

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

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**UGI Utilities, Inc. – Electric Division**  
**Energy Efficiency and Conservation Plan**  
**Phase II (Original Filing Date April 9, 2015)**

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**Docket No. M-2015-2477174**

**Amended Plan Filed as of ~~April 9, 2015~~ October 1, 2015**

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## **SECTION 1: PLAN OVERVIEW**

UGI Utilities, Inc. – Electric Division (“UGI Electric” or the “Company”) hereby submits for approval Phase II of its Energy Efficiency and Conservation Plan (“EE&C Plan” or “Plan”) which will continue to offer many of the same effective energy efficiency measures contained within its existing Plan along with several new measures in an effort to enhance and broaden customer participation during the next phase of the Plan. The EE&C Plan includes a portfolio of energy efficiency, conservation, and consumption reduction measures, programs, and education initiatives. Unlike the major Electric Distribution Companies (“EDCs”), UGI Electric is not subject to Act 129 of 2008, P.L. 1592 (“Act 129”) because it serves fewer than 100,000 customers. 66 Pa. C.S. § 2806.1(l). However, with Phase II, UGI Electric continues a voluntary EE&C Plan as suggested by the Pennsylvania Public Utility Commission (“the Commission”) in its Secretarial Letter of December 23, 2009, at Docket No. M-2009-2142851 (“Secretarial Letter”). The portfolio includes the following programs:

1. Appliance Rebate Program (Residential Sector/Low Income Customers)<sup>1</sup>
2. School Energy Education Program (Residential Sector/Low Income Customers)
3. Energy Efficient Lighting Program (Residential Sector/Low Income Customers)
4. Appliance Recycling Program (Residential Sector/Low Income Customers)
5. Residential High Efficiency Fuel Switching (Residential Sector/Low Income Customers)
6. Home Energy Audit (Residential Sector/Low Income Customers)
7. Pilot Low Income Water Heater Replacement (Low Income Customers)
8. Commercial and Industrial Custom Incentive Program (Commercial and Industrial Sector/Governmental Customers)
9. HVAC Tune-up Program (Commercial and Industrial Sector/Governmental Customers)

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<sup>1</sup> It should be noted that all Residential Sector programs also apply to governmental entities and the following non-profit entities: firehouses, ambulance providers, and senior centers.

Note: This plan was amended to incorporate corrections to TRC values and program budgets; however, the substantive program components are unchanged.

10. Commercial Fuel Switching (Small Commercial Sector/Governmental Customers)

11. Customer Education Program (Residential and Small Commercial Customers)

These eleven programs are designed to achieve forecasted energy savings reductions over the three years of the Plan. The programs offer UGI Electric's customers a wide range of energy efficiency and conservation measures to decrease electric consumption and, in turn, customers' electric costs.

In Phase II, UGI Electric's EE&C Plan:

- includes programs and individual measures designed to achieve UGI Electric's targeted electricity consumption reduction levels of approximately 2% energy savings (as measured against the Company's annual historical load for June 1, 2007, through May 31, 2008) by 2018, or approximately 20,000 MWh;
- includes programs and individual measures that are anticipated to produce peak load reductions of approximately 0.5% annually, although the Company did not design the programs and measures with the specific purpose of achieving any peak load reduction targets;<sup>2</sup>
- is designed to expend no more than 2% of annual revenues for the 12-month period ended May 31, 2008, on an annual basis, which totals approximately \$7.5 million for the three-year duration of Phase II;
- provides incentives to achieve energy consumption reductions for low-income customers;
- offers energy efficiency and conservation programs to all customer classes;
- is a cost-effective plan based on Total Resource Cost ("TRC") Test criterion;
- properly allocates the cost of individual measures to the customer class(es) that receive(s) the benefit of those measures;
- will use internal UGI Electric Staff and Conservation Service Providers ("CSPs"), as necessary, to implement the programs, monitor their progress, and verify the Plan results;

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<sup>2</sup> Unlike EDCs subject to Act 129, there is no requirement for UGI Electric to meet peak demand reduction requirements.

- includes procedures to measure, evaluate, and verify performance of the programs and the Plan as a whole;
- details a process for an annual evaluation of the Plan results; and
- includes a Section 1307 mechanism,<sup>3</sup> the Phase II Energy Efficiency and Conservation Rider (“Phase II EEC Rider”), for recovery of all applicable Phase II EE&C Plan costs.<sup>4</sup>

The Phase II EE&C Plan contains a variety of programs that are key components to achieving the desired energy consumption reductions. In choosing the portfolio of programs, UGI Electric considered the currently-approved energy efficiency programs utilized by other Pennsylvania EDCs, as well as other available cost-effective energy efficiency and conservation measures, considering UGI Electric’s size and particular service territory.

In Phase II, UGI Electric has modified and eliminated certain programs that were less successful in achieving energy reductions and has added programs expected to better address the needs of customers in UGI Electric’s service territory. A summary of these changes is set forth in the table below, to be more fully explained in the appropriate program sections:

<b>Residential Phase II Program Changes</b>			
<b>Phase I Program</b>	<b>Phase II Program</b>	<b>Disposition</b>	<b>Modification</b>
Appliance Recycling	Appliance Recycling	Continued	Increase Rebate level
Appliance Rebates	Appliance Rebates	Continued	Adjust Qualified Equipment & Rebates
CFL Bulbs	Energy-Efficient Lighting	Modified	Expand lighting options to LED
Fuel Switching	Fuel Switching	Continued	None
School Energy Ed.	School Energy Ed.	Continued	Replacing CFLs with LEDs
Customer Ed.	Customer Ed.	Continued	None
	Home Energy Audit	New	N/A
	Pilot LIURP Water Heater Replacement	New	N/A

<sup>3</sup> 66 Pa. C.S. § 1307.

<sup>4</sup> As discussed in more detail in Section 6, UGI Electric also proposes to recover the costs to continue its Phase I EE&C Plan through the Phase II EEC Rider.

<b>Commercial/Industrial Phase II Program Changes</b>			
<b>Phase I Program</b>	<b>Phase II Program</b>	<b>Disposition</b>	<b>Modification</b>
Appliance Rebate	None	Discontinued	Discontinued
HVAC Tune-up	HVAC Tune-up	Continued	Rebates
	Fuel Switching	New	N/A
CHP	None	Modified	Merged with Custom Program
Custom	Custom	Continued	Now includes CHP

To the extent possible and feasible, UGI Electric has attempted to incorporate reasonable ideas, insights, program features, and implementation details from the best practices of various EDCs impacted by Act 129.

UGI Electric utilized the expertise of in-house Staff combined with the energy efficiency expertise of an external consultant, Mr. Paul Raab, who has worked in the energy efficiency and conservation field for many years. Cognizant of the guidelines in the Commission’s Secretarial Letter and the related requirements of Act 129, UGI Electric and Mr. Raab will continue to use an approximate 2% of annual revenues<sup>5</sup> expenditure guideline.<sup>6</sup> The level of spending may not be the same in each year of the Phase. However, the total level of spending for the three-year period will not exceed \$7.5 million, which equals approximately 2% of annual revenues each year (\$2.5 million x 3).

For Phase II, UGI Electric proposes to adopt a 2% total energy consumption reduction target in constructing a portfolio of measures and programs targeting all customer classes on the UGI Electric system.<sup>7</sup> For each customer segment, a set of programs was developed in order to provide a range of program options with the goal of meeting the identified energy consumption reduction target.

The process for development of the Phase II EE&C Plan consisted of five basic elements:

1. maintaining continuity with the existing Plan to the extent existing programs were deemed successful;
2. assessing alternative energy efficiency and conservation resource potentials;

<sup>5</sup> UGI Electric utilized annual revenues for the twelve-month period ended May 31, 2008.

<sup>6</sup> While UGI Electric did not reach this 2% budget limit in the first phase of its EE&C Plan, UGI Electric seeks to keep this current cap in place for Phase II, as it allows for Plan flexibility to accommodate increased customer demand for Plan services.

<sup>7</sup> The 2% energy consumption reduction target is a decrease from the 5% energy consumption reduction target proposed in Phase I of UGI Electric’s Plan, which, based on the Company’s experience over the past three years of the Phase I EE&C Plan, was not achievable within UGI Electric’s service territory. Moreover, the 2% reduction target is closer to the three-year reduction targets established for the large EDCs’ Phase II EE&C Plans.

3. developing and balancing the portfolio;
4. providing opportunities for stakeholders to participate and contribute to Plan development; and
5. refining the Plan consistent with the objectives set forth in the Commission's Secretarial Letter and Act 129, generally.

Because UGI Electric is committed to a long-term investment in energy efficiency and conservation, the following guiding principles were part of the development of UGI Electric's Phase II EE&C Plan content:

1. Customer Service – The Plan was developed in a way that is easy to understand to enable customers to take energy efficiency actions that will save money and support the environment.
2. Proven Solutions and Sustainable Savings – The Plan focuses on proven, cost-effective energy efficiency measures as part of an extensive path to long-term and sustainable energy efficiency.
3. Flexibility – The Plan provides customers flexibility by offering a wide variety of programs in which they can participate. To support customers' actions, the Plan provides numerous measures, customer education initiatives, energy efficiency information, financial incentives, and services. For the Company, the Plan provides flexibility by allowing UGI Electric to consider the results of the programs and determine whether any adjustments are necessary in order to achieve the desired energy savings on a whole and/or maintain Plan cost-effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

A summary of Phase II programs and anticipated savings by class is set forth below.

	<b>Program Name</b>	<b>Program Market</b>	<b>Program Summary</b>	<b>Program Years Operated</b>	<b>Program Life MWh Savings</b>	<b>% of Portfolio MWh Savings</b>
Residential Portfolio Programs	Appliance Recycling	Residential/Low-Income	Free pickup, recycling and disposal	2015-2018	2,509	12.6%
	Appliance Rebate	Residential/Low-Income	Rebates for energy efficient appliances	2015-2018	605	3.0%
	Residential Energy Efficient Lighting	Residential/Low-Income	Up-stream incentives on Energy Star Lighting	2015-2018	3,465	<del>17.3%</del> 17.4%
	School Energy Education Program	Residential/Low-Income	Energy education of customers	2015-2018	1,756	8.8%
	Fuel Switching	Residential/Low-Income	Incentive for cost effective, Energy Star fuel switching appliance	2015-2018	741	3.7%
	Home Energy Audit	Residential/Low-Income	Incentive for Home Energy Audit	2015-2018	586	2.9%
	Customer Education	Residential/Low-Income	Energy Efficiency Educational Information	2015-2018	0	0.0%
	Pilot Water Heating Replacement	Low Income Customers	Replace inefficient electric with Energy Star natural gas water heater	2015-2018	51	0.3%
	<b>Residential Total</b>	-----	-----	-----	9,713	<del>48.6%</del> 48.8%



	Program Name	Program Market	Program Summary	Program Years Operated	Program Life MWh Savings	% of Portfolio MWh Savings
C&I Portfolio Programs	C&I HVAC Tune-up	Commercial and Industrial/Governmental	Incentives for tune-up and retrofit of HVAC equipment	2015-2018	2,004	10.0%
	C&I Custom	Commercial and Industrial/Governmental	Incentives for custom energy efficiency measures	2015-2018	7,812	<del>39.1%</del> <u>39.2%</u>
	Fuel Switching	Small Commercial/Governmental	Incentive for cost effective, Energy Star fuel switching appliance	2015-2018	<del>467</del> <u>375</u>	<del>2.3%</del> <u>1.9%</u>
	C&I Total	-----	-----	-----	<del>10,283</del> <u>10,191</u>	<del>51.4%</del> <u>51.2%</u>
	Grand Total				<del>19,996</del> <u>19,904</u>	100%

\*EPA ENERGY STAR performance rating currently is not available for natural gas clothes dryers. Until the ENERGY STAR rating becomes available for this appliance, the Company will direct incentive payments toward natural gas dryers without the rating.

A summary of the total program budget is reflected below.

**Budget and Parity Analysis Summary**

Customer Class	Total Budget	% of Total EEC Budget		
Residential	<del>\$2,906,885</del> \$2,890,685	43% <u>43.6%</u>		
C&I	<del>\$2,771,880</del> \$2,769,105	42% <u>41.7%</u>		
Internal Staff, Program Setup and Development	\$975,000	<del>15%</del> <u>14.7%</u>		
Total	<del>\$6,653,765</del> \$6,634,790	-----		

The chosen programs are detailed in Section 2 (Program Descriptions) of this Plan. The Plan is cost-effective under the TRC test, as demonstrated in Section 3 of the Plan (Cost Effectiveness) and as shown in the following table.

**Program Efficiency Analysis Summary**

Customer Class	TRC NPV Benefits	TRC NPV Cost	TRC Net Benefits	TRC Benefit/Cost Ratio
Residential	<del>\$ 7,615,612</del> <u>627,019</u> \$22,846,836	<del>\$ 4,857,782</del> <u>876,263</u> \$14,573,349	<del>\$ 2,757,830</del> <u>750,756</u> \$8,273,490	← <del>1.567</del> <u>1.57</u>
C&I	<del>\$ 4,512,705</del> <u>512,706</u> \$13,538,118	<del>\$ 3,600,419</del> <u>20</u> \$10,801,260	<del>\$ 912,286</del> \$2,736,858	<u>1.25</u> <del>1.25</del>
Internal Staff, Program Setup and Development	\$0	\$975,000	\$(975,000)	"NA"
Total	<del>\$ 12,128,318</del> <u>139,724</u> \$36,384,954	<del>\$ 9,433,201</del> <u>451,682</u> \$26,349,609	<del>\$ 2,695,116</del> <u>688,042</u> \$10,035,348	← <del>1.289</del> <u>1.38</u>

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Assuming Commission approval, all program changes and new program implementations will begin within 60 days of Commission approval. If implemented by that date, the first annual report for Phase II would be provided approximately 14 months later, with subsequent reports being provided on an annual basis thereafter.

