$0	$21,763	$0	$12,470	$0	$0	$34,233
Self Direct	$0	$0	$0	$0	$0	$0	$0
Business Program Total	**$0**	**$994,927**	**$46,745**	**$1,280,499**	**-$14,002**	**$100,383**	**$2,454,751**
Residential Program							
Energy Efficiency Showerhead	$0	$136,928	$72,200	$84,425	$0	$0	$293,554
Energy Feedback Residential	$0	$449,735	$0	$0	$0	$0	$449,735
ENERGY STAR New Homes	$0	$469,580	$25,439	$1,695,976	$0	$281,663	$2,472,658
Evaporative Cooling	$0	$0	$0	$0	$0	$0	$0
High Efficiency Air Conditioning	$0	$0	$0	$0	$0	$0	$0
Home Energy Squad	$0	$139,988	$87,928	$3,138	$77,934	$0	$308,988
Home Lighting & Recycling	$0	$0	$0	$0	$0	$0	$0
Home Performance with ENERGY STAR	$0	$40,712	$182	$151,686	$0	$20,874	$225,580
Insulation & Air Sealing	$0	$32,876	$5,480	$541,518	$0	$19,750	$599,625
Refrigerator & Freezer Recycling	$0	$0	$0	$0	$0	$0	$0
Residential Heating	$0	$124,949	$47,978	$2,741,290	$0	$7,325	$2,921,542
School Education Kits	$0	$293,655	$1,399	$265,347	$0	$0	$562,649
Thermostat Optimization	$0	$265	$0	$21,560	$0	$0	$21,825
Water Heating	$0	$26,449	$0	$83,410	$0	$13,950	$123,809
Residential Program Total	**$0**	**$1,715,138**	**$240,606**	**$5,588,349**	**$77,934**	**$343,561**	**$7,979,965**

Table 8b: (Cont.)

2018	Program Planning & Design	Admin & Program Delivery	Advertising/ Promotion/ Customer Ed	Participant Rebates and Incentives	Equip & Install	M&V	Total
Low-Income Program							
Energy Savings Kit	$0	$29,034	$4,144	$21,039	$0	$4,250	$58,467
Multifamily Weatherization	$0	$148,945	$23,438	$905,859	$0	$34,907	$1,113,148
Non-Profit	$0	$89,926	$18,176	$179,689	$0	$11,659	$299,450
Single-Family Weatherization	$0	$152,249	$113,409	$2,016,147	$0	$76,947	$2,358,751
Low-Income Program Total	**$0**	**$420,153**	**$159,167**	**$3,122,734**	**$0**	**$127,762**	**$3,829,816**
Indirect Products & Services							
Education/Market Transformation							
Business Education	$0	$11,677	$4,336	$0	$0	$0	$16,013
Business Energy Analysis	$0	$34,125	$4,221	$2,438	$0	$0	$40,784
Consumer Education	$0	$80,354	$32,884	$0	$0	$0	$113,238
Energy Benchmarking	$0	$21,177	$55	$0	$0	$0	$21,232
Energy Efficiency Financing	$0	$38,032	$7,294	$0	$0	$0	$45,325
Home Energy Audit	$0	$139,721	$12,304	$271,474	$0	$29,370	$452,868
Education/Market Transformation Total	**$0**	**$325,086**	**$61,094**	**$273,912**	**$0**	**$29,370**	**$689,461**
Planning and Research							
DSM Planning & Administration	$0	$121,206	$0	$0	$0	$0	$121,206
Program Evaluations	$0	$8,179	$0	$0	$0	$124,970	$133,149
Market Research	$0	$101,912	$0	$0	$0	$0	$101,912
Measurement & Verification	$0	$1,055	$0	$0	$0	$0	$1,055
Product Development	$0	$113,439	$0	$0	$0	$730	$114,169
ENERGY STAR Retail Products Platform Pilot	$0	-$1,031	$0	$0	$0	$0	-$1,031
Thermostat Optimization	$0	$0	$0	$0	$0	$0	$0
Product Development Total	**$0**	**$112,407**	**$0**	**$0**	**$0**	**$730**	**$113,138**
Planning and Research Total	**$0**	**$344,760**	**$0**	**$0**	**$0**	**$125,700**	**$470,460**
Indirect Products & Services Total	**$0**	**$669,846**	**$61,094**	**$273,912**	**$0**	**$155,070**	**$1,159,921**
EE PORTFOLIO TOTAL	**$0**	**$3,800,064**	**$507,612**	**$10,265,494**	**$63,932**	**$726,776**	**$15,424,453**

Participation Analysis

Decision No. C14-0731 in 2013 DSM Strategic Issues (Proceeding No. 13A-0686EG) directed the Company to "*collect, define, and analyze participant and non-participant rates. In future DSM plan filings, the Company shall explain how these data were collected and used for each program.*"[4] Furthermore, the Commission clarified in Decision No. C14-0997 that *"we also require that the Company set forth proposals for tracking participants and non-participants for specific programs and measures and to provide estimates of participant and non-participant counts in its DSM Plans. While we recognize that, for certain programs or measures it may be difficult or prohibitively expensive to collect such data, it is reasonable for the Commission to consider plans for tracking participation and non-participation when programs and measures are proposed in a DSM Plan filing and when we review the cost-effectiveness and ratepayer impacts of those programs and measures."*[5]

2018 Participation

Participant counts have been reported at the customer level (rather than at the premise level as had been forecasted in the 2014 DSM Plan) for each electric DSM product and by customer class, as well as the portfolio total counts for the 2018 calendar year. These values are shown in Tables 9a, 9b, 9c and 9d.

Historical Participation Analysis

The Company believes a thorough analysis of participants and non-participants must go beyond a counting of participation each year. It must also consider the amount of cumulative consumption savings realized by individual customers each year, due to the participation in electric DSM programs over several program years. To this end, the Company has identified the estimated percentages of business and residential customers by their range of consumption savings attributable to DSM participation since the expansion of the DSM programs in 2009. The extent of individual participation is further compared to the cumulative rate impacts of the DSM program since 2009. The combination of these factors results in identification of the level and distribution of bill savings among business and residential customers. This data is shown in Tables 9e, 9f, and 9g.

Table 9a: 2018 Electric Participation, Percentage of Total by Customer Class

	Total Unique DSM Participants (Estimate)[6]		Total PSCo Customers[7]		PSCo Customers Participating in DSM		PSCo Customers Not Participating in DSM	
Electric	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
2018 Total	793,208		1,366,403		793,208	58.05%	573,195	16.56%
Business	9,881	0.87%	100,617	7.36%	9,881	9.82%	90,736	90.18%
Residential	783,327	98.75%	1,265,786	92.64%	783,327	61.88%	482,459	10.71%

[4] Paragraph 115, pg. 39.
[5] Paragraph 24, pg. 8.
[6] Participation by DSM product is shown in Table 9c below. Total estimated participation is the sum of DSM product participation estimates less the number of duplicates (participation in multiple products).
[7] Customer count as of 12/31/2018.

Table 9b: 2018 Gas Participation, Percentage of Total by Customer Class

	Total Unique DSM Participants (Estimate)[8]		Total DSM-Eligible PSCo Customers		PSCo Customers Participating in DSM		PSCo Customers Not Participating in DSM	
Gas	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**
2018 Total	449,006		1,401,870		449,006	32.03%	952,864	67.97%
Business	531	0.12%	101,044	7.21%	531	0.53%	100,513	99.47%
Residential	448,475	99.88%	1,300,826	92.79%	448,475	34.48%	852,351	65.52%

[8] Participation by DSM product is shown in Table 9c below. Total estimated participation is the sum of DSM product participation estimates less the number of duplicates (participation in multiple products).

Table 9c: 2018 Electric Participation, Average Rebate and Savings

Product	2018 Participants	Average Rebate per Customer	Average kWh Savings per Customer
Business Program			
Commercial Refrigeration Efficiency	110	$1,401.66	24,897
Compressed Air Efficiency	41	$5,294.93	31,860
Computer Efficiency	1,339	$0.00	1,336
Cooling	636	$3,848.29	10,343
Custom Efficiency	6	$22,831.00	102,286
Data Center Efficiency	11	$16,092.86	253,160
Energy Management Systems	32	$26,341.81	243,003
Heating Efficiency	10	$246.69	2,508
Lighting Efficiency	2,259	$6,614.31	71,696
Lighting - Small Business	2,306	$1,924.54	16,533
Motor & Drive Efficiency	154	$9,125.11	99,715
Multifamily Buildings	189	$4,136.68	29,775
New Construction	86	$48,515.04	333,061
Process Efficiency	26	$52,294.48	750,029
Recommissioning	13	$8,931.03	127,868
Self Direct	1	$321,095.00	3,155,488
Residential Program			
Energy Efficient Showerhead	1,071	$7.79	697
Energy Feedback Residential	429,287	$0.00	45
ENERGY STAR New Homes	3,692	$211.03	1,087
Evaporative Cooling	2,964	$594.42	1,294
High Efficiency Air Conditioning	6,196	$876.40	973
Home Energy Squad	1,024	$3.06	1,463
Home Lighting & Recycling	157,555	$18.44	596
Home Performance with ENERGY STAR	177	$440.86	1,014
Insulation & Air Sealing	641	$367.84	433
Refrigerator & Freezer Recycling	6,814	$53.76	935
Residential Heating	6,994	$103.31	827
School Education Kits	38,501	$23.09	240
Thermostat Optimization	663	$39.15	182
Water Heating	29	$465.52	3,645
Low-Income Program			
Energy Savings Kit	3,109	$29.84	342
Multifamily Weatherization	45	$22,673.87	45,876
Non-Profit	38	$24,922.50	39,613
Single-Family Weatherization	2,313	$424.44	523
Indirect Products & Services			
Business Education	3,092	$0.00	0
Business Energy Analysis	129	$0.00	0
Consumer Education	46,870	$0.00	0
Energy Efficiency Financing	25	$0.00	0
Home Energy Audit	1,535	$0.00	0
Planning and Research			
ENERGY STAR Retail Prod Platform Pilot	43,180	$0.00	140
Demand Response Program			
Saver's Switch	4,906	N/A	7

Table 9d: 2018 Natural Gas Participation

Product	2018 Participants	Average Rebate Per Customer	Average Dth Savings Per Customer
Business Program			
Commercial Refrigeration Efficiency	21	$0.00	40.2
Custom Efficiency	1	$239.00	59.7
Energy Management Systems	13	$1,388.54	360.6
Heating Efficiency	178	$3,268.32	161.0
Lighting - Small Business	127	$3.18	22.9
Multifamily Building	126	$2,954.57	213.9
New Construction	53	$5,571.65	967.5
Recommissioning	12	$1,039.16	122.5
Residential Program			
Energy Efficient Showerhead	8,092	$10.43	6.1
Energy Feedback Residential	389,493	$0.00	0.2
ENERGY STAR New Homes	5,234	$324.03	23.6
Home Energy Squad	946	$3.32	6.2
Home Performance with ENERGY STAR	183	$828.88	49.6
Insulation & Air Sealing	983	$550.88	31.0
Residential Heating	5,369	$510.58	20.2
School Education Kits	36,785	$7.21	2.4
Thermostat Optimization	424	$50.84	9.3
Water Heating	966	$86.35	6.7
Low-Income Program			
Energy Savings Kit	3,211	$6.55	2.5
Multifamily Weatherization	34	$26,642.90	396.6
Non-Profit	36	$4,991.37	106.6
Single-Family Weatherization	1,979	$1,018.77	24.4
Indirect Products & Services			
Business Education	113	$0.00	0.0
Business Energy Analysis	94	$25.94	0.0
Consumer Education	9,587	$0.00	0.0
Energy Efficiency Financing	59	$0.00	0.0
Home Energy Audit	2,076	$130.77	0.0

Table 9e: Estimated Customer Consumption Savings Range, 2009-2018

Year	Total Non-Participants		DSM Participants Saving 1-2% of Annual Electric Consumption		DSM Participants Savings 3-5% of Annual Electric Consumption		DSM Participants Saving 6-10% of Annual Electric Consumption		DSM Participants Saving 11-25% of Annual Electric Consumption		DSM Participants Saving More than 25% of Annual Electric Consumption	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
2009												
BUS	95,264	98.22%	583	0.60%	325	0.34%	225	0.23%	418	0.43%	175	0.18%
RES	1,002,895	83.78%	46,664	3.90%	49,289	4.12%	64,964	5.43%	29,559	2.47%	3,660	0.31%
2010												
BUS	93,700	96.61%	1,063	1.10%	574	0.59%	501	0.52%	627	0.65%	524	0.54%
RES	841,077	70.26%	75,558	6.31%	67,823	5.67%	121,557	10.15%	80,156	6.70%	10,859	0.91%
2011												
BUS	90,922	93.74%	1,703	1.76%	1,117	1.15%	996	1.03%	1,374	1.42%	878	0.91%
RES	521,924	43.60%	68,964	5.76%	116,415	9.73%	237,175	19.81%	214,875	17.95%	37,678	3.15%
2012												
BUS	86,193	88.87%	2,319	2.39%	1,749	1.80%	1,689	1.74%	2,861	2.95%	2,179	2.25%
RES	481,788	40.25%	78,694	6.57%	133,753	11.17%	245,966	20.55%	217,324	18.16%	39,507	3.30%
2013												
BUS	83,530	86.12%	2,570	2.65%	2.177	2.24%	2,295	2.37%	3,612	3.72%	2,805	2.89%
RES	352,847	29.48%	73,693	6.16%	153,450	12.82%	276,372	23.09%	282,966	23.64%	57,704	4.82%
2014												
BUS	80,168	82.66%	3,008	3.10%	2,755	2.84%	2,828	2.92%	4,510	4.65%	3,721	3.84%
RES	237,454	19.84%	57,010	4.76%	178,786	14.94%	303,588	25.36%	343,422	28.69%	76,770	6.41%
2015												
BUS	71,425	73.28%	8,894	9.13%	4,010	4.11%	3,559	3.65%	5,479	5.62%	4,098	4.20%
RES	108,652	8.96%	100,007	8.24%	200,298	16.51%	322,245	26.57%	389,218	32.09%	92,540	7.63%
2016												
BUS	70,516	65.57%	13,556	12.61%	5,818	5.41%	4,935	4.59%	6,724	6.25%	5,991	5.57%
RES	89,486	7.27%	86,136	7.00%	181,845	14.78%	319,593	25.98%	437,535	33.56%	115,671	9.40%
2017												
BUS	59,747	59.86%	17,726	17.76%	7,036	7.05%	5,041	5.05%	5,964	5.98%	4,291	4.30%
RES	57,396	4.60%	67,535	5.42%	165,542	13.28%	314,079	25.19%	490,044	39.31%	152,172	12.21%
2018												
BUS	77,235	76.76%	4,486	4.46%	3,239	3.22%	3,553	3.53%	6,176	6.14%	5,927	5.89%
RES	93,872	7.42%	48,752	3.85%	48,413	3.82%	130,464	10.31%	556,567	43.97%	387,717	30.63%

Table 9f: Estimated Cumulative Rate Impact, 2009-2018

Year	Cumulative Electric Rate Impact						
	DSM Cost Recovery	System Benefits	Lost Revenue	Rate Imbalance (Increase)	Rate Impact (Increase)	Total Revenue	% Rate Increase
2009	$31.8M	$16.7M	$10.4M	-$6.2M	$25.5M	$2,216M	1.151%
2010	$42.2M	$32.3M	$22.4M	-$9.9M	$32.4M	$2,614M	1.238%
2011	$51.7M	$48.0M	$36.0M	-$12.0M	$39.7M	$2,673M	1.486%
2012	$67.1M	$71.2M	$62.7M	-$8.4M	$58.7M	$2,604M	2.255%
2013	$63.5M	$92.7M	$87.7M	-$4.9M	$58.6M	$2,793M	2.097%
2014	$65.1M	$108.8M	$109.2M	$0.3M	$65.5M	$2,865M	2.285%
2015	$74.7M	$131.2M	$141.5M	$10.4M	$85.1M	$2,767M	3.075%
2016	$72.2M	$147.9M	$179.6M	$31.7M	$104.0M	$2,737M	3.798%
2017	$88.3M	$166.9M	$219.8M	$52.9M	$141.2M	$2,735M	5.161%
2018	$92.0M	$171.3M	$241.6M	$70.2M	$162.2M	$2,674M	6.066%

Table 9g: Estimated Customer Bill Savings Range, 2009-2018

Year	Customers >1% Bill Increase		Customers 0-1% Bill Increase		Customers 0-2% Bill Savings		Customers 3-5% Bill Savings		Customers 6-15% Bill Savings		Customers more than 15% Bill Savings	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
2009												
BUS	95,395	98.36%	318	0.33%	257	0.26%	261	0.27%	471	0.49%	288	0.30%
RES	1,003,343	83.82%	39,099	3.27%	21,072	1.76%	54,960	4.57%	67,954	5.68%	10,858	0.91%
2010												
BUS	93,931	96.85%	598	0.62%	489	0.50%	461	0.48%	726	0.75%	783	0.81%
RES	845,554	70.64%	61,787	5.16%	29,019	2.42%	82,581	6.90%	143,759	12.01%	34,322	2.87%
2011												
BUS	91,583	94.43%	792	0.82%	858	0.88%	870	0.90%	1,438	1.48%	1,449	1.49%
RES	703,376	58.76%	40,082	3.35%	38,547	3.22%	117,868	9.85%	228,185	19.06%	68,950	5.76%
2012												
BUS	87,971	90.70%	717	0.74%	1,257	1.30%	1,179	1.22%	2,521	2.60%	3,344	3.45%
RES	547,524	45.74%	17,512	1.46%	80,617	6.73%	167,317	13.98%	282,157	23.57%	101,883	8.51%
2013												
BUS	85,209	87.85%	933	0.96%	1,493	1.54%	1,686	1.74%	3,306	3.41%	4,364	4.50%
RES	403,710	33.73%	24,509	2.05%	91,003	7.60%	181,822	15.19%	348,137	29.08%	147,819	12.35%
2014												
BUS	82,680	85.25%	1,075	1.11%	1,808	1.86%	1,857	1.91%	4,006	4.13%	5,562	5.73%
RES	277,559	23.19%	25,085	2.10%	112,873	9.43%	201,714	16.85%	390,844	32.65%	188,918	15.78%
2015												
BUS	80,969	83.08%	1,521	1.56%	2,172	2.23%	2,283	2.34%	4,415	4.53%	6,103	6.26%
RES	207,475	17.10%	58,120	4.79%	137,772	11.36%	202,860	16.72%	400,288	33.00%	206,445	17.02%
2016												
BUS	86,851	80.74%	1,851	1.72%	2,571	2.39%	2,797	2.60%	5,475	5.09%	8,030	7.46%
RES	186,063	15.12%	57,925	4.71%	153,439	12.47%	190,010	15.44%	407,093	33.09%	235,735	19.16%
2017												
BUS	84,195	84.36%	1,376	1.38%	2,297	2.30%	2,198	2.20%	4,105	4.11%	5,634	5.65%
RES	218,438	17.52%	57,038	4.57%	121,930	9.78%	172,829	13.86%	397,034	31.85%	279,499	22.42%
2018												
BUS	86,655	86.12%	723	0.72%	1,344	1.34%	1,584	1.57%	3,869	3.85%	6,442	6.40%
RES	187,648	14.82%	15,873	1.25%	42,291	3.34%	91,058	7.19%	372,458	29.43%	556,459	43.96%

Compliance

Table 10: Reporting Requirements and Compliance

Item #	Compliance Point – Description	Statute / Rule / Proceeding Reference	Status Report Reference	Comments
ELECTRIC				
1	The annual DSM report will be filed with the Commission on April 1 of each year, starting in 2010.	Proceeding No. 07A-420E, Decision No. C08-560, p.53, ¶173.	---	Report filed April 1, 2018.
2	Shall include the results achieved during the previous plan year in total and by program, including achieved energy and demand savings, avoided annual and cumulative CO_2 and SO_x emissions in metric tons, actual expenditures, expenditures expressed in terms of $/kWh over the lifetime of the measures installed, and net economic benefits achieved.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.16, ¶11(b)	See Tables 4a - 6	$/kWh over lifetime and net economic benefits achieved by product in Cost-Effectiveness Section.
3	Public Service shall use the technical assumptions relating to the energy savings calculations for such measures actually installed during calendar years 2015 and 2018.	Proceeding No. 14A-1057EG, Stipulation & Settlement Agreement, p.17, ¶8	---	Deemed savings approved in Proceeding No. 14A-1057EG (2015/2018 DSM Plan) were used to calculate prescriptive product achievements unless amended via 60-Day Notice during 2018.

4	Use the net-to-gross ratios and the technical assumptions relating to incremental customer O&M savings (for prescriptive measures only), customer O&M costs (for prescriptive measures only), incremental customer capital costs (for prescriptive measures only), the deemed savings formulas and other technical assumptions set forth in the Appendix G for purposes of determining program and portfolio cost-effectiveness and for calculating annual portfolio net economic benefits based on measures actually installed during calendar years 2015 and 2018.	Proceeding No. 14A-1057EG, Stipulation & Settlement Agreement, p.17, ¶8	See Cost-Effectiveness and Financial Incentive Calculations sections	The technical assumptions approved in Proceeding No. 16A-0512EG (2018/18 DSM Plan) were applied to product achievements.
5	All Participant O&M data should be treated as proprietary in the absence of a written agreement signed by the Participant authorizing disclosure.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.8, ¶4	---	---
6	Do not include Participant O&M data in incentive calculations unless there is authorization to disclose such data.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.8, ¶4	See Financial Incentive Calculations	----

7	PSCo may only disclose the results, by cost category, of calculations made using the privileged values, but not values themselves, by making such results available for inspection by both the Staff of the Commission and OCC at the Company's Colorado offices, pursuant to the following procedures: • PSCo will provide the customer 10 business-days' notice of the place and time of the inspection and provide the opportunity for a customer representative to be present during the inspection. • PSCo shall maintain a log of persons, dates, times and documents reviewed. • Participant O&M data shall not be disclosed to any other party or by any other means, except after receipt of written authorization from the Participant.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.9, ¶4	---	Participant O&M data has been neither requested nor disclosed to any external party.
8	Track the expenditures, energy savings, and paybacks associated with each approved project under the Self-Directed Custom Efficiency Program.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.8, ¶3	See Evaluation, Measurement and Verification	---
9	Approve Self-Directed customers' projects for which the customer meets TRC test value at least equal to one (1), rather than limiting this product to installations that have a TRC value at least equal to the TRC value for the overall DSM portfolio.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.7, ¶3	---	Ongoing.
10	Offer the Self-Directed Custom Efficiency product to commercial and industrial customers who have an aggregated peak demand at all meters of at least 2 MW in any single month and an aggregated annual energy usage of at least 10 GWh. The customer of record must be the same for all meters aggregated to qualify for this program.	Proceeding No. 08A-366EG, Stipulation & Settlement Agreement, p.8, ¶3	---	Ongoing.

11	All incentive payments must be included in the final TRC calculation. At the time of the annual report following the DSM performance year, the incentive amounts will be "proposed" versus "final." PSCo shall include the proposed incentive amounts in their annual report. Public Service will calculate a proposed incentive amount based upon its calculation of the DSM savings achieved and costs incurred. Public Service's annual report will delineate the DSM activities that occurred, the costs and benefits related to these activities, and the net economic benefits. Based upon the percentage of the DSM goal achieved, a percentage of the net economic benefits will comprise Public Service's incentive payment. That value, along with the disincentive offset, will also be presented in the annual report, as a proposed performance incentive. This is the procedure that Public Service is to follow in its annual DSM report. The Decision does not require that the incentive amount be recalculated after the inclusion of the incentive payment amounts into the final TRC calculation.	Proceeding No. 07A-420E, Decision No, C08-0560, p.37, ¶117 Proceeding No. 071-420E, Decision No. C08-0769, pg. 19-20, ¶63	See Table 1c See Financial Incentive Calculations	---
12	For any low-income program that achieves a TRC<1.0, the costs and benefits may be excluded from the calculation of net economic benefits. The energy and demand savings may be applied toward the calculation of overall energy and demand savings, for the purposes of determining progress toward annual goals.	Proceeding No. 07A-420E, Decision No, C08-560, p.44, ¶140	See Financial Incentive Calculations	---
13	Beginning with the 2012 Annual Status Report, PSCo will quantify and track certain costs incurred through the use of third-party providers.	Proceeding No. 10A-554EG, Decision No. C11-0442, p. 52, Ordering ¶4	See Executive Summary	---

14	"Indirect impact programs" (customer education, market transformation and pilot programs) do not need to individually pass a TRC test, but need to be incorporated into the overall costs used to calculate the TRC of the DSM portfolio. Market Transformation efforts shall have a presumptive TRC of 1.0 so as to not adversely affect the financial incentive calculation.	Proceeding No. 07A-420E, Decision No. C08-0560, pg. 44-45, ¶141	See Indirect Program and Financial Incentive Calculations	Included within Report filed April 1, 2018.
15	Distribute a bi-monthly DSM Pilot/Product Development e-mail update.	Proceeding No. 14A-1057EG, Settlement Agreement, Para. 5(j)(i)	---	The Company continued to provide more comprehensive PD updates as part of its DSM Roundtables in lieu of the e-mail update.
16	Offer to hold at least two meetings with interested stakeholder, for each pilot that the Company decides to pursue, prior to 60-Day Notice.	Proceeding No. 14A-1057EG, Settlement Agreement, Para. 5(j)(iv)	---	The Company did not pursue any 60-Day Notices for pilots in 2018.
17	Re-allocate $25,000 to support energy codes training, in consultation with interested stakeholders.	Proceeding No. 14A-1057EG, Settlement Agreement, Para. 5(n)	---	The Company provided funding through the Business Education product.
18	Maintain low-income efficiency programs from 2015 to 2020 at existing levels.	Decision No. C14-0731, Para. 75	See Tables 15a and 15b	The 2014 DSM Plan forecast for Low-Income Program combined electric and natural gas expenditures was $6.249 million. The 2018 combined electric and natural gas expenditures for the Low-Income Program were $7.609 million.
19	Provide an annual total of DSM program participants and non-participants in its annual status reports filed with the Commission.	Decision No. C14-00997, Para. 24	See Participation Analysis	Included within Report filed April 1, 2018.

20	Commit to report the number of leads generated and shared with internal product management and customer service specialists from all customer outreach event categories	Proceeding No. 16A-0512EG, Settlement Agreement, Para. III(S)(iii)	See Consumer Education write up included in the Indirect Program section	---
21	Include in its annual status report filing the number of customers under the tariff, the number of interruptions called, and the number of interruptions that were coincident with the system peak.	Proceeding No. 16A-0512EG, Settlement Agreement, Para. III(BB)(i)	See Peak Partner Rewards Write Up included in the Demand Response Program section	
23	The Company agrees that it will investigate alternative product delivery methods including shifting to upstream incentives for heat pump water heaters by the end of 2017. The goal of this investigation will be to improve the cost effectiveness of the product. The Company agrees to report on the results of this investigation in the fourth quarter 2017 DSM roundtable meeting, which will be held in the first quarter of 2018.	Proceeding No. 16A-0512EG, Settlement Agreement, Para. III(Q)	---	The Company reported on the Water Heating product as part of the Fourth Quarter 2017 roundtable meeting held on February 15, 2018.
24	The Company agrees to conduct a Comprehensive Evaluation for the Home Lighting product by the end of 2018.	Proceeding No. 16A-0512EG, Settlement Agreement, Para. III(U)	See the Home Lighting & Recycling Write Up included in the Residential Program section	The Company completed the Home Lighting & Recycling comprehensive evaluation on December 12, 2018.
NATURAL GAS				
1	Beginning April 1, 2010 and each April 1st thereafter, each utility shall submit its annual DSM report, application for bonus and DSMCA filing.	Rule 4752(b)	---	Report filed April 1, 2018.
2	Each utility shall also file an annual DSM report and an application for bonus.	Rule 4750(b)	---	Included with Report filed April 1, 2018.

3	The utility's annual expenditure target for DSM programs shall be, at a minimum, two percent of a natural gas utility's base rate revenues, (exclusive of commodity costs), from its sales customers in the 12-month calendar period prior to setting the targets, or one-half of one percent of total revenues from its sales customers in the 12-month calendar period prior to setting the targets, whichever is greater.	Rule 4753(h)(I)	---	PSCo spent a total of $15.4 million on its natural gas DSM programs. This surpassed the statutory expenditure targets – $7.7 million (2% of gas base rate revenues), and $5.5 million (0.5% of total gas revenues).
4	In the annual DSM report the utility shall describe its actual DSM programs as implemented. For each DSM program, the utility shall document actual program expenditures, energy savings, participation levels and cost-effectiveness.	Rule 4754(a)	See 2018 Status Report	---
5	Annual program expenditures shall be separated into cost categories contained in the approved DSM plan.	Rule 4754(b)	See Tables 7a, 7b, 8a, 8b	---
6	For each DSM program, the utility shall compare the program's proposed and actual expenditures, savings, participation rate, and cost-effectiveness; in addition, the utility shall prepare an assessment of the success of the program, and list any suggestions for improvement and greater customer involvement.	Rule 4754(c)	See 2018 Status Report	---
7	The utility shall provide actual benefit/cost results for the overall DSM plan and individual DSM programs implemented during the plan year. The benefit/cost analysis shall be based on the costs incurred and benefits achieved, as identified in the modified TRC test. Benefit values are to be based upon the results of M&V evaluation, when such has been conducted as set forth in rule 4755. Otherwise, the benefit values of the currently approved DSM plan are to be used.	Rule 4754(d)	See Cost-Effectiveness	Business, Residential, and Low-Income cost-benefit analysis (CBA) results are included in CBA work paper.
8	If the annual report covers a year within which an M&V evaluation was completed, the complete M&V results are to be included as part of the annual report.	Rule 4754(e)	See Evaluation, Measurement & Verification	---

9	The utility may file an application for bonus, pursuant to rule 4760. The application for bonus shall include the utility's calculation of estimated bonus applying the methodology set forth in this rule to the utility's actual performance. (II) As a threshold matter, the utility must expend at least the minimum amount set forth in rule 4753 (g)(I), except during a phase-in period as set forth in rule 4753 (g)(III), in order to earn a bonus. (III) The bonus amount is a percentage of the net economic benefits resulting from the DSM plan over the period under review. The percentage value is the product of the two factors: (A) The Energy Factor is determined by the percentage of the energy target achieved by the utility. The energy factor is zero plus 0.5 percent for each one percent above 80 percent of the energy target achieved by the utility. (B) The Savings Factor is the actual savings achieved divided by the approved savings target. Each of these quantities is expressed in dekatherms saved per dollar expended. (IV) The following is provided as an example of the bonus calculation, using these illustrative numbers: utility achieves 106 percent of its energy target; the utility's savings target is 15,000 dekatherms per $1 million expended, and the utility's actual savings is 18,000 dekatherms per $1 million.	Rule 4754(f)	See Financial Incentive Calculations	Included within Report filed April 1, 2018.
10	Acknowledgment of Lost Revenues (ALR) - Separate from any bonus determined by the Commission, the Commission may authorize a utility to recover a calculated amount of revenue that acknowledges that an effective DSM program reduced the utility's revenue. The amount shall be calculated as set forth in Rule 4754(g)(I) (A)-(F)	Rule 4754(g)	See Financial Incentive Calculations	---
11	Spend no less than $12 million annually on gas DSM in 2015 and 2018.	Decision C14-0731, Para. 69	See Table 5b	Natural gas DSM expenditures in 2018 totaled $15.4 million.

12	Maintain low-income efficiency programs from 2015 to 2020 at existing levels.	Decision No. C14-0731, Para. 75	See Tables 15a and 15b	The 2014 DSM Plan forecast for Low-Income Program combined electric and natural gas expenditures was $6.249 million. The 2018 combined electric and natural gas expenditures for the Low-Income Program were $7.608 million.

Financial Incentive Calculations

Electric Financial Incentive: Summary

Table 11 below summarizes the Company's Financial Incentive for electric energy efficiency based upon the Company's achievement of 453 GWh and net benefits of $81,484,788 in 2018.

Table 11: Summary of 2018 Electric Incentive

	Amount
Disincentive Offset	$5,000,000
Performance Incentive	$4,074,239
Total	**$9,074,239**

Disincentive Offset

A Disincentive Offset of $5.0 million is awarded because the Company achieved 100 percent of the annual energy savings goal of 400 GWh. That threshold is the same for the incentive mechanism ordered in Decision No. C11-0442 and the revised mechanism ordered in Decision No. C14-0731.

Performance Incentive

The Performance Incentive for the 2018 Plan year is 5 percent of net economic benefits[9] upon achievement of 100 percent or more of the energy savings goal of 400 GWh. That threshold was ordered in Decision No. C14-0731.

Electric Financial Incentive: Calculation

The combination of the pre-tax Disincentive Offset and the Performance Incentive cannot exceed $30 million. The total financial incentive is recovered in the year following the 2018 performance year. The full calculation of the Company's financial incentive for electric DSM is shown in Table 12 below.

[9] A minor adjustment is made for market transformation programs, allowing for the costs of these programs to be excluded from net economic benefits.

Table 12: Public Service 2018 Electric DSM Incentive

Disincentive Offset (Grossed-up for Income Taxes)	**$5,000,000**
Performance Incentive Calculation	
Approved 2018 kWh Goal	400,000,000
kWh from YE Achievements	453,892,959
Net Economic Benefits from YE Achievements	**$77,619,097**
Net Economic Benefits Adjustments	
Total Low-Income Allowance	$1,273,425
Total Market Transformation Allowance from YE Achieve.	$2,592,265
FINAL Net Benefits from YE Achievements	**$81,484,788**
% of Goal Achieved	113%
% of Net Benefits Awarded	5.00%
Performance Incentive	**$4,074,239**
Total Incentive - Subject to CAP	$9,074,239
Incentive Cap (Subject to Hard Cap of $30,000,000)	$30,000,000
Total 2018 Proposed Electric Financial Incentive Pre-Tax	**$9,074,239**

Natural Gas Bonus

The natural gas incentive mechanism ("Gas DSM Bonus") is calculated as set forth in 4 CCR 723-4-4754 ("Rule 4754"). The Gas DSM Bonus is awarded in a single installment, requested by application and approved in the first status report year following the natural gas DSM program year in which the savings were achieved. The approved Gas DSM Bonus amount is recovered through the Gas Demand-Side Management Cost Adjustment ("G-DSMCA"), over the same twelve-month period as set forth in 4 CCR 723-4-4752 (b) (I). (See, Rule 4752(g)(I)(E)).

The natural gas incentive is awarded on a sliding scale of net benefits, calculated based on an Energy Factor (percent of Dth goal achieved) and a Savings Factor (Dth per $1 million spend). The Gas DSM Bonus is capped at 25 percent of expenditure, or 20 percent of net benefits, whichever is less. For 2018, the natural gas incentive is calculated to be $2,152,049. This bonus is less than the net benefit cap of $3,349,525 and the expenditure cap of $3,856,113. In addition, the Company is filing for an acknowledgement of lost revenues associated with natural gas DSM programs of $671,952 for a total award of $2,824,001. The full calculation of Public Service's 2018 Natural Gas Incentive is detailed in Table 13 below.

Table 13: Public Service 2018 Natural Gas Bonus and Acknowledgement of Lost Revenue

Approved Energy Target (Goal)	573,136	Dekatherm per year		
Energy Target Achieved - YE Forecast	604,928	Dekatherm per year		
Percent of Energy Target Achieved	105.5%			
			Dth	**Spend**
Approved Savings Target	44,788	Dekatherm per $1M	573,136	$12,796,667
Savings Target Achieved - Portfolio Total	39,129	Dekatherm per $1M	604,928	$15,424,453
Savings Target Achieved - Low-Income Program Adjustments				
Energy Savings Kit			5,531	$58,467
Multi-Family Weatherization			13,485	$1,113,148
Non-Profit Energy Efficiency			3,839	$299,450
Single-Family Weatherization			48,238	$2,358,751
Total Savings Target Achieved - Low-Income Program Adjustments	18,563	Dekatherm per $1M	71,093	$3,829,816
Savings Target Achieved - Adjusted*	46,042	Dekatherm per $1M	533,835	$11,594,637
Total DSM Expenditures	$15,424,453			
Energy Factor	12.5%			
Savings Factor	1.027989789			
Percent of Net Benefits Awarded	12.8%	= Energy Factor * Savings Factor		
Net Economic Benefits Achieved	**$16,045,868**			
Net Economic Benefits Adjustments				
Energy Savings Kit	$-			
Multi-Family Weatherization	$482,597			
Non-Profit Energy Efficiency	$219,162			
Single-Family Weatherization	$-			
Low-Income Allowance from Plan	$701,760			
FINAL Net Economic Benefits Achieved	**$16,747,627**			
Incentive Cap	$3,349,525	= 20% of net economic benefits or 25% of expenditures, whichever is less		
Total 2018 Proposed Gas Financial Incentive Pre-Tax	**$2,152,049**			
Business/Residential Allocation				
Business Actual Savings (Dth)	109,396	18%		
Residential & Low Income Actual Savings (Dth)	495,532	82%		
Total Savings	**604,928**	**100%**		
Allocated Bonus				
Business	389,181			
Residential & Low Income	1,762,868			
Total	**2,152,049**			
Acknowledgement of Lost Revenue [ALR] Calculation:				
Dollar Value Per Therm				
Business (Non-residential)	$0.12849			
Residential	$0.10724			
12-Month Therm Reduction Impact From 2018 Programs				
Business (Non-residential)	1,093,964			
Residential	4,955,317			
ALR Totals				
Business (Non-residential)	$140,558			
Residential	$531,394			
Total ALR	**$671,952**			
Total Gas Bonus and ALR	**$2,824,001**			

Business Program

The Company's Business Program—for commercial and industrial customers of all sizes—offers a broad portfolio of DSM products designed to meet the needs of this varied segment. Eligible customers are on a Public Service business rate for electric service and/or retail natural gas service. The portfolio has three primary components:

1. *Prescriptive products* focus on the most common equipment.
2. *Custom products* encourage savings from unique situations, often involving newer technologies or measures.
3. *Study and educational products* help customers identify energy efficiency opportunities.

Electric

In 2018, the electric products in the Company's Business Program achieved 117 percent of the net generator kWh target. Multiple products overachieved their forecast savings, including Lighting Efficiency, Lighting – Small Business, New Construction, and Multifamily Buildings. Lighting Efficiency was the largest contributor to business program achievements, followed by Lighting – Small Business, and New Construction. A summary of the Company's Business Program achievements for electric DSM products is shown in Table 14a below.

Table 14a: 2018 Business Program – Electric DSM Products (Target to Actual)

	Budgets / Targets				Expenditures / Achievements			
Business Program - 2018	**Electric Budget**	**Net Gen. kW**	**Net Gen. kWh**	**Electric MTRC Test Ratio**	**Electric Expenditures**	**Net Gen. kW**	**Net Gen. kWh**	**Electric MTRC Test Ratio**
Commercial Refrigeration Efficiency	$1,033,938	573	5,679,594	1.46	$508,936	339	2,929,420	1.48
Compressed Air Efficiency	$765,393	650	4,053,541	1.39	$458,138	217	1,136,934	1.12
Computer Efficiency	$260,974	293	2,293,385	0.77	$131,688	208	1,683,839	0.95
Cooling	$4,901,289	4,946	12,641,733	1.25	$7,043,194	2,472	5,979,679	0.77
Custom Efficiency	$1,473,843	1,168	7,112,368	1.41	$643,706	222	571,113	0.71
Data Center Efficiency	$1,377,885	876	9,806,422	1.71	$535,635	260	2,671,620	1.27
Energy Management Systems	$1,331,211	147	8,823,461	1.16	$1,359,584	151	7,236,300	1.44
Heating Efficiency	$10,249	8	49,241	1.79	$8,269	4	26,829	1.62
LED Street Lighting	$43,000	-	9,840,359	0.77	$0	-	1,511,056	0.78
Lighting Efficiency	$12,089,569	12,231	94,358,382	1.46	$17,545,995	23,624	170,479,917	1.84
Lighting - Small Business	$5,529,916	3,131	26,367,554	1.26	$7,003,189	5,052	36,431,520	1.50
Motor & Drive Efficiency	$2,649,794	2,072	12,450,713	1.68	$1,933,199	1,564	10,676,508	1.84
Multifamily Buildings	$1,122,668	718	5,266,068	2.51	$1,232,569	504	6,019,402	1.64
New Construction	$6,578,848	4,619	24,013,839	1.14	$6,934,332	7,074	29,105,877	0.96
Process Efficiency	$2,064,792	1,700	18,084,744	1.92	$1,774,253	2,246	18,772,782	2.71
Recommissioning	$681,950	302	6,277,029	1.34	$321,808	40	1,600,236	1.52
Self Direct	$982,131	1,517	10,233,982	2.03	$483,317	572	3,071,445	1.35
Business Program Total	**$42,897,452**	**34,950**	**257,352,415**	**1.40**	**$47,917,813**	**44,550**	**299,904,478**	**1.51**

Natural Gas

In 2018, the natural gas products in the Company's Business Program achieved 76 percent of the Dth savings target. Both Multifamily Buildings and Heating Efficiency met or exceeded their targets while New Construction under achieved the target and was the primary contributor to the program's lower than forecast achievement. Natural gas achievement in New Construction has been hampered by the number of customers opting to take non-retail gas service which disqualifies them from receiving a rebate or participating in the product. A summary of the Company's Business Program achievements for natural gas DSM products is shown in Table 14b below.

Table 14b: 2018 Business Program – Natural Gas DSM Products (Target to Actual)

	Budgets / Targets					Expenditures / Achievements				
Business Program - 2018	**Gas Budget**	**Net Annual Dth Savings**	**Annual Dth/$M**	**Gas MTRC Test Net Benefits**	**Gas MTRC Test Ratio**	**Gas Expenditures**	**Net Annual Dth Savings**	**Annual Dth/$M**	**Gas MTRC Test Net Benefits**	**Gas MTRC Test Ratio**
Commercial Refrigeration Efficiency	$11,918	2,434	204,214	$269,213	8.76	$10,129	845	83,424	$96,770	9.40
Compressed Air Efficiency										
Computer Efficiency										
Cooling										
Custom Efficiency	$83,538	3,768	45,109	$128,319	1.77	$57,502	52	903	-$54,904	0.06
Data Center Efficiency										
Energy Management Systems	$52,595	8,878	168,791	$252,447	1.59	$38,376	4,219	109,929	$84,140	1.41
Heating Efficiency	$488,280	18,119	37,107	$64,987	1.05	$882,961	24,675	27,946	-$79,280	0.96
LED Street Lighting										
Lighting Efficiency										
Lighting - Small Business	$17,940	3,497	194,907	$104,768	5.95	$19,323	2,618	135,486	$343,134	18.41
Motor & Drive Efficiency										
Multifamily Buildings	$687,416	26,912	39,150	$1,871,914	2.45	$706,533	26,952	38,146	$2,269,177	3.16
New Construction	$1,087,593	76,624	70,452	$763,545	1.17	$705,694	48,713	69,028	$525,382	1.13
Process Efficiency										
Recommissioning	$59,244	3,450	58,232	$14,595	1.13	$34,233	1,323	38,647	$6,746	1.17
Self Direct										
Business Program Total	**$2,488,524**	**143,681**	**57,737**	**$3,469,787**	**1.45**	**$2,454,751**	**109,396**	**44,565**	**$3,191,166**	**1.44**

Business Products

The following provides a brief summary of the performance of each DSM business product in 2018.

Commercial Refrigeration Efficiency

The Commercial Refrigeration Efficiency product offers refrigeration maintenance and upgrades to commercial customers with significant refrigeration loads, notably restaurants, grocery, convenience and liquor stores. The product offers four major components to provide customers with the resources necessary to reduce their energy usage. These include a free onsite energy assessment with an assessment report, direct installation of complimentary energy saving measures, identification of prescriptive measures, and proactive project management to assist customers in implementing energy efficient measures.

2018 Product Achievement

The product did not meet its electric or gas savings targets for 2018; however, performance did exceed previous years. Underperformance is due, in part, to the product not engaging or meeting with trade as much as previous years and participation in general. However, it was found that participation has continued to decline for both measures and the product as a whole, with each passing year. As part of standard practice, the Company conducted an RFP in 2018 to ensure the most cost-effective implementation of the product and a new implementer was selected for 2019. The Company expects the new implementer to provide a fresh perspective on product delivery; with possible marketing campaigns, educational and informative trade events and boost customer and pipeline participation and engagement.

Changes in 2018

There were no rebate or savings changes to this product.

Compressed Air Efficiency

The Compressed Air Efficiency product helps customers identify and address inefficiencies in their compressed air systems. The product encourages the repair and redesign of existing systems and the purchase of efficient options for new and replacement systems. The product has three components:

1. Prescriptive rebates for the most common high-efficiency options, such as no-loss air drains, and for certain variable frequency drive ("VFD") compressors;
2. Rebates for studies that help customers identify efficiency opportunities from fixing to redesign or replacement of system components; and
3. Custom rebates for implementation of unique improvements identified by studies. Improvements can include a wide range of capital purchases and "process" improvements, such as piping modifications or horsepower reductions.
    - An incentive of $600 per kW is provided, rather than the $400 per kW, for those eligible custom projects that have previously completed a compressed air study.