UGI Electric understands that customer engagement is critical to the success of the Plan. With this in mind, UGI Electric developed a number of customer programs that provide tangible customer benefits. UGI Electric Staff and the CSPs will promote customer support throughout the Plan process. Finally, coordination with trade allies and other market participants through outreach, training, and education to raise customer awareness of UGI Electric's available programs stands to minimize the risks associated with Plan implementation and success. A more complete description of UGI Electric's implementation and management strategy is provided in Section 4 of this EE&C Plan.

UGI Electric will continue to employ tracking, reporting, and analyses of program progress that will enable ongoing monitoring, management, analysis, and reporting with regard to Plan activities. UGI Electric will focus on anticipation, prevention, and detection of problems or errors with regard to Plan implementation so as to minimize impediments to Plan success. UGI Electric will continue working closely with its CSPs to ensure that qualified individuals are performing the required actions to carry out the Plan. In addition, UGI Electric will continue to submit an annual report detailing Plan results. Finally, UGI Electric has developed Phase II with the idea that updates or revisions to the Plan can be achieved on an ongoing basis to address customer participation levels and to achieve Plan success. A more detailed description of UGI Electric's reporting and tracking systems and quality assurance, evaluation, measurements, and verification is provided in Section 5.

UGI Electric will continue to use a budget cap of 2% of annual revenues. For UGI Electric, this equates to an approximate maximum \$7.5 million total Plan cost over the life of Phase II of the Plan. As in its Phase I Implementation Order, the Commission found that EDCs should be permitted to recover the incremental costs incurred to design, create, and obtain Commission approval of a plan in Phase II.<sup>8</sup> Thus, the total Plan cost of \$7.5 million also includes the costs that UGI Electric incurred or will incur to design, create, and obtain approval of the Phase II EE&C Plan.

Consistent with Act 129, UGI Electric has designed its Phase II EE&C Plan to provide that EE&C measures are paid for by the same customer class that receives the energy efficiency and conservation benefits of those measures by assigning the costs related to each measure to those classes that will receive the benefits. *See* 66 Pa. C.S. § 2806.1(a)(11). The cost recovery mechanism, the Phase II EEC Rider, is described in more detail in Section 6 of the Plan. UGI Electric has designed the Phase II EEC Rider to apply to all default service and choice customers.

Plan costs are likely to vary year-to-year, and UGI Electric proposes to recover those costs on a year-to-year basis by way of a Section 1307 recovery mechanism designed to track actual yearly expenditures by customer class. Distribution of cost recovery is anticipated to be relatively even over the course of the Plan.

UGI Electric proposes to continue to reconcile the revenues collected under its cost recovery mechanism on an annual basis. In addition, UGI Electric proposes to conduct a final reconciliation of total revenue collected to total Plan expenditures (up to the budget caps) at the conclusion of this three-year Plan period and to recover any resulting over/under collections during the following year in the absence of any additional Plan extensions. The annual reconciliation and end-of-Plan reconciliation will be subject to Commission review and potential audit, as the Commission deems necessary.

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<sup>8</sup> *Energy Efficiency and Conservation Program*, Docket Nos. M-2012-2289411, M-2008-2069887, at p. 103 (Order Entered Aug. 3, 2012) (“*Phase II Implementation Order*”).

**SECTION 2: PROGRAM DESCRIPTIONS**

**A. RESIDENTIAL SECTOR PROGRAMS<sup>9</sup>**

**1. Appliance Rebate Program  
(Residential Sector/Low Income Customers)**

**Objectives**

The objectives of the Residential Appliance Rebate Program include:

1. Provide customers with opportunities to reduce their energy costs and increase their energy efficiency;
2. Encourage customers to install high-efficiency HVAC, lighting equipment, and electric appliances;
3. Encourage the use of high-efficiency/ENERGY STAR–rated equipment;
4. Promote strategies that encourage and support market transformation for high-efficiency appliances and equipment; and
5. Achieve approximately 4,927 installed measures through 2018, with a total reduction of approximately 605 MWh.

**Target Market**

UGI Electric’s Residential Appliance Rebate Program will be available to all residential customers, including low income customers and new residential construction using a consistent implementation strategy, incentive mechanism, and administrative process.

The table below outlines eligibility parameters for the residential sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Residential/Low-Income
<b>Building Type</b>	Single family, multifamily, mobile home
<b>Building Vintage</b>	Existing and new construction
<b>Building ownership</b>	Owner or tenant with owner approval

**Program Description**

The program promotes the purchase and installation of a wide range of high-efficiency equipment. The Residential Appliance Rebate Program provides customers and

<sup>9</sup> It should be noted that all Residential Sector programs also apply to governmental entities and the following non-profit entities: firehouses, ambulance providers, and senior centers.

potential customers with financial incentives to offset the higher purchase costs of energy-efficient equipment and offers information on the features and benefits of energy-efficient equipment. Targeted equipment includes electric heating, cooling, lighting, water heating, appliance, and other measures (ENERGY STAR-labeled equipment is specified where available).

### **Implementation Strategy**

UGI Electric intends to maintain the current CSP in Phase II. Maintaining the current CSP in Phase II will provide a seamless continuation of the program and improve customer experience.

Customers will be required to submit a program application with documentation of the equipment purchase and installation(s) for verification and rebate processing. UGI Electric will provide overall strategic direction and program management for the program and promotional, education, trade ally support, and other administrative functions.

### **Key steps in program participation**

1. Customers may be directed to the program through UGI Electric's customer education activities, the Company website, equipment dealers or by contacting an equipment installation contractor/trade ally for a service call.
2. Customers will generally work with the equipment/appliance retailer or installation contractor to fill out program applications and ensure the required documentation is submitted to the program CSP for processing.
3. The CSP will review documentation to verify the applicant is a UGI Electric customer and the installed equipment meets the minimum efficiency standard.
4. Customers installing eligible high-efficiency equipment will schedule the work directly with their equipment dealer or installation contractor.
5. The CSP shall process rebate checks for qualified equipment.

### **Risks and Risk Management Strategy**

The table below presents key market risks to an effective Residential Appliance Rebate Program as well as the strategies the program will use to address each risk.

**Risks and Risk Management Strategies**

<b>Market Risks</b>	<b>Management Strategies</b>
Higher first cost of energy-efficient equipment	Offer rebates to offset higher incremental cost. Educate customers on the long-term energy cost-saving benefits of higher efficiency equipment.
Changing technology may impact lifecycle cost	Market program and general efficiency awareness to customers
Economic environment may limit customer's ability to purchase energy-efficient equipment and appliances	Add new programs or measures and/or increase eligible equipment efficiency levels as technology improves
Customers needing emergency replacement may not know about the program	Provide web-based information with downloadable forms and brochures. Promote general efficiency awareness to customers and trade allies
Customers choose to buy less-efficient equipment	

**Anticipated Costs to Participating Customers**

Customer incremental costs (*i.e.*, the cost differential between standard and high-efficiency measures) will vary depending on the type of equipment purchased and the efficiency level of eligible equipment selected by the customer. In general, rebates are designed to cover a portion of the customer incremental cost.

**Customer Education Strategy**

This program relies on both customer education and point-of-sale dealer and installer information for promotion. UGI Electric will work with merchants to promote the program. This education strategy may include:

1. Promote the program in UGI Electric's customer bill insert
2. Communicate and provide access to program information on the Company's website
3. Educate using appropriate media forms and communication channels
4. Outreach to and coordinated advertising with trade allies
5. Publish and distribute program brochure

**Eligible Measures and Incentive Strategy**

The program provides a financial incentive in the form of a rebate on a per-unit basis to customers installing qualifying equipment and technologies. Rebates will be a fixed amount per device, paid to customers who complete a rebate application, submit the required documentation of the equipment purchase to UGI Electric's CSP, and receive CSP approval.

The table below shows UGI Electric's list of eligible equipment, incentive levels, and efficiency qualifications. The following table shows the list of equipment deemed appropriate for the residential sector. Residential customers may claim a rebate for each listed measure.

**Eligible Measures**

<b>Measure</b>	<b>Eligibility Rating</b>	<b>Incentive</b>
Central Air Conditioner	SEER 15 and above	\$225
Room AC Unit	ENERGY STAR	\$25
Programmable Thermostat	ENERGY STAR	\$50
Ductless Mini Split Heat Pump	SEER >=19	\$350
Air-Source Heat Pump	SEER 15	\$325
Air-Source Heat Pump	SEER 16	\$400
Heat Pump Hot Water Heater	ENERGY STAR, EF >= 2.0, or COP >= 2.0	\$300
Dishwasher	ENERGY STAR	\$30
Clothes Washer	ENERGY STAR	\$75
Refrigerator	ENERGY STAR	\$50
Dehumidifier	ENERGY STAR	\$10
Light Fixture	ENERGY STAR	\$10

SEER = Seasonal Energy-Efficiency Ratio

UGI Electric will periodically review its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

**Evaluation, Measurement, and Verification (“EM&V”)**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control (“QC”) will be integral to the delivery of all programs in UGI Electric’s Phase II EE&C Plan. QC measures will be deployed at various stages of program implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees and various CSPs
- Applying rigorous screening and qualifying protocols in engaging CSPs
- Sampling of rebate claims processed by the CSP to verify program compliance

QC processes will strive to:

- Prevent errors from beginning to end in any given program process
- Detect and correct errors as early as possible
- Eliminate the causes of errors as well as the errors themselves
- Establish a correction plan based on best practices and lessons learned

The program CSP, or UGI Electric Staff if no CSP involvement is indicated, will track all of the data necessary to verify all program activities and outcomes. For the Appliance Rebate Program, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill, and contact information
- Measure information: make and model number of new appliance, type and quantity of measures installed, and efficiency rating
- Expenditures and energy savings
- New construction information: developer contact information, builder contact information, and confirmation of new account activation (most recent bill)

The CSP shall provide periodic reports to UGI Electric for measurement and verification.

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year
- Adjust program measures based on effectiveness of the various measures
- Adjust education channels, messages, and trade ally groups, based on effectiveness
- Adjust budgets for various measures accordingly based on consumer demand



### **Administrative Requirements**

A member of UGI Electric Staff will oversee this program, supported by other internal Staff. Anticipated administrative requirements and participant roles for the program follow.

1. UGI Electric will have an internal UGI Electric Staff that will have overall program implementation responsibility.
2. The CSP will process applications, provide rebates, and provide information for the preparation of reports.
3. UGI Electric Staff will create an education program using appropriate media forms and communication channels to generate awareness for the program

### **Estimated Participation**

Participation levels were developed based on current program participation rates and demand for new and/or modified offerings.

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### Projected Participation

Total Measures and Costs				
Measure	Year 1	Year 2	Year 3	Total
Central Air Conditioners	20	20	20	60
Clothes Washer	200	200	200	600
Room Air Conditioners	274	274	274	822
Programmable Thermostats	53	54	55	162
Air-Source Heat Pumps	22	22	22	66
Ductless Mini-Split Heat Pumps	20	24	26	70
Dishwasher	364	364	364	1,092
Energy Star Refrigerator	587	587	587	1,761
Energy Star Dehumidifier	98	98	98	294
<b>Total</b>	<b>1,638</b>	<b>1,643</b>	<b>1,646</b>	<b>4,927</b>

### Program Budget, Costs and Cost-Effectiveness

Over the three-year Phase II EE&C Plan horizon, the program is expected to achieve electricity consumption savings of approximately 605 MWh. The annual budget allocation, cumulative MWh savings through 2018 and overall program cost-effectiveness for the residential customer sector are shown in the table below. Key assumptions used in calculating the measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	188	204	212	605
Capacity Savings (MW)	0.059	0.061	0.061	0.181
Total Resource Cost	\$ 230,354	\$ 243,558	\$ 250,192	\$ 724,104
Direct Participant Costs	\$ 175,854	\$ 189,058	\$ 195,692	\$ 560,604
Direct Utility Costs	\$ 98,965	\$ 100,415	\$ 101,165	\$ 300,545
Customer Incentives	44,465	45,915	46,665	\$ 137,045
CSP Labor	\$ 24,000	\$ 24,000	\$ 24,000	\$ 72,000
CSP Materials and Supplies	\$ 20,500	\$ 20,500	\$ 20,500	\$ 61,500
Communications	\$ 10,000	\$ 10,000	\$ 10,000	\$ 30,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 160,180	\$ 154,553	\$ 149,498	\$ 464,231
TRC NPV Costs	\$ 230,354	\$ 218,760	\$ 208,326	\$ 657,440
TRC Net Benefits	\$ (70,174)	\$ (64,207)	\$ (58,829)	\$ (193,209)
TRC Benefit/Cost Ratio	0.70	0.71	0.72	0.71

**Other Information**

Customers who install or commit to installing qualifying equipment under this program on or after the first of the month following Commission approval of this Plan will qualify for rebates. Installations must be made during the life of the Plan.

2. **School Energy Education Program**  
**(Residential Sector/Low Income Customers)**

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**Objectives**

The objectives of the Residential School Energy Education Program include:

1. Provide customers with opportunities to reduce their energy costs and increase their energy efficiency
2. Encourage customers to improve the efficiency of their homes by providing an energy efficiency toolkit
3. Educate students on various energy types, energy generation and consumption, home energy use, and ways to increase energy efficiency in a home
4. Leverage UGI Electric’s School Energy Education Program by giving away the School Energy Education Toolkit to 4<sup>th</sup> through 7<sup>th</sup> graders in UGI Electric’s service territory
5. Obtain participation of approximately 2,850 students, teachers and families through 2018, with a total reduction of approximately 1,756 MWh

**Target Market**

This program targets residential customers with students in 4<sup>th</sup> through 7<sup>th</sup> grade. Participants must have electric service. The table below outlines eligibility parameters.

**Customer Eligibility Parameters**

<b>Customer type</b>	Residential/Low-Income
<b>Building Type</b>	Any dwelling unit
<b>Building Vintage</b>	Existing
<b>Building ownership</b>	Owner or tenant with owner approval

**Program Description**

The Residential School Energy Education Program is designed to educate 4<sup>th</sup> through 7<sup>th</sup> grade students on various energy types, energy consumption and generation, home energy use, and ways to save energy in a home.

Think! Energy is typically delivered through school presentations. Teachers and schools are recruited throughout UGI Electric’s service territory. In consultation with the state department of education, presentations are scheduled to avoid testing schedules, vacation periods and other school activities.

Students and teachers at one grade level attend a one-hour presentation on energy literacy and energy efficiency. Under the direction of two National Energy Foundation (“NEF”) professional instructors, students learn how to “Think!” about energy, then “Talk” with others about what they have learned, and ultimately “Take Action!” in their own homes to

use energy more efficiently. A custom-designed PowerPoint presentation guides the discussion, and hands-on learning activities are employed to build understanding among students.

The culmination of the school presentation is the distribution of take-home energy efficiency kits. After the completion of the school presentation, teachers ensure that each student who has returned a signed parent permission/participation slip takes home a kit. As part of a homework assignment, students then install devices with a parent and record installation and other home energy usage and behavior information on a "Household Report Card" Scantron form. Teachers, incentivized by a performance-based \$100 mini-grant, collect Household Report Cards and return to NEF by a predetermined deadline. NEF analyzes and summarizes installation and usage information and reports back to UGI Electric.

### **Annual Implementation Outline**

The implementation strategy for the program includes the following key components:

- Program content aligned with grade-appropriate academic standards as defined by the state department of education
- Determining school eligibility and targeting schools for participation
- Recruiting teachers and conducting additional education activities
- Registering teachers online and scheduling presentations
- Preparing curriculum and presentation materials
- Developing energy efficiency kits
- Assembling and shipping "Take Action!" energy efficiency kits
- Working with utility sponsor to invite local media representatives
- Conducting school presentations
- Awarding incentives
- Gathering and analyzing program data using the Household Report Card
- Reporting estimated energy savings
- Program evaluation and final reporting

UGI Electric will leverage existing energy efficiency education programs and the Reading is Fundamental program by providing a free energy efficiency toolkit to all 4<sup>th</sup> through 7<sup>th</sup> graders in UGI Electric's service territory. The toolkits will include:

- Two (2) ENERGY STAR LED light bulbs
- Oxygenics<sup>®</sup> high efficiency showerhead (2.0 gallons per minute)
- Shower timer
- Kitchen aerator (1.5 gallons per minute)

- Electroluminescent Limelite night light
- Refrigerator thermometer
- Flow rate test bag
- Digital water temperature thermometer
- Fun facts slide chart
- Think! Energy light switch stickers

NEF will educate middle school students on various energy types, ways to generate electricity, the source fuel used in the generation process, and on home energy consumption.

**Implementation Strategy**

NEF will continue to oversee the School Energy Education program.

UGI Electric’s Staff and NEF will manage the program and will handle acquiring the materials, mailing, record keeping, and reporting.

**Risks and Risk Management Strategy**

The table below presents key market risks to an effective Residential School Energy Education Program, as well as the strategies the program will use to address each risk.

<b>Risks and Risk Management Strategies</b>	
<b>Market Risks</b>	<b>Management Strategies</b>
Cost of energy efficiency education and kit	Educate students and households on home energy consumption and ways to save energy. Offer free energy efficiency toolkits to students
Economic environment may limit customer’s ability to purchase energy efficient toolkit	
Lack of program awareness among customers	Partner with middle schools and leverage RIF to offer energy education classes from 4 <sup>th</sup> through 7 <sup>th</sup> grade

**Anticipated Costs to Participating Customers**

This program will cost participating customers zero dollars.

**Ramp-up and Education Strategy**

This program relies on both getting the schools involved and generating awareness at the local level.

1. Promote program in UGI Electric’s customer bill insert and in the middle schools
2. Communicate and provide access to program information on the Company’s website
3. Present program information at community events

**Eligible Measures and Incentive Strategy**

The energy efficiency toolkit will be free to 4<sup>th</sup> through 7<sup>th</sup> grade students within UGI Electric’s service territory.

**Eligible Measures**

Measure	Eligibility Rating	Incentive
<ul style="list-style-type: none"><li>• Two (2) ENERGY STAR LED light bulbs</li><li>• Oxygenics® high efficiency showerhead (2.0 gpm)</li><li>• Shower timer</li><li>• Kitchen aerator (1.5 gpm)</li><li>• Electroluminescent Limelite night light</li><li>• Refrigerator thermometer</li><li>• Flow rate test bag</li><li>• Digital water temperature thermometer</li><li>• Fun facts slide chart</li><li>• Think! Energy light switch stickers</li></ul>	Measure must save electricity, LEDs ENERGY STAR, aerator 1.5 gallons per minute	Free to 4 <sup>th</sup> through 7 <sup>th</sup> grade students within UGI Electric service territory

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during Phase II. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness, provided however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

### **Evaluation, Measurement and Verification**

UGI Electric will strive to continuously improve the success of its Plan in order to achieve program goals. UGI Electric and NEF will enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control is integral to the delivery of all programs in UGI Electric's EE&C Plan. QC measures will be deployed at various stages of program design and implementation to ensure the highest industry standards of operational efficiency.

NEF will track all of the data necessary to verify all program activities and outcomes. For the School Energy Education Program, this data will include:

- Participant information: contact information;
- School information: site (facility) location and teacher involved; and
- Expenditures and energy savings.

QC processes will strive to:

- Prevent errors from beginning to end in any given program process;
- Detect and correct errors as early as possible;
- Eliminate the causes of errors as well as the errors themselves; and
- Establish a correction plan based on best practices and lessons learned.

NEF shall provide periodic reports to UGI Electric for measurement and verification.

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare it against the target for the year;
- Adjust program measures based on effectiveness of the various measures;
- Adjust education channels, messages, and trade ally groups, based on effectiveness; and
- Adjust budgets of various measures accordingly based on consumer demand.

### **Administrative Requirements**

UGI Electric Staff will oversee this program supported by NEF. Anticipated administrative requirements and participant roles for the program follow:

1. UGI Electric Staff will oversee all program operations
2. UGI Electric Staff and NEF will track all program activities



### Estimated Participation

Participation levels were developed based on achieved participation levels to date along with anticipated school interest levels.

#### Projected Participation

Measure	Year 1	Year 2	Year 3	Total
Energy Efficiency Toolkit	925	950	975	2,850

### Program Budget, Costs and Cost-Effectiveness

Over the three-year planning horizon, the program is expected to achieve electricity consumption savings of approximately 1,756 MWh. The annual budget allocation, cumulative MWh savings, and overall program cost-effectiveness for the residential customer sector are shown in the table below.<sup>10</sup> Key assumptions used in calculating the measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	585	585	585	1,756
Capacity Savings (MW)	0.055	0.057	0.058	0.171
Total Resource Cost	\$ 75,125	\$ 73,500	\$ 73,500	\$ 222,125
Direct Participant Costs	\$ -	\$ -	\$ -	\$ -
Direct Utility Costs	\$ 75,125	\$ 76,750	\$ 78,375	\$ 230,250
Customer Incentives	\$ 60,125	\$ 61,750	\$ 63,375	\$ 185,250
CSP Labor	\$ 13,000	\$ 13,000	\$ 13,000	\$ 39,000
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ 2,000	\$ 2,000	\$ 2,000	\$ 6,000
[Note: Total Resource Cost equals Direct Participant Costs, plus Incentives and Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				
TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 389,905	\$ 385,238	\$ 383,049	\$ 1,158,192
TRC NPV Costs	\$ 75,125	\$ 72,887	\$ 70,684	\$ 218,696
TRC Net Benefits	\$ 314,780	\$ 312,351	\$ 312,365	\$ 939,496
TRC Benefit/Cost Ratio	5.19	5.29	5.42	5.30

<sup>10</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the program as a whole over the three-year timeframe.

<b>Benefits/Cost Component</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
Savings (MWh)	585	585	585	1,756
Capacity Savings (MW)	0.055	0.057	0.058	0.171
Total Resource Cost	\$ 75,125	\$ 73,500	\$ 73,500	\$ 222,125
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CSP Labor	\$ 13,000	\$ 13,000	\$ 13,000	\$ 39,000
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ 2,000	\$ 2,000	\$ 2,000	\$ 6,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

<b>TRC Test</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
TRC NPV Benefits	\$ 389,905	\$ 385,238	\$ 383,049	\$ 1,158,192
TRC NPV Costs	\$ 75,125	\$ 72,887	\$ 70,684	\$ 218,696
TRC Net Benefits	\$ 314,780	\$ 312,351	\$ 312,365	\$ 939,496
TRC Benefit/Cost Ratio	5.19	5.29	5.42	5.30

**3. Energy Efficient Lighting  
(Residential Sector/Low Income Customers)**

**Objectives**

The objectives of the Energy Efficient Lighting Program include:

1. Provide a mechanism for customers to easily obtain discounted ENERGY STAR-qualified LED Light Bulbs
2. Develop and execute strategies aimed at transforming the market for ENERGY STAR-qualified LEDs with the goal of increasing the number of qualified products purchased and installed in UGI Electric’s service territory
3. Increase consumer awareness and understanding of the energy-efficiency of LEDs
4. Promote consumer awareness and understanding of the ENERGY STAR label
5. Distribute approximately 91,800 LEDs through 2018, with a total reduction of approximately 3,465 MWh

**Target Market**

This program will be available to all UGI Electric residential customers. For the purposes of the Plan, the program does not allocate budget or attribute savings or impacts to the Large Commercial and Industrial Sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Residential/Low-Income
<b>Building Type</b>	Any dwelling unit
<b>Building Vintage</b>	Existing
<b>Building ownership</b>	Owner or tenant with owner approval

**Program Description**

This program encourages customers to purchase new ENERGY STAR-rated LED bulbs.

The program has two components:

1. A retail upstream lighting incentive that will significantly reduce the customer cost of ENERGY STAR LED bulbs
2. LED distribution to UGI Electric’s Customer Assistance Program (“CAP”) participants. UGI Electric will send a package of (2) LEDs to CAP participants each year at no cost to the customer, utilizing the same CSP as the retail upstream lighting incentive

## Implementation Strategy

UGI Electric intends to continue to use ECOVA as its CSP for this program and expects ECOVA to achieve LED distribution goals. ECOVA, in conjunction with UGI Electric personnel, will develop and execute an education and delivery plan that achieves these goals.

ECOVA will manage an upstream Energy Efficient Lighting Campaign, including negotiating bulk pricing, recruitment, and coordination with retail stores, education and outreach to retailers, and tracking and providing program reports. ECOVA will target a broad range of retailers, including big box and chain stores as well as smaller local and independent stores throughout UGI Electric's service territory. Also, ECOVA will deliver free LEDs to low income residential customers in UGI Electric's CAP program. UGI Electric Staff will provide overall strategic direction and program management for the program and, supported by ECOVA's promotional, education, trade ally support, and other administrative functions, including:

1. Customers may purchase discounted LEDs at a participating retailer, where LED discounts are applied at the register; customers may become aware of the program through ECOVA, UGI Electric, or retailer education and promotional activities
2. Retailer provides documentation of LED sales results to the ECOVA
3. ECOVA tracks results and reports periodically to UGI Electric
4. ECOVA will provide free LEDs to low income residential customers in UGI Electric's CAP program

## Risks and Risk Management Strategy

The table below presents key market risks to an effective Energy Efficient Lighting program, as well as the strategies the program will use to address each risk.

<b>Risks and Risk Management Strategies</b>	
<b>Market Risks</b>	<b>Management Strategies</b>
Cost of energy efficient bulbs	Provide upstream incentive and distributions
Lack of customer awareness	Robust education strategies, including point-of-sale promotions and discounts CSP outreach to retailers to solicit participation
Willingness of retailer to stock LEDs	
Other retail LED promotions may be more attractive	

## Anticipated Costs to Participating Customers

The average customer cost of a standard LED under this program is expected to be approximately ~~\$5.00~~ \$7.98 (after the incentive).

### **Education Strategy**

Education for this program will be led by ECOVA with support from UGI Electric Staff. The education strategy may include:

1. Promote program in UGI Electric's customer bill insert;
2. Communicate and provide access to program information on the Company's website;
3. Educate customers using appropriate media forms and communication channels;
4. In-store educational display;
5. Coordinate education opportunities with trade allies; and
6. Publish and distribute program brochure.

### **Eligible Measures and Incentive Strategy**

ECOVA will negotiate bulk pricing and manage the delivery of upstream incentives to participating LED manufacturers, which are expected to cover approximately 50% of the retail cost of LEDs and 100% of the cost of distribution of bulbs to CAP customers.

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or to maintain Plan cost effectiveness; provided, however, the Company may not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

### **Evaluation, Measurement, and Verification**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure, and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric's Phase II EE&C Plan. QC measures will be deployed at various stages of program design and implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees and ECOVA; and
- Applying rigorous screening and qualifying protocols in engaging new CSPs should that be necessary.

QC processes will strive to:

- Prevent errors from beginning to end in any given program process;
- Detect and correct errors as early as possible;

- Eliminate the causes of errors as well as the errors themselves; and
- Establish a correction plan based on best practices and lessons learned.