Trade partners support the product through direct equipment sales and system studies.

2018 Product Achievement
The product did not achieve its 2018 electric savings target. This is due to several factors:

- the need for a larger trade base to expand outreach to and engage with customers;
- the need for more trade education and updates surrounding the product; and
- customers delaying projects into future years.

In an effort to increase education and awareness within the trade, the product hosted a Fundamentals of Compressed Air Challenge. This event is a day-long training course, which was very well received. Based upon the positive feedback and engagement from the first event, the Company will host another Advanced Compressed Air Challenge in March of 2019. The Company expects this second event to continue generating more awareness of the technologies and offerings the product has; as well as increased customer and trade participation and engagement.

Changed in 2018
None.

Computer Efficiency

The Computer Efficiency program provides prescriptive electric offerings to business customers who install Personal Computer ("PC") Power Management and Virtual Desktop Infrastructure ("VDI"). These products are marketed directly to business customers through trade partner and sales channels.

Incentives are also offered directly to desktop personal computer and server manufacturers that design, manufacture, and sell PCs and servers with energy-efficient power supplies to business customers in Public Service's electric service territory. These incentives are marketed through a third-party implementer that works directly with the various PC and server manufacturers to track equipment sold in Public Service's electric service territory.

2018 Product Achievement
The product did not achieve its energy savings targets for 2018; however, expenditures were aligned with achievement. Over the past several years we have seen a decline in upstream participation due to the increase in sales of laptops and other efficient computing devices. The product has also been affected by the decline in savings due to energy efficient advances in technologies

Changes in 2018
The Company posted a 60-Day Notice, effective January 1, 2019, to discontinue the Computer Efficiency Product and merge cost effective measures from the Computer Efficiency product into the Data Center Efficiency product. This Notice eliminated non-cost effective measures and reduced costs by merging complimentary products.

Cooling

The Cooling product offers rebates to customers who purchase and install select high-efficiency ("HE") cooling equipment and incentives to distributors to stock and sell select HE equipment. Rebate dollars and study funding are offered to assist in buying down the incremental cost associated with purchasing the HE equipment, and to shorten the associated payback period. In addition, customers may qualify for a mix of prescriptive rebates for common HE equipment and custom rebates for newer, system-based HE solutions. Marketing efforts and events are directed toward educating customers on making strategic decisions that will benefit their facility, as well as to vendors who work with customers on a daily basis.

2018 Product Achievement
The product failed to achieve its forecast of electric energy savings for 2018. While midstream measures continue to increase product performance, prescriptive and custom measures underperformed. Underperformance in the prescriptive segment was primarily due to lack of participation in the direct evaporative measure, DEPACC; and water-cooled chillers. Custom cooling has seen fewer projects submitted for analysis. The Company is addressing the issue by bringing energy efficiency engineers into the definition phase earlier and recommending engineering assistance studies to assist customers in choosing the most efficient options.

Changes in 2018
In August, the Company posted 60-Day Notice to make changes to the Cooling product in response to the 2017 Comprehensive Evaluation. The evaluation provided key findings in the areas of net-to-gross, data collection, midstream efficiency tiers, trade partner communication, cost effectiveness suggestions, create a detailed logic model, track key performance metrics, perform a market baseline study.

Custom Efficiency

The Custom Efficiency product is designed to provide rebates on a wide variety of equipment and process improvements that do not fall within the Company's prescriptive rebate products. All Custom Efficiency projects require pre-approval before customer and/or contractor purchase and installation, and must pass the MTRC test as part of that analysis. This process is in place to help ensure that participation in the product significantly influences the project and that rebates are awarded to projects that are technically and financially sound.

2018 Product Achievement
The Custom Efficiency product did not achieve its electric savings or its natural gas savings targets in 2018. The product continues to work with account managers and customers to identify potential projects. The 2018 Program Evaluation indicated Xcel Energy staff experience challenges in the custom process and may avoid participating in the product due to its higher degree of technical requirements. The Company is addressing this concern by including the engineering team earlier in the process, which can provide valuable insight during the scoping stage to help determine the eligibility of a project and, as needed, to identify specific characteristics that would need to be modified in order to make a project eligible.

Changes in 2018
None.

Data Center Efficiency

The Data Center Efficiency product offers study and implementation rebates to customers who make energy saving improvements to a data center. The product encourages a holistic approach by providing energy efficiency information, site evaluations, and project analyses for customers. The Company's portfolio of prescriptive and custom rebates is also available to data center customers to encourage the implementation of additional energy saving upgrades.

2018 Product Achievement
The Data Center Efficiency product did not achieve its electric savings target in 2018. The primary cause of the underachievement was projects extending the expected completion date into 2019. For completed projects, electric achievement was from a variety of prescriptive and custom projects focused on lighting, cooling, and motors technologies.

In addition, the Company worked with the third-party evaluator to continue the 2017 program evaluation in 2018. Additional work was deemed necessary because the evaluator was not able to identify a statistically significant group of customers to determine the Company's influence. After conducting the additional research, the evaluator identified various paths of influence the Company has employed to support customers participating in the product. In response, the Company will focus on strengthening partnerships with participating trade partners to help identify potential new customers, while supporting existing customers on the identification of energy savings projects at their data centers. Additional efforts will focus on moving customers through the pipeline for the Data Center New Construction offering.

Changes in 2018
In August 2018, the Company posted a 60-Day Notice to add the following Computer Efficiency measures to the product:

- Virtual Desktop Infrastructure (VDI) for Zero and Thin Clients; and
- Titanium Rated Power Supply Servers with 400 Watts or greater

Energy Management Systems

The Energy Management Systems ("EMS") product encourages customers to install or upgrade automated building controls. The product covers new systems in an existing building, the replacement

of an obsolete system, and adding functionality or control points to an existing system. An EMS helps reduce a building's on- and off-peak energy usage through sensors and controls that are centrally operated. Through automation, the systems may control heating, cooling, or ventilation functions. The program includes lighting controls only when they are integrated with the control of other functions.

The EMS product also contains the Energy Information Systems ("EIS") offering. EIS helps customers implement facility-wide visualization and analysis of real-time energy data. It also provides formalized energy management coaching.

2018 Product Achievement
The product's electric achievement improved compared to the prior year. Expenses for administration and building-controls projects were in-line with achievement. The product also invested in EIS-related costs for participants' initial studies and EIS consulting, which will influence achievement in future years.

However, product did not achieve its electric or gas energy savings targets. Among the challenges to greater savings are:

- Based on Trade Partner feedback, they are focused on new construction, and are less focused on system retrofits. The feedback also suggests the cost for retrofits has increased relative to recent years.
- Several trade partners have shifted their focus from system implementation to ongoing performance contracting. Performance contractors are often reluctant to participate because the product requires custom calculation of results.
- Large portion of EMS retrofits are not cost-beneficial and are either not completed or are completed for non-energy related reasons. Traditional systems tend to save neither peak-coincident demand nor customers' billed demand, and are expensive relative to their energy savings.

In response to the challenges, the Company:

- Visited trade partner offices to improve understanding. The meetings provide training about functions that can yield peak-coincident savings. They also highlight the value the product can have to the performance contractors. In several cases, the meetings have corrected trade partner misconceptions about approval rates for projects.
- Invested in EIS consulting and designed EIS enhancements. Within the year, the Company enrolled eight new customers. For each, the EIS consultant is actively assisting with system installation and identifying savings opportunities.
- Encouraged trade partners and account representatives to target projects for duel-fuel (gas and electric) customers.
- Began evaluating whether additional technologies or control strategies can yield additional savings. The Company will also emphasize the technologies and control strategies that yield on-peak, high-value savings.

Heating Efficiency
The Heating Efficiency product provides rebates for retail natural gas business customers who purchase high-efficiency natural gas or dual-fuel commercial equipment for heating. The process load of the equipment must be less than 30 percent to qualify, (higher than 30 percent may qualify under the Custom Efficiency product). Product rebates are designed to promote, to qualifying customers, the installation of high-efficiency boilers, commercial water heaters, furnaces and electronically commutated

furnace fan motors ("ECM"), pipe insulation, unit heaters, boiler tune-ups, and boiler system auxiliary equipment that improves combustion and seasonal efficiency. The Company communicates with customers and trade partners via direct mail, direct customer outreach via account managers and energy efficiency specialists. Low-cost and cost-efficient tactics such as email, newsletters, social media, association meetings and trade shows are also used, as well as strategic partnerships with the Colorado Boiler Inspection Office, and the bi-annual Heating Advisory Board.

2018 Product Achievement
The product exceeded its natural gas participation and savings targets primarily through high efficiency water heaters and Boiler Tune-ups. While Boiler Tune-ups provided gas savings to the program, they proved to not be cost effective which pulled down the overall cost effectiveness of the gas program. Boiler Tune-ups will be a custom measure in 2019. The electric participation and savings achievement were below targets. EC fan motors provided significant energy savings in 2018, but will be discontinued at the end of 2019 as a result of code changes.

Changes in 2018
In May 2018, the Company posted 60-Day Notice to add Ozone Laundry as gas measure, and introduced a direct install measure for Pipe Insulation as part of a new outreach strategy to increase gas savings.

LED Street Lights

The Company's LED Street Lights product captures energy savings for local municipalities on the Street Lighting Service ("SL") Rate by replacing legacy Company-owned street lights with LED fixtures.

2018 Product Achievement
The Company did not achieve the forecasted 2018 target as participation and interest in the product declined especially in the third and fourth quarter where no units were retrofitted. In 2019, the Company will explore new ways to promote the product to interested communities.

Changes in 2018
None.

Lighting Efficiency

The Lighting Efficiency product offers rebates to customers who purchase and install qualifying energy-efficient lighting in existing or new construction buildings. Prescriptive rebates are offered to encourage customers to purchase energy-efficient lighting by lowering the up-front premium costs associated with this equipment. Custom lighting and advanced lighting control rebates are also available for energy-saving lighting solutions not currently available as prescriptive rebate measures, but require pre-approval prior to purchasing equipment and beginning a project.

2018 Product Achievement
The product exceeded its participation, savings, and spending targets due to strong performance in LED measures in the prescriptive and custom components of the product. The product's highest performing measures included LED tubes, area lights, troffers and LED lamps offered through the LED instant rebate offering. The Company continued to observe declining LED equipment costs making LEDs more affordable to customers and driving greater adoption of the technology. In response, the

Company continued to focus its efforts on right sizing rebates to align with declining costs as well as helping customers make the best and most cost-effective lighting upgrades for their business.

The LED Instant Rebate offering continues to be successful; however, the Company anticipates the Energy Independence and Security Act legislative backstop and lower demand for LED lamps in the future as a result of longer operating life of LEDs will present some new challenges for the product.

The Company also conducted an evaluation in 2018 which will reduce the NTG in future years. This will have an impact on the potential for the product to maintain high savings rates and cost effectiveness in the future.

Along with new challenges there are also new opportunities such as networked lighting controls, which is a new measure the Company launched in September of 2018. According to the 2017 study conducted by the Design Lighting Consortium, networked lighting controls can save on average 47 percent of lighting energy use in commercial buildings while providing additional opportunities, capabilities and benefits for customers. Additional market research suggests there is great potential for the measure particularly for metal manufacturing, food and beverage and merchant wholesale customers. In the fourth quarter the product completed four networked lighting controls trainings in conjunction with various manufacturer partners to provide contractors, distributors and specifiers with foundational training of networked lighting controls as well as hands-on experience with specific networked lighting control systems. The Company will continue its efforts to train and promote the networked lighting controls offering to customers and contractors in 2019.

In addition, market research also suggests that customers have only been retrofitting a portion of their facility focusing on the areas of highest need first. This will provide the opportunity for the Company to circle back with customers to explore additional lighting retrofits in other spaces of the facility.

Changes in 2018
In May 2018, the Company posted a 60-Day Notice to allow shelf stocking for lamps to simplify paperwork and improve the customer experience, reduce rebates for exterior lighting fixtures to align the rebate amounts with the benefits of the measures, reduce troffer rebates to match declining costs in the market, eliminated fluorescent fixture and lamp measures to influence the market to LED adoption, add a new networked lighting controls measure, and changed the structure and costs of existing stand-alone control rebates to align with the new networked lighting controls measure. The Company posted an additional 60-Day Notice in November 2018 to add rebates that convert existing T8 lighting to LED direct linear ambient fixtures to continue the momentum of the direct linear ambient with a T12 baseline from 2018.

Lighting – Small Business

The Lighting – Small Business product offers free lighting audits and free direct installation of lighting and non-lighting measures for customers under 100 kW demand, as well as recommendations for energy-saving measures, special services, and attractive rebates to business customers who purchase and install energy-efficient lighting equipment in existing facilities. The product is available to businesses with peak demand of up to 400 kW, and seeks to overcome barriers that often prevent small businesses from investing in energy-efficient lighting, including limited financial resources and time, low awareness of lighting equipment, and lack of access to quality contractors.

2018 Product Achievement
The product exceeded its electric participation, savings, and spending targets due to strong performance in LED measures in the prescriptive and custom components of the program. The product's highest performing measures included LED troffers, LED area lights, LED tubes, and LED lamps offered through the LED instant rebate program. The Company continues to observe declining LED equipment costs making LEDs more affordable to customers and driving greater adoption of the technology. In 2018 the product continued to focus its efforts on right sizing rebates to align with declining market costs as well as helping customers make the best and most cost-effective lighting upgrades for their business. The product did not meet the gas target for the year, despite an increase in participation at year-end.

The LED Instant Rebate offering also continues to be very successful, representing approximately 30percent of the product's overall achievement. The Company anticipates however that the Energy Independence and Security Act legislation will impact the product's achievement and demand for LED lamps will level off in the future as customers require fewer lamp replacements each year as a result of the longer operating life of LEDs.

The Company launched the new networked lighting controls measure in September of 2018. The product is partnering with a manufacturer that has a system that is ideal for small businesses, specifically office spaces, to promote the adoption of networked lighting controls in the smaller market. In addition, market research also suggests that customers have only been retrofitting a portion of their entire facility focusing on the areas of highest need first. This will provide the opportunity for the Company to circle back with customers to explore additional lighting retrofits in other spaces of the facility.

Beginning in 2019, the Small Business Lighting product will partner with the Energy Analysis product to provide customers with a comprehensive audit identifying energy savings opportunities from lighting to cooling to heating. Customers with a peak demand under 100kW are still eligible to receive free direct installation of lighting and non-lighting measures

Changes in 2018
In May 2018, the Company posted a 60-Day Notice to allow shelf stocking for lamps to simplify paperwork and improve the customer experience, reduce rebates for exterior lighting fixtures to align the rebate amounts with the benefits of the measures, reduce troffer rebates to match declining costs in the market, eliminated fluorescent fixture and lamp measures to influence the market to LED adoption, add a new networked lighting controls measure, and changed the structure and costs of existing stand-alone control rebates to align with the new networked lighting controls measure. The Company posted an additional 60-Day notice in November 2018 to add rebates that convert existing T8 lighting to LED direct linear ambient fixtures to continue the momentum of the direct linear ambient with a T12 baseline from 2018.

Motor and Drive Efficiency

The Motor & Drive Efficiency product is designed to encourage customers to purchase high-efficiency motors and variable frequency drives used on fans, pumps, and eligible industrial equipment. The Company offers prescriptive rebates to customers who install qualifying equipment, and custom rebates to those customers whose projects do not meet the prescriptive criteria.

2018 Product Achievement
The Motor and Drives Efficiency product did not achieve its savings target in 2018. The reasoning for this is because customers delayed project completions to 2019. In 2019, we plan to focus marketing and awareness efforts on those measures that are cost effective.

Changes in 2018
None.

Multifamily Buildings

The Multifamily Buildings product is designed to engage multifamily building owners in deploying DSM measures that will lower customers' energy consumption. The multifamily customer segment has historically been a difficult market to reach with traditional DSM products because building/equipment owners may not be the metered bill payer for individual units. The product first launched as a pilot in 2014 and was designed to encourage DSM participation by offering an energy assessment and direct-install improvements for individual units and common areas at no cost to the customer. The assessments are also used to identify larger prescriptive and custom efficiency opportunities for improvements to mechanical and lighting systems and for common areas.

The product engages customers in a three-stage process:

Stage 1. Energy assessment
Stage 2. Direct-install measures
Stage 3. Traditional energy efficiency improvements (comprehensive building upgrades, custom/prescriptive projects, etc.)

2018 Product Achievement
The Multifamily Buildings product overachieved the electric savings target but underachieved the gas savings target. Expenditures were in line with these achievements. The product achieved the direct install target and a large number of assessments were performed which should build a strong pipeline for 2019.

Changes in 2018
The Company is assessing the product model in an effort to promote participation in Stage 3.. The collaboration with the Fort Collins Utility continued in the fourth quarter and continued to be successful in allowing the Company to reach Multifamily buildings that may have been resistant to participating in the product previously.

New Construction

The New Construction product's mission is to help business customers prioritize energy efficiency when constructing new buildings. By providing whole-building energy analysis for larger buildings, as well as consultation and checklists of energy savings opportunities for smaller buildings, the Company is helping customers achieve their energy and sustainability goals.

The Energy Design Assistance ("EDA") component of the New Construction product was the primary offering to customers in 2018. Features include comprehensive energy consulting services in support of integrated design processes by providing; computer modeling of planned designs; funding to offset the

cost of design time associated with increased energy analyses; financial rebates to improve the cost-effectiveness of packages of energy-efficient measures; and field verification to ensure that the strategies are installed per the design intent.

The Energy Efficient Buildings ("EEB") component of the product is a combination of prescriptive measures and custom analyses that allows customers to package numerous measures in just one application. The EEB process provides preliminary rebate amounts per measure, giving the customer the tools to make early decisions to influence efficient equipment choices

2018 Product Achievement
The product exceeded its electric savings targets, but missed natural gas savings targets. Unlike the previous year, where construction delays affected projects across all building sizes, the over performance on the electric target and under performance on the gas target was due in part to delays of several large projects with high gas achievement, and the higher-than-average share of electric-only projects completed in the program year. The EDA offering remained the primary offering in terms of share of overall achievement.

Changes in 2018
The New Construction product posted a 60-day notice in the second quarter. The Notice increased the minimum square footage eligibility requirement for EDA from 20,000 square feet to 50,000 square feet; and EEB, from 5,000 square feet to 10,000 square feet. The purpose of this modification was to increase the cost effectiveness of the product, as these smaller projects incur comparable costs, yet have lower savings potential. By increasing minimum square footage, we can improve the cost effectiveness of the New Construction product without sacrificing customer rebate eligibility, as they can still be captured through the Company's prescriptive and custom offerings.

Process Efficiency

Process Efficiency targets energy-intensive processes at large facilities with a minimum annual usage of 2 GWh. The product identifies and influences improvements on large systems not being addressed by the Company's Custom Efficiency or prescriptive products. It also provides recommendations to improve business practices and drive continuous improvement in energy efficiency.

The Process Efficiency product is delivered in phases, providing customers with the resources necessary to drive conservation through the development and implementation of a holistic energy management plan.

- Phase 1 identifies energy saving opportunities through a high-level energy diagnostic session.
- Phase 2 further defines those energy saving opportunities identified in the previous phase and develops an actionable and prioritized energy management plan.
- In Phase 3, the Company works with the customer to implement energy saving opportunities included in the energy management plan. It also attempts to integrate energy efficiency into the organization's daily business practices.

2018 Product Achievement
The product met its energy savings targets, and nearly doubled its prior year savings. Reengagement with previous product participants was an important factor in this achievement. The product spending was within budget and peak coincident demand savings were better than expected.

Of note, the Company found that customers tended to rearrange their recommended opportunities to prioritize lighting projects. Completed lighting projects represented 70 percent of this year's savings, compared to less than 30 percent in most years. To encourage customers to implement non-lighting measures the Company continues to offer "re-studies" for past study participants that did not convert on original recommendations. The "re-studies" however, have not yielded a pipeline of new project recommendations.

To gain deeper savings, the Company has begun employing product enhancements for Phase 3 activities. The enhancements include more formalized and regularly scheduled follow-up sessions. Where possible, the study vendor has begun to leverage the customers' analytical systems in preparation for next year's SEM offer. Additionally, the Company is seeking and sharing best practices by increasing interaction with the Consortium for Energy Efficiency, the American Council for an Energy-Efficient Economy, and ESource.

Changes in 2018
None.

Recommissioning

The Recommissioning product is designed to assist electric and/or natural gas business customers to improve the efficiency of their existing building operations by identifying functional systems that can be "tuned up" to run as efficiently as possible through low- or no-cost improvements. Recommissioning consists of two main steps: (1) diagnosis (studies) and (2) implementation. Public Service offers rebates for recommissioning studies and for the implementation of recommissioning measures.

2018 Product Achievement
The product did not achieve its electric and natural gas energy savings target in 2018. Underachievement is due to the long term decline in the number of completed studies. As a result, customer implementation of identified energy savings measures has been minimal. In response to this trend, the Company focused on follow up with previous study participants to encourage implementation of identified recommendations. The Company will continue outreach to participating trade partners to identify customers that would benefit from participating in the product. Positively, the product did see a significant increase in customers participating in the Small Building Tune-Up offering compared to 2017 and the Company expects this trend to continue in 2019.

Changes in 2018
None.

Self-Direct

The Self-Direct product provides large commercial and industrial electric customers in Colorado the opportunity to control all stages of their energy saving projects' rebate application process. The product allows the customer to perform all of the required activities and incur all the costs for the identification, study, design, engineering, Measurement & Verification ("M&V"), and reporting work associated with energy savings projects. These steps are comparable to the Company's Custom Efficiency product but because the customer is responsible for the majority of the administrative and engineering activities, the customer is eligible to receive a higher rebate than is offered through the Custom Efficiency product.

The Company's role in this process is one of support through the project stages including verification of customer eligibility, pre-approval of proposed projects, development of the approved M&V plan, and verification of project completion prior to rebate processing.

The product is open to those customers who have an aggregated peak load of at least 2 MW in any single month and an aggregated annual energy consumption of at least 10 GWh.

2018 Product Achievement
The product did not achieve its electric savings target in 2018. The product forecast is based on pipeline forecast, but actual achievement is dependent on when customers are able to complete their projects. The Company met with engineering firms to identify potential new projects for the product pipeline and to discuss new technologies that can help customers better manage their energy and demand use.

Changes in 2018
None.

Residential Program

The Residential Program serves customers who live in single-family dwellings, apartments, or condominiums and receive electric and/or natural gas from Public Service. The Company focuses on cost-effective, direct-impact products. This effort is supplemented with educational services intended to further increase customer understanding and interest in conservation and energy efficiency.

Electric

In 2018, the Residential Program did not achieve its targeted electric energy savings. Electric expenditures were slightly below budget and the program was, overall, cost effective. Home Lighting and Recycling continued to be the primary contributor to the program by delivering the majority of the program's electric energy savings; however, the product fell short of its target. ENERGY STAR® New Homes, Energy Feedback Residential, High Efficiency Air Conditioning, Refrigerator Recycling, and School Education Kits all cost-effectively exceeded their product specific forecasts in 2018. A summary of the Company's Residential Program achievements for electric DSM products is shown in Table 15a below.

Table 15a: Residential Program – Electric DSM Products (Budget to Actual)

	Budgets / Targets				Expenditures / Achievements			
Residential Program - 2018	**Electric Budget**	**Net Gen. kW**	**Net Gen. kWh**	**Electric MTRC Test Ratio**	**Electric Expenditures**	**Net Gen. kW**	**Net Gen. kWh**	**Electric MTRC Test Ratio**
Energy Efficiency Showerhead	$ 55,570	80	991,735	11.13	$ 27,340	45	594,793	13.86
Energy Feedback Residential	$ 2,944,892	4,356	19,820,695	1.21	$ 3,098,673	5,715	20,797,392	1.29
ENERGY STAR New Homes	$ 1,008,992	1,078	3,593,510	1.58	$ 1,118,776	1,069	3,998,189	1.28
Evaporative Cooling	$ 2,969,333	5,166	3,444,940	2.94	$ 2,724,376	4,338	2,902,651	2.21
High Efficiency Air Conditioning	$ 4,417,131	4,247	3,976,854	1.09	$ 5,926,999	5,357	4,466,952	1.10
Home Energy Squad	$ 331,696	267	2,036,383	1.67	$ 553,166	217	1,622,598	0.89
Home Lighting & Recycling	$ 7,925,427	10,925	112,445,526	1.82	$ 4,424,936	8,886	91,487,553	3.18
Home Performance with ENERGY STAR	$ 286,478	538	776,425	1.20	$ 159,311	246	225,567	1.13
Insulation & Air Sealing	$ 195,707	441	449,623	1.27	$ 257,624	515	260,884	1.05
Refrigerator & Freezer Recycling	$ 1,276,056	566	4,954,115	1.67	$ 1,247,658	455	3,984,616	1.43
Residential Heating	$ 794,880	938	5,320,023	1.60	$ 901,835	1,068	5,886,571	1.58
School Education Kits	$ 1,403,066	498	5,672,969	1.19	$ 1,599,656	742	8,461,522	1.41
Thermostat Optimization	$ -	0	0	-	$ 27,185	173	130,558	1.68
Water Heating	$ 27,804	21	102,246	0.65	$ 20,059	17	114,513	1.19
Residential Program Total	**$ 23,637,032**	**29,121**	**163,585,046**	**1.66**	**$22,087,596**	**28,842**	**144,934,361**	**1.77**

Natural Gas

The Residential Program exceeded its natural gas savings target with strong results in the majority of products, including Residential Heating, and ENERGY STAR® New Homes. This overachievement impacted the budget as significant rebate payments resulted in overspending of the budget.

A summary of the Company's Residential Program achievements for natural gas DSM products is shown in Table 15b below.

Table 15b: Residential Program – Natural Gas DSM Products (Budget to Actual)

	Budgets / Targets					Expenditures / Achievements				
Residential Program - 2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio	Gas Expenditures	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Energy Efficiency Showerhead	$473,661	52,190	110,185	$6,311,701	10.42	$293,554	36,213	123,359	$4,368,265	12.28
Energy Feedback Residential	$484,764	64,550	133,157	$177,748	1.37	$449,735	86,503	192,343	$441,669	1.98
ENERGY STAR New Homes	$2,232,379	94,878	42,501	$2,180,723	1.42	$2,472,658	113,489	45,897	$2,476,446	1.40
Evaporative Cooling	$0	-				$0	-			
High Efficiency Air Conditioning	$0	-				$0	-			
Home Energy Squad	$351,408	13,423	38,197	$301,829	1.51	$308,988	5,871	18,999	$92,160	1.30
Home Lighting & Recycling	$0	-				$0	-			
Home Performance with ENERGY STAR	$560,434	26,853	47,915	-$292,182	0.86	$225,580	10,538	46,714	-$115,111	0.86
Insulation & Air Sealing	$385,385	20,687	53,678	-$32,346	0.98	$599,625	25,911	43,213	-$223,064	0.89
Refrigerator & Freezer Recycling	$0	-				$0	-			
Residential Heating	$540,988	47,981	88,692	$329,075	1.12	$2,921,542	93,194	31,899	$762,649	1.10
School Education Kits	$451,103	34,972	77,525	$4,082,228	7.45	$562,649	42,986	76,399	$5,075,240	7.82
Thermostat Optimization	$0	-	-	$0	-	$21,825	3,941	180,562	$46,867	1.41
Water Heating	$121,930	2,283	18,723	-$68,012	0.72	$123,809	5,793	46,791	-$89,076	0.82
Residential Program Total	**$5,602,053**	**357,816**	**63,872**	**$12,990,764**	**1.92**	**$7,979,965**	**424,438**	**53,188**	**$12,836,045**	**1.68**

Residential Products

The following provides a brief summary of the performance of each residential DSM product in 2018.

Energy Efficiency Showerhead

The Energy Efficiency Showerhead product has delivered reliable and cost-effective natural gas and electric savings to Public Service customers since 2009. Residential natural gas and combination natural gas and electric customers are eligible to receive a free kit—valued at $30—containing energy-efficient showerheads and aerators to help reduce their energy and water use costs. The product continues to prove to be a popular energy saving solution. The product not only provides energy savings, but also O&M savings that are equally beneficial to customers and the environment.

Recognizing that many customers have more than one shower and one bathroom sink in their home, participants are offered the choice of a one or two bathroom kit to retrofit their current configuration, which also includes a kitchen faucet aerator. Customers are provided with education and instructions for installing the units and later surveyed to determine the installation rates of each unit.

2018 Product Achievement

The product did not achieve its electric or gas savings targets. The Company has shifted the product to offer more customizable kits which has made digital marketing more difficult. Therefore, the Company has focused on direct mail marketing more than it has in previous years as well as non-traditional efforts like giveaways to drive participation.

Changes in 2018

None.

Energy Feedback Residential

The Energy Feedback Residential product provides targeted communication of energy-use comparisons and information called the Home Energy Report to residential customers, including specific recommendations and feedback intended to motivate and educate customers on how to reduce their energy consumption. Customers receive new information with each report that is delivered, by mail, email, or a combination of both. An online version, referred to as My Energy, provides similar

information along with supplemental energy-awareness and savings tools. Savings are determined by comparing the energy consumption of the participating "treatment group" (those receiving the reports) to a non-participating "control group." Realized energy savings increase gradually over time as behavior is impacted by treatment. Product savings are measured and reported to the Company each month by the third-party implementer.

2018 Product Achievement
Overall, the product exceeded its electric and natural gas savings targets. This achievement is primarily attributable to the cohort of customers added in 2015. Furthermore, participants continue to respond favorably to both the print and email versions of the Home Energy Report.

Changes in 2018
The Company conducted an RFP for third-party implementation of this product. Results are expected to be finalized and announced in 2019.

ENERGY STAR® New Homes

The ENERGY STAR® New Homes ("ESNH") product provides builders of single-family and small multifamily homes with an incentive to exceed local building codes and go beyond common construction practices. Homes must achieve at least a 10 percent improvement over their local jurisdiction's energy code in order to qualify. All homes are evaluated and rated by an independent third-party Home Energy Rating System ("HERS") rater. The Residential Energy Services Network accredited HERS raters consult with homebuilders during the construction process and ensures the energy-efficiency measures have been properly installed in the home. Homeowners benefit from lower energy bills, fewer maintenance concerns, higher resale value, and a more comfortable, quiet home.

2018 Product Achievement
The product exceeded electric and natural gas savings targets and spending was in line with overachievement. Lighting measures played a significant role in the overall product electric savings. A small majority of the qualifying homes were completed in jurisdictions with 2009 IECC as their adopted energy code; however, 2012/2015 IECC jurisdictions were a close second. The Company expects 2018 will bring a reversal of this trend, with 2012/2015 IECC being the predominate energy code for qualifying homes. This will likely drive lower therm savings on a per-home basis and lower product net benefits; however, the Company expects the product to remain cost-effective.

Changes in 2018
None.

Evaporative Cooling

The Evaporative Cooling product provides a rebate to Public Service's residential electric customers who purchase and install qualifying evaporative cooling equipment. For homes in dryer climates, such as Colorado, this equipment provides cooler, more comfortable air—like an air conditioner—but with significantly lower ongoing energy use costs. Upfront costs vary widely, depending on the type of cooler the customer chooses. About half of rebated units were purchased through retail stores. Customers can do their own installations or use any contractor to help with the installation of the equipment.

2018 Product Achievement
The product fell short of 2018 expectations in all areas. Two new technologies became obvious competitors. First, retailers stocked significantly more portable coolers which do not currently qualify for Company rebates. Also, retailers and contractors sold more mini-split air conditioners and mini-split heat pumps than in the past. These trends are expected to continue.

A formal product evaluation was completed in 2018. The Company plans to implement the recommended changes to rebate levels and net-to-gross, and grow participation in this product through new tactics. First, instant rebates will be offered at many retail locations; also some distributors, and their dealers (contractors), are planning to offer instant rebates as well. Second, retail store special events will help customers understand how evaporative cooling works. Also, advertising and marketing budget and tactics will be increased. The Company will explore the possibility of adding portable coolers as a rebate offering.

Changes in 2018
None.

High Efficiency Air Conditioning

The High Efficiency Air Conditioning product comprehensively addresses energy-efficiency opportunities related to central air conditioning (AC), air source heat pumps (ASHP), quality installations (QI), ductless mini-split heat pumps (MSHP), ground source heat pumps (GSHP), and the Western Cooling Control (WCC). One North American Technical Excellence ("NATE")-certified technician on staff at each participating trade partner is required for the measures for the project to qualify for an AC, ASHP, GSHP rebate; each trade partner must also pass a required class annually. The class is free and available online, and there is a test and minimum passing score requirement.

The AC/ASHP/QI product group is relatively complex for residential customers to understand because of industry terms such as SEER and EER and load calculations. Also there were eight different rebate levels available. Customers can benefit most when their new AC/ASHP equipment has a quality installation (QI) when it is installed. QI consists of right-sizing the new system, having sufficient air flow, having ventilation ducts sealed, and having the system refrigerant charged correctly. Most customers buy standard efficiency AC systems, and the QI results in significant energy savings, and costs little. Conversely, high efficiency AC/ASHP equipment costs more, and likely won't deliver promised energy savings unless QI is done.

Ground Source Heat Pumps (GSHP) rebates are rarely used. This has been true for several years. The tax incentive for this "renewable" technology was reinstated in 2018, and may help with future achievement. The energy savings are significant, but so is the upfront cost.

No customers used the rebate for the Western Cooling Control (WCC) device in 2018. This has been true since its inception as a rebate offering several years ago. The Western Cooling Control (WCC) device effectively increases the capacity of an AC or ASHP unit by capturing cooling energy left in the refrigerant within, as well as the water condensed on, the cooling coil after a cooling cycle has completed. Due to the fact that many newer cooling systems have built-in features that provide similar benefits to the WCC device, this measure is available only to customers with units installed in 2009 or

prior. Trade partners have not been interested in this rebate offering, and local distributors are not known to stock this device.

2018 Product Achievement
In 2018, the product exceeded its energy savings goals and its budget. Additional labor and other administrative costs stemmed from analyzing the product and preparing the 60-Day Notice.

Changes in 2018
A 60-Day Notice was posted in May, with an effective date of October 1, for the purpose of avoiding changes during the cooling season, because that could have significantly reduced customer and trade partner satisfaction. The 60-Day Notice simplified the AC/ASHP rebate structure to two levels, and eliminated the trade-in rebate. The revised rebate structure emphasizes QI, and makes this product significantly more cost effective. The trade incentive was left intact for the high efficiency measure, and it was doubled for the standard efficiency measure because of the increased customer benefits of having QI done. The product team proposed these changes in order to motivate contractors to make full use of the standard efficiency – with QI – measure through the increased trade incentive, as well as the increased customer rebate.

The mini-split heat pump (MSHP) rebate was first offered in March, 2017, and participation was slow to grow in 2017. In February, customer rebates were increased from $200 to $300 and some trade incentives were increased. 2018 participation was over three times higher than in 2017. A stakeholder focus group was held in the fall to discuss trends and possible future changes to the rebate offering; the conclusions were that incremental costs and cooling/heating use assumptions are accurate, and that it is too soon to make meaningful rebate offering changes at this time. This is a cost-effective cooling and heating technology and customer participation is highly desired.

Home Energy Squad

The Home Energy Squad product offers energy-efficiency installation services and discounted equipment costs to customers who seek to improve their homes' energy efficiency and comfort levels, and lower their utility bills. The product had a successful track record in other Xcel Energy service territories, and, therefore, was launched in Colorado in mid-2015.

For a small trip fee, the Home Energy Squad product installs a number of moderate-impact; low-cost measures for combination natural gas and electric customers, and electric-only customers, at no cost, and offers additional "a la carte" measures at a discounted cost. The product seeks to assist customers in overcoming barriers related to making energy efficiency improvements. Such barriers include confusion on which products are right for their home, product cost and payback, and finding qualified installers.

2018 Product Achievement
The Home Energy Squad product did not achieve its energy savings targets. The product remained under its natural gas budget but went over the electric budget. The electric overspend was due to higher-than-anticipated equipment and installation costs and high product administrative costs. The high equipment and installation costs were a result of more equipment being installed in customer homes than anticipated, and because of this the product also achieved higher energy savings per home than originally anticipated.

The product utilized a multi-channel marketing campaign to promote the product which included digital advertising, social media, radio, bill onserts, and email retargeting during the year. The product also partnered with the Partners in Energy program to promote Home Energy Squad at community events throughout the Company's service territory.

Changes in 2018
The Company made all LED bulb types complimentary to customers, eliminating "a la carte" LED bulbs.

Home Lighting & Recycling

The Home Lighting & Recycling product offers discounted prices, via upstream incentives to retailers and manufacturers, on LEDs as well as an environmentally-friendly way to dispose of spent CFLs. Energy-efficient light bulbs are an easy and low-cost way for customers to save energy and reduce their monthly electric bills. The Company has put more focus on LED bulbs to drive transformation in the marketplace and although the lighting market continues to mature, there is still room for consumers to replace inefficient bulbs with A-line and specialty LEDs.

The Home Lighting & Recycling product is widely promoted through a variety of marketing channels, including radio, TV, social media, print publications, bill inserts, and point-of-purchase displays. We continued to have opportunity to prominently feature discounted bulbs in high profile areas which increases the visibility of our program. The Company promotes the product at local events in the community such as fairs, energy workshops, earth day celebrations, and sporting events, such as partnering with the Colorado Rockies team.

2018 Product Achievement
The product underachieved its electric energy savings target and underspent the budget target. The primary reason the Company did not achieve the targeted savings in the Home Lighting & Recycling product is because the growth in LED sales was less than the Company expected when the plan was filed. The Company forecasted year-over-year growth of approximately 40 percent but achieved closer to 20 percent. The budget savings were attributed to the continued reduction in the price of LED bulbs and the cost of incentives. Significant achievements were made in growing LED sales to approximately 2.1 million units, which is an increase of 19 percent relative to 2017 results.

To encourage participation and increase customer awareness of efficient lighting options, we increased the number of community events that home lighting was featured at and we plan to continue having this presence at local events in the future. In-store retailer demos continue to be a source for consumer education and outreach where program field representatives work with consumers to provide education on bulb color, lumens and wattage equivalencies, helping customers find the right bulb for the right task and promoting ENERGY STAR products. The Company also targeted hard-to-reach populations through educational efforts and LED bulb giveaways in our low-income programs.

The product conducted a formal evaluation, which was completed in December 2018, to assess lighting industry changes, program attribution (net-to-gross) and underserved markets. The evaluation confirmed that there is still an opportunity for the Company to influence consumer lighting decisions, that there is still uncertainty around what the final results of EISA will be, and that we should lower the net-to-gross to 61 percent in 2019, but to reassess this value when the DOE or litigation determines how the backstop will be enacted. The Company continues to focus on promoting LED bulbs as much

possible while there is still an opportunity to influence customers. The NEMA lamp shipment indices confirm that there's still an opportunity to transform the market, as there is still a considerable amount of halogens being shipped to stores.

Changes in 2018
None.

Home Performance with ENERGY STAR®

Home Performance with ENERGY STAR® ("HPwES") is a comprehensive, whole-home retrofit product designed to give cash rebates to customers for implementation of measures identified during a Home Energy Audit. Air sealing, attic insulation, and energy-efficient lighting are three improvements that, if recommended through the audit, must be completed (at minimum) to receive a rebate.

Upon completion of the product improvements, a post-improvement verification inspection is conducted. The Company's third-party implementer is responsible for performing quality assurance on the in-home inspections, the home energy audit reports, and the audit itself. The implementer also provides customer support, contractor management, and oversight of the energy modeling software.

The Company promoted the program through consumer outreach (i.e., bundled mailings and utility bill onserts), community program partnerships and HVAC trade education and promotion.

2018 Product Achievement
HPwES underachieved its electric and natural gas savings targets in 2018 and came in under budget. The Company worked with the implementer to research potential program barriers to identify the cause(s) of low participation. The Company will continue to evaluate product structure and rebates in 2019.

Changes in 2018
The Company made changes to the product by adding supplemental upgrades to the top three required improvements. These supplemental upgrades included water saving showerheads and aerators or a Home Energy Squad visit. Instant rebates for the LED bulbs and water savings measures were highlighted within the product in an effort to promote these new upgrades. The Company also aligned the product with the introduction of the Home Energy Squad Plus promotion which is a Home Energy Squad visit with the addition of a Home Energy Audit. Completion of a Home Energy Squad Plus visit now satisfies the audit requirement of the HPwES product along with one of the required home improvements for participation. This alignment may reduce product barriers by making it easier for customers to complete the eligibility requirements.

Insulation & Air Sealing

The Insulation & Air Sealing product offers prescriptive rebates in order to increase the energy efficiency in single-family homes and one-to-four unit residential properties. This product is available to combination electric and natural gas service customers, natural gas service residential customers, or electric service customers who heat their homes with electrically-powered baseboard heat. To qualify for the rebate, customers must have the insulation professionally installed by a contractor with a Building Performance Institute certification, and must make air sealing improvements first, unless the house does not require additional air sealing improvements.

2018 Product Achievement
The Insulation product exceeded its natural gas targets; and spend was in alignment with the overachievement. The product overachieved the demand reduction savings target but did not achieve the target in energy savings. The product offered bonus rebates during the first quarter and was promoted through the heating bundle in the fourth quarter.

Changes in 2018
None.

Refrigerator & Freezer Recycling

The Refrigerator & Freezer Recycling product is designed to decrease the number of inefficient freezers and refrigerators in the Company's service territory in an environmentally safe and compliant manner and, by doing so, achieve electric energy savings and peak demand reduction. Customers receive an incentive plus free pickup and disposal of their operable, inefficient freezers and refrigerators. A third-party implementer administers the product, including customer scheduling, pickup, recycling, and rebating. This product is primarily marketed through bill onserts, direct mail, print, radio advertisements, and online/social media efforts.

2018 Product Achievement
The product experienced a strong increase in participation over 2017 but did not achieve its electric savings targets due to lower-than-expected savings per unit. Product expenditures were under budget due to the efficient use of its marketing budget. The secondary refrigerator removal component of the product continues to be the majority of units recycled.

Changes in 2018
A 60-day notice was posted late in the year to enable the product to claim electric savings for recycling operable, inefficient room air conditioners. This new measure will improve the customer experience, provide additional services and value for customers, and will provide additional opportunities for cost-beneficial electric savings.

Residential Heating

The Residential Heating product provides rebates to the Company's customers who purchase high-efficiency heating equipment for residential use. Customers benefit because a high-efficiency furnace and/or an electronically commutated ("EC") motor uses less energy and lowers monthly bills over the life of the equipment. The rebates lower the purchase price of the high-efficiency equipment and improve the project's payback. The EC Motor rebate is available when paired with a non-qualifying new furnace, as well as with a qualifying new furnace. Further, the rebate is also available when an EC Motor is retrofitted into an existing furnace.

One North American Technical Excellence ("NATE") certified technician, with certification in Gas Heating, is required for each participating trade partner.

2018 Product Achievement
The product over achieved both its natural gas and electric forecasts in participation, energy savings, and budgets. All achievement categories were proportionate to each other, except for the natural gas spend. One reason for the deviation in spending was a significant "bonus" rebate on 95 percent efficient

furnaces was offered in late 2017, and continued for the first three months of 2018. Participation in the bonus rebate offering was far greater than anticipated. Additionally, overall participation in the furnace rebate was much higher than in previous years for the same periods. While EC Motors are very popular with new equipment installations, very few "retrofit EC Motor" rebate applications were received.

Changes in 2018
A bonus rebate of $450 was offered on 95 percent+ AFUE furnaces from January through March, 2018, in addition to the standard rebate of $300. This generated twice as much participation as in the same time period the previous year.

A product evaluation was conducted in 2017 and concluded in early 2018. This resulted in a net-to-gross increase for natural gas furnaces from .77 to .86 for all of 2018 and beyond. Trade partner and customer satisfaction were rated highly, and the rebate product was credited with making a difference in the customers' decision to buy a high-efficiency solution in most instances.

School Education Kits

The School Education Kits product combines a set of classroom and in-home activities with projects that enable students and parents to install energy efficiency measures in their homes. The product is targeted to fifth and sixth grade students in the Company's electric and natural gas combined service territory. A third-party implementer fully administers the product, including recruiting and training teachers, providing all materials, and tracking participation and installation rates among the students.

2018 Product Achievement
The product exceeded both its electric and natural gas savings targets. Over 1,000 students in natural gas-only service territory were enrolled in an effort to increase gas savings. The success of the product can be attributed to continuous participation from teachers and follow-up communications to emphasize the importance of installing the provided measures. Installation rates remained high in 2018 due to the popularity of LED bulbs and accounting for customers planning to install measures in the near future. Previously, these customers were counted as not installing their measures.