ECOVA, the program CSP, will track all of the data necessary to verify all program activities and outcomes. For the Residential Energy Efficient Lighting program, this data will include:

- Expenditures and energy savings;
- Retailer information: retail location, contact information, type, and quantity of products sold; and
- For the LED bulb distribution to CAP customers: contact information.

CSP shall provide periodic reports to UGI Electric for measurement and verification.

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare it against the target for the year;
- Adjust program measures based on effectiveness of the various measures;
- Adjust education channels, messages, and trade ally groups, based on effectiveness; and
- Adjust budgets of various measures accordingly based on consumer demand.

UGI Electric expects impact evaluation of this program will rely mainly on estimates of savings established in the Technical Reference Manual (“TRM”) and information on measure installations, including but not limited to:

1. Number of energy efficient bulbs distributed
2. Reporting shall be electronic, with periodic reports supplied to UGI Electric from the CSP

#### **Administrative Requirements**

UGI Electric Staff will oversee this program and the CSP. External staffing requirements will be a function of the selected CSP work scope, proposed program management structure, and internal needs. Anticipated administrative requirements and participant roles for the program follow.

1. UGI Electric Staff will oversee all program operations and program CSP and will work with trade allies, other Pennsylvania utilities, if appropriate, and stakeholders
2. The CSP will track all program activities and report to UGI Electric

#### **Estimated Participation**

Program participation rates were developed in conjunction with ECOVA, the CSP currently operating the UGI Electric CFL Lighting Campaign program. The overall budget is driven

by the goal of attaining the cumulative targeted savings and satisfying the TRC test. The anticipated number of LEDs purchased by residential customers and given away to residential CAP customers is shown below.

Measure	Total Measures			Total
	Year 1	Year 2	Year 3	
LED Purchase	22,000	23,000	24,000	69,000
LED Give-Away (Low Income)	6,700	7,600	8,500	22,800
<b>Total</b>	<b>28,700</b>	<b>30,600</b>	<b>32,500</b>	<b>91,800</b>

### Program Budget, Costs, and Cost-effectiveness

Over the three-year planning horizon, the program is expected to achieve electricity consumption savings of approximately 3,465 MWh. The annual budget allocation, cumulative MWh savings through 2018, and overall program cost-effectiveness for the residential customer sector are shown in the table below.<sup>11</sup> Key assumptions used in calculating measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	1,083	1,155	1,227	3,465
Capacity Savings (MW)	0.142	0.151	0.161	0.454
Total Resource Cost	\$ 615,300	\$ 651,400	\$ 687,500	\$ 1,954,200
Direct Participant Costs	\$ 545,300	\$ 581,400	\$ 617,500	\$ 1,744,200
Direct Utility Costs	\$ 381,660	\$ 407,140	\$ 432,620	\$ 1,221,420
Customer Incentives	\$ 311,660	\$ 337,140	\$ 362,620	\$ 1,011,420
CSP Labor	\$ 55,000	\$ 55,000	\$ 55,000	\$ 165,000
CSP Materials and Supplies	\$ 8,000	\$ 8,000	\$ 8,000	\$ 24,000
Communications	\$ 7,000	\$ 7,000	\$ 7,000	\$ 21,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 1,042,689	\$1,070,855	\$ 1,096,139	\$ 3,209,683
TRC NPV Costs	\$ 615,300	\$ 618,614	\$ 620,035	\$ 1,853,948
TRC Net Benefits	\$ 427,389	\$ 452,242	\$ 476,105	\$ 1,355,735
TRC Benefit/Cost Ratio	1.69	1.73	1.77	1.73

<sup>11</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the program as a whole over the three-year timeframe.

**4. Appliance Recycling Program  
(Residential Sector/Low Income Customers)**

**Objectives**

The objectives of the Appliance Recycling Program include:

1. Encourage customers to dispose of their existing, inefficient appliances when they purchase new ones or eliminate a second unit that may not be needed;
2. Reduce the use of secondary, inefficient appliances;
3. Ensure appliances are disposed of in an environmentally responsible manner;
4. Decommissioning to ensure appliances are not resold in a secondary market; and
5. Recycle approximately 2,250 refrigerators and freezers and 600 window air conditioning units through 2018, with a total reduction of approximately 2,509 MWh.

**Target Market**

The program primarily targets residential customers, but it is available to all UGI Electric customers with a working, residential-grade refrigerator or freezer. Refrigerators must be at least 10 cubic feet in size. Window air conditioners will only be picked up in conjunction with a refrigerator or freezer pickup. For the purposes of this Plan, the Appliance Recycling Program allocates budget and attributes savings and impacts only to the residential sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Residential/Low-Income
<b>Building Type</b>	All
<b>Building Vintage</b>	All
<b>Building ownership</b>	Owner or tenant

**Program Description**

A customer incentive will be offered for customers who turn in eligible appliances. The program provides free pick-up and disposal of old, inefficient refrigerators, freezers and window air conditioning units. Units must be plugged in and functioning when picked up.

All units are disposed of in an environmentally responsible manner. This involves removing hazardous materials such as chlorinated fluorocarbons from the refrigerant and foam insulation, preparing refrigerant for reclamation, and recycling other materials such as metal and plastic.



**Implementation Strategy**

UGI Electric will continue to utilize JACO, a turn-key Appliance Recycling CSP, to deliver this program. JACO will be expected to develop and execute a delivery plan that achieves the Phase II EE&C Plan energy savings goals. JACO will provide turnkey services to manage and administer the program, including:

1. Education;
2. Call center services, including customer intake and scheduling;
3. Processing applications and rebates;
4. Tracking program data; and
5. Providing customer and transaction information to UGI Electric.

UGI Electric’s Staff will provide overall strategic direction and program management for the program. Key steps in program participation may include the following:

1. CSP schedules and executes appliance collection contract;
2. CSP verifies customer and appliance eligibility;
3. CSP picks up and transports appliances to recycling facility;
4. CSP recycles applicable components and appropriately disposes of remaining components;
5. CSP tracks customer data, appliances, and outcomes throughout process; and
6. CSP processes rebate payments and delivers them to customers.

**Risks and Risk Management Strategy**

The table below presents the key market risks to an effective Appliance Recycling Program, as well as the strategies the program will use to address each risk.

<b>Market Risks and Management Strategies</b>	
<b>Market Risks</b>	<b>Management Strategies</b>
Time required for customer to be available for pick up	CSP responsible to work with customer to ensure the pick-up is as convenient as possible Up to a \$50 incentive to compensate customer for time invested
Need to fill out rebate forms	Provide simple rebate forms
Lack of program awareness among customers	Appliance Recycling CSP helps customers fill out forms
Customers do not see benefit of harvesting qualified appliance(s)	Education strategy will leverage ENERGY STAR brand Consumer education and outreach Up to a \$50 incentive to enhance benefit to customer

**Anticipated Costs to Participating Customers**

There are no costs incurred by customers in this program.

**Education Strategy**

Customer education for this program will be conducted by both UGI Electric and JACO. The education strategy includes:

- 1. Promote program in UGI Electric customer bill insert;
- 2. Communicate and provide access to program information on the Company’s website;
- 3. Promote program using appropriate media forms and communication channels; and
- 4. Use existing ENERGY STAR refrigerator harvesting materials as a resource; include program on ENERGY STAR “Find a Fridge or Freezer Recycling Program” web page.

**Eligible Measures and Incentive Strategy**

There are two distinct incentives associated with the program:

- 1. Free pick-up and disposal of refrigerator or freezer or window A/C unit
- 2. Appliance rebate

There is a limit of two rebates per customer address per program year. Appliance eligibility parameters and rebates are shown in the table below.

<b>Eligible Measures</b>		
<b>Measure</b>	<b>Eligibility Rating</b>	<b>Incentive</b>
Refrigerator	Working unit; ≥ 10 CU FT.	Up to \$50
Freezer	Working Unit	Up to \$50
Window Air Conditioner	Working Unit	\$15

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

### **Evaluation, Measurement, and Verification**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure, and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric's Phase II EE&C Plan. QC measures will be deployed at various stages of program design and implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees and CSP; and
- Applying rigorous screening and qualifying protocols in engaging a new CSP, should that be deemed necessary; and
- Checking 3% of recycled appliances to verify program compliance.

QC processes will strive to:

- Prevent errors from beginning to end in any given program process;
- Detect and correct errors as early as possible;
- Eliminate the causes of errors as well as the errors themselves; and
- Establish a correction plan based on best practices and lessons learned.

The program CSP and UGI Electric Staff will track all of the data necessary to verify all program activities and outcomes. For the Residential Appliance Recycling Program, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill, EE&C customer segment, and contact information
- Measure information: make and model number of old appliance, type, size, and quantity
- Expenditures and energy savings

The CSP shall provide periodic reports to UGI Electric for measurement and verification.

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year;
- Adjust program measures based on effectiveness of the various measures;

- Adjust education channels, messages, and trade ally groups, based on effectiveness; and
- Adjust budgets of various measures accordingly based on consumer demand.

UGI Electric expects impact evaluation of this program will rely on estimates of savings established in the TRM.

**Administrative Requirements**

UGI Electric Staff will oversee this program. Anticipated administrative requirements and participant roles for the program follow.

1. UGI Electric Staff will oversee all program operations and program CSP, and will work with trade allies, other Pennsylvania utilities, and stakeholders as necessary
2. The Appliance Recycling CSP will track all program activities and report to UGI Electric

**Estimated Participation**

Program participation levels were developed based on actual experience with this program during the first phase along with consultation with JACO on participation rates within similarly operated programs. The resulting quantity of appliances recycled is shown below.

**Projected Participation**

Measure	Total Measures			
	Year 1	Year 2	Year 3	Total
Refrigerators and Freezers	750	750	750	2,250
Room Air Conditioners	200	200	200	600
<b>Total</b>	<b>950</b>	<b>950</b>	<b>950</b>	<b>2,850</b>

**Program Budget, Costs, and Cost-effectiveness**

Over the three-year Phase II planning horizon, the program is expected to achieve electricity consumption savings of approximately 2,509 MWh. The annual budget allocation, cumulative MWh savings through 2018, and overall program cost-effectiveness for the residential customer sector are shown in the table below.<sup>12</sup> Key assumptions used in calculating measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	836	836	836	2,509
Capacity Savings (MW)	0.128	0.128	0.128	0.383
Total Resource Cost	\$ 182,000	\$ 182,000	\$ 182,000	\$ 546,000
Direct Participant Costs	\$ 102,000	\$ 102,000	\$ 102,000	\$ 306,000
Direct Utility Costs	\$ 120,500	\$ 120,500	\$ 120,500	\$ 361,500
Customer Incentives	\$ 40,500	\$ 40,500	\$ 40,500	\$ 121,500
CSP Labor	\$ 48,000	\$ 48,000	\$ 48,000	\$ 144,000
CSP Materials and Supplies	\$ 12,000	\$ 12,000	\$ 12,000	\$ 36,000
Communications	\$ 20,000	\$ 20,000	\$ 20,000	\$ 60,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 467,005	\$ 448,275	\$ 430,718	\$ 1,345,998
TRC NPV Costs	\$ 182,000	\$ 172,840	\$ 164,140	\$ 518,980
TRC Net Benefits	\$ 285,005	\$ 275,435	\$ 266,578	\$ 827,018
TRC Benefit/Cost Ratio	2.57	2.59	2.62	2.59

<sup>12</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the program as a whole over the three-year timeframe.

**5. Fuel Switching  
(Residential Sector/Low Income Customers)**

**Objectives**

The Residential Fuel Switching program has several objectives:

1. Make significant contribution to UGI Electric’s energy savings goals
2. Encourage a “full fuel cycle” approach to energy efficiency
3. Obtain participation of approximately 264 customers through 2018 with a total reduction of approximately 741 MWh

**Program Description**

UGI Electric will encourage energy efficiency on a total fuel cycle basis by promoting the use of natural gas and solar thermal appliances, where such appliances are more cost-effective under the TRC test than electric counterparts.

Solar thermal water heaters and natural gas appliances, such as furnaces, water heaters, and clothes dryers, use less energy and emit less carbon than electric appliance equivalents on a total fuel cycle basis. In addition, natural gas appliances and solar thermal water heaters have an annual operating cost advantage over their electric counterparts.

**Fuel Switching Program Components**

- Water heating fuel switching (natural gas and solar thermal)
- Space heating fuel switching
- Clothes dryer fuel switching

**Target Market**

UGI Electric’s Fuel Switching Program will be available to all residential customers, including new residential construction, using a consistent implementation strategy, incentive mechanism, and administrative process.

To be as cost-effective as possible, the program will target customers seeking to replace older, inefficient equipment. The table below outlines eligibility parameters for the residential sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Residential/Low-Income
<b>Building Type</b>	Single family, multi-family
<b>Building Vintage</b>	Existing and new construction
<b>Building ownership</b>	Owner or tenant with owner approval

## **Implementation Strategy**

UGI Electric currently conducts customer intake, eligibility verification, rebate processing, and tracking for this program. Customers will be required to submit a program application with documentation of the equipment purchase and installation(s) for verification and rebate processing. UGI Electric currently provides overall strategic direction and program management, as well as promotional, education, trade ally support, and other administrative functions. UGI Electric may decide to engage a CSP to administer this program depending on customer demand.