Changes in 2018
None.

Thermostat Optimization

The Thermostat Optimization product is designed to provide residential customers year-round savings through the use of smart thermostat technology. The product incentivizes residential customers to purchase and install smart thermostats that have earned the ENERGY STAR® Connected Thermostat certification, resulting in year-round electric and natural gas savings. This product is available to combination electric and natural gas service customers, natural gas service residential customers who have central gas heating or electric service customers who have central air conditioning.

2018 Product Achievement
In addition to the pilot, the Company introduced a prescriptive rebate in October on the Xcel Energy Store. The initial forecast was based on anticipated demand during Black Friday/Cyber Monday sales that would carry through the holiday shopping season. While the product did not meet its 2018 targets

due to an over estimate of how strong these sales would be, it is anticipated that prescriptive rebates for thermostats will be added to other Residential energy efficiency products in the future.

Changes in 2018
The Company posted a 60-Day Notice in October, to include a product offering prescriptive rebates for qualifying ENERGY STAR® smart thermostats.

Water Heating

The Water Heating product leverages incentives to encourage residential customers to purchase energy-efficient water heating equipment. Rebates are available for natural gas storage tank and tankless water heaters and electric heat pump water heaters. Participating customers reduce their natural gas and electricity usage and long-term operating costs.

2018 Product Achievement
The product overachieved its natural gas savings and met its electric savings targets while keeping spend in alignment with the budget. This is due to higher participation in tankless water heaters which have higher net therm savings than storage tank water heaters. The Company focused on market research in an effort to increase participation in electric heat pump water heaters in 2019 and beyond.

Changes in 2018
Due to the adoption of the Uniform Energy Factor (UEF)in 2018, the Company updated the rebates and qualifying measures through a 60-Day Notice. Instant rebates on qualifying water heaters were introduced at select retailers as a pilot and may be expanded in 2019.

Low-Income Program

The Low-Income Program consists of the Energy Savings Kit, Multifamily Weatherization, Non-Profit and Single-Family Weatherization products. These products analyze natural gas and electric consumption for low-income customers and provide them with products, services, and education designed to assist in lowering their energy bills.

Electric

In 2018, the Low-Income Program exceeded all of its targets. Energy savings and cost-effectiveness were greater than forecast while the budget was less than forecast. All products were more cost-effective than originally forecast.

A summary of the Company's Low-Income Program achievements for electric DSM products is shown in Table 16a below.

Table 16a: Low-Income Program – Electric DSM Products (Budget to Actual)

	Budgets / Targets				Expenditures / Achievements			
Low-Income Program - 2018	Electric Budget	Net Gen. kW	Net Gen. kWh	Electric MTRC Test Ratio	Electric Expenditures	Net Gen. kW	Net Gen. kWh	Electric MTRC Test Ratio
Energy Savings Kit	$326,222	80	908,428	1.01	$158,949	74	842,299	2.00
Multifamily Weatherization	$1,156,816	266	1,900,602	0.71	$1,193,543	304	2,236,422	1.01
Non-Profit	$1,107,475	304	1,493,941	0.95	$1,159,033	336	1,610,095	1.00
Single-Family Weatherization	$1,222,574	102	1,241,188	0.68	$1,267,510	103	1,310,216	0.70
Low-Income Program Total	**$3,813,087**	**751**	**5,544,159**	**0.79**	**$3,779,035**	**817**	**5,999,032**	**0.94**

Natural Gas

In 2018, the Low-Income Program met natural gas savings targets with strong achievement from the Multifamily Weatherization product. Expenditures were above budget, primarily driven by rebates to participants. A summary of the Company's Low-Income Program achievements for natural gas DSM products is shown in Table 16b below.

Table 16b: Low-Income Program – Natural Gas DSM Products (Budget to Actual)

	Budgets / Targets					Expenditures / Achievements				
Low-Income Program - 2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio	Gas Expenditures	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Energy Savings Kit	$117,642	8,005	68,044	$974,022	7.12	$58,467	5,531	94,608	$689,729	10.10
Multifamily Weatherization	$592,539	10,835	18,286	-$215,050	0.83	$1,113,148	13,485	12,114	-$482,597	0.77
Non-Profit	$293,986	3,821	12,996	-$94,777	0.82	$299,450	3,839	12,821	-$219,162	0.66
Single-Family Weatherization	$2,358,186	48,620	20,617	$1,275,891	1.30	$2,358,751	48,238	20,451	$916,697	1.21
Low-Income Program Total	**$3,362,353**	**71,280**	**21,200**	**$1,940,086**	**1.31**	**$3,829,816**	**71,093**	**18,563**	**$904,666**	**1.13**

Low-Income Products

The following provides a brief summary of the performance of each low-income product in 2018.

Energy Savings Kit

The Energy Savings Kit product provides income-qualifying customers with a bundle of home energy efficiency measures and educational materials. Customers prove income eligibility by applying for Federal Low-Income Housing Energy Assistance Program funding. In 2018, the kits included the following measures:

- 1.0 gallon per minute ("gpm") bathroom faucet aerator
- 1.5 gpm kitchen faucet aerator
- 1.5 gpm high-efficiency showerhead
- Eight LED bulbs

2018 Product Achievement
The product's main challenge continues to be participation, largely due to the fact that the number of customers applying for energy assistance has slightly decreased, and once a customer orders a kit they are disqualified from ordering another for 10 years. Additionally, email has been a successful marketing tactic for the product in previous years; however, in 2018 the email marketing experienced technical complications related to the third party website. The Company worked with third party implementer to resolve issues after the first marketing campaign, however the issue persisted. Plans for 2019 are to utilize the Company's website, instead of the third party vendor. A continued focus in 2018 was improving installation rates, efforts include an improved process that allows the third party M&V partner to contact the customer immediately after receiving the kit, when the customer is more likely to remember what was installed. While this method proved successful to increase installation rates, due to low participation the product did not meet the electric or natural gas savings targets. In line with savings targets, the product stayed under budget.

Changes in 2018
None.

Multifamily Weatherization

The Multifamily Weatherization product provides funding for a wide variety of natural gas and electric equipment retrofits, process improvements, facility audits and studies for low-income multifamily buildings. These buildings have common areas, greater square footage, more appliances and more potential retrofit measures than single-family homes.

The Company's rebates supplement leveraged funding secured by implementer Energy Outreach Colorado ("EOC") to produce incremental, natural gas and electric savings. Each submitted project is evaluated using a custom analysis by the Company's energy efficiency engineers to determine cost-effectiveness. In some cases, prescriptive rebates are offered for retrofit measures when the equipment would otherwise be ineligible for inclusion in the custom project bundle, to offer greater flexibility.

In addition to these measures, the Company, in partnership with EOC kicked off an "Energy in Action" workshop series that aims to educate tenants on ways they can reduce their energy use. The workshop was held once a month in the common area of a multifamily property, each month featured a different theme and technology related to easy energy saving habits. While no behavioral savings are captured, this interaction increases customer satisfaction with the upgrades installed through the program.

The partnership with EOC allows the Company to reach more customers and increase the impact these programs have on the community. EOC leverages additional funding sources to decrease property owner contribution, which these organizations typically do not have in their budget, thus increasing the impact and participation in the program. American Council for an Energy Efficient Economy (ACEEE) selected low income products as Exemplary Programs in a national review – an award for outstanding innovation and implementation delivery.

2018 Product Achievement
The product exceeded its electric and natural gas savings targets, with project completion driven by the third-party implementer, EOC. The electric demand reduction target was achieved as large multifamily facilities continued to upgrade common-area and in-unit lighting, and cooling. Electric expenditures were on budget while natural gas expenditures exceeded the budget in line with over achievement.

Changes in 2018
None.

Non-Profit

The Non-Profit product provides funding for a wide variety of energy-efficient equipment and process improvements for qualified non-profit organizations within the Company's service territory. The product's focus is helping organizations that serve low-income individuals, such as shelters, safe houses, and residential treatment centers.

The Company's rebates supplement grants provided by EOC and other funding to produce incremental, cost-effective natural gas and electric savings for qualified non-profit facilities. Each submitted project is evaluated using a custom analysis by the Company's energy efficiency engineers to determine cost-effectiveness. In some cases, prescriptive rebates are offered for retrofit measures when the equipment would otherwise be ineligible for inclusion in the custom project bundle, to offer greater flexibility.

In addition to these measures, The Company in partnership with EOC implemented an "Energy in Action" plan with 12 of the non-profit organizations that participated in the program. The plan provides nonprofit staff with education on how to further reduce energy usage by making easy changes, and opens the door for continued engagement. While no behavioral savings are captured, customer satisfaction with the program has increased.

The partnership with EOC allows the Company to reach more customers and increase the impact these programs have on the community. EOC leverages additional funding sources to decrease property owner contribution, allowing these organizations to put more of their budget back into serving the low income community, thus increasing the impact and participation in the program. American Council for an Energy Efficient Economy (ACEEE) selected low income products as Exemplary Programs in a national review – an award for outstanding innovation and implementation delivery.

2018 Product Achievement
The product exceeded its electric savings and met natural gas savings targets, with project completion driven by the third-party implementer, EOC. Electric expenditures exceeded the budget in line with the additional savings. Finding cost-effective natural gas measures is becoming a bigger challenge, as most of the organizations need large capital upgrades, such as boilers, that typically have very high incremental costs.

Changes in 2018
None.

Single-Family Weatherization

The Single-Family Weatherization product offers natural gas and electric efficiency measures to low-income, single-family households in the Public Service electric and natural gas service territory. Depending on the needs of the home, eligible customers will receive the improvements that are recommended. In addition to these measures, a major focus of the product is customer education on ways to reduce energy use in the home.

The product is implemented in partnership with EOC, and helps to supplement the federally funded Weatherization Assistance Programs, as well as the Colorado Residential Affordable Energy (CARE) program. CARE accepts customers that are 80percent of Area Median Income (AMI), which is important in the state of Colorado due to the rising cost of living.

The partnership with EOC allows the Company to reach more customers and increase the impact these programs have on the community. American Council for an Energy Efficient Economy (ACEEE) selected low income products as Exemplary Programs in a national review – an award for outstanding innovation and implementation delivery.

2018 Product Achievement
The product met its energy savings and budget targets. Typically measures installed through weatherization programs are envelope measures associated with gas savings, and finding electric saving opportunities is getting increasingly difficult. The Company is working with EOC to identify customers that have electric heat to address this challenge. The Company also supported implementer efforts for behavior change and was able to claim savings on measures directly installed through this program.

Changes in 2018
In 2018, the efficiency rating of water heaters changed from Energy Factor to Uniform Energy Factor. The product updated technical assumptions based on the new standards.

Indirect Program

The Indirect Program includes products and services that support the overall development and implementation of the DSM Plan. Most of these products and services do not directly produce energy or demand savings and are not independently evaluated for cost-effectiveness. However, DSM pilots that are being evaluated to become direct impact products and have measured savings do go through a cost-effectiveness evaluation. The costs of the entire indirect program are included in the overall portfolio cost-effectiveness evaluation. The Indirect Program has two core elements: Education/Market Transformation and Planning and Research.

Within Education/Market Transformation, the Company offered six customer-facing products in 2018, including: Business Education, Business Energy Analysis, Consumer Education, Energy Benchmarking, Energy Efficiency Financing, and Home Energy Audit. These products did not deliver measured savings in 2018 and, therefore, were not evaluated for cost-effectiveness. However, these services do encourage participation in other direct-impact DSM products.

Within Planning and Research, the Company continued five internal services: DSM Planning and Administration, Program Evaluations, Market Research, M&V, and Product Development. In 2018, the Company operated two direct DSM pilots: ENERGY STAR® Retail Products Platform Pilot and Building Optimization EE & DR Pilot. It also conducted a Smart Thermostat Optimization pilot intended to further research into improving the effectiveness of smart thermostat products.

Electric

A summary of the Company's indirect program achievements for electric DSM products and services is shown in Table 17a below.

Table 17a: Indirect Program – Electric DSM Products (Budget to Actual)

	Budgets / Targets				Expenditures / Achievements			
Indirect Products & Services - 2018	**Electric Budget**	**Net Gen. kW**	**Net Gen. kWh**	**Electric MTRC Test Ratio**	**Electric Expenditures**	**Net Gen. kW**	**Net Gen. kWh**	**Electric MTRC Test Ratio**
Education/Market Transformation								
Business Education	$176,739				$171,775			
Business Energy Analysis	$620,966				$360,237			
Consumer Education	$899,908				$854,160			
Energy Benchmarking	$89,000				$64,927			
Energy Efficiency Financing	$56,365				$55,224			
Home Energy Audit	$417,765				$342,159			
Education/Market Transformation Total	**$2,260,743**				**$1,848,482**			
Planning and Research								
DSM Planning & Administration	$556,545				$567,085			
Program Evaluations	$541,444				$534,559			
Market Research	$372,595				$255,508			
Measurement & Verification	$10,953				$9,848			
Product Development	$2,559,750				$1,244,872			
Energy Star Retail Products Platform Pilot	$1,092,064	848	2,866,581	0.66	$1,268,597	1,075	3,015,823	0.77
Thermostat Optimization	$0	-	-	-	$0	-	-	-
Product Development Total	$3,651,814	848	2,866,581	0.48	$2,513,469	1,075	3,015,823	0.52
Planning and Research Total	$5,133,351	848	2,866,581	0.39	$3,880,470	1,075	3,015,823	0.38
Indirect Products & Services Total	**$7,394,094**	**848**	**2,866,581**	**0.36**	**$5,728,952**	**1,075**	**3,015,823**	**0.30**

Natural Gas

A summary of the Company's indirect program achievements for natural gas DSM products and services is shown in Table 17b below.

Table 17b: Indirect Program – Natural Gas DSM Products (Budget to Actual)

	Budgets / Targets					Expenditures / Achievements				
Indirect Products & Services - 2018	Gas Budget	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio	Gas Expenditures	Net Annual Dth Savings	Annual Dth/$M	Gas MTRC Test Net Benefits	Gas MTRC Test Ratio
Education/Market Transformation										
Business Education	$19,638					$16,013			$0	
Business Energy Analysis	$65,548					$40,784			$0	
Consumer Education	$133,323					$113,238			$0	
Energy Benchmarking	$31,000					$21,232			$0	
Energy Efficiency Financing	$60,000					$45,325			$0	
Home Energy Audit	$544,637					$452,868			$0	
Education/Market Transformation Total	**$854,146**					$689,461			$0	
Planning and Research										
DSM Planning & Administration	$61,895					$121,206			$0	-
Program Evaluations	$143,864					$133,149			$0	-
Market Research	$108,380					$101,912			$0	-
Measurement & Verification	$1,217					$1,055			$0	-
Product Development	$145,061					$114,169			$0	-
Energy Star Retail Products Platform Pilot	$29,174	359	12,309	-$152,760	0.22	-$1,031	0	0	$0	-
Thermostat Optimization	$0	0	0	$0	-	$0	0	0	$0	-
Product Development Total	$174,235	359	2,061	-$152,760	0.13	**$113,138**	**0**	**1,102**	**$0.00**	**0.03**
Planning and Research Total	$489,591	359	733	-$152,760	0.06	**$470,460**	**0**	**381**	**$0.00**	**0.01**
Indirect Products & Services Total	$1,343,737	**359**	**267**	**-$152,760**	**0.21**	**$1,159,921**	**0**	**160**	**$0.00**	**0.23**

The Indirect Program budget consists primarily of labor, educational materials, and study costs. Most studies are conducted by outside experts, generally selected through a competitive bid.

Education / Market Transformation Products

The following provides a brief summary of the performance of each education / market transformation product in 2018.

Business Education

The Business Education product creates awareness of energy conservation by providing business customers with information and resources to reduce their business' energy use. The Company provides customers with opportunities to actively engage in energy efficiency through offering program information at event sponsorships and other onsite outreach, customer feedback surveys, and social media channels such as Facebook and Twitter. The Company also uses traditional outreach channels like seasonal print and bill inserts as an integral part of the overall education and outreach strategy.

2018 Product Achievement

The Company exceeded the electric and natural gas participation targets for this program while staying on budget achieving approximately 102 percent of the year-end participation target. The Company conducted 23 community-based events, attended by approximately 14,618 people that generated 527 customer leads at a cost of $71,234. Continued long-term partnerships with community-based organizations contributed to increased participation without additional expenditures. Community partners offered additional outreach opportunities as a result of mutually beneficial, longstanding relationships. The Company's DSM efforts have realized better newsletter readership and positive

results from digital tracking and social media reporting, which have supported increased participation. The combination of these initiatives continues to support DSM achievements.

Business Energy Analysis

Business Energy Analysis is an indirect impact product that offers analysis services to identify energy saving opportunities for Colorado business customers. The product includes three different types of assessments: (1) online assessments, (2) on-site audits, and (3) engineering assistance studies. The reports in all three assessments provide varying levels of detailed information about cost and paybacks, which support the business case for the customer to make energy-efficiency upgrades.

2018 Product Achievement
While the product did not meet its target of 300 electric participants, the offering did identify over 20 GWh of energy conservation opportunities. Marketing efforts included multiple direct mail and e-mail campaigns including a promotional on-site energy audit price of only $99 for a spring promotion during the 2018 Energy Efficiency Expo as well as another $99 summer promotion to keep momentum following the benchmarking deadline in June. This consequently booked out the product for the remainder of the year, with some audits overflowing into 2019, helping create a strong pipeline for the start of the year. These promotions contributed to over 50 percent of the leads brought in for the offering. Electric and natural gas expenditures were less than the filed budget.

Consumer Education

The Consumer Education product creates awareness of energy conservation by providing residential customers with information and resources to reduce their homes' energy use. The Company provides customers with opportunities to actively engage in energy efficiency through offering product registration at community outreach events, customer feedback surveys, follow-up emails, digital kiosks, and social media channels such as Facebook and Twitter. The Company also uses traditional outreach channels like seasonal print and bill inserts as an integral part of the overall education and outreach strategy.

2018 Product Achievement
The Company exceeded the electric and natural gas participation targets for this product while staying within the approved budgets achieving approximately 168 percent of the year-end participation target. The Company conducted 110 community-based events, attended by approximately 1.46 million people that generated 5,287 customer leads and 394 signups at a cost of $562,835 While the product followed tactics outlined in the Plan, factors that contributed to increased participation without additional expenditure included: value-added outreach from continued long-term partnerships with community-based organizations, and increased tracking and reporting from those partnerships. Community-based partners continued to offer additional outreach opportunities at no charge as a result of mutually beneficial, longstanding relationships. The Company has also worked with its community relations and internal partners to deliver better newsletter readership and social media reporting, which have also resulted in increased DSM participation. The combination of these initiatives continues to drive participation in DSM products.

Energy Efficiency Financing

Energy Efficiency Financing is an indirect impact product, connecting residential and business customers with third-party lending institutions to encourage the use of financing, where needed, for implementation of DSM projects. The Company has established formal alliances with several financial institutions and local programs that provide customers with easy access to the funds they need to be able to improve energy performance. All loans are made directly from third-party lenders—"allies"—to customers.

2018 Product Achievement
The target of 25 business loans and 275 residential loans was not reached. A new online commercial finance portal will help facilitate loans for business customers, while a new third-party ally began helping the Company reach residential customers across its service territory. These efforts will help to increase participation. The Company will continue to strategically promote the product through its trade partner network and trainings, business and residential marketing communications, sponsorships, and events.

Home Energy Audit

The Home Energy Audit product provides rebates to the Company's natural gas and/or electric customers who receive an in-home energy audit. Considered a gateway to other residential products, Home Energy Audit is designed to encourage customers to understand their home's energy usage which can lead to improvements in energy savings in residential homes. An Energy Advising component has been incorporated as a value-added service to customers who are unsure of which next steps to take to achieve their energy goals. There are three types of in-home audit rebates offered through this product that can earn the customer a rebate: (1) standard audit; (2) standard audit with blower door test; or (3) infrared audit which includes the standard audit and the blower door test.

Throughout the year, the Company promoted the Home Energy Audit product through marketing efforts such as bill onserts, digital ads, and bundling with other products such as Home Energy Squad and Insulation.

2018 Product Achievement
The Home Energy Audit product did not achieve its participation targets for the year. The Company began offering audits in combination with a Home Energy Squad visit in an effort to increase participation and lead customers to take additional action. Early feedback from customers has been very positive, and the Company will continue to develop these combined visits in order to improve the customer experience and encourage participation in other DSM products.

Energy Benchmarking

The Benchmarking service is a free data aggregation and upload program provided to the Company's electric and natural gas customers seeking to track whole building data. The service allows building owners to receive monthly whole-building energy consumption data for their buildings without violating customer privacy. Once the service is implemented, it continues to upload data automatically to the Environmental Protection Agency's online tool; Energy Star Portfolio Manager.

The program is marketed to larger building customers with multiple premises on their property. It primarily targets customers in those cities with a benchmarking ordinance who are required to report whole building energy consumption data to the Cities.

2018 Product Achievement
Participation and spending is in line with expectations. The cities of Denver and Boulder have expanded their benchmarking ordinances on schedule. In 2018, Fort Collins also passed a benchmarking ordinance to be phased in over five years. Between these cities plus some voluntary participation, the benchmarked building count has grown well beyond original projections.

Planning & Research Products

The following provides a brief summary of the performance of each planning and research product in 2018.

DSM Planning & Administration

DSM Planning & Administration is an indirect product with internal staff that manages all energy efficiency-related filings, including the annual DSM Status Report, DSM Plans and Notices, and Strategic Issues proceedings. This group performs cost-benefit analyses of all the energy efficiency and demand response products, provides tracking of the energy and demand savings, and collaborates with the Company's Resource Planning group to develop inputs for the resource plans. DSM Planning & Administration conducts all planning and implementation of the quarterly DSM Roundtable Meetings and associated filings; and provides management oversight of all evaluation, measurement and verification planning and policies. These staff members work with outside consultants and stakeholders as needed throughout the year. These functions are necessary to ensure a cohesive and high-quality DSM portfolio that meets all legal requirements as well as the expectations of internal and external customers and the Colorado PUC.

2018 Product Achievement
In 2018, the Company's exceeded its electric and gas budget forecasts. This was due to the 2017 Strategic Issues proceeding which was resolved in August and the development of the 2019/2020 DSM Plan that was filed in August.

DSM Market Research

The Company conducts surveys and studies throughout the year to gauge energy awareness and customer interest around DSM. Internal market research functions are needed to provide overall support for clarifying DSM issues and thoroughly understanding current and potential DSM customers. In 2018, the Company conducted the following general research and analytical services:

- Residential and Business Media Effectiveness Tracking
- Dun & Bradstreet Business list refresh for Salesforce market segmentation
- CAMEO Residential list for Salesforce market segmentation
- E Source Consultative Services
- DSM decision-making research
- On-site lighting saturation research

Market research is used internally by the Company as a resource for planning marketing activities and initiating efforts to reduce the number of non-participants.

2018 Product Achievement
The Market Research expenditures were under budget for both electric and natural gas expenditures.

Program Evaluations

The Company procures third-party comprehensive evaluations, including impact and/or process evaluations, of products in the DSM Portfolio. The evaluations identify product strengths as well as opportunities for improvement and enable comparison with industry best practices. In 2018, a process-only evaluation was conducted for Custom Efficiency. In addition, Home Lighting and Recycling, Lighting Efficiency, and School Education Kits were subject to impact and process evaluations. Finally, the Date Center Efficiency evaluation that was initiated in 2017 was completed in 2018.

High-level outcomes from these evaluations include:

- *Custom Efficiency (Business):* Customers are generally satisfied with Custom Efficiency though opportunities to adjust internal processes and trade partner communications exist. Past participants in other products were identified as primary candidates for energy efficiency because some barriers to Custom Efficiency participation are reduced by familiarity with energy efficiency in general.
- *Home Lighting and Recycling (Residential)*: The evaluation of Home Lighting and Recycling evaluation updated the product net-to-gross ratio and highlighted potential paths to helping hard-to-reach customers install higher efficiency lighting in their homes.
- *Data Center Efficiency (Business):* The follow-up research conducted in 2018 identified customer journey "paths" through the program and found that evidence exists for non-study technical assistance by the Company that can justify separating customer influence according to level of interaction with the Company over time.
- *Lighting Efficiency (Business):* The evaluation updated the net-to-gross ratio for 2019 only and, based on a wide range of estimates of future adoption of efficient lighting, suggested follow-up research that would better capture the pace of shifts in the commercial market. The program evaluation was also reviewed and effects of changes to eligibility criteria regarding Design Lights Consortium qualified products were examined.
- *School Education Kits (Residential):* The most significant take-away from the School Education Kits evaluation was that the energy savings from spillover measures is equal to, if not greater than, the free-ridership of kit measures. The evaluation also found that the installation rate of water measures should be adjusted based on the in-service rate reported by customers in phone interviews.

Evaluation reports are found on the Company's website, here: http://www.xcelenergy.com/Company/Rates_&_Regulations/Filings/Colorado_Demand-Side_Management

2018 Product Achievement
Program Evaluations ended the year under budget.

Measurement and Verification

Measurement and verification activities ensure that all direct electric and natural gas DSM savings are properly calculated in the system of record (Salesforce) and accurately reported for compliance purposes, on a quarterly and annual basis. This M&V ensures that technical assumptions, net-to-gross ("NTG") ratios, and realization rates used in energy savings calculations are as accurate as possible. The expenditures associated with M&V, as reported in the Executive Summary of this report, include only the internal labor to manage the overall M&V process. M&V expenses from third-party verification contractors are charged directly to individual products supported.

The intensity of third-party M&V methods is balanced with the costs of the M&V approaches, being mindful of the objectives to ensure accurate savings while keeping expenditures prudent and maintaining the cost-effectiveness of the products. Product savings are validated through a multi-step process designed to ensure that rebates are correctly processed, rebated measures were installed, and equipment is performing as intended. The M&V activities also provide opportunities to evaluate customer satisfaction and identify strategies for improving product delivery and effectiveness. Results of M&V analyses are reported in the section of this Report labeled "Evaluation, Measurement, and Verification Results."

DSM Product Development

The product development process starts with ideas and concepts from customers, regulators, energy professionals, interest groups, and Company staff. The Company's DSM Product Development team identifies, assesses, and develops new energy efficiency and load management products, services, and measures for the Company. This work enables the Company to identify and promote promising new DSM products, measures, delivery mechanisms, and other opportunities for its customers.

In 2018, the Company introduced new DSM products or measures via 60-Day Notices, managed ongoing pilots, and also worked to develop new products and measures that may be introduced via a 60-Day notice in 2019. A summary of these activities in 2018 follows:

- Heating Efficiency – added ozone laundry measure
- Refrigeration Recycling – added room air conditioner measure
- Thermostat Optimization – added as a product
- Lighting Efficiency – added networked lighting controls measure

2018 Product Achievement
DSM Product Development expenditures were under budget in 2018 due to lower-than-anticipated costs for research, and consulting services.

ENERGY STAR® Retail Products Platform Pilot

The ENERGY STAR® Retail Products Platform Pilot is intended to test a national-level mid-stream incentive approach to driving transformation of the appliance and consumer electronics market. The Pilot is part of an effort coordinated by the U.S. Environmental Protection Agency to evaluate whether incentivizing retailers for efficient product sales can drive increased market penetration of ENERGY STAR® products. The Pilot launched in 2016 and included participating utilities and energy efficiency

program implementers from California, the Pacific Northwest, New York, Vermont, Wisconsin, Hawaii and New Jersey. Since its launch, the product offering has been adjusted to include Clothes Washers and Refrigerators as well as basic and advanced tiers for most products to improve the cost-effectiveness of the pilot.

2018 Product Achievement
Electric savings and participation targets were exceeded. This was largely due to retailers driving sales of the highest efficiency clothes washers which produce higher-than-average savings compared to the rest of the products in the pilot. Gas savings achievements were far below target due to the removal of basic gas clothes dryers.

Changes in 2018
The Company eliminated support for the basic tier of clothes dryers based on low cost-effectiveness. Lowes was also added as a retailer.

Thermostat Optimization Pilot

The Thermostat Optimization pilot leverages available software and customer experience tools that optimize smart thermostat operations to deliver savings in addition to the prescriptive ENERGY STAR® Thermostat product that may also improve customers' comfort and overall user experience.

2018 Product Achievement
The pilot engaged customers during both the summer and winter period. Summer participation included approximately 11,000 customers with reported savings of approximately 410,000 kWh. Winter participation included approximately 12,500 customers and savings of approximately 18,900 Dth and 143,000 kWh. The Company is working with a third-party evaluator to review the 2018 product results in anticipation of the full scale deployment in the 2019/2020 DSM Plan.

Changes in 2018
None.

Demand Response Program

Demand Response provides utilities with a valuable tool for managing peak demand on the electric system. The Company offered three types of DR products in 2018: (1) Direct Load Control, (2) Interruptible DR, and (3) Non-Dispatchable DR.[10] The Company's DR Program includes participation opportunities for business and residential customers on a Public Service firm demand rate for electric service. DR results for 2018 are shown in Table 19 below.

Table 19: 2018 DR Results (MW)

	Goal[11]	Actual
Demand Response (DR)	575	451
Demand Reduction from Energy Efficiency (EE-DR)	65	75
Total	**640**	**524**

Ordering Paragraph 58 of Decision No. C17-0731 directed the Company to achieve total demand reduction goals of 620 MW in 2018.

The Company's Demand Response program underachieved its forecasts and goals in 2018. The shortfall was due to underperformance across its suite of products and the slower than anticipated growth of the Company's new DR products: Peak Partner Rewards, Critical Peak Pricing, and AC Rewards. All are expected to increase available load in the future.

Table 20: Demand Response Program – Electric DSM products (Budget to Actual)

	Budgets / Targets				Expenditures / Achievements			
Demand Response Program - 2018	Electric Budget	Net Gen. kW	Net Gen. kWh	Electric MTRC Test Ratio	Electric Expenditures	Net Gen. kW	Net Gen. kWh	Electric MTRC Test Ratio
Critical Peak Pricing Pilot	$65,000	-	-		$68,126	1,167	1,537	-
Peak Partner Rewards	$3,154,472	-	-		$702,399	3,883	-	-
Residential Demand Response	$17,406,029	16,120	123,179	1.70	$11,676,699	5,804	39,266	1.23
Demand Response Program Total	**$20,625,501**	**16,120**	**123,179**	**1.55**	**$12,447,223**	**10,854**	**40,803**	**1.19**

Demand Response Products

The following provides a brief summary of the performance of each Demand Response product in 2018.

Critical Peak Pricing Pilot

During periods of peak energy demand, such as hot summer days, the electric system may require more power than is typically available. The Critical Peak Pricing ("CPP") pilot provides participants a price signal to encourage them to reduce their electricity usage during these periods. Under the CPP rate participating customers receive a discounted demand charge, but are subject to higher energy charges during CPP events. CPP events can occur up to 15 times a year during the hours of noon and eight p.m.

[10] See page 312 of the 2015/16 DSM Plan (Proceeding No. 14A-1057EG).
[11] Decision No. C14-0731, Proceeding No. 13A-0686EG, Paragraph 60, page 22.

on non-holiday weekdays and may be up to four hours in duration. Participating customers receive day-ahead notification of when "critical peak" days will occur.

To better manage their energy usage during peak events, participants are provided access to their electric load profile data in near-real-time. Access to this data not only allows participants to monitor their performance during events, but also provide insight into their energy use throughout the year.

The CPP pilot is marketed directly by the Company's account management staff and is available to commercial and industrial customers under rate schedules SG, PG or TG, (including Net Metering Service under schedule NM) who have an existing interval meter.

2018 Product Achievement
Overall, event performance for 2018 pilot participants was positive. With a full control season available for testing, the pilot dispatched 11 control events for seven pilot participants while one additional participant joined mid-year and participated in the final seven control events. Preliminary results suggest demand reductions varied from event to event, which is typical performance for a critical peak product, but on average demand reductions were achieved. However, the average event reduction underachieved the forecasted reduction target of 5 MW. Under subscribing participation for the pilot is the primary reason for this performance underachievement. The Company plans to leverage the implementation service partner RFP launched in 2018 to improve the pilot's participation in the future. The pilot's spend was slightly above the filed budget.

The Company will continue to evaluate the pilot's results to understand customers' behavior and performance, participant experience, and how to better forecast the product's performance for future critical peak periods.

Changes in 2018
None.

Interruptible Service Option Credit

The Interruptible Service Option Credit ("ISOC") product offers savings opportunities for business customers on the ISOC Tariff[12] that can reduce their electric demand when notified. In return for participating, customers receive a monthly credit based on the program options they signed up for. Participating customers must have a Contract Interruptible Load ("CIL") of 300 kW or more.

2018 Product Achievement
Total costs for the product were $27,024,221. Additional information on the ISOC product is available through the Company's ISOC Annual Status Report filed in Proceeding No. 07S-521E.

Changes in 2018
None.

[12] Advice Letter No. 1524 (Second Amended); Electric Tariff Sheet No. 90.

Peak Partner Rewards

During periods of peak energy demand, such as hot summer days, the electric system may require more power than is typically available. Customers who participate in the Peak Partner Rewards product agree to reduce their electricity use at the Company's request during these periods. The Peak Partner Rewards product is available to all business customers that agree to reduce usage during the summer months, June through September, between the hours of 2 p.m. and 6 p.m. by a minimum of 25 kilowatts (kW).

2018 Product Achievement
In 2018, the Peak Partner Rewards product underachieved its target of 59 MW but also underspent its budget of $3,154,472. The Company conducted an RFP in 2018 to acquire an implementation service partner and expects this partner to be actively marketing the product by the second quarter of 2019 to supplement the Company's marketing and administration of the product, as well as increase the successful transition rate of previous Third-Party Demand Response participants.

Changes in 2018
None.

Residential Demand Response

With last year's launch of AC Rewards, the Company has two residential demand response offerings:

- Saver's Switch® is a demand response product that offers residential customers with central AC an annual rebate on their bill in exchange for allowing the Company to control their AC during times of peak demand.
- AC Rewards is a demand response product that uses smart communicating thermostats for reducing AC load during a control event. Participating customers receive incentives for enrolling eligible thermostats in AC Rewards. They also receive annual bill credits for their participation. Unlike Saver's Switch®, participants have the ability to override a control event.

2018 Product Achievement
The Saver's Switch® offering has been in existence since 2000 and has approximately 193,000 active participants. The company projects the current participants account for approximately 50percent of the eligible (single family homes with central AC) population. In an effort to minimize confusion in the market place, marketing Saver's Switch took a back seat to AC Rewards in 2018. In all, approximately 2,600 new participants joined the program during the year. The product had four control events in 2018 for a total of 14.25 control hours.

AC Rewards was launched in the spring of 2017 and ended the 2018 with about 3,400 participants, up from about 1,300 at the end of 2017. With the strong market place presence of Saver's Switch, approximately half of the new AC Rewards participants were previously on, and removed from, Saver's Switch. While supported by a substantial marketing campaign in 2018, participation in AC Rewards has been disappointing. In 2019, the Company expects to continue marketing AC Rewards and working with additional device manufacturers to add eligible thermostats to the lineup. The product had four control events in 2018 for a total of 17 control hours.

Enrollments in both Saver's Switch and AC Rewards were significantly below projections for the year. As a result, both offerings' demand response achievements and spend were substantially less than forecasted.

Changes in 2018
None.

Evaluation, Measurement, and Verification: 2018 Results

Background

An Evaluation, Measurement, and Verification (EM&V) Plan is necessary to help ensure that Public Service's DSM programs are delivering reliable energy and demand savings and to improve overall program design and operation. Public Service developed its EM&V Plan to evaluate, measure, and verify savings for gas and electric DSM products during and after each performance year, in order to confirm that savings and technical assumptions are accurate. The robustness of any EM&V Plan must be balanced against the cost of performing EM&V, keeping in mind the objectives of ensuring accurate savings calculations while keeping expenditures prudent and maintaining the cost-effectiveness of programs.

Description of Process

Public Service uses a variety of providers to conduct its measurement and verification activities. In 2018, measurement and verification for the majority of direct-impact prescriptive products was conducted by a verification contractor (Nexant). For other products, such as ENERGY STAR New Homes, Home Performance with ENERGY STAR, and New Construction, the third-party product implementer verified all of the installations to ensure that reported gross savings were accurate. Custom projects were verified through internal engineering reviews, as described below.

The Company's EM&V approach includes both performance year and post-performance year activities. Performance year activities are conducted on an ongoing basis during the reporting year and include rebate application validation and ongoing M&V. Post-performance year activities occur in the year following the reporting year and include all comprehensive product (process and impact) evaluations. Each of these EM&V activities is described in more detail below.

Performance Year EM&V Activities

- **Rebate Application Validation** takes place on a daily basis during the program year and involves auditing all rebate applications received by the Company. The Company's Rebate Operations Department has a two-step process (described in the EM&V section of the 2015/16 and 2017/18 DSM Plans). The first step entails validating every application for accuracy and completeness as it is received prior to processing. In the second step, all rebates that have been entered into a tracking system are audited each day prior to issuing a rebate. The objective of this validation is to ensure that the rebate forms and the reported gross savings that are entered into the Company's databases are as accurate as possible and that customers are receiving the correct rebates.
- **Ongoing Measurement and Verification** is conducted with the primary objective of ensuring that the gross energy and demand savings reported by the Company are accurate. Ongoing M&V takes place during and just after the performance year. Ongoing measurement and verification of savings differs for prescriptive, custom, load management, and pilot products. For direct impact prescriptive products, Public Service contracts with third-party verification contractors and product implementers to perform M&V. Custom projects are verified through either engineering reviews of savings or through pre- and post-metering, depending on the size

of the savings. The following sections describe the general M&V methods that have been used for prescriptive, custom, load management, and pilot products.

- For Prescriptive products, the verification activities follow a Deemed Savings approach, where the primary goal is to conduct field inspections for a sample of projects to determine that the measures are properly installed and have the potential to generate savings. The contractor selects a statistically valid number of projects to verify through field inspections or phone surveys. The sample size is designed to achieve accuracy levels of between 10% and 20% given a confidence level of 90% around the "realization rate" and is weighted to select larger projects. Inspection parameters gathered onsite will vary based on the product and sector, but will generally confirm that the installed equipment matches equipment listed on rebate application. If they don't match, the product's reported savings are adjusted using the realization rate which reflects the actual results of these inspections.

- For Custom products, the M&V process depends on the size and scope of the project. Each project is typically pre-approved through an engineering analysis performed by one of the Company's internal energy efficiency engineers. Within the initial engineering analysis, the expected project savings and payback are calculated using technical assumptions that fit the specific measure(s) being implemented. Depending on the size of the project, these calculations are then reviewed by a second internal energy efficiency engineer and/or manager and a random sampling is sent for third-party review. After installation of the efficiency measure, an internal engineer reviews the efficiency measure invoices to determine if the project savings remained within ± 10% of its original scope. If the project did not remain within scope, then the project is re-analyzed. For projects with savings greater than or equal to 1 GWh and/or 20,000 Dth, pre- and post-installation metering is performed for a minimum of two weeks to measure and verify savings. For all metered projects, the analysis of the metering data is conducted by one of the Company's internal energy efficiency engineers, and then reviewed by a team of internal engineers and a manager. For all custom projects, installation and realization rates of 100% are applied and a net-to-gross of 87% is used.

- For Load Management products (Saver's Switch), Public Service selected a third-party contractor to monitor air conditioning usage for randomly selected customer sites. The data collected were analyzed by another third-party consultant to determine the available load relief provided by the load management program.

- For direct impact Pilot products, the M&V treatment depends on the measures or services being tested. Often, additional testing beyond that performed for prescriptive or custom products is required. Typically, a control group is established and then a third-party contractor compares the results from the test group to those in the control group.

Post-Performance Year EM&V Activities

- **Comprehensive Product Process and Impact Evaluations** are conducted periodically for individual products to assess their overall effectiveness and to determine what improvements or other changes should be implemented in the future. The objectives of the process evaluation include: determining customer satisfaction with the product; identifying the populations that participate in the product and target markets that are potentially receptive, but do not currently participate in the product; identifying areas where the product, processes, or marketing could be

improved; quantifying the product's market saturation levels; suggesting appropriate rebate design; and determining attribution factors, such as free-ridership and spillover. The objectives of the impact evaluation include estimating net product impacts. These evaluations do not verify the savings of a specific performance year and are not applied retrospectively to performance year activities. Comprehensive evaluations are not conducted on every product each year, but instead are staggered over several years in order to comprehensively evaluate most of the portfolio of products.

Outline of Requirements

The Commission has provided overarching guidance on the requirements for Public Service's EM&V activities including the Gas Rule (4 Code of Colorado Regulations (C.C.R.) 723-4-4755).

The Gas Rule contains the following requirements:

4755. Measurement and Verification.

(a) Each utility shall implement a measurement and verification (M&V) program to evaluate the actual performance of its DSM program. The utility shall present its M&V plan as a part of its DSM plan application, pursuant to rule 4753, and shall include the complete M&V evaluation results with its annual DSM report in those years when the M&V is conducted.

(b) As a part of its M&V process, the utility shall, at a minimum, design an M&V plan to evaluate the effectiveness of the actual DSM measures and programs implemented by the utility. The M&V plan shall address: sampling bias; a data gathering process sufficient to yield statistically significant results; and generally accepted methods of data analysis. The M&V plan shall also include an evaluation of free ridership, spillover, and the net-to-gross ratio. The M&V evaluation shall be implemented at least once per DSM plan period. Subsequent DSM plan applications shall reflect the results of all completed M&V evaluations.

(c) The M&V evaluation shall, at a minimum, include the following:

- (I) An assessment of whether the DSM programs have been implemented as set forth in its Commission approved DSM plan;
- (II) A measurement of the actual energy savings for each DSM program, in dekatherms per dollar expended and in total dollars, and a comparison to the corresponding utility projections in the approved DSM plan;
- (III) To the extent feasible, an assessment of the period of time that each DSM measure actually remains in service, and a comparison to the corresponding utility projections in the approved DSM plan;
- (IV) A summary of the actual benefit/cost ratio for each DSM program within the approved DSM plan;
- (V) An assessment of the extent to which education and market transformation efforts are achieving the desired results; and
- (VI) Recommendations for how the utility can improve the market penetration and cost effectiveness of individual DSM programs.

In compliance with these requirements, Public Service has applied the following concepts to its EM&V Plan:

- The ongoing M&V Plan will be conducted annually for all products. Comprehensive evaluations will be conducted on a staggered schedule over several years.
- The ongoing M&V Plan results will be reported with each annual DSM Status Report.
- For products that use a sampling methodology for M&V, the Plan will address sampling bias and all samples will be designed to yield statistically significant results.
- For products that are selected for a comprehensive evaluation, an evaluation of free ridership, spillover, and the net-to-gross ratio will be included as a study objective.
- Subsequent DSM Plan applications shall reflect the results of ongoing M&V, results of completed comprehensive evaluations, and results of any other DSM studies that are reviewed.
- The annual M&V evaluation report will include an assessment of whether the DSM products have been implemented as set forth in the Commission-approved Plan.

M&V Assessment Year & Technical Assumptions

Beginning in 2016, the Company used the November 1 – October 31 time period to collect the M&V data utilized in the DSM Annual Status Report. This November through October M&V data collection time period was used for 2018 results and the will continue to be used going forward.

2018 M&V Results

The following paragraphs provide the M&V activities and results for each of the DSM products offered by the Company in 2018. All M&V activities followed the processes described above and outlined in the M&V Plan filed with the 2017/18 DSM Plan, unless noted below. Where sampling was used in the M&V process for prescriptive measures, the achieved precision and confidence level is provided.

Portfolio Results

With its best efforts, Public Service achieved portfolio realization rates of 99.9% for electric demand, 100.0% for electric energy, and 100.0% for natural gas energy in 2018. Applying the results to the portfolio's gross savings, the Company achieved 81,089 net generator kW, 453,892,959 net generator kWh, and 604,928 net Dth of DSM savings.

Business Products

Commercial Refrigeration Efficiency

The Commercial Refrigeration Efficiency product offers prescriptive and custom rebates, as well as direct installation of several refrigeration efficiency measures. M&V of the prescriptive component of the product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 1,694 electric prescriptive, as well as 91 electric and 116 gas direct install electric Commercial Refrigeration Efficiency measures. For these measures, Nexant performed 28 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final electric demand and energy realization rates, as well as the gas realization rate for the 2018 Commercial Refrigeration Efficiency prescriptive measures were all 100.0% ± 0.0% around the targeted 90% confidence level. The Company rebated one custom Commercial Refrigeration Efficiency project in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Compressed Air Efficiency

The Compressed Air Efficiency product offers prescriptive, custom, and study rebates. M&V of the prescriptive component of the product was performed by Nexant, following the prescriptive protocols described above. In 2018, Public Service rebated 43 prescriptive Compressed Air Efficiency measures. Of these projects, Nexant performed 16 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand and energy realization rates for the 2018 Compressed Air Efficiency prescriptive measures were 97.58% ± 4.19% and 95.49% ± 7.69%, respectively, around the targeted 90% confidence level. The Company completed 15 studies and 10 custom Compressed Air Efficiency projects in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Computer Efficiency

The Computer Efficiency product offers prescriptive rebates, which were measured and verified in a multi-step process. First, Public Service confirmed that all computers reported by the third-party implementer, Ecova, were shipped to Public Service zip codes. Then product performance was reviewed by Nexant, following the prescriptive protocols described above. In 2018, the Computer Efficiency product provided 13,408 upstream manufacturer incentives (for high efficiency power supplies, desktop PCs, and servers) with a final installation rate of 100%. The final demand and energy realization rates for the 2018 Computer Efficiency prescriptive measures were 100.0% ± 0.0% around the targeted 90% confidence level.