Key steps in program participation include:

1. Customers may be directed to the program through UGI Electric's education activities, the Company website, and equipment dealers, or by contacting an equipment installation contractor/trade ally for a service call;
2. Customers will generally work with the equipment/appliance retailer or installation contractor to fill out program applications and ensure the required documentation is submitted to UGI Electric for processing;
3. UGI Electric will review documentation to verify the applicant is a UGI Electric customer and the installed equipment meets the minimum efficiency standard;
4. UGI Electric will review documentation to verify the applicant installed natural gas appliances and removed the old electric one;
5. Customers installing eligible high-efficiency equipment will schedule the work directly with their equipment dealer or installation contractor; and
6. UGI Electric will process rebate checks for qualified equipment.

## **Risks and Risk Management Strategy**

The table below presents key market risks to an effective Fuel Switching Program as well as the strategies the program will use to address each risk.

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### **Risks and Risk Management Strategies**

<b>Market Risks</b>	<b>Management Strategies</b>
Higher first cost of energy-efficient equipment	Offer rebates to offset higher incremental cost. Educate customers on the long-term energy cost-saving benefits of higher-efficiency equipment
Changing technology may impact life cycle cost	Market program and general efficiency awareness to customers
Economic environment may limit customer's ability to purchase energy-efficient equipment and appliances	Add new programs or measures and/or increase eligible equipment efficiency levels as technology improves
Customers needing emergency replacement may not know about the program	Provide web-based information with downloadable forms and brochures Promote general efficiency awareness to customers and trade allies
Customers choose to buy less efficient equipment.	Maintain communications and obtain input from trade allies

#### **Anticipated Costs to Participating Customers**

In general, rebates are designed to cover 30% of the customer incremental cost for water heaters and dryers and 22% of the customer incremental cost for space heating.

#### **Ramp-up and Education Strategy**

This program relies on both customer education and point-of-sale dealer and installer information for promotion. UGI Electric will work with merchants to promote the program. This education strategy may include:

1. Promote program in UGI Electric's customer bill insert;
2. Communicate and provide access to program information on the Company's website;
3. Educate using appropriate media forms and communication channels;
4. Outreach to and coordinated advertising with trade allies; and
5. Publish and distribute program brochure.

#### **Eligible Measures and Incentive Strategy**

The program provides a financial incentive in the form of a rebate on a per-unit basis to customers installing qualifying equipment and technologies. Rebates will be a fixed amount per device, paid by check to customers who complete a rebate application and submit documentation of the equipment purchase to UGI Electric.

The table below shows UGI Electric's proposed list of eligible equipment, incentive levels, and efficiency qualifications appropriate for the residential sector. Residential customers may claim a rebate for each listed measure.



<b>Programs</b>	<b>Incentives</b>	<b>Eligible Appliances</b>
Water Heater Fuel Switching (Natural Gas)	\$ 270	EPA ENERGY STAR-labeled natural gas water heaters
Water Heater Fuel Switching (Solar Thermal)	\$ 140	All solar thermal water heaters
Dryer Fuel Switching	\$ 250	EPA ENERGY STAR-labeled (when available)* natural gas dryers
Space Heating Fuel Switching	\$ 1,500	EPA ENERGY STAR-labeled natural gas furnaces

\*EPA ENERGY STAR performance rating currently is not available for natural gas clothes dryers. Until the ENERGY STAR rating becomes available for this appliance, the Company will direct incentive payments toward natural gas dryers without the rating.

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

#### **Evaluation, Measurement, and Verification**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric's Phase II EE&C Plan. QC measures will be deployed at various stages of program design and implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric Staff; and
- Checking a significant percentage of rebate claims to verify program compliance

QC processes will strive to:

- Prevent errors from beginning to end in any given program process;
- Detect and correct errors as early as possible;
- Eliminate the causes of errors as well as the errors themselves; and
- Establish a correction plan based on best practices and lessons learned.

UGI Electric Staff will track all of the data necessary to verify program activities and outcomes. For the Residential Fuel Switching program, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill, copy of most recent natural gas bill, EE&C customer segment, and contact information;
- Measure information: make and model number of new appliance;
- Expenditures, savings, and peak load impacts; and
- New construction information: developer contact information, builder contact information, and confirmation of new account activation (most recent bill).

UGI Electric will conduct a self-review on an annual basis and submit a report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year;
- Spot check significant sample of installations to verify fuel switch and prevent fraud;
- Adjust program measures based on effectiveness of the various measures;
- Adjust education channels, messages, and trade ally groups, based on effectiveness; and
- Adjust budgets of various measures accordingly, based on consumer demand.

**Administrative Requirements**

UGI Electric Staff will oversee this program.

**Estimated Participation**

Participation levels were developed by balancing competing concerns. The levels were set low enough so as to be achievable, but no so high as to become too costly relative to UGI Electric’s other program budgets.

**Projected Participation**

Measure	Total Measures			Total
	Year 1	Year 2	Year 3	
Water Heater Fuel Switching	24	25	26	75
Water Heater Solar	1	1	1	3
Dryer Fuel Switching	40	40	40	120
Space Heating Fuel Switching	21	22	23	66
<b>Total</b>	<b>86</b>	<b>88</b>	<b>90</b>	<b>264</b>

**Program Budget, Costs and Cost-Effectiveness**

Over the three-year planning horizon, the program is expected to achieve electricity consumption savings of approximately 741 MWh. The annual budget allocation, cumulative MWh savings through 2018, and overall program cost-effectiveness for the residential customer sector are shown in the table below. Key assumptions used in calculating the measure-level savings are shown in Appendix A.

<b>Benefits/Cost Component</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
Savings (MWh)	238	247	256	741
Capacity Savings (MW)	0.771	0.789	0.806	2.366
Total Resource Cost	\$ 167,550	\$ 173,300	\$ 179,050	\$ 519,900
Direct Participant Costs	157,550	163,300	169,050	\$ 489,900
Direct Utility Costs	\$ 58,120	\$ 59,890	\$ 61,660	\$ 179,670
Customer Incentives	48,120	49,890	51,660	\$ 149,670
CSP Labor	\$ -	\$ -	\$ -	\$ -
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ 10,000	\$ 10,000	\$ 10,000	\$ 30,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

<b>Water Heater Fuel Switching TRC Test</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
TRC NPV Benefits	\$ 337,476	\$ 323,588	\$ 310,408	\$ 971,472
TRC NPV Costs	\$ 343,952	\$ 329,320	\$ 315,238	\$ 988,509
TRC Net Benefits	\$ (6,477)	\$ (5,732)	\$ (4,829)	\$ (17,037)
TRC Benefit/Cost Ratio	0.98	0.98	0.98	0.98

**6. Home Energy Audit  
(Residential Sector/Low Income Customers)**

**Objectives**

The objectives of the Residential Home Energy Audit Program include:

6. Provide customers with opportunities to reduce their energy costs and increase their energy savings;
7. Encourage customers to install high-efficiency HVAC, lighting equipment, and electric appliances;
8. Provide customers with energy –saving solutions and home energy audits;
9. Provide immediate energy savings to customers by installing energy saving measures; and
10. Achieve approximately 780 audits through 2018, with a total reduction of approximately 586 MWh.

**Target Market**

UGI Electric’s Residential Home Energy Audit Program will be available to all residential customers, including low income customers and new residential construction, using a consistent implementation strategy, incentive mechanism, and administrative process.

The table below outlines eligibility parameters for the residential sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Residential/Low-Income
<b>Building Type</b>	Single family, multifamily, mobile home
<b>Building Vintage</b>	Existing and new construction
<b>Building ownership</b>	Owner or tenant with owner approval

**Program Description**

The Home Energy Audit Program will provide the selected CSP with financial incentives to offset the higher cost of home audits to UGI Electric customers. The cost of the audit will be approximately \$500; with UGI’s financial incentive paid to the CSP, the customer’s cost will be ~~approximately \$150~~ approximately \$50. During the audit, the CSP will educate the customer on how to save money based on the customer’s day to day usage, as well as educate the customer on the benefits of upgrading to energy-efficient equipment. In addition, the Home Energy Audit Program will provide immediate energy savings to the customer in the form of direct installed energy saving measures. The measures will be paid for by UGI Electric and include the installation of six LEDs, two faucet aerators, one smart strip plug, water pipe insulation and water heater thermostat setback.

### Implementation Strategy

UGI Electric will select a qualified CSP (Audit CSP) through a Request for Proposal (RFP) to provide customer intake, eligibility verification, performing audit and installation of measures and tracking.

Customers will be required to contact the CSP to set up an audit in their homes. The CSP will be responsible for insuring the customer is a UGI Electric account holder. UGI Electric will provide overall strategic direction and program management for the program and promotional, education, trade ally support, and other administrative functions.

### Key steps in program participation

1. Customers may be directed to the program through UGI Electric's customer education activities, the Company website, or marketing and outreach performed by the CSP.
2. Customers will generally work with the CSP to complete a program application to ensure the required documentation is submitted for processing.
3. The CSP will review documentation to verify the applicant is a UGI Electric customer.
4. Customers will schedule the audit directly with the CSP.
5. The CSP will install energy saving measures.
6. The CSP will process invoices for the customer.

### Risks and Risk Management Strategy

The table below presents key market risks to an effective Home Energy Audit Program, as well as the strategies the program will use to address each risk.

<b>Risks and Risk Management Strategies</b>	
<b>Market Risks</b>	<b>Management Strategies</b>
Customers not wanting to pay the cost of audit	Offer rebates to offset cost of audit. Educate customers on day to day energy savings and the long-term energy cost-saving benefits of higher efficiency equipment.
Changing technology may impact lifecycle cost of installed measures	
Economic environment may limit customer's ability to purchase suggested energy-efficient equipment and appliances	Market program and general efficiency awareness to customers.
Customers choose to buy less-efficient equipment	Inform Customers of the Appliance Rebate Program to offset the cost of purchasing suggested energy-efficient equipment and appliances.
	Promote general energy efficiency awareness to customers and trade allies

**Anticipated Costs to Participating Customers**

This cost to the customer to be invoiced by the Audit CSP for a Home Energy Audit and energy saving measures will be ~~approximately \$150~~ \$50.

**Customer Education Strategy**

This program relies on both customer education and the Audit CSP marketing for promotion. UGI Electric will work with the CSP to promote the program. This education strategy may include:

1. Promote program in UGI Electric’s customer bill insert
2. Communicate and provide access to program information on the Company’s website
3. Educate using appropriate media forms and communication channels
4. Outreach to and coordinated advertising with trade allies
5. Publish and distribute program brochure

**Eligible Measures and Incentive Strategy**

The program provides a financial incentive to the CSP in the form of a rebate on a per-audit basis. Rebates will be a fixed amount per audit, paid to the CSP who completes the customer’s audit application and submits the required documentation of audit completion and measures installed.

The table below shows UGI Electric’s list of energy saving measures and an approximate cost per measure, to be paid by UGI Electric.

<b>Eligible Measures</b>	
<b>Measure</b>	<b>Cost (Paid by UGI)</b>
Six ENERGY STAR LEDs	<del>\$120.00</del> <u>\$55.77</u>
Two Faucet Aerators	\$4.00
Smart Strip Plug	<del>\$15.00</del> <u>\$33.00</u>
Water Pipe Insulation	<del>\$18.00</del> <u>\$30.00</u>
Water Heater Thermostat Setback	\$0.00
Audit	<del>\$350</del> <u>\$377.23</u>

UGI Electric will periodically review its program and may adjust measures and rebate levels in the future as market conditions change. UGI Electric will review actual results from this

program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

**Evaluation, Measurement, and Verification (EM&V)**

UGI will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric's Phase II EE&C Plan. QC measures will be deployed at various stages of program implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees and various CSPs
- Applying rigorous screening and qualifying protocols in engaging CSPs
- Sampling of audits performed by the CSP to verify program compliance

QC processes will strive to:

- Prevent errors from beginning to end in any given program process
- Detect and correct errors as early as possible
- Eliminate the causes of errors as well as the errors themselves
- Establish a correction plan based on best practices and lessons learned

The program CSP, or UGI Electric Staff, will track all of the data necessary to verify all program activities and outcomes. For the Home Energy Audit Program, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill and contact information
- Audit information: primary and secondary heat type, water heat type and measures installed
- Expenditures and energy savings

The CSP shall provide periodic reports to UGI Electric for measurement and verification.

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year

- Adjust program measures based on effectiveness of the various measures
- Adjust education channels, messages, and trade ally groups, based on effectiveness
- Adjust budgets for various measures accordingly based on consumer demand

**Administrative Requirements**

A member of UGI Electric Staff will oversee this program, supported by other internal Staff. Anticipated administrative requirements and participant roles for the program follow.

4. UGI Electric will have an internal UGI Electric Staff that will have overall program implementation responsibility.
5. The CSP will process applications, perform audits, install energy saving measures, and provide information for the preparation of reports.
6. UGI Electric Staff will create an education program using appropriate media forms and communication channels to generate awareness for the program

**Estimated Participation**

Participation levels were developed based on estimated participation levels of other EDCs’ programs and adjusted to reflect UGI Electric’s smaller customer base.