Cooling Efficiency

The Cooling Efficiency product offers prescriptive, custom, and study rebates. M&V of the prescriptive component of the product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 2,832 prescriptive Cooling Efficiency measures. For these measures, Nexant performed 41 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand and energy realization rates for the 2018 Cooling Efficiency prescriptive measures were 100.0% ± 0.0% and 100.0% ± 0.0%, respectively, around the targeted 90% confidence level. The Company completed one custom Cooling Efficiency project in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Custom Efficiency

The Custom Efficiency product offers custom rebates. Public Service rebated six electric and one gas Custom Efficiency projects in 2018. All Custom projects were reviewed by internal engineers following the custom protocols described above.

Data Center Efficiency

The Data Center Efficiency product offers rebates for study-driven and non-study-driven prescriptive and custom projects. The Data Center Efficiency product completed 2,291 prescriptive measures and 21 EC Plug Fans, as well as four custom projects in 2018. The final aggregated demand and energy realization rates for the 2018 Data Center Efficiency prescriptive measures were 100.0% ± 0.0% and 100.0% ± 0.0%, respectively. All Custom projects were reviewed by internal engineers following the custom protocols described above.

Energy Management Systems

The Energy Management Systems product provides custom rebates. Measurement and verification of this product follows the custom protocols. In 2018, the EMS product completed 46 electric and 13 gas Energy Information Systems (EIS) measures. All projects were reviewed by internal engineers following the custom protocols described above.

Heating Efficiency

The Heating Efficiency product provides prescriptive and custom rebates for efficient heating equipment. In 2018, M&V of the prescriptive component of the product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 753 prescriptive measures and six electrically commutated motors. Of these projects, Nexant performed 42 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final realization rates for the 2018 Heating Efficiency prescriptive measures were 100.0% ± 0.0% for electric demand and energy, and 100.0% ± 0.0% for gas, around the targeted 90% confidence level. The Company completed no custom Heating Efficiency projects in 2018.

LED Street Lighting

The LED Street Lighting product captures energy savings for local municipalities on the Street Lighting Service (SL) Rate by replacing legacy Company-owned street lights with LED fixtures. In 2018, the program achieved savings of approximately 1.5 net GWh.

Lighting Efficiency

The Lighting Efficiency product offers prescriptive, custom, and study rebates. In 2018, M&V of the prescriptive component of the product were performed by Nexant, following the prescriptive protocols described above. Public Service rebated 754,704 prescriptive Lighting Efficiency measures. Of these projects, Nexant performed 43 prescriptive field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand and energy realization rates for the 2018 Lighting Efficiency prescriptive measures were 100.0% ± 0.0% and 100.0 ± 0.0%, respectively, around the targeted 90% confidence level. The Company rebated 216 custom Lighting Efficiency measures in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Lighting - Small Business

The Lighting - Small Business product offers prescriptive, direct install, and custom rebates. In 2018, M&V of the prescriptive and midstream components of the product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 151,158 prescriptive Lighting - Small Business measures. Of these projects, Nexant performed 43 prescriptive field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand and energy realization rates for the 2018 Small Business Lighting prescriptive measures were 100.0% ± 0.0% and 100.0 ± 0.0%, respectively, around the targeted 90% confidence level. The product resulted in the direct installation of 2,904 electric and 809 gas measures. The Company completed 169 custom Lighting - Small Business projects in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Motor & Drive Efficiency

The Motor & Drive Efficiency product offers prescriptive and custom rebates. In 2018, M&V of the prescriptive component of the product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 632 prescriptive Motor & Drive Efficiency measures. Of these measures, Nexant performed 36 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand and energy realization rates for the 2018 Motor & Drive Efficiency prescriptive measures were 100.0% ± 0.0% and 100.0 ± 0.0%, respectively, around the targeted 90% confidence level. The Company completed one custom Motor & Drive Efficiency project in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Multifamily Buildings

The Multifamily Buildings product offers the residential multifamily housing market energy assessments, direct-install of energy savings measures, and custom projects. The third-party implementer is responsible for the measurement and verification of the pilot. This product follows the Company's standard prescriptive product measurement and verification process. In 2018, the third-party implementer used the deemed savings of the direct installation measures to calculate savings.

New Construction

Public Service's New Construction product offers prescriptive Energy Efficient Buildings and custom Energy Design Assistance rebates. Measurement and verification are performed on all New Construction projects, whether prescriptive or custom. The Company rebated 893 electric projects and 142 gas projects under the Energy Efficient Buildings component in 2018. M&V for these projects was performed by Nexant. Public Service completed 216 electric projects and 251 gas projects under Energy Design Assistance. The Weidt Group and Group 14 conducted verification on these projects. All adopted measures received a visual verification. This information was used in our savings reports and for rebate payment. Since all project savings are calculated based on independent verification, this product has a realization rate of 100%.

Process Efficiency

The Process Efficiency product offers prescriptive and custom rebates. Prescriptive rebates are identified by their end-use. Measurement and verification of those measures is performed with the end-use product. In 2018, M&V of the prescriptive component of the product was performed by Nexant, following the prescriptive protocols described above. In 2018, Public Service rebated 35,921 prescriptive Process Efficiency measures. These projects were included in the pool of prescriptive projects on which Nexant performed field inspections. The Company completed two custom Process Efficiency projects in 2018. The custom component was reviewed by internal engineers following the custom protocols described above.

Recommissioning

The Recommissioning product offers study and custom rebates. Public Service completed five electric and five natural gas Recommissioning projects in 2018. The measurement and verification of these projects was relatively simple because each implemented measure resulted from a previous Recommissioning study completed by an independent party. The customer hired an engineering firm to conduct a study of the building to determine energy savings for each measure; an internal engineer then reviewed and verified 100% of projects for savings calculation accuracy. In turn, each study was thoroughly reviewed and approved by a qualified Public Service engineer.

Self-Direct

The Self-Direct product offers custom rebates. One customer participated in the Self-Direct product in 2018. The project was measured and verified using individualized customer-developed and Public-Service approved M&V Plans. All measurement and verification was required to be performed in accordance with the International Performance Measurement and Verification Protocol guidelines. Upon project completion, participants submitted project completion reports that include raw metering results and engineering calculations to demonstrate actual energy and demand savings based on pre- and post-monitoring results. All projects were reviewed by the internal energy efficiency engineers and/or managers, depending on their size. The rebate amount was based on these results.

Residential Products

Energy Efficient Showerheads

The Energy Efficient Showerheads product provides customers with up to two free 1.5 gpm showerheads (primary and secondary), a 1.5 gpm kitchen faucet aerator, and up to two 1.0 gpm bathroom faucet aerators (primary and secondary). In 2018, Public Service provided 2,429 measures to electric customers and 40,264 measures to gas customers. Public Service performed a phone survey of a random sampling of customers who received a free showerhead and aerators. Based on the phone survey results, the 2018 installation rates were 77.1% for showerheads, 27.3% for kitchen aerators, and 36.7% for bathroom aerators.

Energy Feedback Residential

The Energy Feedback Residential product offers customers a variety of methods of feedback on their energy consumption in order to quantify how these different forms of feedback impact customers' energy use. This product was implemented by a third-party provider, Oracle Utilities Opower, which utilizes a Randomized Control Trial with Random Encouragement (RCT) process that compares the consumption data of participants to an appropriately sized group of non-participants (Control Group) to determine the energy savings. The Control Group are uninformed by any direct action of this product. In addition to determining the savings, the third-party implementer tracked and adjusted savings for participant's incremental participation in other energy efficiency products. This RCT methodology is recommended by the State and Local Energy Efficiency Action Network (SEE Action). A small portion of the product savings were derived from the online tool called My Energy. Propensity Score Matching was used to construct a comparison group for My Energy login customers to non-login customers. Propensity score matching is recommended by the SEE Action guidelines for evaluating behavior-based programs when it is not feasible to construct a randomized control group. In 2018, the realization rate for the Energy Feedback Pilot was 100.0%.

ENERGY STAR New Homes

Public Service's ENERGY STAR New Homes product offers prescriptive rebates. In 2018, the product was administered by a third-party implementer, Residential Science Resources, Inc. (RSR). All homes rebated through this product were subject to verification by a qualified Home Energy Rating Service (HERS) Rater and their associated Residential Energy Services Network Provider. The HERS Rater completed a minimum of two site visits to each home during the construction phase. Hundreds of data points are collected and submitted for each home, including the duct blaster test results and the final HERS rating. Upon completion, RSR reviewed each home and it's HERS rating to confirm the accuracy of the energy modeling. Energy saving impacts for each home rebated were calculated based

on the actual construction as compared to the reference (baseline) home for that particular jurisdiction. As a result, the realization rate for this product is 100%. In 2018, 7,632 electric and 4,392 gas rebates were issued for the product.

Evaporative Cooling

The Evaporative Cooling Rebate product provides prescriptive rebates to customers who purchase efficient evaporative cooling units. In 2018, M&V of this product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 3,005 evaporative coolers. Of these projects, Nexant performed 43 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand and energy realization rates for the 2018 Evaporative Cooling product were 100.0% ± 0.0% around the targeted 90% confidence level.

High Efficiency Air Conditioning

The High Efficiency Air Conditioning Product provides rebates to customers who purchase high-efficiency equipment, properly install high efficiency air-conditioning equipment, or trade-in their old, inefficient equipment and purchase of high-efficiency equipment. Because air conditioners can only be field tested when the ambient outdoor temperature is above 70°F (or 55°F with a Field Diagnostic Services Inc. tool), this product maintains a slightly different M&V calendar than Public Service's other DSM products. Specifically, air conditioners that are installed after October 1 of each year will not be inspected until the following spring, and thus, the M&V period for this product runs from October 1 to September 30 of each year.

The three product components have different M&V processes. M&V for the new equipment purchase and quality installation were considered together and performed by Group 14 Engineering. The M&V process was designed to verify that the installed equipment matched what was rebated and that the equipment was installed according to quality installation standards, as described by the Air Conditioning Contractors of America. The M&V involved an ongoing random sampling of rebated projects, following the prescriptive protocols described above. To verify a quality installation, the Verification Contractor confirmed that a Manual J calculation was performed and that the participant's refrigeration charge, airflow, and duct leakage were within acceptable ranges. Public Service rebated a total of 6,410 HEAC measures in 2018. The final demand and energy savings realization rates for the New Equipment component of the product in 2018 were 100.0% ± 0.0% and 100.0% ± 0.0%, respectively, around the targeted confidence level of 90%. The final demand and energy savings realization rates for the Quality Installation component of the product in 2018 were 98.31% and 98.74%, respectively, around the targeted confidence level of 90%.

M&V for the Trade-In component of the High Efficiency Air Conditioning Product was performed by Public Service since the original equipment removal was conducted by independent HVAC contractors. For each of the retirements rebated, the contractor was required to report to Public Service the type and age of equipment being removed. Public Service then spot-checked the provided paperwork to confirm that the removed equipment met product requirements. The final demand and energy savings realization rates for the Trade-In component of the product in 2018 were 100.0% ± 0.0% and 100.0% ± 0.0%, respectively, around the targeted confidence level of 90%.

Home Energy Squad

The Home Energy Squad product offers installation services and discounted equipment to residential customers. The third-party implementer verifies and reports implemented measures to the Company. The final demand and energy realization rates for the 2018 Home Energy Squad product were 100.0% ± 0.0% and 100.0% ± 0.0%, respectively, around the targeted 90% confidence level.

Home Lighting & Recycling

The Home Lighting & Recycling product provides prescriptive point-of-sale rebates to customers who purchase qualifying CFL and LED light bulbs. In 2018, Nexant performed the Home Lighting & Recycling product measurement and verification. The verification process consisted of cross-checking Public Service's tracking databases with a sample of monthly or weekly invoices and invoice details from various manufacturers submitted to retailers. These invoices contained product buy-down dollar amounts and counts for each item SKU. There were 2,091,223 LEDs sold in 2018. Nexant examined and verified 44 invoice line detail items out of the total 39,816residential records contained within the Company's program tracking database. The 44 line items were taken from a sample of monthly manufacturer invoices and associated invoice details. This effort uncovered two discrepancies between Xcel Energy's database and the invoice data. The final demand and energy realization rates for the 2018 Home Lighting & Recycling product were 100.1% ± 0.2% and 100.1% ± 0.2%, respectively, around the targeted 90% confidence level.

Home Performance with ENERGY STAR®

The Home Performance with ENERGY STAR product provides prescriptive rebates to residential customers. In 2018, Public Service's third-party product implementer, CLEAResult, performed verification of home improvements, including a blower door test to verify the natural air changes per hour, a Combustion Appliance Zone test, and inspections of all work performed. There were 300 electric and 330 gas measures rebated in 2018. Due to the extensive testing performed on each home, this product is assumed to have a realization rate of 100%.

Insulation & Air Sealing

The Insulation & Air Sealing product provides prescriptive rebates to customers who add insulation to their homes. In 2018, M&V of this product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 592 electric and 1,391 gas measures. Of these projects, Nexant performed 35 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand, energy, and gas realization rates for the 2018 Insulation & Air Sealing product were 102.1% ± 8.9%, 102.0% ± 8.9%, and 99.9% ± 1.5%, respectively, around the targeted 90% confidence level.

Refrigerator & Freezer Recycling

The Refrigerator & Freezer Recycling product provides a rebate to customers who retire their old, inefficient, but operational refrigerators and freezers. In 2018, M&V of this product was performed by Nexant, following the prescriptive protocols described above. The Company recycled 5,941 refrigerators and 1,374 freezers. To verify these results, Nexant performed phone of 44 randomly-selected participants and confirmed that the old refrigerator or freezer was operational and removed from the home as reported. The final realization rates for the 2018 Refrigerator & Freezer Recycling product were 100.0% ± 0.0% for both demand and energy savings.

Residential Heating

The Residential Heating product provides prescriptive rebates to customers who install efficient furnaces, boilers, and EC motor furnace fans. In 2018, M&V of this product was performed by Nexant, following the prescriptive protocols described above. Public Service rebated 7,216 electric and 5,525 gas units. Of these projects, Nexant performed 44 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand, energy, and gas realization rates for the 2018 Residential Heating product were 100.0% ± 0.0%, 100.0% ± 0.0%, and 100.0% ± 0.0%, respectively, around the targeted 90% confidence level.

School Education Kits

The School Education Kits product provides curriculum and educational materials to teachers and efficiency measures to school children to teach them more about energy efficiency. In 2018, the product shipped 38,501 electric/gas kits to school children. Product administration, measurement, and verification for School Education Kits were conducted by a third-party vendor, AM Conservation. AM Conservation used parental surveys to determine which measures were installed in the home. The 2018 year-end savings for the program were determined using the following installation rates determined by AM Conservation: 91.3% for 11W LEDs, 92.2% for 9W LEDs, 48.8% for showerheads, 43.3% for kitchen aerators, and 44.5% for bathroom aerators.

Water Heating

The Water Heating product provides prescriptive rebates to customers who purchase new, energy efficient water heaters. In 2018, M&V of this product was performed by Nexant, following the prescriptive protocols described above. Public Service provided 29 electric and 985 gas rebates in 2018. Of these projects, Nexant performed 42 field inspections of installed energy efficient equipment at randomly-selected participant locations to verify key savings factors. The final demand, energy, and gas realization rates for the 2018 Water Heating product were 100.0% ± 0.0%, 100.0% ± 0.0%, and 100.0% ± 0.0% around the targeted 90% confidence level.

Residential Demand Response

The Residential Demand Response product includes Saver's Switch and smart thermostats, both of which the Company controls during times of high system load. For the purposes of the Status Report, Public Service assumes a deemed savings value for both the Saver's Switch and smart thermostat devices. For load management purposes, the Company uses data logging on a sample of installed Saver's Switches to identify the available system controllable load per switch. These data loggers record the actual load of the air-conditioning units controlled by the installed switches. This recorded load is used to estimate the available system controllable load at typical system peaking conditions. This estimated available system controllable load can vary over time due to changes in air conditioner efficiencies and residential conservation efforts. Additionally, performance of the switches varies over time due to the disconnection or mechanical failure of switches. In 2018, the Company installed 2,317 smart thermostats.

Low-Income Products

Energy Savings Kit

The Energy Savings Kits product provides energy efficiency kits to low-income customers. In 2018, the product delivered 671 showerheads, 671 kitchen faucet aerators, 676 bathroom faucet aerators, and

3,155 LEDs to customers with electric service and 3,233 showerheads, 3,233 kitchen faucet aerators, and 3,228 bathroom faucet aerators to customer with gas water heating. This product was implemented by a third-party provider, Energy Federation Inc., who identified income-qualified customers to receive kits. CustomerLink performed a phone survey to those customers who received a kit. Installation rates were found to be 74.6% for LEDs, 70.1% for showerheads, 68.1% for kitchen aerators, and 64.4% for bathroom aerators.

Multifamily Weatherization

The Multifamily Weatherization product offers weatherization measures to qualifying low-income multi-family buildings. In 2018, Public Service rebated 47 electric and 37 gas Multifamily Weatherization projects. The third-party program implementer, Energy Outreach of Colorado, audited each building to confirm that all work was completed correctly. Savings were calculated for each project based on the measures installed. As a result, the realization rate for this program is 100%.

Non-Profit

The Non-Profit product offers weatherization services to non-profit organizations. In 2018, the product completed 38 electric and 27 gas projects. Public Service's third-party program implementer, Energy Outreach of Colorado, audited each building to confirm that all work was completed correctly. Savings were calculated for each project based on the measures installed. As a result, the realization rate for this program is 100%.

Single-Family Weatherization

The Single-Family Weatherization product provides weatherization to low-income single-family homes. In 2018, 5,006 electric and 6,728 gas weatherization measures were performed. Public Service's third-party product implementers, the Colorado Energy Office and Energy Outreach Colorado, managed the weatherization agencies that performed energy savings measures in each income-qualified single-family home. 100% of homes weatherized were subject to verification from Public Service at any given time. The Company received a signed or electronic form from each customer attesting to the work performed. Energy savings were calculated on a per-measure, per-home basis. Savings were calculated for each project based on the measures installed. As a result, the realization rate for this program is 100%.

Pilot Products

The 2018 direct impact energy efficiency pilot products included:

- ENERGY STAR® Retail Products Platform Pilot,
- Thermostat Optimization.

ENERGY STAR Retail Products Platform Pilot

The ENERGY STAR Retail Products Platform Pilot engaged retailers through midstream incentive payments to increase the demand and supply for the most energy efficient residential plug-load and appliance products on the market, driving greater sales of select ENERGY STAR certified products to customers. The third-party implementer is responsible for the measurement and verification of the pilot. In 2018, the third-party implementer used the deemed savings of the direct installation measures to calculate savings and reported those savings to the Company on a quarterly basis.

This product follows the Company's standard prescriptive product measurement and verification process.

Thermostat Optimization Pilot

The Thermostat Optimization Pilot is intended to evaluate the opportunity for the Company to utilize thermostat optimization software in conjunction with eligible residential smart thermostats to enhance the energy efficiency savings of smart thermostats and improve peak demand reduction by smart thermostats during peak periods. No savings were claimed in 2018.

Post-Program Year Activities

All measurement and verification activities for the 2018 performance year were completed from late 2017 through 2018 and all results are included in this report. Public Service intends to complete all future M&V activities annually prior to filing its M&V Report.

Product Process and Impact Evaluations Performed in 2018

Public Service contracted for evaluators to perform process and impact evaluations on four direct impact products in 2018: Data Center Efficiency, Lighting Efficiency, Evaporative Cooling, Home Lighting and Recycling, and School Education Kits. The following sections provide an overview of the findings of the evaluations and the evaluators' recommendations. The Company intends to address any recommended changes coming from these comprehensive evaluations through 60-Day Notices corresponding to the evaluation recommendations and Company responses.

Data Center Efficiency

An evaluation team led by EMI Consulting conducted a comprehensive process and impact evaluation of Xcel Energy's Minnesota Data Center Efficiency product, in which they assessed: participant and trade partner experiences, product influence on customer decisions, similarity to peer programs, and opportunities to improve the product. Since the product is offered similarly in Colorado, it is assumed that this evaluation pertains to Xcel Energy's Colorado Data Center Efficiency product as well.

The evaluation was conducted through interviews with participants, non-participants, trade partners, peer program benchmarking, and staff. Overall, the evaluation team found that the Data Center Efficiency product is operating effectively, with generally high levels of satisfaction among participating customers, trade partners, and distributors. There is evidence that both the midstream and downstream delivery channels have had a positive net impact on energy efficiency within the Xcel Energy Colorado service. The team had the following key findings:

- The product is an important product, but there is room to improve its influence in an industry that is rapidly evolving. Some customers derive a lot of value from the product, and more targeted engagement can increase influence in the market.
- Overall product satisfaction is high for both participants and trade partners. Both groups find determining eligibility and filling out forms the most challenging aspects of participating in the product.
- Personal contact, technical assistance, and recommendations of contractors, more than incentives, are what influence customers' decisions to install energy efficient equipment.
- Most peer programs have a similar NTGR. They also report that personal outreach is best for customer engagement, and product ease-of-use promotes customer participation.

https://xcelenergy.sharepoint.com/sites/SPSC74/dsmbiennialplan/Shared Documents/Status Reports/2018 DSM Annual Status Report

The team had the following recommendations:

- Conduct a targeted market characterization study. The goals of this study would be to: (1) identify potential new participants, (2) understand the characteristics of trade partners who influence data center decision-makers, and (3) identify other market actors that may be worth developing relationships with.
- The recommended prospective NTG ratio is 0.65. Consider setting stricter product eligibility requirements. Devise a method for documenting the counterfactual in the customer journey.
- Target outreach efforts towards customers, trade partners, or other market actors with characteristics that indicate increased barriers to energy efficiency.
- Consider hiring an outreach firm with strong existing and trusted relationships to promote the product to potential participants.
- Incentivize trade partners for recruiting first-time participants and for upselling projects, increasing the value proposition for trade partner participation.
- Target outreach efforts on trade partners with greater ability to influence customer decision-making.
- Consider implementing a pre-qualified trade partner list to ensure that contractors have gone through training on how to include or upsell energy efficiency in projects.
- Review study content to increase the efficiency of projects or identify additional opportunities not already under consideration.
- Promote technologies that are not well accepted through implementing a tiered incentive structure.
- Implement a method for tracking the customer journey to document existing equipment and efficiency levels, what the customers would have installed without the program, and what was actually installed.
- Make sure eligibility requirements are explicit, clearly communicated, and easy to find on every communication channel.
- To make forms easier to complete, consider changing the format to an Excel workbook or online form and review fields and structure of documents to make them more user-friendly.

All of these recommendations are currently being reviewed by Public Service. Any changes that might affect impact assumptions will be publicized through 60-Day Notice prior to implementation.

<u>Lighting Efficiency</u>

An evaluation team led by EMI Consulting conducted a comprehensive process and impact evaluation of Xcel Energy's Colorado Lighting Efficiency product, in which they assessed: barriers and programmatic adoption strategies for lighting controls, how the qualified products list differs from that of other utilities, and customer, as well as trade partner, satisfaction with the program.

The evaluation was conducted through interviews with staff, trade partners, and other utilities, as well as participant surveys. Key findings included that:

- The product plays a large role in the business model of many trade partners;
- The product has strong relationships with trade partners;

- The product evaluation's recommended net-to-gross (NTG) ratio (0.67-0.74) falls within the range of NTG ratios reported by peer utilities.

The team had the following recommendations:

1. Target early replacement of working lighting equipment.
    a. Discontinue new construction lighting rebates.
    b. Collect information on reason for replacements.
    c. Expand campaigns to encourage early replacement.
    d. Ensure gross savings calculations include a dual baseline for calculating lifetime savings.
2. Continue to monitor changes to the lighting market. Due to the rapidly transforming lighting market, it is important to re-evaluate this product influence at frequent intervals. This will allow the product to evolve with the market and the NTG ratio to reflect changing offerings and market potential. This includes additional research in 2019 to feed into the 2020 NTG ratio and evaluations at regular intervals thereafter.
    a. For 2019, apply a NTG ratio of 74% to the program, upon implementation of the recommendations contained in the report.
3. Expand trade partner network and focus efforts on mid/low performing trade partners.
4. Focus product efforts on increasing adoption of lighting control strategies through focused campaigns and trade partner trainings. Peer utilities report having successful campaigns focused on specific facility types, such as classroom and retail spaces; the product should consider that strategy.
5. Consider applying a separate NTG ratio to lighting control strategy measures. Market adoption for control strategies remains behind LEDs, and represented very few participant customers in the 2017 product (and therefore as part of this study).
6. Assess ways to simplify the application form to make it accessible to more customers and trade partners.
7. Monitor satisfaction with non-DLC-qualified products among participant customers and reassess non-DLC incentives if product satisfaction is substantially less than DLC-qualified products.

All of these recommendations are currently being reviewed by Public Service. Any changes that might affect impact assumptions will be publicized through 60-Day Notice prior to implementation.

<u>Evaporative Cooling</u>

An evaluation team led by EMI Consulting conducted a comprehensive process and impact evaluation of Xcel Energy's Colorado Evaporative Cooling product, in which they assessed: customer and trade partner awareness and perceptions of evaporative cooling technologies, as well as the Xcel Energy Evaporative Cooling Product, key barriers in the customer decision-making process related to evaporative cooling purchases, trade partners' experiences, the role of manufacturers, manufacturer reps, and distributors in the market for evaporative coolers in Colorado, and opportunities to improve product design and delivery and contextualize using peer utility information.

The evaluation was conducted through interviews with staff, trade partners, wholesalers, and other utilities, as well as participant and near-participant surveys. Key findings included that:

- Customers are very likely to replace existing cooling systems with "like" systems, making it difficult to convert customers from central AC to evaporative cooling.

- Simply increasing awareness of what an evaporative cooler is may not be sufficient to increase uptake of this technology among customers. Instead, it appears that a lack of experience with how an evaporative cooler actually operates in a home may also be preventing more customers from seriously considering this type of equipment.
- Window and roof-mounted evaporative coolers face heavy competition from other cooling technologies such as central AC systems, mini-split heat pumps, and non-rebated portable evaporative coolers.
- While contractors interviewed by the evaluation team indicated that nearly all eligible evaporative coolers they sell are rebated, there is some indication from wholesalers that not all units sold receive a rebate.
- There is evidence from this evaluation that the Evaporative Cooling Product is having a net positive influence on customer decisions regarding high efficiency residential cooling equipment in the Xcel Energy service territory in Colorado.

The team had the following recommendations:

1. Continue to target customers without any type of existing cooling system, as well as those in areas of lower socioeconomic means.
2. Increase the customer rebate amount for first time (e.g., non-replacement) purchase decisions while keeping the customer rebate amounts static for replacement situations. Note: If a customer replaces a cooler with a higher rebate category cooler, the customer would qualify for the first time (non-replacement) rebate and associated NTGR.
3. At some point in the future—after the instant incentives mechanism has been implemented—consider partnering with or providing incentives to retailers and/or third parties to help customers understand first-hand what it is like to have an evaporative cooler in their home. For instance, a live display in a retailer showroom may provide the type of exposure that customers need to feel more comfortable with—and positive about—the technology.
4. Find ways to provide information to potential and current evaporative cooling customers related to proper maintenance of evaporative coolers. Such information may emphasize that the maintenance requirements of evaporative coolers are not burdensome.
5. Consider adding portable evaporative coolers as a measure, as some customers choose to purchase portable units rather than window or roof-mounted units.
6. In the future, consider pursuing a point-of-sale (POS) instant rebate mechanism, as this would allow the product to more effectively capture eligible units that are sold in Xcel Energy service territory.
7. The recommended retrospective product-level NTG ratio is 0.60. Moving forward, the product can optimize influence in the market by (1) prioritizing whole house systems and first-time installations, and (2) partnering with retailers to promote evaporative cooling systems through in-store displays in coordination with an instant rebate at the point of sale. These modifications would allow the product to increase its influence in the market, resulting in a recommended prospective product level NTG ratio of 0.70.
8. Separate the "Whole House" product tier into two separate tiers—a first-time tier and replacement tier—as the current grouping includes both systems that are tied into existing ductwork as well as systems where new ductwork is required. Based on the finding that first time systems exhibit less free-ridership than replacement systems, and based on benchmarked values for whole house systems from other utilities, the recommended prospective NTG ratio for a first-time whole house tier is 0.90.

All of these recommendations are currently being reviewed by Public Service. Any changes that might affect impact assumptions will be publicized through 60-Day Notice prior to implementation.

Home Lighting and Recycling

An evaluation team led by EMI Consulting conducted a comprehensive process and impact evaluation of Xcel Energy's Colorado Home Lighting and Recycling product, in which they assessed: lighting industry changes, underserved markets, and program attribution (net-to-gross).

The evaluation team elicited feedback from product staff, participant manufacturers, and program managers of similar programs. Key findings included that:

- The product has effective and mature partnerships between Xcel and the program implementer, as well as with retailers and manufacturers.
- The product significantly increases the amount of LED bulbs sold in Colorado and increases consumer awareness of energy efficient products.
- Implementation of the EISA backstop remains uncertain, causing ambiguity for manufacturers and utility lighting program plans.

The team had the following recommendations:

1. Continue running upstream lighting programs until legislation solidifies or LEDs become the predominant technology.
2. Reassess prospective NTG ratio value when the fate of EISA backstop implementation becomes clear.
3. Closely monitor legislative actions for direction on EISA. Decisions on this legislation will quickly impact the lighting market and provide direction on the future program opportunities, plus impact future NTG ratios.
4. Xcel Energy should plan for decreasing NTGR as options for inefficient bulbs diminish.
5. Xcel Energy will need to design and test a variety of methods if they choose to target hard-to-reach populations.
6. Use a prospective NTGR of 61% for the Home Lighting Product based on results from the sales data model and manufacturer interviews.

All of these recommendations are currently being reviewed by Public Service. Any changes that might affect impact assumptions will be publicized through 60-Day Notice prior to implementation.

School Education Kits

An evaluation team led by EMI Consulting conducted a comprehensive process and impact evaluation of Xcel Energy's Colorado School Education Kit product, in which they assessed: participating teacher experiences with the School Education Kits product including the educational material and Take Action Kits; participating teacher and household satisfaction with the School Education Kits product; student and household engagement with the Take Action Kit measures and educational material; installation rate and usefulness of Take Action Kit measures for participating households; and the School Education Kits product's influence on households' decisions to install additional energy efficiency measures in their homes..

The evaluation team performed their research using interviews with staff, teachers, and other utilities, as well as participating household and teacher web surveys. Key findings included that:

- Both households and teachers are very satisfied with the product. 94% of households and 93% of teachers were very or extremely satisfied with the product overall.
- Product free-ridership is estimated to be 32% while spillover is estimated to be 35%. As a result, the evaluation team estimated product NTGR of 1.03 and recommends maintaining an NTGR of 1.0 for the School Education Kits product.
- Installation rates for energy efficient showerheads and faucet aerators was lower than the Home Energy Worksheet estimates.
- 29% of teachers in schools with a high percentage of students on free lunch said the number one reason for participating was providing the kit measures, compared to 0% of teachers with a low percentage of students on free lunch.

The team had the following recommendations:

1. Maintain the product NTGR of 1.0 to reflect the high level of household spillover.
2. Decrease the installation rates for energy efficient showerheads and aerators to account for households that said they "will install" measures but did not end up installing.
3. Consider targeting low-income schools that will benefit most from the access to energy efficient equipment and educational material the product provides.
4. Explore feasibility of additional kit measures such as outdoor solar lights, energy efficient power strips and smart thermostats as market saturation increases for current kit measures going forward.
5. Consider opportunities for in-school demonstrations and trainings by Xcel Energy or third-party implementation staff.
6. Include information pamphlets in the kits that provide resources for households looking for additional ways to save energy.

All of these recommendations are currently being reviewed by Public Service. Any changes that might affect impact assumptions will be publicized through 60-Day Notice prior to implementation.

M&V Results

The following pages provide Tables 22a and 22b, which describe the installation rates and realization rates used to calculate net, verified savings by program component. The column headings of Tables 22a and 22b are defined in the following table:

Table 21: Defined Terms

Column Heading	Definition
2018 Product	The DSM product offered by Public Service in 2018.
End-Use Measure Type	Whether the product was prescriptive or custom, or the product components, if the M&V process differed for different projects within a single product.
Gross Gen kW	The gross electric demand savings at the generator after line losses and coincidence with peak are factored in.
Gross Gen kWh	The gross electric energy savings at the generator after line losses are removed.
Gross Dth	The gross natural gas energy savings.
Installation Rate	The percent of measures that were installed, as opposed to purchased.
Demand (kW) Realization Rate	The ratio of gross electric demand savings measured in the M&V process to the electric demand savings claimed in the rebate application, expressed as a percentage.
Energy (kWh) Realization Rate	The ratio of gross electric energy savings measured in the M&V process to the electric energy savings claimed in the rebate application, expressed as a percentage.
Energy (Dth) Realization Rate	The ratio of gross natural gas energy savings measured in the M&V process to the gas energy savings claimed in the rebate application, expressed as a percentage.
Verified Gross Gen kW	The gross demand savings at the generator after the installation and demand realization rates have been applied.
Verified Gross Gen kWh	The gross energy savings at the generator after the installation and energy realization rates have been applied.
Verified Gross Dth	The gross savings after the installation and gas realization rates have been applied.
Electric Demand NTG	The net-to-gross ratio (percentage) applied to the Verified Gross Gen kW value to arrive at the Verified Net Gen kW value.
Electric Energy NTG	The net-to-gross ratio (percentage) applied to the Verified Gross Gen kWh value to arrive at the Verified Net Gen kWh value.
Gas NTG	The net-to-gross ratio (percentage) applied to the Verified Gross Dth value to arrive at the Verified Net Dth value.
Verified Net Gen kW	The final demand savings at the generator achieved once the installation rate, realization rate, and net-to-gross ratio were applied.
Verified Net Gen kWh	The final energy savings at the generator achieved once the installation rate, realization rate, and net-to-gross ratio were applied.
Verified Net Dth	The final gas savings achieved once the installation rate, realization rate, and net-to-gross ratio were applied.

Table 22a: Business Segment Installation Rates, Realization Rates, and Final Net, Verified Savings by Program Component

2018 Products Jan. 1 - Dec. 31, 2018	End-Use/Measure Type	Gross Customer kW	Peak Coincident Customer kW	LL	Gross Peak Gen kW	Customer kWh	Gross Gen kWh	Gross Dth	Installation Rate	Demand (kW) Realization Rate	Energy (kWh) Realization Rate	Energy (Dth) Realization Rate	Verified Gross Gen kW	Verified Gross Gen kWh	Verified Gross Dth	Elec Demand NTG	Elec Energy NTG	Gas NTG	Verified Net Gen kW	Verified Net Gen kWh	Verified Net Dth
Business Program																					
Commercial Refrigeration	Prescriptive & Custom	403	317	6.51%	339	2,738,715	2,929,420	845	100.0%	100.0%	100.0%	100.0%	339	2,929,420	845	100.0%	100.0%	100.0%	339	2,929,420	845
Compressed Air Efficiency	Prescriptive	117	103	6.51%	111	425,481	455,109	N/A	100.0%	97.6%	95.5%	N/A	108	434,629	N/A	73.0%	73.0%	N/A	79	317,279	N/A
	Studies & Custom	208	149	6.51%	159	880,799	942,132	N/A	100.0%	100.0%	100.0%	N/A	159	942,132	N/A	87.0%	87.0%	N/A	138	819,655	N/A
Computer Efficiency	Prescriptive	222	222	6.51%	237	1,788,888	1,913,454	N/A	100.0%	100.0%	100.0%	N/A	237	1,913,454	N/A	88.0%	88.0%	N/A	208	1,683,839	N/A
Cooling	Midstream	2,413	2,172	6.51%	2,323	4,773,034	5,105,395	N/A	100.0%	100.0%	100.0%	N/A	2,323	5,105,395	N/A	89.0%	89.0%	N/A	2,068	4,543,802	N/A
	Downstream	560	414	6.51%	443	1,582,500	1,692,694	N/A	100.0%	100.0%	100.0%	N/A	443	1,692,694	N/A	71.0%	71.0%	N/A	315	1,201,813	N/A
	MSHP, Antisweat Heaters, ECM	90	81	6.51%	86	193,932	207,436	N/A	100.0%	100.0%	100.0%	N/A	86	207,436	N/A	100.0%	100.0%	N/A	86	207,436	N/A
	Custom	4	4	6.51%	4	28,615	30,608	N/A	100.0%	100.0%	100.0%	N/A	4	30,608	N/A	87.0%	87.0%	N/A	4	26,629	N/A
Custom Efficiency	Custom	342	239	6.51%	255	613,717	656,452	60	100.0%	100.0%	100.0%	100.0%	255	656,452	60	87.0%	87.0%	87.0%	222	571,113	52
Data Center Efficiency	Holistic	298	274	6.51%	293	2,784,764	2,978,676	N/A	100.0%	100.0%	100.0%	N/A	293	2,978,676	N/A	88.6%	89.7%	N/A	260	2,671,620	N/A
Energy Management Systems		1,015	162	6.51%	174	7,776,111	8,317,586	4,687	100.0%	100.0%	100.0%	100.0%	174	8,317,586	4,687	87.0%	87.0%	90.0%	151	7,236,300	4,219
Heating Efficiency	Prescriptive	12	4	6.51%	4	25,082	26,829	28,660	100.0%	100.0%	100.0%	100.0%	4	26,829	28,660	100.0%	100.0%	86.1%	4	26,829	24,675
LED Street Lights		378	0	6.51%	0	1,569,651	1,678,951	N/A	100.0%	100.0%	100.0%	N/A	0	1,678,951	N/A	90.0%	90.0%	N/A	0	1,511,056	N/A
Lighting Efficiency	Prescriptive & Custom	33,502	22,477	6.51%	24,042	161,961,500	173,239,384	N/A	99.9%	100.0%	100.0%	N/A	24,013	173,027,798	N/A	99.2%	99.2%	N/A	23,624	170,479,917	N/A
Lighting - Small Business	Prescriptive & Custom	9,009	5,284	6.51%	5,652	38,125,585	40,780,388	2,909	100.0%	100.0%	100.0%	100.0%	5,650	40,767,236	2,908	89.7%	89.6%	90.0%	5,052	36,431,520	2,618
Motor & Drive Efficiency	Enhanced Motors	4	2.971	6.51%	3	23,408	25,038	N/A	100.0%	100.0%	100.0%	N/A	3	25,038	N/A	65.0%	65.0%	N/A	2	16,275	N/A
	Prescriptive	2,935	2,247	6.51%	2,404	15,260,537	16,323,176	N/A	100.0%	100.0%	100.0%	N/A	2,404	16,323,176	N/A	65.0%	65.0%	N/A	1,562	10,610,064	N/A
	Custom	15	0	6.51%	0	72,158	77,183	N/A	100.0%	100.0%	100.0%	N/A	0	77,183	N/A	65.0%	65.0%	N/A	0	50,169	N/A
Multifamily Buildings	Prescriptive and Custom	2,871	471	6.51%	504	5,627,539	6,019,402	26,952	100.0%	100.0%	100.0%	100.0%	504	6,019,402	26,952	100.0%	100.0%	100.0%	504	6,019,402	26,952
New Construction	Energy Efficient Buildings	1,758	1,219	6.51%	1,304	5,924,844	6,337,409	11,364	100.0%	100.0%	100.0%	100.0%	1,304	6,337,409	11,364	95.0%	95.0%	95.0%	1,239	6,020,539	10,795
	Energy Design Assistance	6,278	5,742	6.51%	6,142	22,718,403	24,300,356	39,913	100.0%	100.0%	100.0%	100.0%	6,142	24,300,356	39,913	95.0%	95.0%	95.0%	5,835	23,085,338	37,918
Process Efficiency	Prescriptive & Custom	2,994	2,334	6.51%	2,496	19,500,749	20,858,647	N/A	100.0%	100.0%	100.0%	N/A	2,496	20,858,647	N/A	90.0%	90.0%	N/A	2,246	18,772,782	N/A
Recommissioning	Custom	213	41	6.51%	44	1,662,290	1,778,040	1,470	100.0%	100.0%	100.0%	100.0%	44	1,778,040	1,470	90.0%	90.0%	90.0%	40	1,600,236	1,323
Self Direct	Custom	769	588	6.51%	629	3,155,488	3,375,214	N/A	100.0%	100.0%	100.0%	N/A	629	3,375,214	N/A	91.0%	91.0%	N/A	572	3,071,445	N/A
Business Program Total		**66,410**	**44,546**	**6.51%**	**47,648**	**299,213,790**	**320,048,979**	**116,859**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**47,613**	**319,803,760**	**116,858**	**93.6%**	**93.8%**	**93.6%**	**44,550**	**299,904,478**	**109,396**

Table 22b: Residential Segment and Low-Income Segment Installation Rates, Realization Rates, and Final Net, Verified Savings by Program Component

2018 Products Jan. 1 - Dec. 31, 2018	End-Use/Measure Type	Gross Customer kW	Peak Coincident Customer kW	LL	Gross Peak Gen kW	Customer kWh	Gross Gen kWh	Gross Dth	Installation Rate	Demand (kW) Realization Rate	Energy (kWh) Realization Rate	Energy (Dth) Realization Rate	Verified Gross Gen kW	Verified Gross Gen kWh	Verified Gross Dth	Elec Demand NTG	Elec Energy NTG	Gas NTG	Verified Net Gen kW	Verified Net Gen kWh	Verified Net Dth
Residential Program																					
Energy Efficient Showerhead	Showerhead	80	51	7.69%	55	699,278	757,532	45,309	77.1%	100.0%	100.0%	100.0%	43	584,162	34,939	99.0%	99.0%	99.0%	42	578,321	34,870
	Kitchen Aerator	2	3	7.69%	3	21,040	22,793	1,600	27.3%	100.0%	100.0%	100.0%	1	6,222	437	99.0%	99.0%	99.0%	1	6,160	433
	Bath Aerator	3	4	7.69%	5	26,192	28,374	2,502	36.7%	100.0%	100.0%	100.0%	2	10,417	918	99.0%	99.0%	99.0%	2	10,313	910
Energy Feedback Residential		5,276	5,276	7.69%	5,715	19,198,073	20,797,392	86,503	100.0%	100.0%	100.0%	100.0%	5,715	20,797,392	86,503	100.0%	100.0%	100.0%	5,715	20,797,392	86,503
ENERGY STAR New Homes		2,050	1,073	7.69%	1,162	4,011,661	4,345,857	123,357	100.0%	100.0%	100.0%	100.0%	1,162	4,345,857	123,357	92.0%	92.0%	92.0%	1,069	3,998,189	113,489
Evaporative Cooling		8,182	5,726	7.69%	6,204	3,835,216	4,154,713	N/A	100.0%	100.0%	100.0%	N/A	6,204	4,154,713	N/A	69.9%	69.9%	N/A	4,338	2,902,651	N/A
High Efficiency Air Conditioning		8,188	7,336	7.69%	7,947	6,026,379	6,528,414	N/A	100.0%	98.4%	98.8%	N/A	7,816	6,450,300	N/A	68.5%	69.2%	N/A	5,357	4,466,952	N/A
Home Energy Squad		1,640	200	7.69%	217	1,497,820	1,622,598	5,871	100.0%	100.0%	100.0%	100.0%	217	1,622,598	5,871	100.0%	100.0%	100.0%	217	1,622,598	5,871
	Residential LEDs	75,868	6,069	7.69%	6,575	68,964,013	74,709,147	N/A	99.0%	100.1%	100.1%	N/A	6,516	74,036,017	N/A	91.0%	91.0%	N/A	5,929	67,372,776	N/A
	Small Business LEDs	4,820	3,065	6.51%	3,279	24,999,870	26,740,689	N/A	99.0%	100.1%	100.1%	N/A	3,249	26,499,755	N/A	91.0%	91.0%	N/A	2,957	24,114,777	N/A
Home Performance w/ ENERGY STAR		292	195.73	7.69%	212	179,501	194,455	9,084	100.0%	100.0%	100.0%	100.0%	212	194,455	9,084	116.0%	116.0%	116.0%	246	225,567	10,538
Insulation & Air Sealing		622	548	7.69%	594	277,765	300,905	30,515	100.0%	102.1%	102.0%	99.9%	606	306,923	30,484	85.0%	85.0%	85.0%	515	260,884	25,911
Refrigerator & Freezer Recycling		1,139	727	7.69%	788	6,372,766	6,903,657	N/A	100.0%	100.0%	100.0%	N/A	788	6,903,657	N/A	57.7%	57.7%	N/A	455	3,984,616	N/A
Residential Heating		1,409	1,049	7.69%	1,136	5,780,738	6,262,310	108,366	100.0%	100.0%	100.0%	100.0%	1,136	6,262,310	108,366	94.0%	94.0%	86.0%	1,068	5,886,571	93,194
School Education Kits	11W LED	3,234	259	7.69%	280	2,939,782	3,184,684	N/A	91.3%	100.0%	100.0%	N/A	256	2,907,617	N/A	100.0%	100.0%	N/A	256	2,907,617	N/A
	9W LED	5,236	419	7.69%	454	4,759,647	5,156,155	N/A	92.2%	100.0%	100.0%	N/A	418	4,753,975	N/A	100.0%	100.0%	N/A	418	4,753,975	N/A
	Showerhead	142	90	7.69%	98	1,240,808	1,344,175	72,232	48.80%	100.0%	100.0%	100.0%	48	655,957	35,249	100.0%	100.0%	100.0%	48	655,957	35,249
	Kitchen Aerator	16	20	7.69%	21	139,472	151,091	8,119	43.30%	100.0%	100.0%	100.0%	9	65,422	3,516	100.0%	100.0%	100.0%	9	65,422	3,516
	Bathroom Aerator	19	23	7.69%	25	162,944	176,518	9,486	44.50%	100.0%	100.0%	100.0%	11	78,551	4,221	100.0%	100.0%	100.0%	11	78,551	4,221
Thermostat Optimization		210	160	7.69%	173	120,518	130,558	3,941	100.0%	100.0%	100.0%	100.0%	173	130,558	3,941	100.0%	100.0%	100.0%	173	130,558	3,941
Water Heating		15	15	7.69%	17	105,707	114,513	6,437	100.0%	100.0%	100.0%	100.0%	17	114,513	6,437	100.0%	100.0%	90.0%	17	114,513	5,793
Residential Program Total		**118,443**	**32,309**	**7.69%**	**34,958**	**151,359,190**	**163,626,530**	**513,320**	**99.3%**	**99.7%**	**100.0%**	**100.0%**	**34,598**	**160,881,372**	**453,323**	**83.4%**	**90.1%**	**93.6%**	**28,842**	**144,934,361**	**424,438**
Low-Income Program																					
Energy Savings Kits	LEDs	833	66	7.69%	72	757,200	820,279	N/A	74.6%	100.0%	100.0%	100.0%	54	611,929	N/A	100.0%	100.0%	100.0%	54	611,929	N/A
	Showerhead	29	18	7.69%	20	246,602	267,145	6,411	70.1%	100.0%	100.0%	100.0%	14	187,269	4,494	100.0%	100.0%	100.0%	14	187,269	4,494
	Kitchen Aerator	3	4	7.69%	4	28,105	30,446	653	68.1%	100.0%	100.0%	100.0%	3	20,734	445	100.0%	100.0%	100.0%	3	20,734	445
	Bathroom Aerator	3	5	7.69%	5	32,062	34,733	920	64.4%	100.0%	100.0%	100.0%	4	22,368	592	100.0%	100.0%	100.0%	4	22,368	592
Multifamily Weatherization		606	281	7.69%	304	2,064,441	2,236,422	13,485	100.0%	100.0%	100.0%	100.0%	304	2,236,422	13,485	100.0%	100.0%	100.0%	304	2,236,422	13,485
Non-Profit		477	314	6.51%	336	1,505,278	1,610,095	3,839	100.0%	100.0%	100.0%	100.0%	336	1,610,095	3,839	100.0%	100.0%	100.0%	336	1,610,095	3,839
Single-Family Weatherization		989	95	7.69%	103	1,209,460	1,310,216	48,238	100.0%	100.0%	100.0%	100.0%	103	1,310,216	48,238	100.0%	100.0%	100.0%	103	1,310,216	48,238
Low-Income Program Total		**2,941**	**784**	**7.69%**	**845**	**5,843,148**	**6,309,337**	**73,546**	**96.8%**	**100.0%**	**100.0%**	**100.0%**	**817**	**5,999,032**	**71,093**	**100.0%**	**100.0%**	**100.0%**	**817**	**5,999,032**	**71,093**

Cost-Effectiveness

Cost-effectiveness ("cost-benefit") analyses represent the ratio of a product's benefits to its costs. By varying which benefits and costs are included in the calculation, the ratio can show how beneficial a DSM portfolio, program, product, or measure might be from a number of different perspectives (the Participant, Utility, Rate Impact, or Total Resource Cost). In Colorado, the Commission calls for utilities to use the Modified Total Resource Cost ("MTRC") test for evaluating the cost-effectiveness of DSM programs. The MTRC test takes into account system and other benefits, utility and participant costs, as well as environmental adders. These analyses are performed in a multi-step process that takes into account, among other factors, the:

- Savings achieved by the program;
- Participant and utility expenditures on the product, by budget category;
- Avoided costs for the product (discussed in more detail in the next section of this report);
- Incremental O&M, and capital spending and savings, of the product; and
- Lifetime, operating hours, coincidence of savings with summer peak, net-to-gross, transmission loss factors, and realization rates for the product.

The cost-benefit analysis is first determined at the measure level; individual measures are then combined to produce the product-level MTRC, and further the program-level MTRC. All of the products in the portfolio (electric and natural gas) are then combined to create the portfolio-level cost-benefit analysis, as provided in Tables 20 and 21 below.

The Company is reporting 2018 electric and natural gas portfolio MTRC test ratio results of 1.48 and 1.64, respectively. These results are shown in Table 23 and Table 24. The portfolio results are based upon electric net economic benefits of $100.7 million and natural gas net economic benefits $16.0 million. The Company has provided the cost-effectiveness results (MTRC test ratios) for electric and natural gas products in the following tables within this report:[13]

- Business Program: Tables 14a (electric) and 14b (gas)
- Residential Program: Tables 15a (electric) and 15b (gas)
- Low-Income Program: Tables 16a (electric) and 16b (gas)
- Indirect Program: Tables 17a (electric) and 17b (gas)
- Demand Response Program: Table 20 (electric)

[13] C.R.S. 40-3.2-104(6)(d) requires that the Company submit an annual report to the Commission that estimates the cost-effectiveness and net economic benefits of DSM programs, among other documentation.

Table 25: 2018 Electric DSM Portfolio Cost-Benefit Analysis (CBA)

PORTFOLIO TOTAL					2018 ELECTRIC		ACTUAL
2018 Net Present Cost Benefit Summary Analysis For All Participants					**Input Summary and Totals**		
			Rate	Modified	**Program Inputs per Customer kW**		
	Participant Test	Utility Test	Impact Test	TRC Test	Lifetime (Weighted on Generator kWh)	A	12.9 years
	($Total)	($Total)	($Total)	($Total)	Annual Hours	B	8760
					Gross Customer kW	C	1 kW
Benefits					Generator Peak Coincidence Factor	D	38.98%
					Gross Load Factor at Customer	E	24.44%
Avoided Revenue Requirements					Net-to-Gross (Energy)	F	92.1%
Generation Capacity	N/A	$74,282,747	$74,282,747	$74,282,747	Net-to-Gross (Demand)	G	89.7%
Transmission & Distribution Capacity	N/A	$7,610,912	$7,610,912	$7,610,912	Transmission Loss Factor (Energy)	H	6.862%
Marginal Energy	N/A	$148,323,957	$148,323,957	$148,323,957	Transmission Loss Factor (Demand)	I	7.302%
Avoided Emissions (CO2)	N/A	N/A	N/A	$0	**Installation Rate (Energy)**	**J**	**99.3%**
Subtotal				$230,217,615	**Installation Rate (Demand)**	**K**	**99.5%**
Non-Energy Benefits Adder (10.2%)				$23,435,911	MTRC Net Benefit (Cost)	**L**	$466
Subtotal	N/A	$230,217,615	$230,217,615	$253,653,526	MTRC Non-Energy Benefit Adder	**M**	$108
					Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.3753 kW
Other Benefits					Gross Annual kWh Saved at Customer	(B x E x C)	2,141 kWh
Bill Reduction - Electric	$419,109,173	N/A	N/A	N/A	Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,957 kWh
Participant Rebates and Incentives	$56,458,546	N/A	N/A	$56,458,546	Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	2,101 kWh
Incremental Capital Savings	$0	N/A	N/A	$0			
Incremental O&M Savings	$0	N/A	N/A	$0	**Program Summary All Participants**		
Subtotal	$475,567,719	N/A	N/A	$56,458,546	**Total Budget**	N	**$91,960,619**
					Gross kW Saved at Customer	O	216,061 kW
Total Benefits	$475,567,719	$230,217,615	$230,217,615	$310,112,072	**Net coincident kW Saved at Generator**	**(G x O x K) x D / (1 - I)**	**81,089 kW**
Costs					Gross Annual kWh Saved at Customer	(B x E x O)	462,505,738 kWh
					Gross Installed Annual kWh Saved at Customer	**(B x E x O x J)**	459,232,675 kWh
Utility Project Costs					Net Annual kWh Saved at Customer	(F x (B x E x O x J))	422,746,295 kWh
Program Planning & Design	N/A	$0	$0	$0	**Net Annual kWh Saved at Generator**	**((F x (B x E x O x J)) / (1 - H))**	**453,892,959 kWh**
Administration & Program Delivery	N/A	$30,261,246	$30,261,246	$30,261,246	**TRC Net Benefits with Adder**	(O x L)	**$100,655,024**
Advertising/Promotion/Customer Ed	N/A	$3,529,600	$3,529,600	$3,529,600	**TRC Net Benefits without Adder**	(O x (L - M))	**$77,219,113**
Participant Rebates and Incentives	N/A	$56,458,546	$56,458,546	$56,458,546			
Equipment & Installation	N/A	$309,991	$309,991	$309,991	**Utility Program Cost per kWh Lifetime**		**$0.0157**
Measurement and Verification	N/A	$1,401,236	$1,401,236	$1,401,236	**Utility Program Cost per kW at Gen**		**$1,134**
Subtotal	N/A	$91,960,619	$91,960,619	$91,960,619			
Utility Revenue Reduction							
Revenue Reduction - Electric	N/A	N/A	$382,609,837	N/A			
Subtotal	N/A	N/A	$382,609,837	N/A			
Participant Costs							
Incremental Capital Costs	$123,055,547	N/A	N/A	$113,595,775			
Incremental O&M Costs	$7,813,311	N/A	N/A	$3,900,654			
Subtotal	$130,868,859	N/A	N/A	$117,496,429			
Total Costs	$130,868,859	$91,960,619	$474,570,456	$209,457,048			
Net Benefit (Cost)	$344,698,860	$138,256,996	($244,352,841)	$100,655,024			
Benefit/Cost Ratio	3.63	2.50	0.49	1.48			

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Table 26: 2018 Natural Gas DSM Portfolio Cost-Benefit Analysis (CBA)

PORTFOLIO TOTAL						2018 GAS		ACTUAL
2018 Net Present Cost Benefit Summary Analysis For All Participants						**Input Summary and Totals**		
			Rate	Modified		**Program Assumptions:**		
	Participant Test ($Total)	Utility Test ($Total)	Impact Test ($Total)	TRC Test ($Total)		Lifetime (Weighted on Dth)	A	14.24 years
						Net-to-Gross (Weighted on Dth)	B	93.32%
						Install Rate (Weighted on Dth)	C	93.3%
Benefits								
Avoided Revenue Requirements						**Program Totals:**		
Commodity Cost Reduction	N/A	$23,482,394	$23,482,394	$23,482,394		**Total Dth/Yr Saved**	F	**604,928**
Variable O&M Savings	N/A	$268,665	$268,665	$268,665		Utility Costs per Net Dth/Yr	G	$25.50
Demand Savings	N/A	$2,507,930	$2,507,930	$2,507,930		Net Benefit (Cost) per Gross Dth/Yr	H	$26.53
Subtotal				$26,258,988		Non-Energy Benefits Adder per Gross Dth/Yr	I	$3.25
Emissions Non-Energy Benefits Adder (7.5%)				$1,966,461		**Annual Dth/$M**	($1M / G)	**39,219**
Subtotal	N/A	$26,258,988	$26,258,988	$28,225,449		**Total Utility Budget**	(G x F)	**$15,424,453**
						Total MTRC Net Benefits with Adder	(F x H)	**$16,045,868**
Other Benefits						**Total MTRC Net Benefits without Adder**	(H - I) x F	**$14,079,406**
Bill Reduction - Gas	$53,836,721	N/A	N/A	N/A				
Participant Rebates and Incentives	$10,265,494	N/A	N/A	$10,265,494		**Utility Program Cost per Net Dth Lifetime**	(G / A)	**$1.79**
Incremental Capital Savings	$0	N/A	N/A	$0				
Incremental O&M Savings	$18,183,213	N/A	N/A	$12,065,136				
Subtotal	$82,285,429	N/A	N/A	$22,330,630				
Total Benefits	$82,285,429	$26,258,988	$26,258,988	$50,556,079				
Costs								
Utility Project Costs								
Program Planning & Design	N/A	$0	$0	$0				
Administration & Program Delivery	N/A	$3,860,640	$3,860,640	$3,860,640				
Advertising/Promotion/Customer Ed	N/A	$507,612	$507,612	$507,612				
Participant Rebates and Incentives	N/A	$10,265,494	$10,265,494	$10,265,494				
Equipment & Installation	N/A	$63,932	$63,932	$63,932				
Measurement and Verification	N/A	$726,776	$726,776	$726,776				
Subtotal	N/A	$15,424,453	$15,424,453	$15,424,453				
Utility Revenue Reduction								
Revenue Reduction - Gas	N/A	N/A	$46,692,198	N/A				
Subtotal	N/A	N/A	$46,692,198	N/A				
Participant Costs								
Incremental Capital Costs	$20,707,043	N/A	N/A	$19,085,758				
Incremental O&M Costs	$0	N/A	N/A	$0				
Subtotal	$20,707,043	N/A	N/A	$19,085,758				
Total Costs	$20,707,043	$15,424,453	$62,116,651	$34,510,212				
Net Benefit (Cost)	$61,578,386	$10,834,535	($35,857,663)	$16,045,868				
Benefit/Cost Ratio	3.97	1.70	0.42	1.46				

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Appendix A: Avoided Cost Assumptions

The following sections summarize the avoided cost assumptions Public Service has made in order to perform the cost-effectiveness tests for electric and gas programs, and for which the Company asked approval of and received for use in the status report and incentives calculations for 2018 calendar year achievements.

A. 2018 Electric Programs

In order to determine the cost-effectiveness of its electric energy efficiency and load management programs Public Service must first calculate the avoided generation, transmission, distribution, and marginal energy costs these programs avoid. Below are tables showing the avoided cost assumptions used in this plan.

1. Estimated Annual Avoided Generation Capacity Costs (*Source:* Public Service Resource Planning)

Capacity costs reflect current generic capacity cost estimates used in Phase II of the Public Service Company of Colorado's 2011 Electric Resource Plan (Docket No. 11A-869E) for a gas-fired CT referred to as a "Resource Acquisition Period (RAP) CT" in compliance with paragraph 96 in Decision C14-0731 (Docket No. 13A-0686EG). These values exclude the ancillary services adjustments per paragraph 97 in this same decision.

	CT		CT
Year	Gen Capacity $/kW-mo	Year	Gen Capacity $/kW-mo
		2028	$11.02
2018	$8.77	2029	$11.27
2019	$8.97	2030	$11.53
2020	$9.18	2031	$11.80
2021	$9.39	2032	$12.07
2022	$9.61	2033	$12.35
2023	$9.83	2034	$12.64
2024	$10.06	2035	$12.93
2025	$10.29	2036	$13.23
2026	$10.29	2037	$13.53
2027	$10.77		

2. **Estimated Annual Avoided Transmission and Distribution ("T&D") Capacity Costs (*Source:* Proceeding No. 16A-0512EG)**
Paragraph 153 in Decision R17-0028 (Proceeding No. 16A-0512EG) approved "the avoided cost assumptions in Appendix E of the Modified Plan."

3. **Estimated Annual Avoided Energy Costs (*Source:* Public Service Resource** Planning Analytics**)**
In order to determine avoided energy costs, the Company's Resource Planning Analytics group produced two Strategist runs, one with and one without the current approved goal level of DSM of 400 GWh/year expected to be acquired from January 1, 2018 through 2037. These runs simulated the economic dispatch of the Company's generation fleet using assumptions regarding must-run plants, must-take resources, minimum and maximum generator output capability, unit heat rates, and unit fuel prices. Consistent with the method proposed by the Company in Proceeding No. 13A-0686EG, the avoided energy costs attributable to future DSM were determined using a comparison of the annual total system variable costs (with and without future DSM), to the annual total energy served (MWh) with and without future DSM. Including variable O&M, fuel, and dump energy.

Simple-Average Hourly DSM Avoided Energy			
Year	$/MWh	Year	$/MWh
		2028	$48.87
2018	$28.86	2029	$40.79
2019	$30.52	2030	$40.82
2020	$36.43	2031	$41.69
2021	$39.09	2032	$41.60
2022	$41.10	2033	$45.88
2023	$42.41	2034	$49.34
2024	$43.92	2035	$50.22
2025	$45.86	2036	$51.98
2026	$48.15	2037	$52.06
2027	$47.46		

4. **Estimated Annual Avoided Emissions Costs (includes CO_2) (*Source:* Public Service Resource Planning)**
In the Public Services Company of Colorado's 2016 Electric Resource Plan (Docket No. 16A-0396E), the base-case assumed zero cost for CO2 emissions. This value is set to $0 for all future years.

B. 2018 Natural Gas Programs

In order to determine the cost-effectiveness of its electric energy efficiency and load management programs Public Service must first calculate the avoided generation, transmission, distribution, and marginal energy costs these programs avoid. Below are tables showing the avoided cost assumptions used in this plan.

1. **Estimated Commodity Cost of Gas (*Source:* Public Service Gas Resource Planning)**
   The following table outlines the gas price forecast as approved in Proceeding No. 16A-0512EG.

Year	$/Dth	Year	$/Dth
		2028	$5.29
2018	$2.75	**2029**	$5.52
2019	$2.98	**2030**	$5.68
2020	$3.57	**2031**	$5.93
2021	$4.03	**2032**	$6.19
2022	$4.21	**2033**	$6.38
2023	$4.38	**2034**	$6.55
2024	$4.50	**2035**	$6.70
2025	$4.65	**2036**	$6.84
2026	$4.81	**2037**	$6.97
2027	$5.04		

2. **Estimated Avoided Variable O&M Costs (*Source:* Public Service Pricing and Planning)**

   The following table outlines the gas price forecast as approved in Proceeding No. 16A-0512EG.

Year	$/Dth
2018-2037	$0.05

3. **Estimated Annual Avoided Reservation Costs (used to estimate capacity savings – Peak Day Dth savings estimated as 1 percent of annual Dth savings) (*Source:* Public Service Gas Resource Planning)**
   The following table outlines the gas price forecast as approved in Proceeding No. 16A-0512EG.

Year	$/Dth
2018-2037	$46.67

Appendix B: Cost-Benefit Analyses

The following section provides the cost-effectiveness analyses for all products and programs included in the Company's 2018 DSM Plan.

PORTFOLIO TOTAL — 2018 ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$74,282,747	$74,282,747	$74,282,747
Transmission & Distribution Capaci	N/A	$7,610,912	$7,610,912	$7,610,912
Marginal Energy	N/A	$148,323,957	$148,323,957	$148,323,957
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$230,217,615
Non-Energy Benefits Adder (10.2%)				$23,435,911
Subtotal	N/A	$230,217,615	$230,217,615	$253,653,526
Other Benefits				
Bill Reduction - Electric	$419,109,173	N/A	N/A	N/A
Participant Rebates and Incentives	$56,458,546	N/A	N/A	$56,458,546
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$475,567,719	N/A	N/A	$56,458,546
Total Benefits	$475,567,719	$230,217,615	$230,217,615	$310,112,072
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$30,261,246	$30,261,246	$30,261,246
Advertising/Promotion/Customer Ed	N/A	$3,529,600	$3,529,600	$3,529,600
Participant Rebates and Incentives	N/A	$56,458,546	$56,458,546	$56,458,546
Equipment & Installation	N/A	$309,991	$309,991	$309,991
Measurement and Verification	N/A	$1,401,236	$1,401,236	$1,401,236
Subtotal	N/A	$91,960,619	$91,960,619	$91,960,619
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$382,609,837	N/A
Subtotal	N/A	N/A	$382,609,837	N/A
Participant Costs				
Incremental Capital Costs	$123,055,547	N/A	N/A	$113,595,775
Incremental O&M Costs	$7,813,311	N/A	N/A	$3,900,654
Subtotal	$130,868,859	N/A	N/A	$117,496,429
Total Costs	$130,868,859	$91,960,619	$474,570,456	$209,457,048
Net Benefit (Cost)	$344,698,860	$138,256,996	($244,352,841)	$100,655,024
Benefit/Cost Ratio	3.63	2.50	0.49	1.48

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12.9 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	38.98%
Gross Load Factor at Customer	E	24.44%
Net-to-Gross (Energy)	F	92.1%
Net-to-Gross (Demand)	G	89.7%
Transmission Loss Factor (Energy)	H	6.862%
Transmission Loss Factor (Demand)	I	7.302%
Installation Rate (Energy)	**J**	**99.3%**
Installation Rate (Demand)	**K**	**99.5%**
MTRC Net Benefit (Cost)	**L**	$466
MTRC Non-Energy Benefit Adder	**M**	$108
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.3753 kW
Gross Annual kWh Saved at Customer	(B x E x C)	2,141 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,957 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	2,101 kWh

Program Summary All Participants

Total Budget	N	**$91,960,619**
Gross kW Saved at Customer	O	216,061 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**81,089 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	462,505,738 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	459,232,675 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	422,746,295 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**453,892,959 kWh**
TRC Net Benefits with Adder	(O x L)	**$100,655,024**
TRC Net Benefits without Adder	(O x (L - M))	**$77,219,113**
Utility Program Cost per kWh Lifetime		**$0.0157**
Utility Program Cost per kW at Gen		**$1,134**

EE PORTFOLIO TOTAL — 2018 ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$68,890,733	$68,890,733	$68,890,733
Transmission & Distribution Capaci	N/A	$7,063,086	$7,063,086	$7,063,086
Marginal Energy	N/A	$148,310,511	$148,310,511	$148,310,511
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$224,264,330
Non-Energy Benefits Adder (10.2%)				$22,840,583
Subtotal	N/A	$224,264,330	$224,264,330	$247,104,912
Other Benefits				
Bill Reduction - Electric	$418,937,204	N/A	N/A	N/A
Participant Rebates and Incentives	$47,941,646	N/A	N/A	$47,941,646
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$466,878,850	N/A	N/A	$47,941,646
Total Benefits	$466,878,850	$224,264,330	$224,264,330	$295,046,558
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$27,181,621	$27,181,621	$27,181,621
Advertising/Promotion/Customer Ed	N/A	$2,678,901	$2,678,901	$2,678,901
Participant Rebates and Incentives	N/A	$47,941,646	$47,941,646	$47,941,646
Equipment & Installation	N/A	$309,991	$309,991	$309,991
Measurement and Verification	N/A	$1,401,236	$1,401,236	$1,401,236
Subtotal	N/A	$79,513,396	$79,513,396	$79,513,396
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$382,437,868	N/A
Subtotal	N/A	N/A	$382,437,868	N/A
Participant Costs				
Incremental Capital Costs	$122,790,832	N/A	N/A	$113,331,060
Incremental O&M Costs	$7,813,311	N/A	N/A	$3,900,654
Subtotal	$130,604,144	N/A	N/A	$117,231,714
Total Costs	$130,604,144	$79,513,396	$461,951,263	$196,745,109
Net Benefit (Cost)	$336,274,706	$144,750,934	($237,686,934)	$98,301,449
Benefit/Cost Ratio	3.57	2.82	0.49	1.50

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12.9 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	39.05%
Gross Load Factor at Customer	E	26.13%
Net-to-Gross (Energy)	F	92.1%
Net-to-Gross (Demand)	G	89.0%
Transmission Loss Factor (Energy)	H	6.862%
Transmission Loss Factor (Demand)	I	7.275%
Installation Rate (Energy)	**J**	**99.3%**
Installation Rate (Demand)	**K**	**99.5%**
MTRC Net Benefit (Cost)	**L**	$487
MTRC Non-Energy Benefit Adder	**M**	$113
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.3727 kW
Gross Annual kWh Saved at Customer	(B x E x C)	2,289 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	2,093 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	2,247 kWh

Program Summary All Participants

Total Budget	N	**$79,513,396**
Gross kW Saved at Customer	O	202,003 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**75,285 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	462,469,492 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	459,196,404 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	422,710,021 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**453,853,694 kWh**
TRC Net Benefits with Adder	(O x L)	**$98,301,449**
TRC Net Benefits without Adder	(O x (L - M))	**$75,460,866**
Utility Program Cost per kWh Lifetime		**$0.0135**
Utility Program Cost per kW at Gen		**$1,056**

BUSINESS PROGRAM TOTAL — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$48,710,399	$48,710,399	$48,710,399
Transmission & Distribution Capaci	N/A	$5,001,044	$5,001,044	$5,001,044
Marginal Energy	N/A	$118,705,763	$118,705,763	$118,705,763
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$172,417,205
Non-Energy Benefits Adder (10%)				$17,241,721
Subtotal	N/A	$172,417,205	$172,417,205	$189,658,926
Other Benefits				
Bill Reduction - Electric	$299,024,681	N/A	N/A	N/A
Participant Rebates and Incentives	$31,514,156	N/A	N/A	$31,514,156
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$330,538,837	N/A	N/A	$31,514,156
Total Benefits	$330,538,837	$172,417,205	$172,417,205	$221,173,081
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$15,124,682	$15,124,682	$15,124,682
Advertising/Promotion/Customer Ed	N/A	$731,142	$731,142	$731,142
Participant Rebates and Incentives	N/A	$31,514,156	$31,514,156	$31,514,156
Equipment & Installation	N/A	$12,210	$12,210	$12,210
Measurement and Verification	N/A	$535,622	$535,622	$535,622
Subtotal	N/A	$47,917,813	$47,917,813	$47,917,813
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$280,646,268	N/A
Subtotal	N/A	N/A	$280,646,268	N/A
Participant Costs				
Incremental Capital Costs	$100,952,385	N/A	N/A	$94,881,860
Incremental O&M Costs	$7,419,711	N/A	N/A	$3,295,291
Subtotal	$108,372,096	N/A	N/A	$98,177,151
Total Costs	$108,372,096	$47,917,813	$328,564,081	$146,094,964
Net Benefit (Cost)	$222,166,741	$124,499,392	($156,146,876)	$75,078,117
Benefit/Cost Ratio	3.05	3.60	0.52	1.51

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	16.2 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	67.08%
Gross Load Factor at Customer	E	51.43%
Net-to-Gross (Energy)	F	93.8%
Net-to-Gross (Demand)	G	93.6%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**99.9%**
Installation Rate (Demand)	**K**	**99.9%**
MTRC Net Benefit (Cost)	**L**	$1,131
MTRC Non-Energy Benefit Adder	**M**	$260
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.6708 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,506 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	4,222 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	4,516 kWh

Program Summary All Participants

Total Budget	N	**$47,917,813**
Gross kW Saved at Customer	O	66,410 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**44,550 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	299,213,790 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	298,926,436 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	280,380,696 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**299,904,478 kWh**
TRC Net Benefits with Adder	(O x L)	**$75,078,117**
TRC Net Benefits without Adder	(O x (L - M))	**$57,836,397**
Utility Program Cost per kWh Lifetime		**$0.0098**
Utility Program Cost per kW at Gen		**$1,076**

RESIDENTIAL PROGRAM TOTAL — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$18,602,856	$18,602,856	$18,602,856
Transmission & Distribution Capaci	N/A	$1,901,524	$1,901,524	$1,901,524
Marginal Energy	N/A	$26,822,653	$26,822,653	$26,822,653
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$47,327,033
Non-Energy Benefits Adder (10%)				$4,732,703
Subtotal	N/A	$47,327,033	$47,327,033	$52,059,736
Other Benefits				
Bill Reduction - Electric	$105,874,840	N/A	N/A	N/A
Participant Rebates and Incentives	$13,219,298	N/A	N/A	$13,219,298
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$119,094,138	N/A	N/A	$13,219,298
Total Benefits	$119,094,138	$47,327,033	$47,327,033	$65,279,034
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$7,084,837	$7,084,837	$7,084,837
Advertising/Promotion/Customer Ed	N/A	$1,254,339	$1,254,339	$1,254,339
Participant Rebates and Incentives	N/A	$13,219,298	$13,219,298	$13,219,298
Equipment & Installation	N/A	$296,541	$296,541	$296,541
Measurement and Verification	N/A	$232,581	$232,581	$232,581
Subtotal	N/A	$22,087,596	$22,087,596	$22,087,596
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$91,928,542	N/A
Subtotal	N/A	N/A	$91,928,542	N/A
Participant Costs				
Incremental Capital Costs	$16,286,028	N/A	N/A	$14,034,753
Incremental O&M Costs	$488,802	N/A	N/A	$663,092
Subtotal	$16,774,829	N/A	N/A	$14,697,845
Total Costs	$16,774,829	$22,087,596	$114,016,137	$36,785,441
Net Benefit (Cost)	$102,319,308	$25,239,437	($66,689,105)	$28,493,593
Benefit/Cost Ratio	7.10	2.14	0.42	1.77

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	6.6 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	27.26%
Gross Load Factor at Customer	E	14.59%
Net-to-Gross (Energy)	F	90.2%
Net-to-Gross (Demand)	G	83.4%
Transmission Loss Factor (Energy)	H	7.497%
Transmission Loss Factor (Demand)	I	7.643%
Installation Rate (Energy)	**J**	**98.2%**
Installation Rate (Demand)	**K**	**98.9%**
MTRC Net Benefit (Cost)	**L**	$241
MTRC Non-Energy Benefit Adder	**M**	$40
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.2435 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,278 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,132 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	1,224 kWh

Program Summary All Participants

Total Budget	N	**$22,087,596**
Gross kW Saved at Customer	O	118,443 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**28,842 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	151,359,190 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	148,655,101 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	134,068,403 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**144,934,361 kWh**
TRC Net Benefits with Adder	(O x L)	**$28,493,593**
TRC Net Benefits without Adder	(O x (L - M))	**$23,760,890**
Utility Program Cost per kWh Lifetime		**$0.0231**
Utility Program Cost per kW at Gen		**$766**

LOW-INCOME PROGRAM TOTAL — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$774,428	$774,428	$774,428
Transmission & Distribution Capaci	N/A	$78,585	$78,585	$78,585
Marginal Energy	N/A	$1,907,984	$1,907,984	$1,907,984
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$2,760,998
Non-Energy Benefits Adder (25%)				$690,250
Subtotal	N/A	$2,760,998	$2,760,998	$3,451,248
Other Benefits				
Bill Reduction - Electric	$6,961,501	N/A	N/A	N/A
Participant Rebates and Incentives	$3,041,889	N/A	N/A	$3,041,889
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$95,201	N/A	N/A	$57,729
Subtotal	$10,098,591	N/A	N/A	$3,099,618
Total Benefits	$10,098,591	$2,760,998	$2,760,998	$6,550,866
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$415,141	$415,141	$415,141
Advertising/Promotion/Customer Ed	N/A	$227,925	$227,925	$227,925
Participant Rebates and Incentives	N/A	$3,041,889	$3,041,889	$3,041,889
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$94,080	$94,080	$94,080
Subtotal	N/A	$3,779,035	$3,779,035	$3,779,035
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$6,733,492	N/A
Subtotal	N/A	N/A	$6,733,492	N/A
Participant Costs				
Incremental Capital Costs	$3,180,168	N/A	N/A	$3,180,168
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$3,180,168	N/A	N/A	$3,180,168
Total Costs	$3,180,168	$3,779,035	$10,512,527	$6,959,202
Net Benefit (Cost)	$6,918,424	($1,018,037)	($7,751,529)	($408,337)
Benefit/Cost Ratio	3.18	0.73	0.26	0.94

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	11.8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	26.56%
Gross Load Factor at Customer	E	22.68%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.389%
Transmission Loss Factor (Demand)	I	7.500%
Installation Rate (Energy)	**J**	**95.1%**
Installation Rate (Demand)	**K**	**96.8%**
MTRC Net Benefit (Cost)	**L**	-$139
MTRC Non-Energy Benefit Adder	**M**	$235
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.2778 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,987 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,889 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	2,040 kWh

Program Summary All Participants

Total Budget	N	**$3,779,035**
Gross kW Saved at Customer	O	2,941 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**817 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	5,843,148 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	5,555,771 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	5,555,771 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**5,999,032 kWh**
TRC Net Benefits with Adder	(O x L)	**($408,337)**
TRC Net Benefits without Adder	(O x (L - M))	**($1,098,586)**
Utility Program Cost per kWh Lifetime		**$0.0535**
Utility Program Cost per kW at Gen		**$4,625**

DR PORTFOLIO TOTAL — 2018 ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$5,392,014	$5,392,014	$5,392,014
Transmission & Distribution Capaci	N/A	$547,826	$547,826	$547,826
Marginal Energy	N/A	$13,446	$13,446	$13,446
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$5,953,285
Non-Energy Benefits Adder (10%)				$595,329
Subtotal	N/A	$5,953,285	$5,953,285	$6,548,614
Other Benefits				
Bill Reduction - Electric	$171,969	N/A	N/A	N/A
Participant Rebates and Incentives	$8,516,900	N/A	N/A	$8,516,900
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$8,688,869	N/A	N/A	$8,516,900
Total Benefits	$8,688,869	$5,953,285	$5,953,285	$15,065,514
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$3,079,625	$3,079,625	$3,079,625
Advertising/Promotion/Customer Ed	N/A	$850,699	$850,699	$850,699
Participant Rebates and Incentives	N/A	$8,516,900	$8,516,900	$8,516,900
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$12,447,223	$12,447,223	$12,447,223
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$171,969	N/A
Subtotal	N/A	N/A	$171,969	N/A
Participant Costs				
Incremental Capital Costs	$264,715	N/A	N/A	$264,715
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$264,715	N/A	N/A	$264,715
Total Costs	$264,715	$12,447,223	$12,619,192	$12,711,938
Net Benefit (Cost)	$8,424,154	($6,493,938)	($6,665,907)	$2,353,575
Benefit/Cost Ratio	32.82	0.48	0.47	1.19

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12.8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	38.11%
Gross Load Factor at Customer	E	0.03%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$167
MTRC Non-Energy Benefit Adder	**M**	$42
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.4129 kW
Gross Annual kWh Saved at Customer	(B x E x C)	3 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3 kWh

Program Summary All Participants

Total Budget	N	**$12,447,223**
Gross kW Saved at Customer	O	14,058 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**5,804 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	36,246 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	36,246 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	36,246 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**39,266 kWh**
TRC Net Benefits with Adder	(O x L)	**$2,353,575**
TRC Net Benefits without Adder	(O x (L - M))	**$1,758,247**
Utility Program Cost per kWh Lifetime		**$24.8382**
Utility Program Cost per kW at Gen		**$2,145**

COMMERCIAL REFRIGERATION EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$326,336	$326,336	$326,336
Transmission & Distribution Capaci	N/A	$33,277	$33,277	$33,277
Marginal Energy	N/A	$1,001,508	$1,001,508	$1,001,508
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$1,361,121
Non-Energy Benefits Adder (10%)				$136,112
Subtotal	N/A	$1,361,121	$1,361,121	$1,497,233
Other Benefits				
Bill Reduction - Electric	$1,967,565	N/A	N/A	N/A
Participant Rebates and Incentives	$154,182	N/A	N/A	$154,182
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$15,766	N/A	N/A	$15,766
Subtotal	$2,137,513	N/A	N/A	$169,949
Total Benefits	$2,137,513	$1,361,121	$1,361,121	$1,667,182
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$336,701	$336,701	$336,701
Advertising/Promotion/Customer Ed	N/A	$2,536	$2,536	$2,536
Participant Rebates and Incentives	N/A	$154,182	$154,182	$154,182
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$15,516	$15,516	$15,516
Subtotal	N/A	$508,936	$508,936	$508,936
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$1,967,565	N/A
Subtotal	N/A	N/A	$1,967,565	N/A
Participant Costs				
Incremental Capital Costs	$621,024	N/A	N/A	$621,024
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$621,024	N/A	N/A	$621,024
Total Costs	$621,024	$508,936	$2,476,501	$1,129,960
Net Benefit (Cost)	$1,516,490	$852,185	($1,115,379)	$537,222
Benefit/Cost Ratio	3.44	2.67	0.55	1.48

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12.7 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	78.69%
Gross Load Factor at Customer	E	77.65%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$1,334
MTRC Non-Energy Benefit Adder	**M**	$338
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8417 kW
Gross Annual kWh Saved at Customer	(B x E x C)	6,802 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	6,802 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	7,276 kWh

Program Summary All Participants

Total Budget	N	**$508,936**
Gross kW Saved at Customer	O	403 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**339 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	2,738,715 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	2,738,715 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	2,738,715 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**2,929,420 kWh**
TRC Net Benefits with Adder	(O x L)	**$537,222**
TRC Net Benefits without Adder	(O x (L - M))	**$401,110**
Utility Program Cost per kWh Lifetime		**$0.0137**
Utility Program Cost per kW at Gen		**$1,502**

COMPRESSED AIR EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$233,530	$233,530	$233,530
Transmission & Distribution Capaci	N/A	$24,231	$24,231	$24,231
Marginal Energy	N/A	$418,735	$418,735	$418,735
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$676,496
Non-Energy Benefits Adder (10%)				$67,650
Subtotal	N/A	$676,496	$676,496	$744,146
Other Benefits				
Bill Reduction - Electric	$1,136,869	N/A	N/A	N/A
Participant Rebates and Incentives	$217,092	N/A	N/A	$217,092
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$477	N/A	N/A	$335
Subtotal	$1,354,439	N/A	N/A	$217,427
Total Benefits	$1,354,439	$676,496	$676,496	$961,573
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$209,062	$209,062	$209,062
Advertising/Promotion/Customer Ed	N/A	$24,392	$24,392	$24,392
Participant Rebates and Incentives	N/A	$217,092	$217,092	$217,092
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$7,591	$7,591	$7,591
Subtotal	N/A	$458,138	$458,138	$458,138
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$914,438	N/A
Subtotal	N/A	N/A	$914,438	N/A
Participant Costs				
Incremental Capital Costs	$502,083	N/A	N/A	$402,030
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$502,083	N/A	N/A	$402,030
Total Costs	$502,083	$458,138	$1,372,576	$860,168
Net Benefit (Cost)	$852,356	$218,358	($696,080)	$101,405
Benefit/Cost Ratio	2.70	1.48	0.49	1.12

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.6 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	77.53%
Gross Load Factor at Customer	E	45.87%
Net-to-Gross (Energy)	F	82.4%
Net-to-Gross (Demand)	G	81.3%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**98.7%**
Installation Rate (Demand)	**K**	**99.1%**
MTRC Net Benefit (Cost)	**L**	$312
MTRC Non-Energy Benefit Adder	**M**	$208
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.6678 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,019 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,270 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,498 kWh

Program Summary All Participants

Total Budget	N	**$458,138**
Gross kW Saved at Customer	O	325 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**217 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,306,280 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,289,326 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,062,919 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,136,934 kWh**
TRC Net Benefits with Adder	(O x L)	**$101,405**
TRC Net Benefits without Adder	(O x (L - M))	**$33,755**
Utility Program Cost per kWh Lifetime		**$0.0258**
Utility Program Cost per kW at Gen		**$2,110**

COMPUTER EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$93,487	$93,487	$93,487
Transmission & Distribution Capaci	N/A	$9,594	$9,594	$9,594
Marginal Energy	N/A	$255,388	$255,388	$255,388
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$358,469
Non-Energy Benefits Adder (10%)				$35,847
Subtotal	N/A	$358,469	$358,469	$394,316
Other Benefits				
Bill Reduction - Electric	$603,689	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$603,689	N/A	N/A	$0
Total Benefits	$603,689	$358,469	$358,469	$394,316
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$129,688	$129,688	$129,688
Advertising/Promotion/Customer Ed	N/A	$2,000	$2,000	$2,000
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$131,688	$131,688	$131,688
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$531,247	N/A
Subtotal	N/A	N/A	$531,247	N/A
Participant Costs				
Incremental Capital Costs	$317,986	N/A	N/A	$279,828
Incremental O&M Costs	$7,951	N/A	N/A	$3,605
Subtotal	$325,937	N/A	N/A	$283,433
Total Costs	$325,937	$131,688	$662,935	$415,121
Net Benefit (Cost)	$277,752	$226,781	($304,466)	($20,805)
Benefit/Cost Ratio	1.85	2.72	0.54	0.95

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	5.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	100.00%
Gross Load Factor at Customer	E	92.19%
Net-to-Gross (Energy)	F	88.0%
Net-to-Gross (Demand)	G	88.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$94
MTRC Non-Energy Benefit Adder	**M**	$162
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.9413 kW
Gross Annual kWh Saved at Customer	(B x E x C)	8,076 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	7,107 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	7,602 kWh

Program Summary All Participants		
Total Budget	N	**$131,688**
Gross kW Saved at Customer	O	222 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**208 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,788,888 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,788,888 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,574,221 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,683,839 kWh**
TRC Net Benefits with Adder	(O x L)	**($20,805)**
TRC Net Benefits without Adder	(O x (L - M))	**($56,652)**
Utility Program Cost per kWh Lifetime		**$0.0156**
Utility Program Cost per kW at Gen		**$632**

COOLING **2018 ELECTRIC ACTUAL**

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$2,822,468	$2,822,468	$2,822,468
Transmission & Distribution Capaci	N/A	$288,462	$288,462	$288,462
Marginal Energy	N/A	$2,589,814	$2,589,814	$2,589,814
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$5,700,744
Non-Energy Benefits Adder (10%)				$570,074
Subtotal	N/A	$5,700,744	$5,700,744	$6,270,819
Other Benefits				
Bill Reduction - Electric	$7,531,606	N/A	N/A	N/A
Participant Rebates and Incentives	$2,447,511	N/A	N/A	$2,447,511
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$9,979,118	N/A	N/A	$2,447,511
Total Benefits	$9,979,118	$5,700,744	$5,700,744	$8,718,330
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$4,510,591	$4,510,591	$4,510,591
Advertising/Promotion/Customer Ed	N/A	$66,292	$66,292	$66,292
Participant Rebates and Incentives	N/A	$2,447,511	$2,447,511	$2,447,511
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$18,800	$18,800	$18,800
Subtotal	N/A	$7,043,194	$7,043,194	$7,043,194
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$6,377,280	N/A
Subtotal	N/A	N/A	$6,377,280	N/A
Participant Costs				
Incremental Capital Costs	$5,063,453	N/A	N/A	$4,315,230
Incremental O&M Costs	$18,037	N/A	N/A	$12,806
Subtotal	$5,081,490	N/A	N/A	$4,328,036
Total Costs	$5,081,490	$7,043,194	$13,420,474	$11,371,231
Net Benefit (Cost)	$4,897,628	($1,342,450)	($7,719,730)	($2,652,901)
Benefit/Cost Ratio	1.96	0.81	0.42	0.77

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	18.4 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	87.08%
Gross Load Factor at Customer	E	24.49%
Net-to-Gross (Energy)	F	85.0%
Net-to-Gross (Demand)	G	86.5%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$865
MTRC Non-Energy Benefit Adder	**M**	$186
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8061 kW
Gross Annual kWh Saved at Customer	(B x E x C)	2,145 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,823 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	1,950 kWh

Program Summary All Participants

Total Budget	N	**$7,043,194**
Gross kW Saved at Customer	O	3,066 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**2,472 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	6,578,081 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	6,578,081 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	5,590,402 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**5,979,679 kWh**
TRC Net Benefits with Adder	(O x L)	**($2,652,901)**
TRC Net Benefits without Adder	(O x (L - M))	**($3,222,975)**
Utility Program Cost per kWh Lifetime		**$0.0642**
Utility Program Cost per kW at Gen		**$2,849**