**Projected Participation**

<u>Total Measures and Costs</u>				
Measure	Year 1	Year 2	Year 3	Total
Home Energy Audit	260	260	260	780
<b>Total</b>	<b>260</b>	<b>260</b>	<b>260</b>	<b>780</b>



**Program Budget, Costs and Cost-Effectiveness**

Over the three-year Phase II EE&C Plan horizon, the program is expected to achieve electricity consumption savings of approximately 586 MWh. The annual budget allocation, cumulative MWh savings through 2018 and overall program cost-effectiveness for the residential customer sector are shown in the table below. Key assumptions used in calculating the measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	195	195	195	586
Capacity Savings (MW)	0.022	0.022	0.022	0.067
Total Resource Cost	\$ 150,000	\$ 150,000	\$ 150,000	\$ 450,000
Direct Participant Costs	\$ 13,000	\$ 13,000	\$ 13,000	\$ 39,000
Direct Utility Costs	\$ 137,000	\$ 137,000	\$ 137,000	\$ 411,000
Customer Incentives	\$ -	\$ -	\$ -	\$ -
CSP Labor	\$ 85,080	\$ 85,080	\$ 85,080	\$ 255,239
CSP Materials and Supplies	\$ 31,920	\$ 31,920	\$ 31,920	\$ 95,761
Communications	\$ 20,000	\$ 20,000	\$ 20,000	\$ 60,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 146,671	\$ 141,327	\$ 136,489	\$ 424,487
TRC NPV Costs	\$ 150,000	\$ 142,450	\$ 135,280	\$ 427,730
TRC Net Benefits	\$ (3,329)	\$ (1,123)	\$ 1,209	\$ (3,244)
TRC Benefit/Cost Ratio	0.98	0.99	1.01	0.99

**7. Residential Low Income Water Heater Pilot Program  
(Residential Sector/Low Income Customers)**

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**Objectives**

The objectives of the Residential Low Income Water Heater Pilot Program include:

1. Provide 15 low income customers, over a three-year time frame, participating in UGI Electric’s Low Income Usage Reduction Program (“LIURP”) with an ENERGY STAR rated natural gas water heater where natural gas is already present and their current electric water heaters are less efficient;
2. Provide LIURP participants with opportunities to reduce their energy costs and increase their energy efficiency;
3. Achieve approximately 15 installed measures through 2018, with a total reduction of approximately 50 MWh.

**Target Market**

UGI Electric’s Residential Low Income Water Heater Pilot Program will be available to residential customers participating in UGI Electric’s LIURP where natural gas is available and their current electric water heaters are less efficient.

The table below outlines eligibility parameters for the residential sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Low-Income
<b>Building Type</b>	Single family, multifamily, mobile home
<b>Building Vintage</b>	Existing and new construction
<b>Building ownership</b>	Owner or tenant with owner approval

**Program Description**

The program provides 15 low income customers, over a three year time frame, participating in UGI Electric’s LIURP with a high efficiency natural gas water heater where natural gas is currently installed and their current electric water heaters are less efficient. The LIURP offers free energy conservation measures to high usage, low income households to help make energy bills more affordable. UGI Electric’s internal EE&C Staff will work with UGI Electric’s internal LIURP Staff to offer this energy saving measure to prequalified LIURP customers.

**Implementation Strategy**

UGI Electric’s internal EE&C Staff will work with UGI Electric’s internal LIURP Staff to implement this measure. The UGI Electric team will work with contracted Community Based Organizations (“CBOs”) to have this measure installed.

Customers are required to submit a program application to participate in LIURP. UGI Electric’s LIURP Staff will select the customers for this program based off of the

condition of their current water heater and their electric usage. UGI Electric’s EE&C Staff will provide overall strategic direction and program management for the program and promotional, education, trade ally support, and other administrative functions.

**Key steps in program participation**

1. Customers will be participating in LIURP or will submit an application to participate in LIURP.
2. Customers will be chosen by UGI Electric’s LIURP Staff based off of the condition of their current water heaters and their electric usage.
3. LIURP CBOs will schedule the work directly with the customer.
4. LIURP will charge the work to UGI Electric’s Residential Low Income Water Heater Pilot Program.

**Risks and Risk Management Strategy**

The table below presents key market risks to an effective Residential Low Income Water Heater Pilot Program as well as the strategies the program will use to address each risk.

<b>Risks and Risk Management Strategies</b>	
<b>Market Risks</b>	<b>Management Strategies</b>
Changing technology may impact lifecycle cost	Market program and general efficiency awareness to customers
Unable to make the program available to all LIURP participants due to cost	Implement the pilot and watch the market’s response; if it shows to be favorable and effective, UGI Electric will reevaluate to see if there potential to reach more customers.

**Anticipated Costs to Participating Customers**

This program will cost participating customers zero dollars.

**Customer Education Strategy**

Customer will become aware of this program if they are selected for the program by UGI Electric’s LIURP Staff.

**Eligible Measures and Incentive Strategy**

The program provides the installation of an ENERGY STAR rated natural gas water heater in homes where natural gas is available and the present electric water heater is inefficient. The full cost will be covered by UGI Electric’s EE&C budget for this program.

UGI Electric will periodically review its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission

approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

**Evaluation, Measurement, and Verification (“EM&V”)**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric’s EE&C Plan. QC measures will be deployed at various stages of program implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees
- Review a sampling of installed measures processed by UGI Electric’s LIURP Staff’s CBOs

QC processes will strive to:

- Prevent errors from beginning to end in any given program process
- Detect and correct errors as early as possible
- Eliminate the causes of errors as well as the errors themselves
- Establish a correction plan based on best practices and lessons learned

The program CSP, or UGI Electric’s EE&C Staff if no CSP involvement is indicated, will track all of the data necessary to verify all program activities and outcomes. For the Residential Low Income Water Heater Pilot, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill, and contact information
- Measure information: make and model number of new and old appliance, and efficiency rating
- Expenditures and energy savings

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year
- Adjust program measures based on effectiveness of the various measures
- Adjust education channels, messages, and trade ally groups, based on effectiveness
- Adjust budgets for various measures accordingly based on consumer demand

**Administrative Requirements**

UGI Electric’s EE&C Staff will oversee this program, supported by other internal Staff. Anticipated administrative requirements and participant roles for the program follow.

- 1. UGI Electric’s EE&C Staff will have overall program implementation responsibility.
- 2. UGI Electric’s LIURP Staff will process LIURP applications, select participants for this pilot, and provide information for the preparation of reports.

**Estimated Participation**

Participation levels will include five installed water heaters on an annual basis for a total of 15 installed measures over the three-year program.

<b>Total Measures and Costs</b>				
<b>Measure</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
Water Heater Installation	5	5	5	15
<b>Total</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>15</b>

### Program Budget, Costs and Cost-Effectiveness

Over the three-year Phase II EE&C Plan horizon, the program is expected to achieve electricity consumption savings of approximately 50 MWh. The annual budget allocation, cumulative MWh savings through 2018 and overall program cost-effectiveness for the residential customer sector are shown in the table below.<sup>13</sup> Key assumptions used in calculating the measure-level savings are shown in Appendix A.

<u>Benefits/Cost Component</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total</u>
<u>Savings (MWh)</u>	<u>17</u>	<u>17</u>	<u>17</u>	<u>50</u>
<u>Capacity Savings (MW)</u>	<u>0.001</u>	<u>0.001</u>	<u>0.001</u>	<u>0.003</u>
<u>Total Resource Cost</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 22,500</u>
<u>Direct Participant Costs</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 22,500</u>
<u>Direct Utility Costs</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 22,500</u>
<u>Customer Incentives</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 7,500</u>	<u>\$ 22,500</u>
<u>CSP Labor</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<u>CSP Materials and Supplies</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<u>Communications</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<u>[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]</u>				

<u>TRC Test</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total</u>
<u>TRC NPV Benefits</u>	<u>\$ 18,346</u>	<u>\$ 17,641</u>	<u>\$ 16,971</u>	<u>\$ 52,957</u>
<u>TRC NPV Costs</u>	<u>\$ 13,802</u>	<u>\$ 13,285</u>	<u>\$ 12,780</u>	<u>\$ 39,867</u>
<u>TRC Net Benefits</u>	<u>\$ 4,544</u>	<u>\$ 4,356</u>	<u>\$ 4,191</u>	<u>\$ 13,091</u>
<u>TRC Benefit/Cost Ratio</u>	<u>1.33</u>	<u>1.33</u>	<u>1.33</u>	<u>1.33</u>

<sup>13</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the Program as a whole over the three-year timeframe.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	17	17	17	50
Capacity Savings (MW)	0.001	0.001	0.001	0.003
Total Resource Cost	\$ 7,500	\$ 7,500	\$ 7,500	\$ 22,500
Direct Participant Costs	\$ 7,500	\$ 7,500	\$ 7,500	\$ 22,500
Direct Utility Costs	\$ 7,500	\$ 7,500	\$ 7,500	\$ 22,500
Customer Incentives	\$ 7,500	\$ 7,500	\$ 7,500	\$ 22,500
CSP Labor	\$ -	\$ -	\$ -	\$ -
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ -	\$ -	\$ -	\$ -
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 14,346	\$ 13,842	\$ 13,363	\$ 41,551
TRC NPV Costs	\$ 7,500	\$ 7,123	\$ 6,764	\$ 21,387
TRC Net Benefits	\$ 6,846	\$ 6,719	\$ 6,599	\$ 20,164
TRC Benefit/Cost Ratio	1.91	1.94	1.98	1.94

**Other Information**

Installations must be made during the life of the Plan.

**B. COMMERCIAL AND INDUSTRIAL SECTOR PROGRAMS**

**1. Commercial and Industrial Custom Incentive Program  
(Commercial and Industrial Sector/Governmental Customers)**

**Objectives**

The objectives of the Commercial and Industrial (“C&I”) Custom Incentive Program include:

1. Encourage the installation of high-efficiency equipment not included in UGI Electric’s other C&I EE&C Programs by customers in new and existing facilities;
2. Encourage equipment repairs and optimization and operational or process changes that reduce electricity consumption and peak demand;
3. Encourage a “whole facility” approach to energy-efficiency;
4. Increase customer awareness of the features and benefits of electric energy efficient equipment;
5. Increase the market penetration of high-efficiency equipment;
6. Support emerging technologies and non-typical efficiency solutions in cost-effective applications including Combined Heat and Power applications;
7. Encourage advanced energy efficiency strategies required for certification by national market transformation programs such as Leadership in Energy and Environmental Design (“LEED”), Architecture 2030, ENERGY STAR Buildings, or Energy Policy Act of 2005 tax credits;
8. Encourage municipalities to consider the conversion of public street lighting and traffic lighting to high efficiency LED alternatives; and
9. Obtain approximately 60 participants through 2018, with a total energy reduction of approximately 7,812 MWh.

**Target Market**

UGI Electric’s C&I Custom Incentive Program targets all new and existing commercial and industrial facilities, including government and municipal customers. The program will be available for any type of new or replacement energy-efficient equipment not eligible for a prescriptive rebate through UGI Electric’s other EE&C Programs. The program also covers retro-commissioning, repairs, optimization, and operational or process changes. All measures, packages of measures, and process changes must be cost-effective, as substantiated through a technical analysis.

The target market is the C&I sector, which includes governmental customers. UGI Electric expects to use a consistent implementation strategy, incentive mechanism, and administrative process to deliver the program across these market sectors. The table below outlines participant eligibility parameters for this measure.



### Customer Eligibility Parameters

<b>Customer type</b>	Commercial and Industrial
<b>Building Type</b>	Commercial and Industrial
<b>Building Vintage</b>	Existing and new construction
<b>Building ownership</b>	Owner or tenant with owner approval

#### Program Description

This Custom Incentive Program provides a delivery channel and financial incentives to customers installing a wide variety of custom measures suited to their particular business needs. To qualify for financial incentives, eligible customers will be required to provide documentation that their proposed efficiency upgrades pass UGI Electric's cost-effectiveness threshold and technical criteria.

UGI Electric will encourage customers building new facilities to pursue advanced building performance certification such as LEED or ENERGY STAR Buildings.

#### Implementation Strategy

The program CSP and UGI Electric's Staff will work with customers to identify, evaluate and approve custom projects. UGI Electric will continue to build upon an outreach campaign to potential trade allies to promote the program.

Since the C&I Custom program is fluid by nature, the program CSP and UGI Electric will promote the custom program through a variety of channels such as newspaper, radio, and magazine advertising. In addition, UGI Electric's local area sales staff will reach out to C&I customers to inform them about the program and the savings it could provide.

UGI Electric plans to retain its existing program CSP, Smartwatt, an expert in C&I energy efficiency programs, to manage the proposed projects. Smartwatt will study the customer's proposal and will provide an unbiased third-party opinion on feasibility, energy efficiency and savings, and the TRC project values. Utilizing a qualified CSP such as Smartwatt ensures that projects meet TRC and QC standards.

UGI Electric's Staff will provide overall strategic direction and program management and assist with evaluation and other administrative functions. The project development process for the Custom Incentive Program is more fluid than other programs and may not follow a precise work path. The following workflow is an example of a typical scenario through which an equipment-based custom efficiency project may proceed:

1. Customers may be directed to the program through education efforts, or other UGI Electric EE&C programs;

2. A trade ally (*e.g.*, energy services firms, engineering firms, providers of energy efficiency products and services, etc.) works with the customer to evaluate their facility's energy efficiency opportunities and develop potential project ideas;
3. A professional engineering firm or other qualified contractor, under contract to the customer, performs a detailed technical study of potential projects and evaluates their cost-effectiveness;
4. The program CSP will evaluate the customer's technical study report to qualify projects, which involves confirming project incremental cost, potential energy and capacity savings data, and evaluating cost-effectiveness;
5. Customers will schedule installation of eligible high-efficiency equipment upgrades, operational or process changes, or other eligible measures directly with an installation contractor of their choosing or the program CSP, if selected;
6. CSP will verify equipment installation, operational, or process changes or other eligible work for all participants, which will be a part of the measurement and verification process; and
7. The CSP will then processing rebates for qualifying projects.

**Risk and Risk Management Strategy**

The table below presents key market risks to an effective Custom Incentive Program, as well as the strategies the program will use to address each risk.