CUSTOM EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$280,373	$280,373	$280,373
Transmission & Distribution Capaci	N/A	$29,152	$29,152	$29,152
Marginal Energy	N/A	$262,545	$262,545	$262,545
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$572,070
Non-Energy Benefits Adder (10%)				$57,207
Subtotal	N/A	$572,070	$572,070	$629,277
Other Benefits				
Bill Reduction - Electric	$725,734	N/A	N/A	N/A
Participant Rebates and Incentives	$136,986	N/A	N/A	$136,986
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$862,720	N/A	N/A	$136,986
Total Benefits	$862,720	$572,070	$572,070	$766,263
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$416,569	$416,569	$416,569
Advertising/Promotion/Customer Ed	N/A	$88,627	$88,627	$88,627
Participant Rebates and Incentives	N/A	$136,986	$136,986	$136,986
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$1,524	$1,524	$1,524
Subtotal	N/A	$643,706	$643,706	$643,706
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$631,389	N/A
Subtotal	N/A	N/A	$631,389	N/A
Participant Costs				
Incremental Capital Costs	$474,228	N/A	N/A	$412,578
Incremental O&M Costs	$23,853	N/A	N/A	$20,752
Subtotal	$498,081	N/A	N/A	$433,330
Total Costs	$498,081	$643,706	$1,275,094	$1,077,036
Net Benefit (Cost)	$364,640	($71,636)	($703,025)	($310,773)
Benefit/Cost Ratio	1.73	0.89	0.45	0.71

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	20.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	69.72%
Gross Load Factor at Customer	E	20.46%
Net-to-Gross (Energy)	F	87.0%
Net-to-Gross (Demand)	G	87.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$907
MTRC Non-Energy Benefit Adder	**M**	$167
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.6488 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,792 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,559 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	1,668 kWh

Program Summary All Participants

Total Budget	N	**$643,706**
Gross kW Saved at Customer	O	342 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**222 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	613,717 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	613,717 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	533,934 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**571,113 kWh**
TRC Net Benefits with Adder	(O x L)	**($310,773)**
TRC Net Benefits without Adder	(O x (L - M))	**($367,980)**
Utility Program Cost per kWh Lifetime		**$0.0564**
Utility Program Cost per kW at Gen		**$2,897**

DATA CENTER EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$278,953	$278,953	$278,953
Transmission & Distribution Capaci	N/A	$28,378	$28,378	$28,378
Marginal Energy	N/A	$1,050,941	$1,050,941	$1,050,941
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$1,358,272
Non-Energy Benefits Adder (10%)				$135,827
Subtotal	N/A	$1,358,272	$1,358,272	$1,494,099
Other Benefits				
Bill Reduction - Electric	$2,351,734	N/A	N/A	N/A
Participant Rebates and Incentives	$177,021	N/A	N/A	$177,021
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$2,528,756	N/A	N/A	$177,021
Total Benefits	$2,528,756	$1,358,272	$1,358,272	$1,671,121
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$271,571	$271,571	$271,571
Advertising/Promotion/Customer Ed	N/A	$84,598	$84,598	$84,598
Participant Rebates and Incentives	N/A	$177,021	$177,021	$177,021
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$2,445	$2,445	$2,445
Subtotal	N/A	$535,635	$535,635	$535,635
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$2,116,632	N/A
Subtotal	N/A	N/A	$2,116,632	N/A
Participant Costs				
Incremental Capital Costs	$855,291	N/A	N/A	$770,019
Incremental O&M Costs	$12,079	N/A	N/A	$11,522
Subtotal	$867,369	N/A	N/A	$781,542
Total Costs	$867,369	$535,635	$2,652,267	$1,317,177
Net Benefit (Cost)	$1,661,386	$822,637	($1,293,995)	$353,944
Benefit/Cost Ratio	2.92	2.54	0.51	1.27

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.6 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	91.96%
Gross Load Factor at Customer	E	106.58%
Net-to-Gross (Energy)	F	89.7%
Net-to-Gross (Demand)	G	88.6%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$1,187
MTRC Non-Energy Benefit Adder	**M**	$455
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8718 kW
Gross Annual kWh Saved at Customer	(B x E x C)	9,337 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	8,374 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	8,957 kWh

Program Summary All Participants

Total Budget	N	**$535,635**
Gross kW Saved at Customer	O	298 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**260 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	2,784,764 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	2,784,764 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	2,497,698 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**2,671,620 kWh**
TRC Net Benefits with Adder	(O x L)	**$353,944**
TRC Net Benefits without Adder	(O x (L - M))	**$218,117**
Utility Program Cost per kWh Lifetime		**$0.0128**
Utility Program Cost per kW at Gen		**$2,060**

ENERGY EFFICIENT SHOWERHEAD — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$35,425	$35,425	$35,425
Transmission & Distribution Capaci	N/A	$3,612	$3,612	$3,612
Marginal Energy	N/A	$173,134	$173,134	$173,134
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$212,170
Non-Energy Benefits Adder (10%)				$21,217
Subtotal	N/A	$212,170	$212,170	$233,387
Other Benefits				
Bill Reduction - Electric	$783,679	N/A	N/A	N/A
Participant Rebates and Incentives	$8,348	N/A	N/A	$8,348
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$298,366	N/A	N/A	$219,727
Subtotal	$1,090,393	N/A	N/A	$228,075
Total Benefits	$1,090,393	$212,170	$212,170	$461,462
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$11,006	$11,006	$11,006
Advertising/Promotion/Customer Ed	N/A	$7,986	$7,986	$7,986
Participant Rebates and Incentives	N/A	$8,348	$8,348	$8,348
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$27,340	$27,340	$27,340
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$576,391	N/A
Subtotal	N/A	N/A	$576,391	N/A
Participant Costs				
Incremental Capital Costs	$6,003	N/A	N/A	$5,943
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$6,003	N/A	N/A	$5,943
Total Costs	$6,003	$27,340	$603,731	$33,283
Net Benefit (Cost)	$1,084,389	$184,830	($391,561)	$428,179
Benefit/Cost Ratio	181.63	7.76	0.35	13.86

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	68.45%
Gross Load Factor at Customer	E	100.09%
Net-to-Gross (Energy)	F	99.0%
Net-to-Gross (Demand)	G	99.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**74.3%**
Installation Rate (Demand)	**K**	**71.6%**
MTRC Net Benefit (Cost)	**L**	$5,029
MTRC Non-Energy Benefit Adder	**M**	$249
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.5253 kW
Gross Annual kWh Saved at Customer	(B x E x C)	8,768 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	6,449 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	6,986 kWh

Program Summary All Participants

Total Budget	N	**$27,340**
Gross kW Saved at Customer	O	85 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**45 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	746,510 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	554,600 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	549,054 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**594,793 kWh**
TRC Net Benefits with Adder	(O x L)	**$428,179**
TRC Net Benefits without Adder	(O x (L - M))	**$406,962**
Utility Program Cost per kWh Lifetime		**$0.0046**
Utility Program Cost per kW at Gen		**$611**

ENERGY FEEDBACK RESIDENTIAL — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$1,665,332	$1,665,332	$1,665,332
Transmission & Distribution Capaci	N/A	$171,817	$171,817	$171,817
Marginal Energy	N/A	$1,800,414	$1,800,414	$1,800,414
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$3,637,563
Non-Energy Benefits Adder (10%)				$363,756
Subtotal	N/A	$3,637,563	$3,637,563	$4,001,320
Other Benefits				
Bill Reduction - Electric	$7,228,785	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$7,228,785	N/A	N/A	$0
Total Benefits	$7,228,785	$3,637,563	$3,637,563	$4,001,320
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$3,098,673	$3,098,673	$3,098,673
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$3,098,673	$3,098,673	$3,098,673
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$7,228,785	N/A
Subtotal	N/A	N/A	$7,228,785	N/A
Participant Costs				
Incremental Capital Costs	$0	N/A	N/A	$0
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Costs	$0	$3,098,673	$10,327,458	$3,098,673
Net Benefit (Cost)	$7,228,785	$538,890	($6,689,894)	$902,647
Benefit/Cost Ratio	INF	1.17	0.35	1.29

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	3.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	100.00%
Gross Load Factor at Customer	E	41.54%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$171
MTRC Non-Energy Benefit Adder	**M**	$69
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	1.0833 kW
Gross Annual kWh Saved at Customer	(B x E x C)	3,639 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,639 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,942 kWh

Program Summary All Participants

Total Budget	N	**$3,098,673**
Gross kW Saved at Customer	O	5,276 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**5,715 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	19,198,073 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	19,198,073 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	19,198,073 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**20,797,392 kWh**
TRC Net Benefits with Adder	(O x L)	**$902,647**
TRC Net Benefits without Adder	(O x (L - M))	**$538,890**
Utility Program Cost per kWh Lifetime		**$0.0497**
Utility Program Cost per kW at Gen		**$542**

ENERGY MANAGEMENT SYSTEMS — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$163,520	$163,520	$163,520
Transmission & Distribution Capaci	N/A	$16,570	$16,570	$16,570
Marginal Energy	N/A	$2,778,936	$2,778,936	$2,778,936
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$2,959,027
Non-Energy Benefits Adder (10%)				$295,903
Subtotal	N/A	$2,959,027	$2,959,027	$3,254,929
Other Benefits				
Bill Reduction - Electric	$9,579,446	N/A	N/A	N/A
Participant Rebates and Incentives	$842,938	N/A	N/A	$842,938
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$862,729	N/A	N/A	$750,575
Subtotal	$11,285,113	N/A	N/A	$1,593,513
Total Benefits	$11,285,113	$2,959,027	$2,959,027	$4,848,442
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$450,651	$450,651	$450,651
Advertising/Promotion/Customer Ed	N/A	$50,115	$50,115	$50,115
Participant Rebates and Incentives	N/A	$842,938	$842,938	$842,938
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$15,880	$15,880	$15,880
Subtotal	N/A	$1,359,584	$1,359,584	$1,359,584
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$8,334,118	N/A
Subtotal	N/A	N/A	$8,334,118	N/A
Participant Costs				
Incremental Capital Costs	$2,316,695	N/A	N/A	$2,015,525
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$2,316,695	N/A	N/A	$2,015,525
Total Costs	$2,316,695	$1,359,584	$9,693,702	$3,375,109
Net Benefit (Cost)	$8,968,418	$1,599,442	($6,734,676)	$1,473,333
Benefit/Cost Ratio	4.87	2.18	0.31	1.44

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	16.00%
Gross Load Factor at Customer	E	87.43%
Net-to-Gross (Energy)	F	87.0%
Net-to-Gross (Demand)	G	87.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$1,451
MTRC Non-Energy Benefit Adder	**M**	$291
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.1489 kW
Gross Annual kWh Saved at Customer	(B x E x C)	7,659 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	6,663 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	7,127 kWh

Program Summary All Participants

Total Budget	N	**$1,359,584**
Gross kW Saved at Customer	O	1,015 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**151 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	7,776,111 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	7,776,111 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	6,765,217 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**7,236,300 kWh**
TRC Net Benefits with Adder	(O x L)	**$1,473,333**
TRC Net Benefits without Adder	(O x (L - M))	**$1,177,430**
Utility Program Cost per kWh Lifetime		**$0.0125**
Utility Program Cost per kW at Gen		**$8,992**

ENERGY SAVINGS KIT **2018 ELECTRIC ACTUAL**

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$44,195	$44,195	$44,195
Transmission & Distribution Capaci	N/A	$4,520	$4,520	$4,520
Marginal Energy	N/A	$179,902	$179,902	$179,902
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$228,618
Non-Energy Benefits Adder (25%)				$57,154
Subtotal	N/A	$228,618	$228,618	$285,772
Other Benefits				
Bill Reduction - Electric	$830,732	N/A	N/A	N/A
Participant Rebates and Incentives	$92,785	N/A	N/A	$92,785
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$122,156	N/A	N/A	$84,683
Subtotal	$1,045,672	N/A	N/A	$177,468
Total Benefits	$1,045,672	$228,618	$228,618	$463,240
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$54,648	$54,648	$54,648
Advertising/Promotion/Customer Ed	N/A	$7,266	$7,266	$7,266
Participant Rebates and Incentives	N/A	$92,785	$92,785	$92,785
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$4,250	$4,250	$4,250
Subtotal	N/A	$158,949	$158,949	$158,949
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$602,723	N/A
Subtotal	N/A	N/A	$602,723	N/A
Participant Costs				
Incremental Capital Costs	$72,298	N/A	N/A	$72,298
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$72,298	N/A	N/A	$72,298
Total Costs	$72,298	$158,949	$761,672	$231,246
Net Benefit (Cost)	$973,374	$69,669	($533,054)	$231,994
Benefit/Cost Ratio	14.46	1.44	0.30	2.00

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	7.2 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	10.76%
Gross Load Factor at Customer	E	13.99%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**73.1%**
Installation Rate (Demand)	**K**	**72.9%**
MTRC Net Benefit (Cost)	**L**	$267
MTRC Non-Energy Benefit Adder	**M**	$66
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.0850 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,226 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	896 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	970 kWh

Program Summary All Participants

Total Budget	N	**$158,949**
Gross kW Saved at Customer	O	868 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**74 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,063,969 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	777,527 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	777,527 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**842,299 kWh**
TRC Net Benefits with Adder	(O x L)	**$231,994**
TRC Net Benefits without Adder	(O x (L - M))	**$174,839**
Utility Program Cost per kWh Lifetime		**$0.0261**
Utility Program Cost per kW at Gen		**$2,156**

ENERGY STAR NEW HOMES — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$1,285,595	$1,285,595	$1,285,595
Transmission & Distribution Capaci	N/A	$133,618	$133,618	$133,618
Marginal Energy	N/A	$1,634,951	$1,634,951	$1,634,951
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$3,054,165
Non-Energy Benefits Adder (10%)				$305,416
Subtotal	N/A	$3,054,165	$3,054,165	$3,359,581
Other Benefits				
Bill Reduction - Electric	$6,402,381	N/A	N/A	N/A
Participant Rebates and Incentives	$779,134	N/A	N/A	$779,134
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$6,703	N/A	N/A	$6,166
Subtotal	$7,188,218	N/A	N/A	$785,301
Total Benefits	$7,188,218	$3,054,165	$3,054,165	$4,144,882
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$208,027	$208,027	$208,027
Advertising/Promotion/Customer Ed	N/A	$10,903	$10,903	$10,903
Participant Rebates and Incentives	N/A	$779,134	$779,134	$779,134
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$120,713	$120,713	$120,713
Subtotal	N/A	$1,118,776	$1,118,776	$1,118,776
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$5,890,191	N/A
Subtotal	N/A	N/A	$5,890,191	N/A
Participant Costs				
Incremental Capital Costs	$2,307,285	N/A	N/A	$2,122,702
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$2,307,285	N/A	N/A	$2,122,702
Total Costs	$2,307,285	$1,118,776	$7,008,967	$3,241,478
Net Benefit (Cost)	$4,880,933	$1,935,388	($3,954,802)	$903,403
Benefit/Cost Ratio	3.12	2.73	0.44	1.28

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	17.4 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	52.35%
Gross Load Factor at Customer	E	22.34%
Net-to-Gross (Energy)	F	92.0%
Net-to-Gross (Demand)	G	92.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$441
MTRC Non-Energy Benefit Adder	**M**	$149
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.5217 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,957 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,801 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	1,951 kWh

Program Summary All Participants

Total Budget	N	**$1,118,776**
Gross kW Saved at Customer	O	2,050 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**1,069 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	4,011,661 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	4,011,661 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	3,690,728 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**3,998,189 kWh**
TRC Net Benefits with Adder	(O x L)	**$903,403**
TRC Net Benefits without Adder	(O x (L - M))	**$597,987**
Utility Program Cost per kWh Lifetime		**$0.0161**
Utility Program Cost per kW at Gen		**$1,046**

ENERGY STAR RETAIL PRODUCTS PLATFORM PILOT — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$803,050	$803,050	$803,050
Transmission & Distribution Capaci	N/A	$81,933	$81,933	$81,933
Marginal Energy	N/A	$874,110	$874,110	$874,110
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$1,759,093
Non-Energy Benefits Adder (10%)				$175,909
Subtotal	N/A	$1,759,093	$1,759,093	$1,935,003
Other Benefits				
Bill Reduction - Electric	$7,076,182	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$7,076,182	N/A	N/A	$0
Total Benefits	$7,076,182	$1,759,093	$1,759,093	$1,935,003
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$1,268,597	$1,268,597	$1,268,597
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$1,268,597	$1,268,597	$1,268,597
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$3,129,566	N/A
Subtotal	N/A	N/A	$3,129,566	N/A
Participant Costs				
Incremental Capital Costs	$2,372,253	N/A	N/A	$1,234,279
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$2,372,253	N/A	N/A	$1,234,279
Total Costs	$2,372,253	$1,268,597	$4,398,163	$2,502,876
Net Benefit (Cost)	$4,703,929	$490,496	($2,639,070)	($567,874)
Benefit/Cost Ratio	2.98	1.39	0.40	0.77

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.9 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	10.47%
Gross Load Factor at Customer	E	4.86%
Net-to-Gross (Energy)	F	46.0%
Net-to-Gross (Demand)	G	66.8%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$40
MTRC Non-Energy Benefit Adder	**M**	$12
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.0757 kW
Gross Annual kWh Saved at Customer	(B x E x C)	426 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	196 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	212 kWh

Program Summary All Participants

Total Budget	N	**$1,268,597**
Gross kW Saved at Customer	O	14,208 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**1,075 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	6,053,364 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	6,053,364 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	2,783,906 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**3,015,823 kWh**
TRC Net Benefits with Adder	(O x L)	**($567,874)**
TRC Net Benefits without Adder	(O x (L - M))	**($743,783)**
Utility Program Cost per kWh Lifetime		**$0.0386**
Utility Program Cost per kW at Gen		**$1,180**

EVAPORATIVE COOLING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$4,631,603	$4,631,603	$4,631,603
Transmission & Distribution Capaci	N/A	$469,349	$469,349	$469,349
Marginal Energy	N/A	$1,114,697	$1,114,697	$1,114,697
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$6,215,649
Non-Energy Benefits Adder (10%)				$621,565
Subtotal	N/A	$6,215,649	$6,215,649	$6,837,214
Other Benefits				
Bill Reduction - Electric	$6,403,382	N/A	N/A	N/A
Participant Rebates and Incentives	$1,761,869	N/A	N/A	$1,761,869
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$8,165,252	N/A	N/A	$1,761,869
Total Benefits	$8,165,252	$6,215,649	$6,215,649	$8,599,083
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$668,255	$668,255	$668,255
Advertising/Promotion/Customer Ed	N/A	$274,127	$274,127	$274,127
Participant Rebates and Incentives	N/A	$1,761,869	$1,761,869	$1,761,869
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$20,125	$20,125	$20,125
Subtotal	N/A	$2,724,376	$2,724,376	$2,724,376
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$4,473,663	N/A
Subtotal	N/A	N/A	$4,473,663	N/A
Participant Costs				
Incremental Capital Costs	$395,056	N/A	N/A	$849,674
Incremental O&M Costs	$493,342	N/A	N/A	$323,389
Subtotal	$888,398	N/A	N/A	$1,173,063
Total Costs	$888,398	$2,724,376	$7,198,039	$3,897,439
Net Benefit (Cost)	$7,276,854	$3,491,273	($982,390)	$4,701,644
Benefit/Cost Ratio	9.19	2.28	0.86	2.21

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	69.99%
Gross Load Factor at Customer	E	5.35%
Net-to-Gross (Energy)	F	69.9%
Net-to-Gross (Demand)	G	69.9%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$575
MTRC Non-Energy Benefit Adder	**M**	$76
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.5301 kW
Gross Annual kWh Saved at Customer	(B x E x C)	469 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	327 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	355 kWh

Program Summary All Participants

Total Budget	N	**$2,724,376**
Gross kW Saved at Customer	O	8,182 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**4,338 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	3,835,216 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	3,835,216 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	2,679,438 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**2,902,651 kWh**
TRC Net Benefits with Adder	(O x L)	**$4,701,644**
TRC Net Benefits without Adder	(O x (L - M))	**$4,080,079**
Utility Program Cost per kWh Lifetime		**$0.0626**
Utility Program Cost per kW at Gen		**$628**

HEATING EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$4,627	$4,627	$4,627
Transmission & Distribution Capaci	N/A	$469	$469	$469
Marginal Energy	N/A	$10,303	$10,303	$10,303
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$15,399
Non-Energy Benefits Adder (10%)				$1,540
Subtotal	N/A	$15,399	$15,399	$16,939
Other Benefits				
Bill Reduction - Electric	$37,148	N/A	N/A	N/A
Participant Rebates and Incentives	$2,467	N/A	N/A	$2,467
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$39,614	N/A	N/A	$2,467
Total Benefits	$39,614	$15,399	$15,399	$19,406
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$5,802	$5,802	$5,802
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$2,467	$2,467	$2,467
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$8,269	$8,269	$8,269
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$37,148	N/A
Subtotal	N/A	N/A	$37,148	N/A
Participant Costs				
Incremental Capital Costs	$2,943	N/A	N/A	$2,943
Incremental O&M Costs	$791	N/A	N/A	$791
Subtotal	$3,734	N/A	N/A	$3,734
Total Costs	$3,734	$8,269	$45,417	$12,004
Net Benefit (Cost)	$35,880	$7,129	($30,018)	$7,402
Benefit/Cost Ratio	10.61	1.86	0.34	1.62

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	34.18%
Gross Load Factor at Customer	E	24.47%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$632
MTRC Non-Energy Benefit Adder	**M**	$132
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.3656 kW
Gross Annual kWh Saved at Customer	(B x E x C)	2,143 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	2,143 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	2,292 kWh

Program Summary All Participants

Total Budget	N	**$8,269**
Gross kW Saved at Customer	O	12 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**4 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	25,082 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	25,082 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	25,082 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**26,829 kWh**
TRC Net Benefits with Adder	(O x L)	**$7,402**
TRC Net Benefits without Adder	(O x (L - M))	**$5,862**
Utility Program Cost per kWh Lifetime		**$0.0205**
Utility Program Cost per kW at Gen		**$1,933**

HIGH EFFICIENCY AIR CONDITIONING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$3,717,043	$3,717,043	$3,717,043
Transmission & Distribution Capaci	N/A	$379,338	$379,338	$379,338
Marginal Energy	N/A	$1,139,256	$1,139,256	$1,139,256
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$5,235,637
Non-Energy Benefits Adder (10%)				$523,564
Subtotal	N/A	$5,235,637	$5,235,637	$5,759,200
Other Benefits				
Bill Reduction - Electric	$5,209,381	N/A	N/A	N/A
Participant Rebates and Incentives	$5,430,200	N/A	N/A	$5,430,200
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$10,639,581	N/A	N/A	$5,430,200
Total Benefits	$10,639,581	$5,235,637	$5,235,637	$11,189,400
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$454,915	$454,915	$454,915
Advertising/Promotion/Customer Ed	N/A	$939	$939	$939
Participant Rebates and Incentives	N/A	$5,430,200	$5,430,200	$5,430,200
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$40,945	$40,945	$40,945
Subtotal	N/A	$5,926,999	$5,926,999	$5,926,999
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$3,597,595	N/A
Subtotal	N/A	N/A	$3,597,595	N/A
Participant Costs				
Incremental Capital Costs	$6,270,448	N/A	N/A	$4,239,823
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$6,270,448	N/A	N/A	$4,239,823
Total Costs	$6,270,448	$5,926,999	$9,524,593	$10,166,822
Net Benefit (Cost)	$4,369,132	($691,362)	($4,288,957)	$1,022,579
Benefit/Cost Ratio	1.70	0.88	0.55	1.10

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	8.8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	89.59%
Gross Load Factor at Customer	E	8.40%
Net-to-Gross (Energy)	F	69.2%
Net-to-Gross (Demand)	G	68.5%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**98.8%**
Installation Rate (Demand)	**K**	**98.4%**
MTRC Net Benefit (Cost)	**L**	$125
MTRC Non-Energy Benefit Adder	**M**	$64
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.6543 kW
Gross Annual kWh Saved at Customer	(B x E x C)	736 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	504 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	546 kWh

Program Summary All Participants

Total Budget	N	**$5,926,999**
Gross kW Saved at Customer	O	8,188 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**5,357 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	6,026,379 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	5,955,971 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	4,123,444 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**4,466,952 kWh**
TRC Net Benefits with Adder	(O x L)	**$1,022,579**
TRC Net Benefits without Adder	(O x (L - M))	**$499,015**
Utility Program Cost per kWh Lifetime		**$0.1511**
Utility Program Cost per kW at Gen		**$1,106**

HOME ENERGY SQUAD — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$118,588	$118,588	$118,588
Transmission & Distribution Capaci	N/A	$12,147	$12,147	$12,147
Marginal Energy	N/A	$311,500	$311,500	$311,500
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$442,235
Non-Energy Benefits Adder (10%)				$44,223
Subtotal	N/A	$442,235	$442,235	$486,458
Other Benefits				
Bill Reduction - Electric	$1,021,544	N/A	N/A	N/A
Participant Rebates and Incentives	$3,138	N/A	N/A	$3,138
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$6,066	N/A	N/A	$6,066
Subtotal	$1,030,748	N/A	N/A	$9,203
Total Benefits	$1,030,748	$442,235	$442,235	$495,662
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$173,372	$173,372	$173,372
Advertising/Promotion/Customer Ed	N/A	$80,116	$80,116	$80,116
Participant Rebates and Incentives	N/A	$3,138	$3,138	$3,138
Equipment & Installation	N/A	$296,541	$296,541	$296,541
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$553,166	$553,166	$553,166
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$1,021,544	N/A
Subtotal	N/A	N/A	$1,021,544	N/A
Participant Costs				
Incremental Capital Costs	$4,332	N/A	N/A	$4,332
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$4,332	N/A	N/A	$4,332
Total Costs	$4,332	$553,166	$1,574,711	$557,498
Net Benefit (Cost)	$1,026,416	($110,931)	($1,132,476)	($61,837)
Benefit/Cost Ratio	237.93	0.80	0.28	0.89

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	6.4 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	12.21%
Gross Load Factor at Customer	E	10.43%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$38
MTRC Non-Energy Benefit Adder	**M**	$27
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.1323 kW
Gross Annual kWh Saved at Customer	(B x E x C)	913 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	913 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	989 kWh

Program Summary All Participants

Total Budget	N	**$553,166**
Gross kW Saved at Customer	O	1,640 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**217 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,497,820 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,497,820 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,497,820 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,622,598 kWh**
TRC Net Benefits with Adder	(O x L)	**($61,837)**
TRC Net Benefits without Adder	(O x (L - M))	**($106,060)**
Utility Program Cost per kWh Lifetime		**$0.0536**
Utility Program Cost per kW at Gen		**$2,550**

HOME LIGHTING & RECYCLING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$4,171,773	$4,171,773	$4,171,773
Transmission & Distribution Capaci	N/A	$427,795	$427,795	$427,795
Marginal Energy	N/A	$15,258,850	$15,258,850	$15,258,850
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$19,858,418
Non-Energy Benefits Adder (10%)				$1,985,842
Subtotal	N/A	$19,858,418	$19,858,418	$21,844,260
Other Benefits				
Bill Reduction - Electric	$55,662,084	N/A	N/A	N/A
Participant Rebates and Incentives	$2,905,318	N/A	N/A	$2,905,318
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$58,567,402	N/A	N/A	$2,905,318
Total Benefits	$58,567,402	$19,858,418	$19,858,418	$24,749,578
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$948,475	$948,475	$948,475
Advertising/Promotion/Customer Ed	N/A	$568,143	$568,143	$568,143
Participant Rebates and Incentives	N/A	$2,905,318	$2,905,318	$2,905,318
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$3,000	$3,000	$3,000
Subtotal	N/A	$4,424,936	$4,424,936	$4,424,936
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$50,196,118	N/A
Subtotal	N/A	N/A	$50,196,118	N/A
Participant Costs				
Incremental Capital Costs	$3,686,819	N/A	N/A	$3,358,360
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$3,686,819	N/A	N/A	$3,358,360
Total Costs	$3,686,819	$4,424,936	$54,621,053	$7,783,296
Net Benefit (Cost)	$54,880,583	$15,433,483	($34,762,635)	$16,966,282
Benefit/Cost Ratio	15.89	4.49	0.36	3.18

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	5.5 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	11.28%
Gross Load Factor at Customer	E	13.29%
Net-to-Gross (Energy)	F	91.0%
Net-to-Gross (Demand)	G	91.0%
Transmission Loss Factor (Energy)	H	7.379%
Transmission Loss Factor (Demand)	I	7.620%
Installation Rate (Energy)	**J**	**99.1%**
Installation Rate (Demand)	**K**	**99.1%**
MTRC Net Benefit (Cost)	**L**	$210
MTRC Non-Energy Benefit Adder	**M**	$25
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.1101 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,165 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,050 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	1,134 kWh

Program Summary All Participants

Total Budget	N	**$4,424,936**
Gross kW Saved at Customer	O	80,688 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**8,886 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	93,963,883 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	93,117,269 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	84,736,715 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**91,487,553 kWh**
TRC Net Benefits with Adder	(O x L)	**$16,966,282**
TRC Net Benefits without Adder	(O x (L - M))	**$14,980,440**
Utility Program Cost per kWh Lifetime		**$0.0088**
Utility Program Cost per kW at Gen		**$498**

HOME PERFORMANCE WITH ENERGY STAR — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$273,956	$273,956	$273,956
Transmission & Distribution Capaci	N/A	$28,353	$28,353	$28,353
Marginal Energy	N/A	$79,355	$79,355	$79,355
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$381,664
Non-Energy Benefits Adder (10%)				$38,166
Subtotal	N/A	$381,664	$381,664	$419,830
Other Benefits				
Bill Reduction - Electric	$242,598	N/A	N/A	N/A
Participant Rebates and Incentives	$78,032	N/A	N/A	$78,032
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$320,630	N/A	N/A	$78,032
Total Benefits	$320,630	$381,664	$381,664	$497,862
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$60,333	$60,333	$60,333
Advertising/Promotion/Customer Ed	N/A	$73	$73	$73
Participant Rebates and Incentives	N/A	$78,032	$78,032	$78,032
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$20,874	$20,874	$20,874
Subtotal	N/A	$159,311	$159,311	$159,311
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$281,414	N/A
Subtotal	N/A	N/A	$281,414	N/A
Participant Costs				
Incremental Capital Costs	$242,064	N/A	N/A	$280,795
Incremental O&M Costs	$923	N/A	N/A	$1,070
Subtotal	$242,987	N/A	N/A	$281,865
Total Costs	$242,987	$159,311	$440,725	$441,176
Net Benefit (Cost)	$77,642	$222,353	($59,061)	$56,686
Benefit/Cost Ratio	1.32	2.40	0.87	1.13

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	14.3 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	67.05%
Gross Load Factor at Customer	E	7.02%
Net-to-Gross (Energy)	F	116.0%
Net-to-Gross (Demand)	G	116.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$194
MTRC Non-Energy Benefit Adder	**M**	$131
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8425 kW
Gross Annual kWh Saved at Customer	(B x E x C)	615 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	713 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	773 kWh

Program Summary All Participants

Total Budget	N	**$159,311**
Gross kW Saved at Customer	O	292 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**246 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	179,501 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	179,501 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	208,221 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**225,567 kWh**
TRC Net Benefits with Adder	(O x L)	**$56,686**
TRC Net Benefits without Adder	(O x (L - M))	**$18,519**
Utility Program Cost per kWh Lifetime		**$0.0496**
Utility Program Cost per kW at Gen		**$648**

INSULATION & AIR SEALING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$557,983	$557,983	$557,983
Transmission & Distribution Capaci	N/A	$57,723	$57,723	$57,723
Marginal Energy	N/A	$102,926	$102,926	$102,926
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$718,633
Non-Energy Benefits Adder (10%)				$71,863
Subtotal	N/A	$718,633	$718,633	$790,496
Other Benefits				
Bill Reduction - Electric	$426,374	N/A	N/A	N/A
Participant Rebates and Incentives	$235,787	N/A	N/A	$235,787
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$662,162	N/A	N/A	$235,787
Total Benefits	$662,162	$718,633	$718,633	$1,026,283
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$11,682	$11,682	$11,682
Advertising/Promotion/Customer Ed	N/A	$155	$155	$155
Participant Rebates and Incentives	N/A	$235,787	$235,787	$235,787
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$10,000	$10,000	$10,000
Subtotal	N/A	$257,624	$257,624	$257,624
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$369,666	N/A
Subtotal	N/A	N/A	$369,666	N/A
Participant Costs				
Incremental Capital Costs	$824,865	N/A	N/A	$715,757
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$824,865	N/A	N/A	$715,757
Total Costs	$824,865	$257,624	$627,291	$973,381
Net Benefit (Cost)	($162,704)	$461,008	$91,342	$52,902
Benefit/Cost Ratio	0.80	2.79	1.15	1.05

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	16.1 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	88.05%
Gross Load Factor at Customer	E	5.09%
Net-to-Gross (Energy)	F	85.0%
Net-to-Gross (Demand)	G	85.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**102.0%**
Installation Rate (Demand)	**K**	**102.1%**
MTRC Net Benefit (Cost)	**L**	$85
MTRC Non-Energy Benefit Adder	**M**	$115
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8278 kW
Gross Annual kWh Saved at Customer	(B x E x C)	446 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	387 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	419 kWh

Program Summary All Participants

Total Budget	N	**$257,624**
Gross kW Saved at Customer	O	622 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**515 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	277,765 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	283,320 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	240,822 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**260,884 kWh**
TRC Net Benefits with Adder	(O x L)	**$52,902**
TRC Net Benefits without Adder	(O x (L - M))	**($18,961)**
Utility Program Cost per kWh Lifetime		**$0.0612**
Utility Program Cost per kW at Gen		**$500**

LED STREET LIGHTING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$0	$0	$0
Transmission & Distribution Capaci	N/A	$0	$0	$0
Marginal Energy	N/A	$580,286	$580,286	$580,286
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$580,286
Non-Energy Benefits Adder (10%)				$58,029
Subtotal	N/A	$580,286	$580,286	$638,315
Other Benefits				
Bill Reduction - Electric	$2,285,177	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$2,285,177	N/A	N/A	$0
Total Benefits	$2,285,177	$580,286	$580,286	$638,315
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$0	$0	$0
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$0	$0	$0
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$2,056,659	N/A
Subtotal	N/A	N/A	$2,056,659	N/A
Participant Costs				
Incremental Capital Costs	$906,264	N/A	N/A	$815,638
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$906,264	N/A	N/A	$815,638
Total Costs	$906,264	$0	$2,056,659	$815,638
Net Benefit (Cost)	$1,378,912	$580,286	($1,476,373)	($177,323)
Benefit/Cost Ratio	2.52	INF	0.28	0.78

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	0.00%
Gross Load Factor at Customer	E	47.38%
Net-to-Gross (Energy)	F	90.0%
Net-to-Gross (Demand)	G	0.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**0.0%**
MTRC Net Benefit (Cost)	**L**	-$469
MTRC Non-Energy Benefit Adder	**M**	$153
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	- kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,150 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,735 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,995 kWh

Program Summary All Participants

Total Budget	N	**$0**
Gross kW Saved at Customer	O	378 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**0 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,569,651 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,569,651 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,412,686 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,511,056 kWh**
TRC Net Benefits with Adder	(O x L)	**($177,323)**
TRC Net Benefits without Adder	(O x (L - M))	**($235,352)**
Utility Program Cost per kWh Lifetime		**$0.0000**
Utility Program Cost per kW at Gen		**#DIV/0!**

LIGHTING - SMALL BUSINESS — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$5,272,950	$5,272,950	$5,272,950
Transmission & Distribution Capaci	N/A	$542,223	$542,223	$542,223
Marginal Energy	N/A	$14,199,409	$14,199,409	$14,199,409
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$20,014,582
Non-Energy Benefits Adder (10%)				$2,001,458
Subtotal	N/A	$20,014,582	$20,014,582	$22,016,041
Other Benefits				
Bill Reduction - Electric	$40,601,139	N/A	N/A	N/A
Participant Rebates and Incentives	$4,437,990	N/A	N/A	$4,437,990
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$45,039,128	N/A	N/A	$4,437,990
Total Benefits	$45,039,128	$20,014,582	$20,014,582	$26,454,030
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$2,462,206	$2,462,206	$2,462,206
Advertising/Promotion/Customer Ed	N/A	$79,278	$79,278	$79,278
Participant Rebates and Incentives	N/A	$4,437,990	$4,437,990	$4,437,990
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$23,716	$23,716	$23,716
Subtotal	N/A	$7,003,189	$7,003,189	$7,003,189
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$36,177,579	N/A
Subtotal	N/A	N/A	$36,177,579	N/A
Participant Costs				
Incremental Capital Costs	$11,322,242	N/A	N/A	$10,085,003
Incremental O&M Costs	$1,582,103	N/A	N/A	$594,349
Subtotal	$12,904,344	N/A	N/A	$10,679,352
Total Costs	$12,904,344	$7,003,189	$43,180,768	$17,682,541
Net Benefit (Cost)	$32,134,784	$13,011,393	($23,166,186)	$8,771,489
Benefit/Cost Ratio	3.49	2.86	0.46	1.50

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	16.3 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	58.65%
Gross Load Factor at Customer	E	48.31%
Net-to-Gross (Energy)	F	89.5%
Net-to-Gross (Demand)	G	89.6%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**99.8%**
Installation Rate (Demand)	**K**	**99.8%**
MTRC Net Benefit (Cost)	**L**	$974
MTRC Non-Energy Benefit Adder	**M**	$222
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.5608 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,232 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,781 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	4,044 kWh

Program Summary All Participants

Total Budget	N	**$7,003,189**
Gross kW Saved at Customer	O	9,009 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**5,052 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	38,125,585 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	38,047,045 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	34,059,828 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**36,431,520 kWh**
TRC Net Benefits with Adder	(O x L)	**$8,771,489**
TRC Net Benefits without Adder	(O x (L - M))	**$6,770,031**
Utility Program Cost per kWh Lifetime		**$0.0118**
Utility Program Cost per kW at Gen		**$1,386**

LIGHTING EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$24,570,419	$24,570,419	$24,570,419
Transmission & Distribution Capaci	N/A	$2,518,593	$2,518,593	$2,518,593
Marginal Energy	N/A	$65,732,563	$65,732,563	$65,732,563
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$92,821,574
Non-Energy Benefits Adder (10%)				$9,282,157
Subtotal	N/A	$92,821,574	$92,821,574	$102,103,731
Other Benefits				
Bill Reduction - Electric	$154,645,019	N/A	N/A	N/A
Participant Rebates and Incentives	$14,941,720	N/A	N/A	$14,941,720
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$169,586,739	N/A	N/A	$14,941,720
Total Benefits	$169,586,739	$92,821,574	$92,821,574	$117,045,451
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$2,467,422	$2,467,422	$2,467,422
Advertising/Promotion/Customer Ed	N/A	$106,795	$106,795	$106,795
Participant Rebates and Incentives	N/A	$14,941,720	$14,941,720	$14,941,720
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$30,057	$30,057	$30,057
Subtotal	N/A	$17,545,995	$17,545,995	$17,545,995
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$152,943,547	N/A
Subtotal	N/A	N/A	$152,943,547	N/A
Participant Costs				
Incremental Capital Costs	$43,558,437	N/A	N/A	$43,173,109
Incremental O&M Costs	$6,090,979	N/A	N/A	$2,887,087
Subtotal	$49,649,416	N/A	N/A	$46,060,196
Total Costs	$49,649,416	$17,545,995	$170,489,541	$63,606,190
Net Benefit (Cost)	$119,937,323	$75,275,579	($77,667,968)	$53,439,261
Benefit/Cost Ratio	3.42	5.29	0.54	1.84

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.6 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	67.09%
Gross Load Factor at Customer	E	55.19%
Net-to-Gross (Energy)	F	98.5%
Net-to-Gross (Demand)	G	98.4%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**99.9%**
Installation Rate (Demand)	**K**	**99.9%**
MTRC Net Benefit (Cost)	**L**	$1,595
MTRC Non-Energy Benefit Adder	**M**	$277
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.7051 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,834 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	4,757 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	5,089 kWh

Program Summary All Participants

Total Budget	N	**$17,545,995**
Gross kW Saved at Customer	O	33,502 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**23,624 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	161,961,500 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	161,773,480 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	159,381,674 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**170,479,917 kWh**
TRC Net Benefits with Adder	(O x L)	**$53,439,261**
TRC Net Benefits without Adder	(O x (L - M))	**$44,157,103**
Utility Program Cost per kWh Lifetime		**$0.0066**
Utility Program Cost per kW at Gen		**$743**

MOTOR & DRIVE EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$1,692,225	$1,692,225	$1,692,225
Transmission & Distribution Capaci	N/A	$171,490	$171,490	$171,490
Marginal Energy	N/A	$4,102,839	$4,102,839	$4,102,839
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$5,966,555
Non-Energy Benefits Adder (10%)				$596,655
Subtotal	N/A	$5,966,555	$5,966,555	$6,563,210
Other Benefits				
Bill Reduction - Electric	$14,610,707	N/A	N/A	N/A
Participant Rebates and Incentives	$1,405,267	N/A	N/A	$1,405,267
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$24,616	N/A	N/A	$16,000
Subtotal	$16,040,590	N/A	N/A	$1,421,268
Total Benefits	$16,040,590	$5,966,555	$5,966,555	$7,984,478
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$425,209	$425,209	$425,209
Advertising/Promotion/Customer Ed	N/A	$84,728	$84,728	$84,728
Participant Rebates and Incentives	N/A	$1,405,267	$1,405,267	$1,405,267
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$17,995	$17,995	$17,995
Subtotal	N/A	$1,933,199	$1,933,199	$1,933,199
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$9,496,960	N/A
Subtotal	N/A	N/A	$9,496,960	N/A
Participant Costs				
Incremental Capital Costs	$3,705,060	N/A	N/A	$2,408,289
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$3,705,060	N/A	N/A	$2,408,289
Total Costs	$3,705,060	$1,933,199	$11,430,159	$4,341,488
Net Benefit (Cost)	$12,335,530	$4,033,355	($5,463,604)	$3,642,989
Benefit/Cost Ratio	4.33	3.09	0.52	1.84

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	15.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	76.19%
Gross Load Factor at Customer	E	59.35%
Net-to-Gross (Energy)	F	65.0%
Net-to-Gross (Demand)	G	65.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$1,233
MTRC Non-Energy Benefit Adder	**M**	$202
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.5297 kW
Gross Annual kWh Saved at Customer	(B x E x C)	5,199 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,380 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,615 kWh

Program Summary All Participants

Total Budget	N	**$1,933,199**
Gross kW Saved at Customer	O	2,953 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**1,564 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	15,356,103 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	15,356,103 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	9,981,467 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**10,676,508 kWh**
TRC Net Benefits with Adder	(O x L)	**$3,642,989**
TRC Net Benefits without Adder	(O x (L - M))	**$3,046,334**
Utility Program Cost per kWh Lifetime		**$0.0121**
Utility Program Cost per kW at Gen		**$1,236**

MULTIFAMILY BUILDINGS — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$603,374	$603,374	$603,374
Transmission & Distribution Capaci	N/A	$62,147	$62,147	$62,147
Marginal Energy	N/A	$2,610,482	$2,610,482	$2,610,482
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$3,276,003
Non-Energy Benefits Adder (10%)				$327,600
Subtotal	N/A	$3,276,003	$3,276,003	$3,603,603
Other Benefits				
Bill Reduction - Electric	$9,543,351	N/A	N/A	N/A
Participant Rebates and Incentives	$781,832	N/A	N/A	$781,832
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$10,325,183	N/A	N/A	$781,832
Total Benefits	$10,325,183	$3,276,003	$3,276,003	$4,385,435
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$413,310	$413,310	$413,310
Advertising/Promotion/Customer Ed	N/A	$25,217	$25,217	$25,217
Participant Rebates and Incentives	N/A	$781,832	$781,832	$781,832
Equipment & Installation	N/A	$12,210	$12,210	$12,210
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$1,232,569	$1,232,569	$1,232,569
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$9,543,351	N/A
Subtotal	N/A	N/A	$9,543,351	N/A
Participant Costs				
Incremental Capital Costs	$1,389,545	N/A	N/A	$1,389,545
Incremental O&M Costs	$46,774	N/A	N/A	$46,774
Subtotal	$1,436,319	N/A	N/A	$1,436,319
Total Costs	$1,436,319	$1,232,569	$10,775,921	$2,668,888
Net Benefit (Cost)	$8,888,864	$2,043,434	($7,499,918)	$1,716,547
Benefit/Cost Ratio	7.19	2.66	0.30	1.64

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	18.3 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	16.39%
Gross Load Factor at Customer	E	22.37%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$598
MTRC Non-Energy Benefit Adder	**M**	$114
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.1754 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,960 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,960 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	2,096 kWh

Program Summary All Participants

Total Budget	N	**$1,232,569**
Gross kW Saved at Customer	O	2,871 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**504 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	5,627,539 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	5,627,539 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	5,627,539 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**6,019,402 kWh**
TRC Net Benefits with Adder	(O x L)	**$1,716,547**
TRC Net Benefits without Adder	(O x (L - M))	**$1,388,947**
Utility Program Cost per kWh Lifetime		**$0.0112**
Utility Program Cost per kW at Gen		**$2,448**

MULTIFAMILY WEATHERIZATION — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$259,373	$259,373	$259,373
Transmission & Distribution Capaci	N/A	$26,410	$26,410	$26,410
Marginal Energy	N/A	$705,148	$705,148	$705,148
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$990,931
Non-Energy Benefits Adder (25%)				$247,733
Subtotal	N/A	$990,931	$990,931	$1,238,664
Other Benefits				
Bill Reduction - Electric	$2,382,849	N/A	N/A	N/A
Participant Rebates and Incentives	$1,020,324	N/A	N/A	$1,020,324
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$3,403,172	N/A	N/A	$1,020,324
Total Benefits	$3,403,172	$990,931	$990,931	$2,258,988
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$121,907	$121,907	$121,907
Advertising/Promotion/Customer Ed	N/A	$33,438	$33,438	$33,438
Participant Rebates and Incentives	N/A	$1,020,324	$1,020,324	$1,020,324
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$17,875	$17,875	$17,875
Subtotal	N/A	$1,193,543	$1,193,543	$1,193,543
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$2,382,849	N/A
Subtotal	N/A	N/A	$2,382,849	N/A
Participant Costs				
Incremental Capital Costs	$1,040,560	N/A	N/A	$1,040,560
Incremental O&M Costs	$10,981	N/A	N/A	$10,981
Subtotal	$1,051,541	N/A	N/A	$1,051,541
Total Costs	$1,051,541	$1,193,543	$3,576,392	$2,245,084
Net Benefit (Cost)	$2,351,631	($202,612)	($2,585,460)	$13,904
Benefit/Cost Ratio	3.24	0.83	0.28	1.01

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	11.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	46.31%
Gross Load Factor at Customer	E	38.86%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$23
MTRC Non-Energy Benefit Adder	**M**	$409
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.5017 kW
Gross Annual kWh Saved at Customer	(B x E x C)	3,405 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,405 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,688 kWh

Program Summary All Participants

Total Budget	N	**$1,193,543**
Gross kW Saved at Customer	O	606 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**304 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	2,064,441 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	2,064,441 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	2,064,441 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**2,236,422 kWh**
TRC Net Benefits with Adder	(O x L)	**$13,904**
TRC Net Benefits without Adder	(O x (L - M))	**($233,829)**
Utility Program Cost per kWh Lifetime		**$0.0485**
Utility Program Cost per kW at Gen		**$3,923**

NEW CONSTRUCTION — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$8,925,409	$8,925,409	$8,925,409
Transmission & Distribution Capaci	N/A	$928,043	$928,043	$928,043
Marginal Energy	N/A	$13,380,178	$13,380,178	$13,380,178
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$23,233,630
Non-Energy Benefits Adder (10%)				$2,323,363
Subtotal	N/A	$23,233,630	$23,233,630	$25,556,993
Other Benefits				
Bill Reduction - Electric	$28,375,950	N/A	N/A	N/A
Participant Rebates and Incentives	$4,172,294	N/A	N/A	$4,172,294
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$32,548,243	N/A	N/A	$4,172,294
Total Benefits	$32,548,243	$23,233,630	$23,233,630	$29,729,286
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$2,274,595	$2,274,595	$2,274,595
Advertising/Promotion/Customer Ed	N/A	$87,232	$87,232	$87,232
Participant Rebates and Incentives	N/A	$4,172,294	$4,172,294	$4,172,294
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$400,211	$400,211	$400,211
Subtotal	N/A	$6,934,332	$6,934,332	$6,934,332
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$26,957,152	N/A
Subtotal	N/A	N/A	$26,957,152	N/A
Participant Costs				
Incremental Capital Costs	$24,994,049	N/A	N/A	$23,744,346
Incremental O&M Costs	$272,183	N/A	N/A	$258,574
Subtotal	$25,266,231	N/A	N/A	$24,002,920
Total Costs	$25,266,231	$6,934,332	$33,891,484	$30,937,251
Net Benefit (Cost)	$7,282,012	$16,299,298	($10,657,854)	($1,207,965)
Benefit/Cost Ratio	1.29	3.35	0.69	0.96

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	20.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	86.62%
Gross Load Factor at Customer	E	40.69%
Net-to-Gross (Energy)	F	95.0%
Net-to-Gross (Demand)	G	95.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$150
MTRC Non-Energy Benefit Adder	**M**	$289
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8802 kW
Gross Annual kWh Saved at Customer	(B x E x C)	3,564 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,386 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,622 kWh

Program Summary All Participants

Total Budget	N	**$6,934,332**
Gross kW Saved at Customer	O	8,036 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**7,074 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	28,643,247 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	28,643,247 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	27,211,085 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**29,105,877 kWh**
TRC Net Benefits with Adder	(O x L)	**($1,207,965)**
TRC Net Benefits without Adder	(O x (L - M))	**($3,531,328)**
Utility Program Cost per kWh Lifetime		**$0.0119**
Utility Program Cost per kW at Gen		**$980**

NON-PROFIT **2018 ELECTRIC ACTUAL**

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$394,760	$394,760	$394,760
Transmission & Distribution Capaci	N/A	$39,913	$39,913	$39,913
Marginal Energy	N/A	$678,493	$678,493	$678,493
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$1,113,166
Non-Energy Benefits Adder (25%)				$278,292
Subtotal	N/A	$1,113,166	$1,113,166	$1,391,458
Other Benefits				
Bill Reduction - Electric	$2,451,087	N/A	N/A	N/A
Participant Rebates and Incentives	$947,055	N/A	N/A	$947,055
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$3,398,142	N/A	N/A	$947,055
Total Benefits	$3,398,142	$1,113,166	$1,113,166	$2,338,513
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$151,931	$151,931	$151,931
Advertising/Promotion/Customer Ed	N/A	$33,176	$33,176	$33,176
Participant Rebates and Incentives	N/A	$947,055	$947,055	$947,055
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$26,871	$26,871	$26,871
Subtotal	N/A	$1,159,033	$1,159,033	$1,159,033
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$2,451,087	N/A
Subtotal	N/A	N/A	$2,451,087	N/A
Participant Costs				
Incremental Capital Costs	$1,164,502	N/A	N/A	$1,164,502
Incremental O&M Costs	$17,989	N/A	N/A	$17,989
Subtotal	$1,182,490	N/A	N/A	$1,182,490
Total Costs	$1,182,490	$1,159,033	$3,610,120	$2,341,523
Net Benefit (Cost)	$2,215,652	($45,867)	($2,496,954)	($3,010)
Benefit/Cost Ratio	2.87	0.96	0.31	1.00

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	17.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	65.74%
Gross Load Factor at Customer	E	35.99%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$6
MTRC Non-Energy Benefit Adder	**M**	$583
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.7032 kW
Gross Annual kWh Saved at Customer	(B x E x C)	3,153 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,153 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,373 kWh

Program Summary All Participants

Total Budget	N	**$1,159,033**
Gross kW Saved at Customer	O	477 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**336 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,505,278 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,505,278 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,505,278 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,610,095 kWh**
TRC Net Benefits with Adder	(O x L)	**($3,010)**
TRC Net Benefits without Adder	(O x (L - M))	**($281,302)**
Utility Program Cost per kWh Lifetime		**$0.0423**
Utility Program Cost per kW at Gen		**$3,452**

PROCESS EFFICIENCY — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$2,720,664	$2,720,664	$2,720,664
Transmission & Distribution Capaci	N/A	$275,456	$275,456	$275,456
Marginal Energy	N/A	$8,070,510	$8,070,510	$8,070,510
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$11,066,629
Non-Energy Benefits Adder (10%)				$1,106,663
Subtotal	N/A	$11,066,629	$11,066,629	$12,173,292
Other Benefits				
Bill Reduction - Electric	$21,028,988	N/A	N/A	N/A
Participant Rebates and Incentives	$1,359,657	N/A	N/A	$1,359,657
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$22,388,644	N/A	N/A	$1,359,657
Total Benefits	$22,388,644	$11,066,629	$11,066,629	$13,532,949
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$410,427	$410,427	$410,427
Advertising/Promotion/Customer Ed	N/A	$2,282	$2,282	$2,282
Participant Rebates and Incentives	N/A	$1,359,657	$1,359,657	$1,359,657
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$1,887	$1,887	$1,887
Subtotal	N/A	$1,774,253	$1,774,253	$1,774,253
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$18,926,089	N/A
Subtotal	N/A	N/A	$18,926,089	N/A
Participant Costs				
Incremental Capital Costs	$3,263,126	N/A	N/A	$2,936,726
Incremental O&M Costs	$318,161	N/A	N/A	$286,335
Subtotal	$3,581,287	N/A	N/A	$3,223,062
Total Costs	$3,581,287	$1,774,253	$20,700,342	$4,997,314
Net Benefit (Cost)	$18,807,357	$9,292,377	($9,633,712)	$8,535,634
Benefit/Cost Ratio	6.25	6.24	0.53	2.71

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	17.9 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	77.95%
Gross Load Factor at Customer	E	74.36%
Net-to-Gross (Energy)	F	90.0%
Net-to-Gross (Demand)	G	90.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$2,851
MTRC Non-Energy Benefit Adder	**M**	$370
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.7503 kW
Gross Annual kWh Saved at Customer	(B x E x C)	6,514 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	5,862 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	6,271 kWh

Program Summary All Participants

Total Budget	N	**$1,774,253**
Gross kW Saved at Customer	O	2,994 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**2,246 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	19,500,749 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	19,500,749 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	17,550,674 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**18,772,782 kWh**
TRC Net Benefits with Adder	(O x L)	**$8,535,634**
TRC Net Benefits without Adder	(O x (L - M))	**$7,428,972**
Utility Program Cost per kWh Lifetime		**$0.0053**
Utility Program Cost per kW at Gen		**$790**

RECOMMISSIONING **2018** **ELECTRIC** **ACTUAL**

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$23,926	$23,926	$23,926
Transmission & Distribution Capaci	N/A	$2,449	$2,449	$2,449
Marginal Energy	N/A	$336,597	$336,597	$336,597
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$362,972
Non-Energy Benefits Adder (10%)				$36,297
Subtotal	N/A	$362,972	$362,972	$399,269
Other Benefits				
Bill Reduction - Electric	$539,332	N/A	N/A	N/A
Participant Rebates and Incentives	$116,103	N/A	N/A	$116,103
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$51,750	N/A	N/A	$46,575
Subtotal	$707,186	N/A	N/A	$162,679
Total Benefits	$707,186	$362,972	$362,972	$561,948
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$189,018	$189,018	$189,018
Advertising/Promotion/Customer Ed	N/A	$16,687	$16,687	$16,687
Participant Rebates and Incentives	N/A	$116,103	$116,103	$116,103
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$321,808	$321,808	$321,808
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$485,399	N/A
Subtotal	N/A	N/A	$485,399	N/A
Participant Costs				
Incremental Capital Costs	$53,770	N/A	N/A	$48,393
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$53,770	N/A	N/A	$48,393
Total Costs	$53,770	$321,808	$807,208	$370,202
Net Benefit (Cost)	$653,416	$41,164	($444,236)	$191,746
Benefit/Cost Ratio	13.15	1.13	0.45	1.52

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	7.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	19.41%
Gross Load Factor at Customer	E	88.90%
Net-to-Gross (Energy)	F	90.0%
Net-to-Gross (Demand)	G	90.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$898
MTRC Non-Energy Benefit Adder	**M**	$170
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.1868 kW
Gross Annual kWh Saved at Customer	(B x E x C)	7,788 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	7,009 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	7,497 kWh

Program Summary All Participants

Total Budget	N	**$321,808**
Gross kW Saved at Customer	O	213 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**40 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,662,290 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,662,290 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,496,061 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,600,236 kWh**
TRC Net Benefits with Adder	(O x L)	**$191,746**
TRC Net Benefits without Adder	(O x (L - M))	**$155,449**
Utility Program Cost per kWh Lifetime		**$0.0287**
Utility Program Cost per kW at Gen		**$8,071**

REFRIGERATOR & FREEZER RECYCLING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$301,949	$301,949	$301,949
Transmission & Distribution Capaci	N/A	$30,855	$30,855	$30,855
Marginal Energy	N/A	$954,283	$954,283	$954,283
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$1,287,088
Non-Energy Benefits Adder (10%)				$128,709
Subtotal	N/A	$1,287,088	$1,287,088	$1,415,796
Other Benefits				
Bill Reduction - Electric	$5,530,397	N/A	N/A	N/A
Participant Rebates and Incentives	$366,350	N/A	N/A	$366,350
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$5,896,747	N/A	N/A	$366,350
Total Benefits	$5,896,747	$1,287,088	$1,287,088	$1,782,146
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$646,441	$646,441	$646,441
Advertising/Promotion/Customer Ed	N/A	$231,867	$231,867	$231,867
Participant Rebates and Incentives	N/A	$366,350	$366,350	$366,350
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$3,000	$3,000	$3,000
Subtotal	N/A	$1,247,658	$1,247,658	$1,247,658
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$3,196,035	N/A
Subtotal	N/A	N/A	$3,196,035	N/A
Participant Costs				
Incremental Capital Costs	$0	N/A	N/A	$0
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Costs	$0	$1,247,658	$4,443,693	$1,247,658
Net Benefit (Cost)	$5,896,747	$39,430	($3,156,605)	$534,488
Benefit/Cost Ratio	INF	1.03	0.29	1.43

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	8.1 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	63.80%
Gross Load Factor at Customer	E	63.85%
Net-to-Gross (Energy)	F	57.7%
Net-to-Gross (Demand)	G	57.7%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$469
MTRC Non-Energy Benefit Adder	**M**	$113
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.3989 kW
Gross Annual kWh Saved at Customer	(B x E x C)	5,593 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,228 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,497 kWh

Program Summary All Participants

Total Budget	N	**$1,247,658**
Gross kW Saved at Customer	O	1,139 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**455 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	6,372,766 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	6,372,766 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	3,678,199 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**3,984,616 kWh**
TRC Net Benefits with Adder	(O x L)	**$534,488**
TRC Net Benefits without Adder	(O x (L - M))	**$405,780**
Utility Program Cost per kWh Lifetime		**$0.0388**
Utility Program Cost per kW at Gen		**$2,745**

RESIDENTIAL DEMAND RESPONSE — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$5,392,014	$5,392,014	$5,392,014
Transmission & Distribution Capaci	N/A	$547,826	$547,826	$547,826
Marginal Energy	N/A	$13,446	$13,446	$13,446
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$5,953,285
Non-Energy Benefits Adder (10%)				$595,329
Subtotal	N/A	$5,953,285	$5,953,285	$6,548,614
Other Benefits				
Bill Reduction - Electric	$171,969	N/A	N/A	N/A
Participant Rebates and Incentives	$8,146,359	N/A	N/A	$8,146,359
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$8,318,328	N/A	N/A	$8,146,359
Total Benefits	$8,318,328	$5,953,285	$5,953,285	$14,694,973
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$2,764,391	$2,764,391	$2,764,391
Advertising/Promotion/Customer Ed	N/A	$765,949	$765,949	$765,949
Participant Rebates and Incentives	N/A	$8,146,359	$8,146,359	$8,146,359
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$11,676,699	$11,676,699	$11,676,699
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$171,969	N/A
Subtotal	N/A	N/A	$171,969	N/A
Participant Costs				
Incremental Capital Costs	$264,715	N/A	N/A	$264,715
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$264,715	N/A	N/A	$264,715
Total Costs	$264,715	$11,676,699	$11,848,668	$11,941,414
Net Benefit (Cost)	$8,053,613	($5,723,413)	($5,895,382)	$2,753,559
Benefit/Cost Ratio	31.42	0.51	0.50	1.23

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	12.8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	38.11%
Gross Load Factor at Customer	E	0.03%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$196
MTRC Non-Energy Benefit Adder	**M**	$42
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.4129 kW
Gross Annual kWh Saved at Customer	(B x E x C)	3 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3 kWh

Program Summary All Participants

Total Budget	N	**$11,676,699**
Gross kW Saved at Customer	O	14,058 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**5,804 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	36,246 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	36,246 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	36,246 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**39,266 kWh**
TRC Net Benefits with Adder	(O x L)	**$2,753,559**
TRC Net Benefits without Adder	(O x (L - M))	**$2,158,231**
Utility Program Cost per kWh Lifetime		**$23.3006**
Utility Program Cost per kW at Gen		**$2,012**

RESIDENTIAL HEATING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$1,284,578	$1,284,578	$1,284,578
Transmission & Distribution Capaci	N/A	$129,741	$129,741	$129,741
Marginal Energy	N/A	$2,536,241	$2,536,241	$2,536,241
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$3,950,560
Non-Energy Benefits Adder (10%)				$395,056
Subtotal	N/A	$3,950,560	$3,950,560	$4,345,616
Other Benefits				
Bill Reduction - Electric	$9,934,679	N/A	N/A	N/A
Participant Rebates and Incentives	$722,525	N/A	N/A	$722,525
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$10,657,204	N/A	N/A	$722,525
Total Benefits	$10,657,204	$3,950,560	$3,950,560	$5,068,141
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$91,508	$91,508	$91,508
Advertising/Promotion/Customer Ed	N/A	$77,228	$77,228	$77,228
Participant Rebates and Incentives	N/A	$722,525	$722,525	$722,525
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$10,575	$10,575	$10,575
Subtotal	N/A	$901,835	$901,835	$901,835
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$9,338,599	N/A
Subtotal	N/A	N/A	$9,338,599	N/A
Participant Costs				
Incremental Capital Costs	$1,529,792	N/A	N/A	$1,438,004
Incremental O&M Costs	$916,764	N/A	N/A	$861,758
Subtotal	$2,446,556	N/A	N/A	$2,299,763
Total Costs	$2,446,556	$901,835	$10,240,434	$3,201,598
Net Benefit (Cost)	$8,210,648	$3,048,725	($6,289,874)	$1,866,543
Benefit/Cost Ratio	4.36	4.38	0.39	1.58

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	18.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	74.43%
Gross Load Factor at Customer	E	46.83%
Net-to-Gross (Energy)	F	94.0%
Net-to-Gross (Demand)	G	94.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$1,325
MTRC Non-Energy Benefit Adder	**M**	$280
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.7579 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,102 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,856 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	4,177 kWh

Program Summary All Participants

Total Budget	N	**$901,835**
Gross kW Saved at Customer	O	1,409 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**1,068 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	5,780,738 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	5,780,738 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	5,433,894 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**5,886,571 kWh**
TRC Net Benefits with Adder	(O x L)	**$1,866,543**
TRC Net Benefits without Adder	(O x (L - M))	**$1,471,487**
Utility Program Cost per kWh Lifetime		**$0.0085**
Utility Program Cost per kW at Gen		**$844**

SCHOOL EDUCATION KITS — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$408,956	$408,956	$408,956
Transmission & Distribution Capaci	N/A	$41,877	$41,877	$41,877
Marginal Energy	N/A	$1,645,709	$1,645,709	$1,645,709
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$2,096,542
Non-Energy Benefits Adder (10%)				$209,654
Subtotal	N/A	$2,096,542	$2,096,542	$2,306,196
Other Benefits				
Bill Reduction - Electric	$6,851,689	N/A	N/A	N/A
Participant Rebates and Incentives	$889,142	N/A	N/A	$889,142
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$613,800	N/A	N/A	$293,874
Subtotal	$8,354,631	N/A	N/A	$1,183,016
Total Benefits	$8,354,631	$2,096,542	$2,096,542	$3,489,212
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$707,713	$707,713	$707,713
Advertising/Promotion/Customer Ed	N/A	$2,802	$2,802	$2,802
Participant Rebates and Incentives	N/A	$889,142	$889,142	$889,142
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$1,599,656	$1,599,656	$1,599,656
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$5,580,675	N/A
Subtotal	N/A	N/A	$5,580,675	N/A
Participant Costs				
Incremental Capital Costs	$874,921	N/A	N/A	$874,921
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$874,921	N/A	N/A	$874,921
Total Costs	$874,921	$1,599,656	$7,180,331	$2,474,577
Net Benefit (Cost)	$7,479,709	$496,885	($5,083,790)	$1,014,634
Benefit/Cost Ratio	9.55	1.31	0.29	1.41

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	6.8 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	9.37%
Gross Load Factor at Customer	E	12.20%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**84.5%**
Installation Rate (Demand)	**K**	**84.5%**
MTRC Net Benefit (Cost)	**L**	$117
MTRC Non-Energy Benefit Adder	**M**	$24
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.0858 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,069 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	903 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	979 kWh

Program Summary All Participants

Total Budget	N	**$1,599,656**
Gross kW Saved at Customer	O	8,646 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**742 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	9,242,653 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	7,810,831 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	7,810,831 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**8,461,522 kWh**
TRC Net Benefits with Adder	(O x L)	**$1,014,634**
TRC Net Benefits without Adder	(O x (L - M))	**$804,980**
Utility Program Cost per kWh Lifetime		**$0.0280**
Utility Program Cost per kW at Gen		**$2,155**

SELF DIRECT **2018 ELECTRIC ACTUAL**

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$698,138	$698,138	$698,138
Transmission & Distribution Capaci	N/A	$70,510	$70,510	$70,510
Marginal Energy	N/A	$1,324,728	$1,324,728	$1,324,728
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$2,093,376
Non-Energy Benefits Adder (10%)				$209,338
Subtotal	N/A	$2,093,376	$2,093,376	$2,302,714
Other Benefits				
Bill Reduction - Electric	$3,461,226	N/A	N/A	N/A
Participant Rebates and Incentives	$321,095	N/A	N/A	$321,095
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$3,782,321	N/A	N/A	$321,095
Total Benefits	$3,782,321	$2,093,376	$2,093,376	$2,623,809
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$151,860	$151,860	$151,860
Advertising/Promotion/Customer Ed	N/A	$10,362	$10,362	$10,362
Participant Rebates and Incentives	N/A	$321,095	$321,095	$321,095
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$483,317	$483,317	$483,317
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$3,149,716	N/A
Subtotal	N/A	N/A	$3,149,716	N/A
Participant Costs				
Incremental Capital Costs	$1,606,189	N/A	N/A	$1,461,632
Incremental O&M Costs	$2,141	N/A	N/A	$1,948
Subtotal	$1,608,329	N/A	N/A	$1,463,580
Total Costs	$1,608,329	$483,317	$3,633,033	$1,946,897
Net Benefit (Cost)	$2,173,992	$1,610,059	($1,539,657)	$676,912
Benefit/Cost Ratio	2.35	4.33	0.58	1.35

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	18.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	76.48%
Gross Load Factor at Customer	E	46.86%
Net-to-Gross (Energy)	F	91.0%
Net-to-Gross (Demand)	G	91.0%
Transmission Loss Factor (Energy)	H	6.510%
Transmission Loss Factor (Demand)	I	6.510%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$880
MTRC Non-Energy Benefit Adder	**M**	$272
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.7444 kW
Gross Annual kWh Saved at Customer	(B x E x C)	4,105 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	3,735 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	3,995 kWh

Program Summary All Participants

Total Budget	N	**$483,317**
Gross kW Saved at Customer	O	769 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**572 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	3,155,488 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	3,155,488 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	2,871,494 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**3,071,445 kWh**
TRC Net Benefits with Adder	(O x L)	**$676,912**
TRC Net Benefits without Adder	(O x (L - M))	**$467,574**
Utility Program Cost per kWh Lifetime		**$0.0087**
Utility Program Cost per kW at Gen		**$844**

SINGLE-FAMILY WEATHERIZATION — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$76,100	$76,100	$76,100
Transmission & Distribution Capaci	N/A	$7,742	$7,742	$7,742
Marginal Energy	N/A	$344,442	$344,442	$344,442
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$428,283
Non-Energy Benefits Adder (25%)				$107,071
Subtotal	N/A	$428,283	$428,283	$535,354
Other Benefits				
Bill Reduction - Electric	$1,296,834	N/A	N/A	N/A
Participant Rebates and Incentives	$981,725	N/A	N/A	$981,725
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$2,015	N/A	N/A	$2,015
Subtotal	$2,280,575	N/A	N/A	$983,740
Total Benefits	$2,280,575	$428,283	$428,283	$1,519,094
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$86,655	$86,655	$86,655
Advertising/Promotion/Customer Ed	N/A	$154,045	$154,045	$154,045
Participant Rebates and Incentives	N/A	$981,725	$981,725	$981,725
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$45,084	$45,084	$45,084
Subtotal	N/A	$1,267,510	$1,267,510	$1,267,510
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$1,296,834	N/A
Subtotal	N/A	N/A	$1,296,834	N/A
Participant Costs				
Incremental Capital Costs	$902,808	N/A	N/A	$902,808
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$902,808	N/A	N/A	$902,808
Total Costs	$902,808	$1,267,510	$2,564,344	$2,170,318
Net Benefit (Cost)	$1,377,766	($839,227)	($2,136,061)	($651,224)
Benefit/Cost Ratio	2.53	0.34	0.17	0.70

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.7 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	9.65%
Gross Load Factor at Customer	E	13.95%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	-$658
MTRC Non-Energy Benefit Adder	**M**	$108
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.1046 kW
Gross Annual kWh Saved at Customer	(B x E x C)	1,222 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	1,222 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	1,324 kWh

Program Summary All Participants

Total Budget	N	**$1,267,510**
Gross kW Saved at Customer	O	989 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**103 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	1,209,460 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	1,209,460 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	1,209,460 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**1,310,216 kWh**
TRC Net Benefits with Adder	(O x L)	**($651,224)**
TRC Net Benefits without Adder	(O x (L - M))	**($758,294)**
Utility Program Cost per kWh Lifetime		**$0.0902**
Utility Program Cost per kW at Gen		**$12,252**

THERMOSTAT OPTIMIZATION — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$136,965	$136,965	$136,965
Transmission & Distribution Capaci	N/A	$13,964	$13,964	$13,964
Marginal Energy	N/A	$38,003	$38,003	$38,003
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$188,932
Non-Energy Benefits Adder (10%)				$18,893
Subtotal	N/A	$188,932	$188,932	$207,825
Other Benefits				
Bill Reduction - Electric	$112,532	N/A	N/A	N/A
Participant Rebates and Incentives	$25,955	N/A	N/A	$25,955
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$138,487	N/A	N/A	$25,955
Total Benefits	$138,487	$188,932	$188,932	$233,781
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$1,230	$1,230	$1,230
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$25,955	$25,955	$25,955
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$27,185	$27,185	$27,185
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$112,532	N/A
Subtotal	N/A	N/A	$112,532	N/A
Participant Costs				
Incremental Capital Costs	$111,607	N/A	N/A	$111,607
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$111,607	N/A	N/A	$111,607
Total Costs	$111,607	$27,185	$139,717	$138,792
Net Benefit (Cost)	$26,881	$161,747	$49,215	$94,989
Benefit/Cost Ratio	1.24	6.95	1.35	1.68

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	75.95%
Gross Load Factor at Customer	E	6.55%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$452
MTRC Non-Energy Benefit Adder	**M**	$90
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	0.8228 kW
Gross Annual kWh Saved at Customer	(B x E x C)	573 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	573 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	621 kWh

Program Summary All Participants

Total Budget	N	**$27,185**
Gross kW Saved at Customer	O	210 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**173 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	120,518 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	120,518 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	120,518 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**130,558 kWh**
TRC Net Benefits with Adder	(O x L)	**$94,989**
TRC Net Benefits without Adder	(O x (L - M))	**$76,095**
Utility Program Cost per kWh Lifetime		**$0.0208**
Utility Program Cost per kW at Gen		**$157**

WATER HEATING — 2018 — ELECTRIC — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Generation Capacity	N/A	$13,109	$13,109	$13,109
Transmission & Distribution Capaci	N/A	$1,336	$1,336	$1,336
Marginal Energy	N/A	$33,333	$33,333	$33,333
Avoided Emissions (CO2)	N/A	N/A	N/A	$0
Subtotal				$47,778
Non-Energy Benefits Adder (10%)				$4,778
Subtotal	N/A	$47,778	$47,778	$52,556
Other Benefits				
Bill Reduction - Electric	$65,335	N/A	N/A	N/A
Participant Rebates and Incentives	$13,500	N/A	N/A	$13,500
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$78,835	N/A	N/A	$13,500
Total Benefits	$78,835	$47,778	$47,778	$66,056
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$3,209	$3,209	$3,209
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$13,500	$13,500	$13,500
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$3,350	$3,350	$3,350
Subtotal	N/A	$20,059	$20,059	$20,059
Utility Revenue Reduction				
Revenue Reduction - Electric	N/A	N/A	$65,335	N/A
Subtotal	N/A	N/A	$65,335	N/A
Participant Costs				
Incremental Capital Costs	$32,835	N/A	N/A	$32,835
Incremental O&M Costs	$2,708	N/A	N/A	$2,708
Subtotal	$35,543	N/A	N/A	$35,543
Total Costs	$35,543	$20,059	$85,395	$55,602
Net Benefit (Cost)	$43,292	$27,719	($37,616)	$10,454
Benefit/Cost Ratio	2.22	2.38	0.56	1.19

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Inputs per Customer kW		
Lifetime (Weighted on Generator kWh)	A	10.0 years
Annual Hours	B	8760
Gross Customer kW	C	1 kW
Generator Peak Coincidence Factor	D	100.00%
Gross Load Factor at Customer	E	78.99%
Net-to-Gross (Energy)	F	100.0%
Net-to-Gross (Demand)	G	100.0%
Transmission Loss Factor (Energy)	H	7.690%
Transmission Loss Factor (Demand)	I	7.690%
Installation Rate (Energy)	**J**	**100.0%**
Installation Rate (Demand)	**K**	**100.0%**
MTRC Net Benefit (Cost)	**L**	$684
MTRC Non-Energy Benefit Adder	**M**	$313
Net coincident kW Saved at Generator	**(G x C x K) x D / (1 - I)**	1.0833 kW
Gross Annual kWh Saved at Customer	(B x E x C)	6,919 kWh
Net Annual kWh Saved at Customer	**(F x (B x E x C x J))**	6,919 kWh
Net Annual kWh Saved at Generator	**(F x (B x E x C x J)) / (1 - H)**	7,496 kWh

Program Summary All Participants

Total Budget	N	**$20,059**
Gross kW Saved at Customer	O	15 kW
Net coincident kW Saved at Generator	**(G x O x K) x D / (1 - I)**	**17 kW**
Gross Annual kWh Saved at Customer	(B x E x O)	105,707 kWh
Gross Installed Annual kWh Saved at Custome	**(B x E x O x J)**	105,707 kWh
Net Annual kWh Saved at Customer	(F x (B x E x O x J))	105,707 kWh
Net Annual kWh Saved at Generator	**((F x (B x E x O x J)) / (1 - H))**	**114,513 kWh**
TRC Net Benefits with Adder	(O x L)	**$10,454**
TRC Net Benefits without Adder	(O x (L - M))	**$5,676**
Utility Program Cost per kWh Lifetime		**$0.0175**
Utility Program Cost per kW at Gen		**$1,212**

PORTFOLIO TOTAL	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$23,482,394	$23,482,394	$23,482,394
Variable O&M Savings	N/A	$268,665	$268,665	$268,665
Demand Savings	N/A	$2,507,930	$2,507,930	$2,507,930
Subtotal				$26,258,988
Emissions Non-Energy Benefits Adder (7.5%)				$1,966,461
Subtotal	N/A	$26,258,988	$26,258,988	$28,225,449
Other Benefits				
Bill Reduction - Gas	$53,836,721	N/A	N/A	N/A
Participant Rebates and Incentives	$10,265,494	N/A	N/A	$10,265,494
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$18,183,213	N/A	N/A	$12,065,136
Subtotal	$82,285,429	N/A	N/A	$22,330,630
Total Benefits	$82,285,429	$26,258,988	$26,258,988	$50,556,079
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$3,860,640	$3,860,640	$3,860,640
Advertising/Promotion/Customer Ed	N/A	$507,612	$507,612	$507,612
Participant Rebates and Incentives	N/A	$10,265,494	$10,265,494	$10,265,494
Equipment & Installation	N/A	$63,932	$63,932	$63,932
Measurement and Verification	N/A	$726,776	$726,776	$726,776
Subtotal	N/A	$15,424,453	$15,424,453	$15,424,453
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$46,692,198	N/A
Subtotal	N/A	N/A	$46,692,198	N/A
Participant Costs				
Incremental Capital Costs	$20,707,043	N/A	N/A	$19,085,758
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$20,707,043	N/A	N/A	$19,085,758
Total Costs	$20,707,043	$15,424,453	$62,116,651	$34,510,212
Net Benefit (Cost)	$61,578,386	$10,834,535	($35,857,663)	$16,045,868
Benefit/Cost Ratio	3.97	1.70	0.42	1.46

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	14.24 years
Net-to-Gross (Weighted on Dth)	B	93.32%
Install Rate (Weighted on Dth)	C	93.3%

Program Totals:		
Total Dth/Yr Saved	F	**604,928**
Utility Costs per Net Dth/Yr	G	$25.50
Net Benefit (Cost) per Gross Dth/Yr	H	$26.53
Non-Energy Benefits Adder per Gross Dth/Yr	I	$3.25
Annual Dth/$M	($1M / G)	**39,219**
Total Utility Budget	(G x F)	**$15,424,453**
Total MTRC Net Benefits with Adder	(F x H)	**$16,045,868**
Total MTRC Net Benefits without Adder	(H - I) x F	**$14,079,406**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.79**

EE PORTFOLIO TOTAL	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$23,482,394	$23,482,394	$23,482,394
Variable O&M Savings	N/A	$268,665	$268,665	$268,665
Demand Savings	N/A	$2,507,930	$2,507,930	$2,507,930
Subtotal				$26,258,988
Emissions Non-Energy Benefits Adder (7.5%)				$1,966,461
Subtotal	N/A	$26,258,988	$26,258,988	$28,225,449
Other Benefits				
Bill Reduction - Gas	$53,836,721	N/A	N/A	N/A
Participant Rebates and Incentives	$10,265,494	N/A	N/A	$10,265,494
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$18,183,213	N/A	N/A	$12,065,136
Subtotal	$82,285,429	N/A	N/A	$22,330,630
Total Benefits	$82,285,429	$26,258,988	$26,258,988	$50,556,079
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$3,860,640	$3,860,640	$3,860,640
Advertising/Promotion/Customer Ed	N/A	$507,612	$507,612	$507,612
Participant Rebates and Incentives	N/A	$10,265,494	$10,265,494	$10,265,494
Equipment & Installation	N/A	$63,932	$63,932	$63,932
Measurement and Verification	N/A	$726,776	$726,776	$726,776
Subtotal	N/A	$15,424,453	$15,424,453	$15,424,453
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$46,692,198	N/A
Subtotal	N/A	N/A	$46,692,198	N/A
Participant Costs				
Incremental Capital Costs	$20,707,043	N/A	N/A	$19,085,758
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$20,707,043	N/A	N/A	$19,085,758
Total Costs	$20,707,043	$15,424,453	$62,116,651	$34,510,212
Net Benefit (Cost)	$61,578,386	$10,834,535	($35,857,663)	$16,045,868
Benefit/Cost Ratio	3.97	1.70	0.42	1.46

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	14.24 years
Net-to-Gross (Weighted on Dth)	B	93.32%
Install Rate (Weighted on Dth)	C	93.3%

Program Totals:		
Total Dth/Yr Saved	F	**604,928**
Utility Costs per Net Dth/Yr	G	$25.50
Net Benefit (Cost) per Gross Dth/Yr	H	$26.53
Non-Energy Benefits Adder per Gross Dth/Yr	I	$3.25
Annual Dth/$M	($1M / G)	**39,219**
Total Utility Budget	(G x F)	**$15,424,453**
Total MTRC Net Benefits with Adder	(F x H)	**$16,045,868**
Total MTRC Net Benefits without Adder	(H - I) x F	**$14,079,406**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.79**

BUSINESS PROGRAM TOTAL — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$4,803,440	$4,803,440	$4,803,440
Variable O&M Savings	N/A	$53,976	$53,976	$53,976
Demand Savings	N/A	$503,858	$503,858	$503,858
Subtotal				$5,361,274
Emissions Non-Energy Benefits Adder (5%)				$268,064
Subtotal	N/A	$5,361,274	$5,361,274	$5,629,338
Other Benefits				
Bill Reduction - Gas	$10,744,402	N/A	N/A	N/A
Participant Rebates and Incentives	$1,280,499	N/A	N/A	$1,280,499
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$3,857,552	N/A	N/A	$3,595,448
Subtotal	$15,882,453	N/A	N/A	$4,875,947
Total Benefits	$15,882,453	$5,361,274	$5,361,274	$10,505,285
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$1,041,127	$1,041,127	$1,041,127
Advertising/Promotion/Customer Ed	N/A	$46,745	$46,745	$46,745
Participant Rebates and Incentives	N/A	$1,280,499	$1,280,499	$1,280,499
Equipment & Installation	N/A	($14,002)	($14,002)	($14,002)
Measurement and Verification	N/A	$100,383	$100,383	$100,383
Subtotal	N/A	$2,454,751	$2,454,751	$2,454,751
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$10,034,148	N/A
Subtotal	N/A	N/A	$10,034,148	N/A
Participant Costs				
Incremental Capital Costs	$5,220,322	N/A	N/A	$4,859,368
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$5,220,322	N/A	N/A	$4,859,368
Total Costs	$5,220,322	$2,454,751	$12,488,900	$7,314,119
Net Benefit (Cost)	$10,662,130	$2,906,523	($7,127,626)	$3,191,166
Benefit/Cost Ratio	3.04	2.18	0.43	1.44

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	16.16 years
Net-to-Gross (Weighted on Dth)	B	93.36%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**109,396**
Utility Costs per Net Dth/Yr	G	$22.44
Net Benefit (Cost) per Gross Dth/Yr	H	$29.17
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.45
Annual Dth/$M	($1M / G)	**44,565**
Total Utility Budget	(G x F)	**$2,454,751**
Total MTRC Net Benefits with Adder	(F x H)	**$3,191,166**
Total MTRC Net Benefits without Adder	(H - I) x F	**$2,923,102**
Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.39**

RESIDENTIAL PROGRAM TOTAL — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$15,756,960	$15,756,960	$15,756,960
Variable O&M Savings	N/A	$181,251	$181,251	$181,251
Demand Savings	N/A	$1,691,944	$1,691,944	$1,691,944
Subtotal				$17,630,156
Emissions Non-Energy Benefits Adder (5%)				$881,508
Subtotal	N/A	$17,630,156	$17,630,156	$18,511,663
Other Benefits				
Bill Reduction - Gas	$37,215,114	N/A	N/A	N/A
Participant Rebates and Incentives	$5,588,349	N/A	N/A	$5,588,349
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$13,274,013	N/A	N/A	$7,644,914
Subtotal	$56,077,477	N/A	N/A	$13,233,263
Total Benefits	$56,077,477	$17,630,156	$17,630,156	$31,744,927
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$1,729,514	$1,729,514	$1,729,514
Advertising/Promotion/Customer Ed	N/A	$240,606	$240,606	$240,606
Participant Rebates and Incentives	N/A	$5,588,349	$5,588,349	$5,588,349
Equipment & Installation	N/A	$77,934	$77,934	$77,934
Measurement and Verification	N/A	$343,561	$343,561	$343,561
Subtotal	N/A	$7,979,965	$7,979,965	$7,979,965
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$30,923,543	N/A
Subtotal	N/A	N/A	$30,923,543	N/A
Participant Costs				
Incremental Capital Costs	$12,189,247	N/A	N/A	$10,928,917
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$12,189,247	N/A	N/A	$10,928,917
Total Costs	$12,189,247	$7,979,965	$38,903,507	$18,908,882
Net Benefit (Cost)	$43,888,229	$9,650,191	($21,273,352)	$12,836,045
Benefit/Cost Ratio	4.60	2.21	0.45	1.68

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	13.62 years
Net-to-Gross (Weighted on Dth)	B	92.26%
Install Rate (Weighted on Dth)	C	90.7%

Program Totals:		
Total Dth/Yr Saved	F	**424,438**
Utility Costs per Net Dth/Yr	G	$18.80
Net Benefit (Cost) per Gross Dth/Yr	H	$30.24
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.08
Annual Dth/$M	($1M / G)	**53,188**
Total Utility Budget	(G x F)	**$7,979,965**
Total MTRC Net Benefits with Adder	(F x H)	**$12,836,045**
Total MTRC Net Benefits without Adder	(H - I) x F	**$11,954,537**
Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.38**

LOW-INCOME PROGRAM TOTAL — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$2,921,993	$2,921,993	$2,921,993
Variable O&M Savings	N/A	$33,437	$33,437	$33,437
Demand Savings	N/A	$312,128	$312,128	$312,128
Subtotal				$3,267,558
Emissions Non-Energy Benefits Adder (25%)				$816,890
Subtotal	N/A	$3,267,558	$3,267,558	$4,084,448
Other Benefits				
Bill Reduction - Gas	$5,877,204	N/A	N/A	N/A
Participant Rebates and Incentives	$3,122,734	N/A	N/A	$3,122,734
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$1,051,649	N/A	N/A	$824,773
Subtotal	$10,051,587	N/A	N/A	$3,947,508
Total Benefits	$10,051,587	$3,267,558	$3,267,558	$8,031,956
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$420,153	$420,153	$420,153
Advertising/Promotion/Customer Ed	N/A	$159,167	$159,167	$159,167
Participant Rebates and Incentives	N/A	$3,122,734	$3,122,734	$3,122,734
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$127,762	$127,762	$127,762
Subtotal	N/A	$3,829,816	$3,829,816	$3,829,816
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$5,734,506	N/A
Subtotal	N/A	N/A	$5,734,506	N/A
Participant Costs				
Incremental Capital Costs	$3,297,473	N/A	N/A	$3,297,473
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$3,297,473	N/A	N/A	$3,297,473
Total Costs	$3,297,473	$3,829,816	$9,564,323	$7,127,289
Net Benefit (Cost)	$6,754,114	($562,258)	($6,296,764)	$904,666
Benefit/Cost Ratio	3.05	0.85	0.34	1.13

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	14.98 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	97.7%

Program Totals:		
Total Dth/Yr Saved	F	**71,093**
Utility Costs per Net Dth/Yr	G	$53.87
Net Benefit (Cost) per Gross Dth/Yr	H	$12.73
Non-Energy Benefits Adder per Gross Dth/Yr	I	$11.49
Annual Dth/$M	($1M / G)	**18,563**
Total Utility Budget	(G x F)	**$3,829,816**
Total MTRC Net Benefits with Adder	(F x H)	**$904,666**
Total MTRC Net Benefits without Adder	(H - I) x F	**$87,777**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$3.60**

COMMERCIAL REFRIGERATION EFFICIENCY — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$24,440	$24,440	$24,440
Variable O&M Savings	N/A	$311	$311	$311
Demand Savings	N/A	$2,905	$2,905	$2,905
Subtotal				$27,656
Emissions Non-Energy Benefits Adder (5%)				$1,383
Subtotal	N/A	$27,656	$27,656	$29,039
Other Benefits				
Bill Reduction - Gas	$51,079	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$79,251	N/A	N/A	$79,251
Subtotal	$130,330	N/A	N/A	$79,251
Total Benefits	$130,330	$27,656	$27,656	$108,290
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$10,129	$10,129	$10,129
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$10,129	$10,129	$10,129
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$51,079	N/A
Subtotal	N/A	N/A	$51,079	N/A
Participant Costs				
Incremental Capital Costs	$1,391	N/A	N/A	$1,391
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$1,391	N/A	N/A	$1,391
Total Costs	$1,391	$10,129	$61,208	$11,520
Net Benefit (Cost)	$128,939	$17,527	($33,551)	$96,770
Benefit/Cost Ratio	93.70	2.73	0.45	9.40

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	9.78 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**845**
Utility Costs per Net Dth/Yr	G	$11.99
Net Benefit (Cost) per Gross Dth/Yr	H	$114.52
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.64
Annual Dth/$M	($1M / G)	**83,424**
Total Utility Budget	(G x F)	**$10,129**
Total MTRC Net Benefits with Adder	(F x H)	**$96,770**
Total MTRC Net Benefits without Adder	(H - I) x F	**$95,387**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.23**

CUSTOM EFFICIENCY	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$2,734	$2,734	$2,734
Variable O&M Savings	N/A	$29	$29	$29
Demand Savings	N/A	$274	$274	$274
Subtotal				$3,037
Emissions Non-Energy Benefits Adder (5%)				$152
Subtotal	N/A	$3,037	$3,037	$3,189
Other Benefits				
Bill Reduction - Gas	$6,563	N/A	N/A	N/A
Participant Rebates and Incentives	$239	N/A	N/A	$239
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$6,802	N/A	N/A	$239
Total Benefits	$6,802	$3,037	$3,037	$3,428
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$56,325	$56,325	$56,325
Advertising/Promotion/Customer Ed	N/A	$938	$938	$938
Participant Rebates and Incentives	N/A	$239	$239	$239
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$57,502	$57,502	$57,502
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$5,710	N/A
Subtotal	N/A	N/A	$5,710	N/A
Participant Costs				
Incremental Capital Costs	$954	N/A	N/A	$830
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$954	N/A	N/A	$830
Total Costs	$954	$57,502	$63,211	$58,332
Net Benefit (Cost)	$5,848	($54,465)	($60,175)	($54,904)
Benefit/Cost Ratio	7.13	0.05	0.05	0.06