<b>Market Risks and Management Strategies</b>	
<b>Market Risks</b>	<b>Management Strategies</b>
Higher first cost of energy efficient equipment	Offer customized incentives on equipment and consider technical study offered by customer to offset higher costs
Not a high priority; limited access to discretionary cash/credit	
Lack of program awareness and "emergency replacement" scenario among target customers	Education strategy focused on decision makers and facility operators Education of equipment dealers, distributors, and installers or other trade allies
Procurement policies that specify low first cost instead of life cycle cost	
Tenant/landlord issues	

Customer incremental costs (*i.e.*, the cost differential between standard and high-efficiency measures) will vary depending on the type of equipment and scope of project. UGI Electric reserves the right to limit the rebate amount to \$100,000 to any individual customer.

**Ramp-up and Education Strategy**

The Custom Project Program has proven to be an attractive option for C&I customers during Phase I of UGI Electric’s EE&C Plan. UGI will continue to work with the program CSP in order to seek out ways to increase customer awareness during Phase II.

UGI Electric’s Staff and the program CSP will continue to hone program outreach and education strategy throughout the program duration, which may include:

1. Communicate and provide access to program information on the Company’s website
2. Coordinate education opportunities with trade allies
3. Utilize actual program case studies in direct mail campaigns

**Eligible Measures and Incentive Strategy**

The table below provides examples of possible Custom Program projects along with proposed incentive levels. As noted above, UGI Electric reserves the right to limit the rebate amount to \$100,000 to any individual customer. In addition, UGI Electric proposes to not issue a rebate in excess of 50% of the total project cost borne by the customer.

**Examples of Potential Custom Projects**

Measure	Eligibility	Incentive (Up to Remaining Budget Amount)
LED Traffic Signals	Switching from incandescent bulbs	\$35/bulb
Street Lighting	TRC >1	\$0.12/kwh saved
Outdoor Lighting		
Custom Industrial Processes		
Building Retrofits		
Cooling Tower-Decrease Approach Temperature		
Cooling Tower-Two-Speed Fan Motor		
Water-Cooled Chiller, Screw Chiller		
Water-Cooled Chiller, Screw Chiller		
Heat Pump – Air Source		
Heat Pump – Air Source		
Motors		
Commercial Reach-In Refrigerator		
Compressor VSD Retrofit		
Floating Head Pressure Control		
Strip Curtains for Walk-Ins		
Occupancy Sensors		
Time Clocks and Timers		
ASD/VSD		
Ceiling Insulation		

Wall Insulation		
Other Custom Applications		

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

**Implementation Schedule and Milestones**

This program is currently in effect in Phase I; thus, there will be no need for program design and development. The addition of the LED traffic light and public street and highway lighting options along with the change to a fixed \$/kwh saved rebate level will become part of the program education rollout. This will be handled by the CSP and UGI Electric Staff through direct customer contact, direct mail, email and other forms of advertising to the Commercial/Industrial customer base.

**Evaluation, Measurement, and Verification**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric’s Phase II EE&C Plan. QC measures will be deployed at various stages of program design and implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees and various CSPs
- Applying rigorous screening and qualifying protocols in engaging CSPs
- Checking a significant percentage of custom projects to verify program compliance

QC processes will strive to:

- Prevent errors from beginning to end in any given program process
- Detect and correct errors as early as possible
- Eliminate the causes of errors as well as the errors themselves
- Establish a correction plan based on best practices and lessons learned

The program CSP and UGI Electric Staff will track all of the data necessary to verify all program activities and outcomes. For the C&I Custom program, this data may include:

- Participant information: account number, rate class, copy of most recent electric bill, EE&C customer segment, and contact information;
- Project information: site (facility) location, project specifications, total project cost, project application date, project approval date, and project completion date;
- Measure information: make and model number of new appliance, type and quantity of measures installed, efficiency rating, and service rendered;
- Expenditures and energy savings;
- Trade ally information, if available: contact information, dates of program involvement, and installation standards used; and
- New construction information: developer contact information, builder contact information, and confirmation of new account activation (most recent bill).

The program CSP and UGI Electric Staff will track the energy usage for custom measures and compare it to historical trends, adjusted for weather and other relevant factors. Customers must provide detailed engineering studies with proposed measures efficiency rating, the TRM values for various proposed measures, and the costs associated with each component. UGI Electric will make a decision based on the cost-effectiveness of the total proposal and the TRM values. Customer information will be collected for verification and auditing.

UGI Electric anticipates self-review on an annual basis and reports to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year;
- Conduct on-site inspections of a significant amount of custom measure installations to verify accuracy and prevent fraud;
- Adjust program measures based on effectiveness of the various measures;
- Adjust education channels, messages, and trade ally groups, based on effectiveness; and
- Adjust budgets of various measures accordingly, based on consumer demand.

#### **Administrative Requirements**

The program CSP and UGI Electric Staff will oversee this program.

#### **Estimated Participation**

Participation levels were estimated based on experience with this program over the past two years.

### Projected Participation

Total Measures and Costs				
Measure	Year 1	Year 2	Year 3	Total
Other Custom Projects	20	20	20	60
<b>Total</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>60</b>

### Program Budget, Costs, and Cost-Effectiveness

Over the three-year planning horizon, the program is expected to achieve electricity consumption savings of approximately 7,812 MWh. The annual budget allocation, cumulative MWh savings, and overall program cost-effectiveness for the commercial and industrial customer sectors are shown in the table below.<sup>14</sup> Key assumptions used in calculating measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	2,604	2,604	2,604	7,812
Capacity Savings (MW)	-	-	-	-
Total Resource Cost	\$ 779,640	\$ 779,640	\$ 779,640	\$ 2,338,920
Direct Participant Costs	\$ 530,840	\$ 530,840	\$ 530,840	\$ 1,592,520
Direct Utility Costs	\$ 750,120	\$ 750,120	\$ 750,120	\$ 2,250,360
Customer Incentives	\$ 501,320	\$ 501,320	\$ 501,320	\$ 1,503,960
CSP Labor	\$ 247,800	\$ 247,800	\$ 247,800	\$ 743,400
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ 1,000	\$ 1,000	\$ 1,000	\$ 3,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 1,204,301	\$1,160,035	\$ 1,118,005	\$ 3,482,341
TRC NPV Costs	\$ 914,591	\$ 871,526	\$ 830,427	\$ 2,616,544
TRC Net Benefits	\$ 289,710	\$ 288,509	\$ 287,578	\$ 865,797
TRC Benefit/Cost Ratio	1.32	1.33	1.35	1.33
[Note: TRC NPV Benefits includes electricity savings from fuel switching. TRC NPV Costs include the additional natural gas cost.]				

### Other Information

Customers who submit qualified and approved projects to UGI Electric will receive a budget commitment for their proposal. Receipt of the rebate is contingent on project completion

<sup>14</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the Program as a whole over the three-year timeframe.

during the life of the Plan and the availability of program funding. Customers submitting projects to UGI Electric will be placed on a waiting list for a potential Phase III if funding runs out prior to the end of the Phase II EE&C Plan period.

## **2. HVAC Tune-up Program**

### **2. HVAC Tune-up Program**

**(Commercial and Industrial Sector/Governmental Customers)**

#### **Objectives**

The objectives of the Commercial HVAC Tune-up Program include:

1. Optimize HVAC unit performance
2. Assist commercial customers in lowering their energy bills and operating costs
3. Qualify approximately 1,632 rebate applications through 2018, with a total energy reduction of approximately 2,004 MWh

#### **Target Market**

UGI Electric's HVAC Tune-up Program targets existing buildings with packaged commercial HVAC systems. The program will offer incentives paid to HVAC contractors who perform qualifying measures.

The target market is the C&I sector, which includes governmental customers. The table below outlines eligibility targets.

#### **Customer Eligibility Parameters**

<b>Customer type</b>	Commercial and Industrial
<b>Building Type</b>	Commercial and Industrial
<b>Building Vintage</b>	Existing buildings
<b>Building ownership</b>	Owner or tenant with owner approval

#### **Program Description**

The HVAC Tune-Up Program is designed to increase the operating performance of electric HVAC systems in commercial buildings. The program offers financial incentives to HVAC contractors to diagnose performance inefficiencies and make energy-saving retrofits. The efficiency opportunities can be broken into three main areas:

1. Refrigeration components
2. Air distribution system
3. Controls

#### **Implementation Strategy**

This is an existing program and as such, UGI Electric will continue to utilize its existing CSP, ECOVA, in managing this measure to avoid any significant program coverage gaps and to allow for a seamless transition for customers. The CSP will continue to manage and

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administer the program, including contractor recruitment, contractor training, providing ongoing contractor field support, education, processing applications and rebates, tracking program data, and reporting to UGI Electric. HVAC contractors will provide technical assessments and install energy efficiency improvements on customers' HVAC systems. UGI Electric Staff will provide overall strategic direction and program management for the program and, supported by the CSP, education, trade ally support, evaluation, and other administrative functions. Key steps in program participation include:

1. Trained contractors will use diagnostic tools to assess HVAC unit performance, tune-up systems, and install energy efficiency equipment to improve performance;
2. Contractors will complete necessary program paperwork to apply for an incentive;
3. The CSP will record all applications as well as process and issue an incentive check to the contractor for qualifying applications; and
4. The CSP will provide monthly reports to UGI Electric that outline program accomplishments, challenges, contractor and customer feedback, projected saving forecasts, and other program information, and will also document problems and urgent issues as they arise.

In accordance with its quality assurance plan ECOVA will ensure that contractors are performing program services properly and that the program is realizing energy savings. At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the plan.

#### **Risk and Risk Management Strategy**

The table below presents key market risks to an effective C&I HVAC Tune-up Program, as well as the strategies the program will use to address each risk.

### Market Risks and Management Strategies

Market Risks	Management Strategies
HVAC contractors have limited time and/or resources to implement program components	Provide financial incentives to contractors to compensate their time and encourage participation Contractor education Education plan encouraging contractor participation
Limited number of qualified contractors	
Customer/contractor may have uncertainties regarding savings and payback	Specific education and information to customers to ensure awareness of UGI Electric incentives
Customers think they receive the service as part of an existing maintenance agreement	
Landlord/tenant issues	
Economic environment may limit customers' ability to upgrade equipment and technology	
Customer not aware of incentives to contractors	

#### Anticipated Costs to Participating Customers

In general, measure rebates are designed to cover approximately 50% of the customer incremental cost. Estimated customer post-incentive costs by measure are outlined in the table below:

Measure	Post-Incentive Cost
Basic diagnostic testing (no economizer)	<u>\$40</u> <u>\$60</u>
Basic diagnostic testing (economizer is present)	\$50
Refrigerant Charge/Airflow (single compressor)	<u>\$75</u> <u>\$90</u>
Refrigerant Charge/Airflow (multiple compressors)	<u>\$125</u> <u>\$205</u>
Thermostat Modification	\$25
Economizer Adjustment	<u>\$125</u> <u>\$75</u>
Thermostat Replacement	<u>\$125</u> <u>\$70</u>
Economizer Control Package	<u>\$100</u> <u>\$90</u>

#### Education Strategy

This program relies on customer education, CSP, and trade ally promotion. The education strategy for this program will include:

1. Communicate and provide access to program information on the Company's website;
2. Educate using appropriate media forms and communication channels;

3. Coordinate promotional opportunities with trade allies; and
4. Targeted education to specific sectors identified as having a high level of unrealized energy-efficiency potential, such as office buildings and data centers.

**Eligible Measures and Incentive Strategy**

The program provides a financial incentive in the form of a prescriptive rebate for specific diagnostic tests and installation of qualifying equipment and technologies associated with commercial packaged HVAC systems. Rebates will be a fixed amount per measure, paid by check to HVAC contractors who complete an application and submit documentation to UGI Electric’s HVAC CSP. The table below shows UGI Electric’s proposed incentive levels.

**Eligible Equipment Measures**

Measure	Incentive
Basic diagnostic testing (no economizer)	\$40
Basic diagnostic testing (economizer is present)	\$50
Refrigerant Charge/Airflow (single compressor)	\$75
Refrigerant Charge/Airflow (multiple compressors)	\$125
Thermostat Modification	\$25
Economizer Adjustment	\$125
Thermostat Replacement	\$125
Economizer Control Package	\$100

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the Plan.

**Evaluation, Measurement, and Verification**

UGI Electric will strive to continuously improve the success of its Plan in order to enhance quality control, evaluate, measure, and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric’s Phase II EE&C Plan. QC measures will be deployed at various stages of program delivery to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to the following:

- Ongoing tracking of program activities and costs by dedicated UGI Electric employees and the program CSP

- CSP or UGI Electric shall check 3% of rebate claims to verify program compliance

QC processes will strive to:

- Prevent errors from beginning to end in any given program process
- Detect and correct errors as early as possible
- Eliminate the causes of errors as well as the errors themselves
- Establish a correction plan based on best practices and lessons learned

The program CSP will track all of the data necessary to verify all program activities and outcomes. For the C&I HVAC Tune-Up program, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill, EE&C customer segment, and contact information;
- Measure information: type and quantity of measures installed, efficiency rating, and service rendered;
- Expenditures and energy savings; and
- Trade ally information: contact information, dates of program involvement, and installation standards used.

CSP shall provide periodic reports to UGI Electric for measurement and verification. CSP shall verify that the contractor performed the measure listed.

UGI Electric anticipates self-review on an annual basis and reports to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare them against the target for the year
- Adjust program measures based on effectiveness of the various measures
- Adjust education channels, messages, and trade ally groups, based on effectiveness
- Adjust budgets of various measures accordingly, based on consumer demand

#### **Administrative Requirements**

1. UGI Electric Staff will oversee the program operations
2. ECOVA and UGI Electric Staff will handle customer calls and direct customers to the program
3. The HVAC Tune-up CSP will administer the program, recruit, liaise with and train contractors, track project and customer data, review and verify program applications, process rebates, and report to UGI Electric
4. Trade allies (HVAC installers) perform tune-up work

### Estimated Participation

Qualifying rebate levels were estimated by examining the actual results of this program to date. The resulting number of qualifying rebates for each measure is shown below.