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	20.00 years
Net-to-Gross (Weighted on Dth)	B	87.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**52**
Utility Costs per Net Dth/Yr	G	$1,107.10
Net Benefit (Cost) per Gross Dth/Yr	H	($1,057.09)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.92
Annual Dth/$M	($1M / G)	**903**
Total Utility Budget	(G x F)	**$57,502**
Total MTRC Net Benefits with Adder	(F x H)	**-$54,904**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$55,056**
Utility Program Cost per Net Dth Lifetime	(G / A)	**$55.36**

ENERGY EFFICIENT SHOWERHEAD — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$1,073,499	$1,073,499	$1,073,499
Variable O&M Savings	N/A	$13,580	$13,580	$13,580
Demand Savings	N/A	$126,764	$126,764	$126,764
Subtotal				$1,213,843
Emissions Non-Energy Benefits Adder (5%)				$60,692
Subtotal	N/A	$1,213,843	$1,213,843	$1,274,535
Other Benefits				
Bill Reduction - Gas	$2,874,639	N/A	N/A	N/A
Participant Rebates and Incentives	$84,425	N/A	N/A	$84,425
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$4,625,791	N/A	N/A	$3,396,589
Subtotal	$7,584,856	N/A	N/A	$3,481,014
Total Benefits	$7,584,856	$1,213,843	$1,213,843	$4,755,549
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$136,928	$136,928	$136,928
Advertising/Promotion/Customer Ed	N/A	$72,200	$72,200	$72,200
Participant Rebates and Incentives	N/A	$84,425	$84,425	$84,425
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$293,554	$293,554	$293,554
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$2,106,776	N/A
Subtotal	N/A	N/A	$2,106,776	N/A
Participant Costs				
Incremental Capital Costs	$94,677	N/A	N/A	$93,731
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$94,677	N/A	N/A	$93,731
Total Costs	$94,677	$293,554	$2,400,330	$387,285
Net Benefit (Cost)	$7,490,179	$920,289	($1,186,487)	$4,368,265
Benefit/Cost Ratio	80.11	4.13	0.51	12.28

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	10.00 years
Net-to-Gross (Weighted on Dth)	B	99.00%
Install Rate (Weighted on Dth)	C	74.0%

Program Totals:		
Total Dth/Yr Saved	F	**36,213**
Utility Costs per Net Dth/Yr	G	$8.11
Net Benefit (Cost) per Gross Dth/Yr	H	$120.63
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.68
Annual Dth/$M	($1M / G)	**123,359**
Total Utility Budget	(G x F)	**$293,554**
Total MTRC Net Benefits with Adder	(F x H)	**$4,368,265**
Total MTRC Net Benefits without Adder	(H - I) x F	**$4,307,573**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$0.81**

ENERGY FEEDBACK RESIDENTIAL — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$714,856	$714,856	$714,856
Variable O&M Savings	N/A	$12,976	$12,976	$12,976
Demand Savings	N/A	$121,124	$121,124	$121,124
Subtotal				$848,956
Emissions Non-Energy Benefits Adder (5%)				$42,448
Subtotal	N/A	$848,956	$848,956	$891,404
Other Benefits				
Bill Reduction - Gas	$1,402,929	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$1,402,929	N/A	N/A	$0
Total Benefits	$1,402,929	$848,956	$848,956	$891,404
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$449,735	$449,735	$449,735
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$449,735	$449,735	$449,735
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$1,402,929	N/A
Subtotal	N/A	N/A	$1,402,929	N/A
Participant Costs				
Incremental Capital Costs	$0	N/A	N/A	$0
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Costs	$0	$449,735	$1,852,663	$449,735
Net Benefit (Cost)	$1,402,929	$399,221	($1,003,708)	$441,669
Benefit/Cost Ratio	INF	1.89	0.46	1.98

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	3.00 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**86,503**
Utility Costs per Net Dth/Yr	G	$5.20
Net Benefit (Cost) per Gross Dth/Yr	H	$5.11
Non-Energy Benefits Adder per Gross Dth/Yr	I	$0.49
Annual Dth/$M	($1M / G)	**192,343**
Total Utility Budget	(G x F)	**$449,735**
Total MTRC Net Benefits with Adder	(F x H)	**$441,669**
Total MTRC Net Benefits without Adder	(H - I) x F	**$399,221**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.73**

ENERGY MANAGEMENT SYSTEMS — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$177,769	$177,769	$177,769
Variable O&M Savings	N/A	$2,050	$2,050	$2,050
Demand Savings	N/A	$19,132	$19,132	$19,132
Subtotal				$198,951
Emissions Non-Energy Benefits Adder (5%)				$9,948
Subtotal	N/A	$198,951	$198,951	$208,899
Other Benefits				
Bill Reduction - Gas	$412,640	N/A	N/A	N/A
Participant Rebates and Incentives	$18,051	N/A	N/A	$18,051
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$70,872	N/A	N/A	$63,785
Subtotal	$501,564	N/A	N/A	$81,836
Total Benefits	$501,564	$198,951	$198,951	$290,735
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$20,325	$20,325	$20,325
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$18,051	$18,051	$18,051
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$38,376	$38,376	$38,376
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$371,376	N/A
Subtotal	N/A	N/A	$371,376	N/A
Participant Costs				
Incremental Capital Costs	$186,910	N/A	N/A	$168,219
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$186,910	N/A	N/A	$168,219
Total Costs	$186,910	$38,376	$409,753	$206,595
Net Benefit (Cost)	$314,654	$160,575	($210,801)	$84,140
Benefit/Cost Ratio	2.68	5.18	0.49	1.41

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	15.00 years
Net-to-Gross (Weighted on Dth)	B	90.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**4,219**
Utility Costs per Net Dth/Yr	G	$9.10
Net Benefit (Cost) per Gross Dth/Yr	H	$19.94
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.36
Annual Dth/$M	($1M / G)	**109,929**
Total Utility Budget	(G x F)	**$38,376**
Total MTRC Net Benefits with Adder	(F x H)	**$84,140**
Total MTRC Net Benefits without Adder	(H - I) x F	**$74,192**
Utility Program Cost per Net Dth Lifetime	(G / A)	**$0.61**

ENERGY SAVINGS KIT	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$163,976	$163,976	$163,976
Variable O&M Savings	N/A	$2,074	$2,074	$2,074
Demand Savings	N/A	$19,363	$19,363	$19,363
Subtotal				$185,413
Emissions Non-Energy Benefits Adder (25%)				$46,353
Subtotal	N/A	$185,413	$185,413	$231,766
Other Benefits				
Bill Reduction - Gas	$464,506	N/A	N/A	N/A
Participant Rebates and Incentives	$21,039	N/A	N/A	$21,039
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$739,606	N/A	N/A	$512,731
Subtotal	$1,225,151	N/A	N/A	$533,770
Total Benefits	$1,225,151	$185,413	$185,413	$765,536
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$29,034	$29,034	$29,034
Advertising/Promotion/Customer Ed	N/A	$4,144	$4,144	$4,144
Participant Rebates and Incentives	N/A	$21,039	$21,039	$21,039
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$4,250	$4,250	$4,250
Subtotal	N/A	$58,467	$58,467	$58,467
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$321,808	N/A
Subtotal	N/A	N/A	$321,808	N/A
Participant Costs				
Incremental Capital Costs	$17,340	N/A	N/A	$17,340
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$17,340	N/A	N/A	$17,340
Total Costs	$17,340	$58,467	$380,275	$75,807
Net Benefit (Cost)	$1,207,811	$126,946	($194,862)	$689,729
Benefit/Cost Ratio	70.65	3.17	0.49	10.10

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	10.00 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	69.3%

Program Totals:		
Total Dth/Yr Saved	F	**5,531**
Utility Costs per Net Dth/Yr	G	$10.57
Net Benefit (Cost) per Gross Dth/Yr	H	$124.69
Non-Energy Benefits Adder per Gross Dth/Yr	I	$8.38
Annual Dth/$M	($1M / G)	**94,608**
Total Utility Budget	(G x F)	**$58,467**
Total MTRC Net Benefits with Adder	(F x H)	**$689,729**
Total MTRC Net Benefits without Adder	(H - I) x F	**$643,376**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.06**

ENERGY STAR NEW HOMES — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$5,988,589	$5,988,589	$5,988,589
Variable O&M Savings	N/A	$64,078	$64,078	$64,078
Demand Savings	N/A	$598,152	$598,152	$598,152
Subtotal				$6,650,819
Emissions Non-Energy Benefits Adder (5%)				$332,541
Subtotal	N/A	$6,650,819	$6,650,819	$6,983,360
Other Benefits				
Bill Reduction - Gas	$12,774,782	N/A	N/A	N/A
Participant Rebates and Incentives	$1,695,976	N/A	N/A	$1,695,976
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$12,027	N/A	N/A	$11,065
Subtotal	$14,482,786	N/A	N/A	$1,707,041
Total Benefits	$14,482,786	$6,650,819	$6,650,819	$8,690,401
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$469,580	$469,580	$469,580
Advertising/Promotion/Customer Ed	N/A	$25,439	$25,439	$25,439
Participant Rebates and Incentives	N/A	$1,695,976	$1,695,976	$1,695,976
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$281,663	$281,663	$281,663
Subtotal	N/A	$2,472,658	$2,472,658	$2,472,658
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$11,752,800	N/A
Subtotal	N/A	N/A	$11,752,800	N/A
Participant Costs				
Incremental Capital Costs	$4,066,627	N/A	N/A	$3,741,297
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$4,066,627	N/A	N/A	$3,741,297
Total Costs	$4,066,627	$2,472,658	$14,225,457	$6,213,954
Net Benefit (Cost)	$10,416,159	$4,178,161	($7,574,639)	$2,476,446
Benefit/Cost Ratio	3.56	2.69	0.47	1.40

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	20.00 years
Net-to-Gross (Weighted on Dth)	B	92.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**113,489**
Utility Costs per Net Dth/Yr	G	$21.79
Net Benefit (Cost) per Gross Dth/Yr	H	$21.82
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.93
Annual Dth/$M	($1M / G)	**45,897**
Total Utility Budget	(G x F)	**$2,472,658**
Total MTRC Net Benefits with Adder	(F x H)	**$2,476,446**
Total MTRC Net Benefits without Adder	(H - I) x F	**$2,143,905**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.09**

ENERGY STAR RETAIL PRODUCTS PLATFORM PILOT — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$0	$0	$0
Variable O&M Savings	N/A	$0	$0	$0
Demand Savings	N/A	$0	$0	$0
Subtotal				$0
#DIV/0!				$0
Subtotal	N/A	$0	$0	$0
Other Benefits				
Bill Reduction - Gas	$0	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Benefits	$0	$0	$0	$0
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	($1,031)	($1,031)	($1,031)
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	($1,031)	($1,031)	($1,031)
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$0	N/A
Subtotal	N/A	N/A	$0	N/A
Participant Costs				
Incremental Capital Costs	$0	N/A	N/A	$0
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Costs	$0	($1,031)	($1,031)	($1,031)
Net Benefit (Cost)	$0	$1,031	$1,031	$1,031
Benefit/Cost Ratio	INF	-	-	-

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	0.00 years
Net-to-Gross (Weighted on Dth)	B	0.00%
Install Rate (Weighted on Dth)	C	#DIV/0!

Program Totals:		
Total Dth/Yr Saved	F	-
Utility Costs per Net Dth/Yr	G	#DIV/0!
Net Benefit (Cost) per Gross Dth/Yr	H	#DIV/0!
Non-Energy Benefits Adder per Gross Dth/Yr	I	#DIV/0!
Annual Dth/$M	($1M / G)	**#DIV/0!**
Total Utility Budget	(G x F)	**-$1,031**
Total MTRC Net Benefits with Adder	(F x H)	**#DIV/0!**
Total MTRC Net Benefits without Adder	(H - I) x F	**#DIV/0!**
Utility Program Cost per Net Dth Lifetime	(G / A)	**#DIV/0!**

HEATING EFFICIENCY — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$1,069,871	$1,069,871	$1,069,871
Variable O&M Savings	N/A	$12,043	$12,043	$12,043
Demand Savings	N/A	$112,419	$112,419	$112,419
Subtotal				$1,194,333
Emissions Non-Energy Benefits Adder (5%)				$59,717
Subtotal	N/A	$1,194,333	$1,194,333	$1,254,050
Other Benefits				
Bill Reduction - Gas	$2,596,732	N/A	N/A	N/A
Participant Rebates and Incentives	$581,762	N/A	N/A	$581,762
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$3,178,494	N/A	N/A	$581,762
Total Benefits	$3,178,494	$1,194,333	$1,194,333	$1,835,812
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$277,299	$277,299	$277,299
Advertising/Promotion/Customer Ed	N/A	$1,650	$1,650	$1,650
Participant Rebates and Incentives	N/A	$581,762	$581,762	$581,762
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$22,250	$22,250	$22,250
Subtotal	N/A	$882,961	$882,961	$882,961
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$2,234,898	N/A
Subtotal	N/A	N/A	$2,234,898	N/A
Participant Costs				
Incremental Capital Costs	$1,199,614	N/A	N/A	$1,032,131
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$1,199,614	N/A	N/A	$1,032,131
Total Costs	$1,199,614	$882,961	$3,117,859	$1,915,092
Net Benefit (Cost)	$1,978,880	$311,373	($1,923,526)	($79,280)
Benefit/Cost Ratio	2.65	1.35	0.38	0.96

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	15.85 years
Net-to-Gross (Weighted on Dth)	B	86.06%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**24,675**
Utility Costs per Net Dth/Yr	G	$35.78
Net Benefit (Cost) per Gross Dth/Yr	H	($3.21)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.42
Annual Dth/$M	($1M / G)	**27,946**
Total Utility Budget	(G x F)	**$882,961**
Total MTRC Net Benefits with Adder	(F x H)	**-$79,280**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$138,997**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$2.26**

HOME ENERGY SQUAD	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$170,242	$170,242	$170,242
Variable O&M Savings	N/A	$2,164	$2,164	$2,164
Demand Savings	N/A	$20,199	$20,199	$20,199
Subtotal				$192,605
Emissions Non-Energy Benefits Adder (5%)				$9,630
Subtotal	N/A	$192,605	$192,605	$202,235
Other Benefits				
Bill Reduction - Gas	$334,106	N/A	N/A	N/A
Participant Rebates and Incentives	$3,138	N/A	N/A	$3,138
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$196,486	N/A	N/A	$196,486
Subtotal	$533,729	N/A	N/A	$199,623
Total Benefits	$533,729	$192,605	$192,605	$401,859
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$139,988	$139,988	$139,988
Advertising/Promotion/Customer Ed	N/A	$87,928	$87,928	$87,928
Participant Rebates and Incentives	N/A	$3,138	$3,138	$3,138
Equipment & Installation	N/A	$77,934	$77,934	$77,934
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$308,988	$308,988	$308,988
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$334,106	N/A
Subtotal	N/A	N/A	$334,106	N/A
Participant Costs				
Incremental Capital Costs	$711	N/A	N/A	$711
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$711	N/A	N/A	$711
Total Costs	$711	$308,988	$643,093	$309,698
Net Benefit (Cost)	$533,018	($116,382)	($450,488)	$92,160
Benefit/Cost Ratio	750.88	0.62	0.30	1.30

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	9.76 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**5,871**
Utility Costs per Net Dth/Yr	G	$52.63
Net Benefit (Cost) per Gross Dth/Yr	H	$15.70
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.64
Annual Dth/$M	($1M / G)	**18,999**
Total Utility Budget	(G x F)	**$308,988**
Total MTRC Net Benefits with Adder	(F x H)	**$92,160**
Total MTRC Net Benefits without Adder	(H - I) x F	**$82,530**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$5.39**

HOME PERFORMANCE WITH ENERGY STAR — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$470,490	$470,490	$470,490
Variable O&M Savings	N/A	$5,249	$5,249	$5,249
Demand Savings	N/A	$48,995	$48,995	$48,995
Subtotal				$524,734
Emissions Non-Energy Benefits Adder (5%)				$26,237
Subtotal	N/A	$524,734	$524,734	$550,971
Other Benefits				
Bill Reduction - Gas	$795,993	N/A	N/A	N/A
Participant Rebates and Incentives	$151,686	N/A	N/A	$151,686
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$39	N/A	N/A	$45
Subtotal	$947,718	N/A	N/A	$151,731
Total Benefits	$947,718	$524,734	$524,734	$702,701
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$52,839	$52,839	$52,839
Advertising/Promotion/Customer Ed	N/A	$182	$182	$182
Participant Rebates and Incentives	N/A	$151,686	$151,686	$151,686
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$20,874	$20,874	$20,874
Subtotal	N/A	$225,580	$225,580	$225,580
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$923,352	N/A
Subtotal	N/A	N/A	$923,352	N/A
Participant Costs				
Incremental Capital Costs	$510,546	N/A	N/A	$592,233
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$510,546	N/A	N/A	$592,233
Total Costs	$510,546	$225,580	$1,148,932	$817,813
Net Benefit (Cost)	$437,172	$299,154	($624,198)	($115,111)
Benefit/Cost Ratio	1.86	2.33	0.46	0.86

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	16.48 years
Net-to-Gross (Weighted on Dth)	B	116.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**10,538**
Utility Costs per Net Dth/Yr	G	$21.41
Net Benefit (Cost) per Gross Dth/Yr	H	($10.92)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.49
Annual Dth/$M	($1M / G)	**46,714**
Total Utility Budget	(G x F)	**$225,580**
Total MTRC Net Benefits with Adder	(F x H)	**-$115,111**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$141,348**
Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.30**

INSULATION & AIR SEALING — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$1,106,801	$1,106,801	$1,106,801
Variable O&M Savings	N/A	$12,494	$12,494	$12,494
Demand Savings	N/A	$116,628	$116,628	$116,628
Subtotal				$1,235,923
Emissions Non-Energy Benefits Adder (5%)				$61,796
Subtotal	N/A	$1,235,923	$1,235,923	$1,297,719
Other Benefits				
Bill Reduction - Gas	$2,558,008	N/A	N/A	N/A
Participant Rebates and Incentives	$541,518	N/A	N/A	$541,518
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$3,099,526	N/A	N/A	$541,518
Total Benefits	$3,099,526	$1,235,923	$1,235,923	$1,839,238
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$32,876	$32,876	$32,876
Advertising/Promotion/Customer Ed	N/A	$5,480	$5,480	$5,480
Participant Rebates and Incentives	N/A	$541,518	$541,518	$541,518
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$19,750	$19,750	$19,750
Subtotal	N/A	$599,625	$599,625	$599,625
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$2,172,132	N/A
Subtotal	N/A	N/A	$2,172,132	N/A
Participant Costs				
Incremental Capital Costs	$1,722,519	N/A	N/A	$1,462,677
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$1,722,519	N/A	N/A	$1,462,677
Total Costs	$1,722,519	$599,625	$2,771,758	$2,062,302
Net Benefit (Cost)	$1,377,008	$636,298	($1,535,835)	($223,064)
Benefit/Cost Ratio	1.80	2.06	0.45	0.89

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	15.65 years
Net-to-Gross (Weighted on Dth)	B	85.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**25,911**
Utility Costs per Net Dth/Yr	G	$23.14
Net Benefit (Cost) per Gross Dth/Yr	H	($8.61)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.38
Annual Dth/$M	($1M / G)	**43,213**
Total Utility Budget	(G x F)	**$599,625**
Total MTRC Net Benefits with Adder	(F x H)	**-$223,064**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$284,860**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.48**

LIGHTING - SMALL BUSINESS — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$77,353	$77,353	$77,353
Variable O&M Savings	N/A	$982	$982	$982
Demand Savings	N/A	$9,165	$9,165	$9,165
Subtotal				$87,500
Emissions Non-Energy Benefits Adder (5%)				$4,375
Subtotal	N/A	$87,500	$87,500	$91,875
Other Benefits				
Bill Reduction - Gas	$179,624	N/A	N/A	N/A
Participant Rebates and Incentives	$404	N/A	N/A	$404
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$300,633	N/A	N/A	$270,570
Subtotal	$480,661	N/A	N/A	$270,974
Total Benefits	$480,661	$87,500	$87,500	$362,848
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$18,919	$18,919	$18,919
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$404	$404	$404
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$19,323	$19,323	$19,323
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$161,662	N/A
Subtotal	N/A	N/A	$161,662	N/A
Participant Costs				
Incremental Capital Costs	$434	N/A	N/A	$391
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$434	N/A	N/A	$391
Total Costs	$434	$19,323	$180,985	$19,714
Net Benefit (Cost)	$480,227	$68,176	($93,485)	$343,134
Benefit/Cost Ratio	1,106.52	4.53	0.48	18.41

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	10.00 years
Net-to-Gross (Weighted on Dth)	B	90.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**2,618**
Utility Costs per Net Dth/Yr	G	$7.38
Net Benefit (Cost) per Gross Dth/Yr	H	$131.07
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.67
Annual Dth/$M	($1M / G)	**135,486**
Total Utility Budget	(G x F)	**$19,323**
Total MTRC Net Benefits with Adder	(F x H)	**$343,134**
Total MTRC Net Benefits without Adder	(H - I) x F	**$338,759**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$0.74**

MULTIFAMILY BUILDINGS	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$859,439	$859,439	$859,439
Variable O&M Savings	N/A	$10,674	$10,674	$10,674
Demand Savings	N/A	$99,643	$99,643	$99,643
Subtotal				$969,755
Emissions Non-Energy Benefits Adder (5%)				$48,488
Subtotal	N/A	$969,755	$969,755	$1,018,243
Other Benefits				
Bill Reduction - Gas	$1,795,986	N/A	N/A	N/A
Participant Rebates and Incentives	$372,275	N/A	N/A	$372,275
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$1,929,532	N/A	N/A	$1,929,532
Subtotal	$4,097,793	N/A	N/A	$2,301,807
Total Benefits	$4,097,793	$969,755	$969,755	$3,320,050
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$323,413	$323,413	$323,413
Advertising/Promotion/Customer Ed	N/A	$24,847	$24,847	$24,847
Participant Rebates and Incentives	N/A	$372,275	$372,275	$372,275
Equipment & Installation	N/A	($14,002)	($14,002)	($14,002)
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$706,533	$706,533	$706,533
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$1,795,986	N/A
Subtotal	N/A	N/A	$1,795,986	N/A
Participant Costs				
Incremental Capital Costs	$344,339	N/A	N/A	$344,339
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$344,339	N/A	N/A	$344,339
Total Costs	$344,339	$706,533	$2,502,519	$1,050,873
Net Benefit (Cost)	$3,753,454	$263,222	($1,532,764)	$2,269,177
Benefit/Cost Ratio	11.90	1.37	0.39	3.16

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	10.92 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**26,952**
Utility Costs per Net Dth/Yr	G	$26.21
Net Benefit (Cost) per Gross Dth/Yr	H	$84.19
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.80
Annual Dth/$M	($1M / G)	**38,146**
Total Utility Budget	(G x F)	**$706,533**
Total MTRC Net Benefits with Adder	(F x H)	**$2,269,177**
Total MTRC Net Benefits without Adder	(H - I) x F	**$2,220,690**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$2.40**

MULTIFAMILY WEATHERIZATION	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$435,823	$435,823	$435,823
Variable O&M Savings	N/A	$5,398	$5,398	$5,398
Demand Savings	N/A	$50,386	$50,386	$50,386
Subtotal				$491,607
Emissions Non-Energy Benefits Adder (25%)				$122,902
Subtotal	N/A	$491,607	$491,607	$614,509
Other Benefits				
Bill Reduction - Gas	$855,317	N/A	N/A	N/A
Participant Rebates and Incentives	$905,859	N/A	N/A	$905,859
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$126,163	N/A	N/A	$126,163
Subtotal	$1,887,338	N/A	N/A	$1,032,021
Total Benefits	$1,887,338	$491,607	$491,607	$1,646,530
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$148,945	$148,945	$148,945
Advertising/Promotion/Customer Ed	N/A	$23,438	$23,438	$23,438
Participant Rebates and Incentives	N/A	$905,859	$905,859	$905,859
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$34,907	$34,907	$34,907
Subtotal	N/A	$1,113,148	$1,113,148	$1,113,148
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$855,317	N/A
Subtotal	N/A	N/A	$855,317	N/A
Participant Costs				
Incremental Capital Costs	$1,015,980	N/A	N/A	$1,015,980
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$1,015,980	N/A	N/A	$1,015,980
Total Costs	$1,015,980	$1,113,148	$1,968,465	$2,129,128
Net Benefit (Cost)	$871,358	($621,540)	($1,476,858)	($482,597)
Benefit/Cost Ratio	1.86	0.44	0.25	0.77

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	11.00 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**13,485**
Utility Costs per Net Dth/Yr	G	$82.55
Net Benefit (Cost) per Gross Dth/Yr	H	($35.79)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$9.11
Annual Dth/$M	($1M / G)	**12,114**
Total Utility Budget	(G x F)	**$1,113,148**
Total MTRC Net Benefits with Adder	(F x H)	**-$482,597**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$605,499**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$7.50**

NEW CONSTRUCTION	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$2,563,836	$2,563,836	$2,563,836
Variable O&M Savings	N/A	$27,506	$27,506	$27,506
Demand Savings	N/A	$256,764	$256,764	$256,764
Subtotal				$2,848,106
Emissions Non-Energy Benefits Adder (5%)				$142,405
Subtotal	N/A	$2,848,106	$2,848,106	$2,990,511
Other Benefits				
Bill Reduction - Gas	$5,636,737	N/A	N/A	N/A
Participant Rebates and Incentives	$295,298	N/A	N/A	$295,298
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$1,477,264	N/A	N/A	$1,252,311
Subtotal	$7,409,298	N/A	N/A	$1,547,609
Total Benefits	$7,409,298	$2,848,106	$2,848,106	$4,538,120
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$312,953	$312,953	$312,953
Advertising/Promotion/Customer Ed	N/A	$19,310	$19,310	$19,310
Participant Rebates and Incentives	N/A	$295,298	$295,298	$295,298
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$78,133	$78,133	$78,133
Subtotal	N/A	$705,694	$705,694	$705,694
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$5,354,900	N/A
Subtotal	N/A	N/A	$5,354,900	N/A
Participant Costs				
Incremental Capital Costs	$3,481,099	N/A	N/A	$3,307,044
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$3,481,099	N/A	N/A	$3,307,044
Total Costs	$3,481,099	$705,694	$6,060,594	$4,012,738
Net Benefit (Cost)	$3,928,199	$2,142,412	($3,212,488)	$525,382
Benefit/Cost Ratio	2.13	4.04	0.47	1.13

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	20.00 years
Net-to-Gross (Weighted on Dth)	B	95.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**48,713**
Utility Costs per Net Dth/Yr	G	$14.49
Net Benefit (Cost) per Gross Dth/Yr	H	$10.79
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.92
Annual Dth/$M	($1M / G)	**69,028**
Total Utility Budget	(G x F)	**$705,694**
Total MTRC Net Benefits with Adder	(F x H)	**$525,382**
Total MTRC Net Benefits without Adder	(H - I) x F	**$382,977**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$0.72**

NON-PROFIT	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$179,505	$179,505	$179,505
Variable O&M Savings	N/A	$1,999	$1,999	$1,999
Demand Savings	N/A	$18,658	$18,658	$18,658
Subtotal				$200,162
Emissions Non-Energy Benefits Adder (25%)				$50,040
Subtotal	N/A	$200,162	$200,162	$250,202
Other Benefits				
Bill Reduction - Gas	$352,284	N/A	N/A	N/A
Participant Rebates and Incentives	$179,689	N/A	N/A	$179,689
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$3,021	N/A	N/A	$3,021
Subtotal	$534,995	N/A	N/A	$182,710
Total Benefits	$534,995	$200,162	$200,162	$432,913
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$89,926	$89,926	$89,926
Advertising/Promotion/Customer Ed	N/A	$18,176	$18,176	$18,176
Participant Rebates and Incentives	N/A	$179,689	$179,689	$179,689
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$11,659	$11,659	$11,659
Subtotal	N/A	$299,450	$299,450	$299,450
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$352,284	N/A
Subtotal	N/A	N/A	$352,284	N/A
Participant Costs				
Incremental Capital Costs	$352,625	N/A	N/A	$352,625
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$352,625	N/A	N/A	$352,625
Total Costs	$352,625	$299,450	$651,735	$652,075
Net Benefit (Cost)	$182,370	($99,288)	($451,573)	($219,162)
Benefit/Cost Ratio	1.52	0.67	0.31	0.66

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	17.00 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**3,839**
Utility Costs per Net Dth/Yr	G	$78.00
Net Benefit (Cost) per Gross Dth/Yr	H	($57.09)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$13.03
Annual Dth/$M	($1M / G)	**12,821**
Total Utility Budget	(G x F)	**$299,450**
Total MTRC Net Benefits with Adder	(F x H)	**-$219,162**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$269,203**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$4.59**

PROCESS EFFICIENCY	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$0	$0	$0
Variable O&M Savings	N/A	$0	$0	$0
Demand Savings	N/A	$0	$0	$0
Subtotal				$0
#DIV/0!				$0
Subtotal	N/A	$0	$0	$0
Other Benefits				
Bill Reduction - Gas	$0	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Benefits	$0	$0	$0	$0
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$0	$0	$0
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$0	$0	$0
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$0	N/A
Subtotal	N/A	N/A	$0	N/A
Participant Costs				
Incremental Capital Costs	$0	N/A	N/A	$0
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Costs	$0	$0	$0	$0
Net Benefit (Cost)	$0	$0	$0	$0
Benefit/Cost Ratio	INF	INF	INF	INF

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	0.00 years
Net-to-Gross (Weighted on Dth)	B	0.00%
Install Rate (Weighted on Dth)	C	#DIV/0!

Program Totals:		
Total Dth/Yr Saved	F	-
Utility Costs per Net Dth/Yr	G	#DIV/0!
Net Benefit (Cost) per Gross Dth/Yr	H	#DIV/0!
Non-Energy Benefits Adder per Gross Dth/Yr	I	#DIV/0!
Annual Dth/$M	($1M / G)	**#DIV/0!**
Total Utility Budget	(G x F)	**$0**
Total MTRC Net Benefits with Adder	(F x H)	**#DIV/0!**
Total MTRC Net Benefits without Adder	(H - I) x F	**#DIV/0!**
Utility Program Cost per Net Dth Lifetime	(G / A)	**#DIV/0!**

RECOMMISSIONING	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$27,999	$27,999	$27,999
Variable O&M Savings	N/A	$381	$381	$381
Demand Savings	N/A	$3,556	$3,556	$3,556
Subtotal				$31,936
Emissions Non-Energy Benefits Adder (5%)				$1,597
Subtotal	N/A	$31,936	$31,936	$33,532
Other Benefits				
Bill Reduction - Gas	$65,042	N/A	N/A	N/A
Participant Rebates and Incentives	$12,470	N/A	N/A	$12,470
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$77,512	N/A	N/A	$12,470
Total Benefits	$77,512	$31,936	$31,936	$46,002
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$21,763	$21,763	$21,763
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$12,470	$12,470	$12,470
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$34,233	$34,233	$34,233
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$58,538	N/A
Subtotal	N/A	N/A	$58,538	N/A
Participant Costs				
Incremental Capital Costs	$5,581	N/A	N/A	$5,023
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$5,581	N/A	N/A	$5,023
Total Costs	$5,581	$34,233	$92,771	$39,256
Net Benefit (Cost)	$71,931	($2,298)	($60,836)	$6,746
Benefit/Cost Ratio	13.89	0.93	0.34	1.17

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	7.00 years
Net-to-Gross (Weighted on Dth)	B	90.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**1,323**
Utility Costs per Net Dth/Yr	G	$25.88
Net Benefit (Cost) per Gross Dth/Yr	H	$5.10
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.21
Annual Dth/$M	($1M / G)	**38,647**
Total Utility Budget	(G x F)	**$34,233**
Total MTRC Net Benefits with Adder	(F x H)	**$6,746**
Total MTRC Net Benefits without Adder	(H - I) x F	**$5,149**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$3.70**

RESIDENTIAL HEATING	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$4,553,469	$4,553,469	$4,553,469
Variable O&M Savings	N/A	$49,981	$49,981	$49,981
Demand Savings	N/A	$466,563	$466,563	$466,563
Subtotal				$5,070,013
Emissions Non-Energy Benefits Adder (5%)				$253,501
Subtotal	N/A	$5,070,013	$5,070,013	$5,323,514
Other Benefits				
Bill Reduction - Gas	$10,391,080	N/A	N/A	N/A
Participant Rebates and Incentives	$2,741,290	N/A	N/A	$2,741,290
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$13,132,370	N/A	N/A	$2,741,290
Total Benefits	$13,132,370	$5,070,013	$5,070,013	$8,064,804
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$124,949	$124,949	$124,949
Advertising/Promotion/Customer Ed	N/A	$47,978	$47,978	$47,978
Participant Rebates and Incentives	N/A	$2,741,290	$2,741,290	$2,741,290
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$7,325	$7,325	$7,325
Subtotal	N/A	$2,921,542	$2,921,542	$2,921,542
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$8,936,329	N/A
Subtotal	N/A	N/A	$8,936,329	N/A
Participant Costs				
Incremental Capital Costs	$5,093,735	N/A	N/A	$4,380,612
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$5,093,735	N/A	N/A	$4,380,612
Total Costs	$5,093,735	$2,921,542	$11,857,871	$7,302,154
Net Benefit (Cost)	$8,038,635	$2,148,471	($6,787,858)	$762,649
Benefit/Cost Ratio	2.58	1.74	0.43	1.10

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	18.00 years
Net-to-Gross (Weighted on Dth)	B	86.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**93,194**
Utility Costs per Net Dth/Yr	G	$31.35
Net Benefit (Cost) per Gross Dth/Yr	H	$8.18
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.72
Annual Dth/$M	($1M / G)	**31,899**
Total Utility Budget	(G x F)	**$2,921,542**
Total MTRC Net Benefits with Adder	(F x H)	**$762,649**
Total MTRC Net Benefits without Adder	(H - I) x F	**$509,149**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.74**

SCHOOL EDUCATION KITS	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$1,274,284	$1,274,284	$1,274,284
Variable O&M Savings	N/A	$16,120	$16,120	$16,120
Demand Savings	N/A	$150,474	$150,474	$150,474
Subtotal				$1,440,878
Emissions Non-Energy Benefits Adder (5%)				$72,044
Subtotal	N/A	$1,440,878	$1,440,878	$1,512,922
Other Benefits				
Bill Reduction - Gas	$5,226,501	N/A	N/A	N/A
Participant Rebates and Incentives	$265,347	N/A	N/A	$265,347
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$8,439,670	N/A	N/A	$4,040,729
Subtotal	$13,931,517	N/A	N/A	$4,306,076
Total Benefits	$13,931,517	$1,440,878	$1,440,878	$5,818,997
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$295,904	$295,904	$295,904
Advertising/Promotion/Customer Ed	N/A	$1,399	$1,399	$1,399
Participant Rebates and Incentives	N/A	$265,347	$265,347	$265,347
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$562,649	$562,649	$562,649
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$2,500,824	N/A
Subtotal	N/A	N/A	$2,500,824	N/A
Participant Costs				
Incremental Capital Costs	$181,108	N/A	N/A	$181,108
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$181,108	N/A	N/A	$181,108
Total Costs	$181,108	$562,649	$3,063,473	$743,757
Net Benefit (Cost)	$13,750,409	$878,229	($1,622,595)	$5,075,240
Benefit/Cost Ratio	76.92	2.56	0.47	7.82

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	10.00 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	47.8%

Program Totals:		
Total Dth/Yr Saved	F	**42,986**
Utility Costs per Net Dth/Yr	G	$13.09
Net Benefit (Cost) per Gross Dth/Yr	H	$118.07
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.68
Annual Dth/$M	($1M / G)	**76,399**
Total Utility Budget	(G x F)	**$562,649**
Total MTRC Net Benefits with Adder	(F x H)	**$5,075,240**
Total MTRC Net Benefits without Adder	(H - I) x F	**$5,003,196**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.31**

SELF DIRECT	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$0	$0	$0
Variable O&M Savings	N/A	$0	$0	$0
Demand Savings	N/A	$0	$0	$0
Subtotal				$0
#DIV/0!				$0
Subtotal	N/A	$0	$0	$0
Other Benefits				
Bill Reduction - Gas	$0	N/A	N/A	N/A
Participant Rebates and Incentives	$0	N/A	N/A	$0
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Benefits	$0	$0	$0	$0
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$0	$0	$0
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$0	$0	$0
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$0	$0	$0
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$0	N/A
Subtotal	N/A	N/A	$0	N/A
Participant Costs				
Incremental Capital Costs	$0	N/A	N/A	$0
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$0	N/A	N/A	$0
Total Costs	$0	$0	$0	$0
Net Benefit (Cost)	$0	$0	$0	$0
Benefit/Cost Ratio	INF	INF	INF	INF

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	0.00 years
Net-to-Gross (Weighted on Dth)	B	0.00%
Install Rate (Weighted on Dth)	C	#DIV/0!

Program Totals:		
Total Dth/Yr Saved	F	-
Utility Costs per Net Dth/Yr	G	#DIV/0!
Net Benefit (Cost) per Gross Dth/Yr	H	#DIV/0!
Non-Energy Benefits Adder per Gross Dth/Yr	I	#DIV/0!
Annual Dth/$M	($1M / G)	**#DIV/0!**
Total Utility Budget	(G x F)	**$0**
Total MTRC Net Benefits with Adder	(F x H)	**#DIV/0!**
Total MTRC Net Benefits without Adder	(H - I) x F	**#DIV/0!**
Utility Program Cost per Net Dth Lifetime	(G / A)	**#DIV/0!**

SINGLE-FAMILY WEATHERIZATION — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$2,142,689	$2,142,689	$2,142,689
Variable O&M Savings	N/A	$23,966	$23,966	$23,966
Demand Savings	N/A	$223,720	$223,720	$223,720
Subtotal				$2,390,376
Emissions Non-Energy Benefits Adder (25%)				$597,594
Subtotal	N/A	$2,390,376	$2,390,376	$2,987,970
Other Benefits				
Bill Reduction - Gas	$4,205,097	N/A	N/A	N/A
Participant Rebates and Incentives	$2,016,147	N/A	N/A	$2,016,147
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$182,859	N/A	N/A	$182,859
Subtotal	$6,404,103	N/A	N/A	$2,199,006
Total Benefits	$6,404,103	$2,390,376	$2,390,376	$5,186,976
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$152,249	$152,249	$152,249
Advertising/Promotion/Customer Ed	N/A	$113,409	$113,409	$113,409
Participant Rebates and Incentives	N/A	$2,016,147	$2,016,147	$2,016,147
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$76,947	$76,947	$76,947
Subtotal	N/A	$2,358,751	$2,358,751	$2,358,751
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$4,205,097	N/A
Subtotal	N/A	N/A	$4,205,097	N/A
Participant Costs				
Incremental Capital Costs	$1,911,528	N/A	N/A	$1,911,528
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$1,911,528	N/A	N/A	$1,911,528
Total Costs	$1,911,528	$2,358,751	$6,563,848	$4,270,279
Net Benefit (Cost)	$4,492,575	$31,624	($4,173,472)	$916,697
Benefit/Cost Ratio	3.35	1.01	0.36	1.21

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	16.50 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**48,238**
Utility Costs per Net Dth/Yr	G	$48.90
Net Benefit (Cost) per Gross Dth/Yr	H	$19.00
Non-Energy Benefits Adder per Gross Dth/Yr	I	$12.39
Annual Dth/$M	($1M / G)	**20,451**
Total Utility Budget	(G x F)	**$2,358,751**
Total MTRC Net Benefits with Adder	(F x H)	**$916,697**
Total MTRC Net Benefits without Adder	(H - I) x F	**$319,103**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$2.96**

THERMOSTAT OPTIMIZATION — 2018 — GAS — ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$116,823	$116,823	$116,823
Variable O&M Savings	N/A	$1,478	$1,478	$1,478
Demand Savings	N/A	$13,795	$13,795	$13,795
Subtotal				$132,096
Emissions Non-Energy Benefits Adder (5%)				$6,605
Subtotal	N/A	$132,096	$132,096	$138,700
Other Benefits				
Bill Reduction - Gas	$229,268	N/A	N/A	N/A
Participant Rebates and Incentives	$21,560	N/A	N/A	$21,560
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$250,828	N/A	N/A	$21,560
Total Benefits	$250,828	$132,096	$132,096	$160,260
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$265	$265	$265
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$21,560	$21,560	$21,560
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$0	$0	$0
Subtotal	N/A	$21,825	$21,825	$21,825
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$229,268	N/A
Subtotal	N/A	N/A	$229,268	N/A
Participant Costs				
Incremental Capital Costs	$91,568	N/A	N/A	$91,568
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$91,568	N/A	N/A	$91,568
Total Costs	$91,568	$21,825	$251,093	$113,394
Net Benefit (Cost)	$159,260	$110,270	($118,998)	$46,867
Benefit/Cost Ratio	2.74	6.05	0.53	1.41

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	10.00 years
Net-to-Gross (Weighted on Dth)	B	100.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**3,941**
Utility Costs per Net Dth/Yr	G	$5.54
Net Benefit (Cost) per Gross Dth/Yr	H	$11.89
Non-Energy Benefits Adder per Gross Dth/Yr	I	$1.68
Annual Dth/$M	($1M / G)	**180,562**
Total Utility Budget	(G x F)	**$21,825**
Total MTRC Net Benefits with Adder	(F x H)	**$46,867**
Total MTRC Net Benefits without Adder	(H - I) x F	**$40,262**
Utility Program Cost per Net Dth Lifetime	(G / A)	**$0.55**

WATER HEATING	2018	GAS	ACTUAL

2018 Net Present Cost Benefit Summary Analysis For All Participants

	Participant Test ($Total)	Utility Test ($Total)	Rate Impact Test ($Total)	Modified TRC Test ($Total)
Benefits				
Avoided Revenue Requirements				
Commodity Cost Reduction	N/A	$287,907	$287,907	$287,907
Variable O&M Savings	N/A	$3,133	$3,133	$3,133
Demand Savings	N/A	$29,249	$29,249	$29,249
Subtotal				$320,289
Emissions Non-Energy Benefits Adder (5%)				$16,014
Subtotal	N/A	$320,289	$320,289	$336,304
Other Benefits				
Bill Reduction - Gas	$627,807	N/A	N/A	N/A
Participant Rebates and Incentives	$83,410	N/A	N/A	$83,410
Incremental Capital Savings	$0	N/A	N/A	$0
Incremental O&M Savings	$0	N/A	N/A	$0
Subtotal	$711,217	N/A	N/A	$83,410
Total Benefits	$711,217	$320,289	$320,289	$419,714
Costs				
Utility Project Costs				
Program Planning & Design	N/A	$0	$0	$0
Administration & Program Delivery	N/A	$26,449	$26,449	$26,449
Advertising/Promotion/Customer Ed	N/A	$0	$0	$0
Participant Rebates and Incentives	N/A	$83,410	$83,410	$83,410
Equipment & Installation	N/A	$0	$0	$0
Measurement and Verification	N/A	$13,950	$13,950	$13,950
Subtotal	N/A	$123,809	$123,809	$123,809
Utility Revenue Reduction				
Revenue Reduction - Gas	N/A	N/A	$565,027	N/A
Subtotal	N/A	N/A	$565,027	N/A
Participant Costs				
Incremental Capital Costs	$427,756	N/A	N/A	$384,981
Incremental O&M Costs	$0	N/A	N/A	$0
Subtotal	$427,756	N/A	N/A	$384,981
Total Costs	$427,756	$123,809	$688,836	$508,790
Net Benefit (Cost)	$283,461	$196,480	($368,547)	($89,076)
Benefit/Cost Ratio	1.66	2.59	0.46	0.82

Note: Dollar values represent present value of impacts accumulated over the lifetime of the measures.

Input Summary and Totals

Program Assumptions:		
Lifetime (Weighted on Dth)	A	18.60 years
Net-to-Gross (Weighted on Dth)	B	90.00%
Install Rate (Weighted on Dth)	C	100.0%

Program Totals:		
Total Dth/Yr Saved	F	**5,793**
Utility Costs per Net Dth/Yr	G	$21.37
Net Benefit (Cost) per Gross Dth/Yr	H	($15.38)
Non-Energy Benefits Adder per Gross Dth/Yr	I	$2.76
Annual Dth/$M	($1M / G)	**46,791**
Total Utility Budget	(G x F)	**$123,809**
Total MTRC Net Benefits with Adder	(F x H)	**-$89,076**
Total MTRC Net Benefits without Adder	(H - I) x F	**-$105,091**

Utility Program Cost per Net Dth Lifetime	(G / A)	**$1.15**