### Projected Participation

Total Measures and Costs				
Measure	Year 1	Year 2	Year 3	Total
Basic diagnostic testing (no economizer)	90	90	90	270
Basic diagnostic testing (economizer is present)	90	90	90	270
Refrigerant/Airflow (Single Compressor)	90	90	90	270
Refrigerant/Airflow (Multiple Compressors)	45	45	45	135
Thermostat Modification	135	135	135	405
Economizer Adjustment	65	65	65	195
Thermostat Replacement	28	28	28	84
Economizer Control Package	1	1	1	3
<b>Total</b>	<b>544</b>	<b>544</b>	<b>544</b>	<b>1,632</b>

### Program Budget, Costs, and Cost-Effectiveness

Over the three-year planning horizon, the program is expected to achieve electricity consumption savings of approximately 2,004 MWh. The annual budget allocation, cumulative MWh savings, and overall program cost-effectiveness for the C&I customer sector are shown in the table below.<sup>15</sup> Key assumptions used in calculating measure-level savings are shown in Appendix A.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	668	668	668	2,004
Capacity Savings (MW)	-	-	-	-
Total Resource Cost	\$ 164,100	\$ 164,100	\$ 164,100	\$ 492,300
Direct Participant Costs	73,100	73,100	73,100	\$ 219,300
Direct Utility Costs	\$ 126,575	\$ 126,575	\$ 126,575	\$ 379,725
Customer Incentives	\$ 35,575	\$ 35,575	\$ 35,575	\$ 106,725
CSP Labor	\$ 65,000	\$ 65,000	\$ 65,000	\$ 195,000
CSP Materials and Supplies	\$ 25,000	\$ 25,000	\$ 25,000	\$ 75,000
Communications	\$ 1,000	\$ 1,000	\$ 1,000	\$ 3,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				
TRC Test	Year 1	Year 2	Year 3	Total
TRC NPV Benefits	\$ 167,281	\$ 159,126	\$ 151,381	\$ 477,788
TRC NPV Costs	\$ 164,100	\$ 155,841	\$ 147,997	\$ 467,937
TRC Net Benefits	\$ 3,181	\$ 3,285	\$ 3,385	\$ 9,851
TRC Benefit/Cost Ratio	1.02	1.02	1.02	1.02

<sup>15</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the program as a whole over the three-year timeframe.

<b>Benefits/Cost Component</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
Savings (MWh)	668	668	668	2,004
Capacity Savings (MW)	-	-	-	-
Total Resource Cost	\$ 164,100	\$ 164,100	\$ 164,100	\$ 492,300
Direct Participant Costs	73,100	73,100	73,100	\$ 219,300
Direct Utility Costs	\$ 132,900	\$ 132,900	\$ 132,900	\$ 398,700
Customer Incentives	\$ 41,900	\$ 41,900	\$ 41,900	\$ 125,700
CSP Labor	\$ 65,000	\$ 65,000	\$ 65,000	\$ 195,000
CSP Materials and Supplies	\$ 25,000	\$ 25,000	\$ 25,000	\$ 75,000
Communications	\$ 1,000	\$ 1,000	\$ 1,000	\$ 3,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				

<b>TRC Test</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Total</b>
TRC NPV Benefits	\$ 167,281	\$ 159,126	\$ 151,381	\$ 477,788
TRC NPV Costs	\$ 164,100	\$ 155,841	\$ 147,997	\$ 467,937
TRC Net Benefits	\$ 3,181	\$ 3,285	\$ 3,385	\$ 9,851
TRC Benefit/Cost Ratio	1.02	1.02	1.02	1.02

**3. Fuel Switching  
(Small Commercial Sector)**

**Objectives**

The Small Commercial Fuel Switching program has several objectives:

1. Make significant contribution to UGI Electric’s energy savings goals
2. Encourage a “full fuel cycle” approach to energy efficiency
3. Obtain participation of approximately 99 customers through 2018, with a total reduction of approximately ~~467~~ 375 MWh

**Program Description**

UGI Electric will encourage energy efficiency on a total fuel cycle basis by promoting the use of natural gas and solar thermal appliances, where such appliances are more cost-effective under the TRC test than electric counterparts.

Solar thermal water heaters and natural gas appliances such as furnaces, water heaters, and clothes dryers use less energy and emit less carbon than electric appliance equivalents on a total fuel cycle basis. In addition, natural gas appliances and solar thermal water heaters have an annual operating cost advantage over their electric counterparts.

**Fuel Switching Program Components**

- ENERGY STAR rated water heater (natural gas and solar thermal)
- ENERGY STAR rated natural gas furnace or boiler
- Natural Gas Clothes dryer fuel switching

**Target Market**

UGI Electric’s Fuel Switching Program will be available to all small commercial customers using a consistent implementation strategy, incentive mechanism, and administrative process.

To be as cost-effective as possible, the program will target customers seeking to replace older, inefficient equipment. The table below outlines eligibility parameters for the commercial sector.

**Customer Eligibility Parameters**

<b>Customer type</b>	Small Commercial
<b>Building Type</b>	Small Commercial
<b>Building Vintage</b>	Existing buildings
<b>Building ownership</b>	Owner or tenant with owner approval

### **Implementation Strategy**

UGI Electric, or a future CSP, will conduct customer intake, eligibility verification, rebate processing, and tracking. Customers will be required to submit a program application with documentation of the appliance being replaced and the equipment purchase and installation(s) for verification and rebate processing. UGI Electric will provide overall strategic direction and program management, as well as promotional, education, trade ally support, and other administrative functions.

Key steps in program participation include:

1. Customers may be directed to the program through UGI Electric's education activities, the Company website, equipment dealers, or by contacting an equipment installation contractor/trade ally for a service call
2. Customers will generally work with the equipment/appliance retailer or installation contractor to fill out program applications and ensure the required documentation is submitted to UGI Electric for processing
3. UGI Electric, or CSP, will review documentation to verify the applicant is a UGI Electric Small Commercial customer and the installed equipment meets the minimum efficiency standard
4. UGI Electric, or CSP, will review documentation to verify the applicant installed a qualifying appliance(s) and removed the old electric appliance(s)
5. Customers installing eligible high-efficiency equipment will schedule the work directly with their equipment dealer or installation contractor
6. UGI Electric, or CSP, will process rebate checks for qualified equipment

### **Risks and Risk Management Strategy**

The table below presents key market risks to an effective Fuel Switching Program as well as the strategies the program will use to address each risk.



### **Risks and Risk Management Strategies**

<b>Market Risks</b>	<b>Management Strategies</b>
Higher first cost of energy-efficient equipment	Offer rebates to offset higher incremental cost Educate customers on the long-term energy cost-saving benefits of higher-efficiency equipment
Changing technology may impact life cycle cost	Market program and general efficiency awareness to customers
Economic environment may limit customer's ability to purchase energy-efficient equipment and appliances	Add new programs or measures and/or increase eligible equipment efficiency levels as technology improves
Customers needing emergency replacement may not know about the program	Provide web-based information with downloadable forms and brochures Promote general efficiency awareness to customers and trade allies
Customers choose to buy less efficient equipment.	Maintain communications and obtain input from trade allies

#### **Anticipated Costs to Participating Customers**

In general, rebates are designed to cover approximately 30% of the customer incremental cost for water heaters and dryers and approximately 22% of the customer incremental cost for furnaces and boilers.

#### **Ramp-up and Education Strategy**

This program relies on both customer education and point-of-sale dealer and installer information for promotion. UGI Electric, or CSP, will work with merchants to promote the program. This education strategy may include:

1. Promote program in UGI Electric's customer bill inserts and direct mailings
2. Communicate and provide access to program information on the Company's website
3. Educate using appropriate media forms and communication channels
4. Outreach to and coordinated advertising with trade allies
5. Publish and distribute program brochure

#### **Eligible Measures and Incentive Strategy**

The program provides a financial incentive in the form of a rebate on a per-unit basis to customers installing qualifying equipment and technologies. Rebates will be a fixed amount per device, paid by check to customers who complete a rebate application and submit documentation of the equipment purchase to UGI Electric.

The table below shows UGI Electric's proposed list of eligible equipment, incentive levels, and efficiency qualifications appropriate for the residential sector. Small commercial customers may claim a rebate for each listed measure.

<b>Programs</b>	<b>Incentives</b>	<b>Eligible Appliances</b>
Water Heater Fuel Switching (Natural Gas)	\$ 270	EPA ENERGY STAR-labeled natural gas water heaters
Water Heater Fuel Switching (Solar Thermal)	\$ 140	All solar thermal water heaters
Dryer Fuel Switching	\$ 250	EPA ENERGY STAR-labeled (when available)* natural gas dryers
Furnace or Boiler Fuel Switching	\$ 1,500	EPA ENERGY STAR-labeled natural gas furnaces

At this time, UGI Electric does not anticipate changes to its eligible measures or incentives during the Plan period. However, UGI Electric will perform an annual review of its programs and may adjust measures, rebate levels, performance criteria, and/or eligibility ratings in the future as market conditions change. UGI Electric will review actual results from this program and determine whether any adjustments are needed to achieve the desired energy savings on a whole and/or maintain Plan cost effectiveness; provided, however, the Company will not, without Commission approval, add new programs, deviate significantly from the approved program parameters, or exceed the total approved budget for the plan.

#### **Implementation Schedule and Milestones**

Planning and implementation tasks and schedule for the Small Commercial Fuel Switching Program follow. All tasks will be led by UGI Electric Staff.

#### **Program Schedules and Milestones**

<b>Schedule</b>	<b>Milestones</b>
Weeks 1 to 3	Add program to UGI EE&C website
Weeks 1 to 3	Finalize outreach to merchants and trade allies
Weeks 1 to 3	Finalize education and customer education material and program applications
Week 4	Launch Program

#### **Evaluation, Measurement, and Verification**

UGI Electric will strive to continuously improve the success of its Phase II EE&C Plan in order to enhance quality control, evaluate, measure and verify procedures to track program activities, monitor performance and progress toward targets, and take corrective action when warranted.

Quality control will be integral to the delivery of all programs in UGI Electric's Phase II EE&C Plan. QC measures will be deployed at various stages of program design and implementation to ensure the highest industry standards of operational efficiency. These measures will include, but will not be limited to, the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric Staff
- Checking a significant percentage of rebate claims to verify program compliance

QC processes will strive to:

- Prevent errors from beginning to end in any given program process
- Detect and correct errors as early as possible
- Eliminate the causes of errors as well as the errors themselves
- Establish a correction plan based on best practices and lessons learned

UGI Electric Staff, or CSP, will track all of the data necessary to verify program activities and outcomes. For the Small Commercial Fuel Switching program, this data will include:

- Participant information: account number, rate class, copy of most recent electric bill, copy of most recent natural gas bill, EE&C customer segment, and contact information
- Measure information: make and model number of new and old appliance/equipment
- Expenditures and energy savings

UGI Electric will conduct a self-review on an annual basis and submit a report to the Commission within three months after the end of each program year. The self-review steps will include:

- Compile all records and compare it against the target for the year
- Spot check significant sample of installations to verify fuel switch and prevent fraud
- Adjust program measures based on effectiveness of the various measures
- Adjust education channels, messages, and trade ally groups, based on effectiveness
- Adjust budgets of various measures accordingly, based on consumer demand

#### **Administrative Requirements**

UGI Electric Staff will oversee this program.

### Estimated Participation

Participation levels were developed by using Phase I participation levels for the Residential Fuel Switching Program with some adjustments made taking into account small commercial customer needs and demographics within the UGI Electric service territory.

### Projected Participation

Measure	Year 1	Year 2	Year 3	Total
Water Heater Fuel Switching	20	20	20	60
Water Heater Solar	1	1	1	3
Dryer Fuel Switching	2	2	2	6
Space Heating Fuel Switching	10	10	10	30
<b>Total</b>	<b>33</b>	<b>33</b>	<b>33</b>	<b>99</b>

### Program Budget, Costs and Cost-Effectiveness

Over the three-year planning horizon, the program is expected to achieve electricity consumption savings of approximately 467,375 MWh. The annual budget allocation, cumulative MWh savings through 2018, and overall program cost-effectiveness for the small commercial customer sector are shown in the table below.<sup>16</sup>

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
<u>Savings (MWh)</u>	<u>125</u>	<u>125</u>	<u>125</u>	<u>375</u>
<u>Capacity Savings (MW)</u>	<u>0.291</u>	<u>0.291</u>	<u>0.291</u>	<u>0.874</u>
<u>Total Resource Cost</u>	<u>\$ 88,960</u>	<u>\$ 88,960</u>	<u>\$ 88,960</u>	<u>\$ 266,880</u>
<u>Direct Participant Costs</u>	<u>69,060</u>	<u>69,060</u>	<u>69,060</u>	<u>\$ 207,180</u>
<u>Direct Utility Costs</u>	<u>\$ 40,940</u>	<u>\$ 40,940</u>	<u>\$ 40,940</u>	<u>\$ 122,820</u>
<u>Customer Incentives</u>	<u>21,040</u>	<u>21,040</u>	<u>21,040</u>	<u>\$ 63,120</u>
<u>CSP Labor</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<u>CSP Materials and Supplies</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ -</u>
<u>Communications</u>	<u>\$ 19,900</u>	<u>\$ 19,900</u>	<u>\$ 19,900</u>	<u>\$ 59,700</u>
<u>[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]</u>				

<sup>16</sup> These costs do not include an allocated portion of UGI Electric's \$325,000 annual administrative costs to design, create, and implement the Plan. If an allocation of those costs was included here, it would not result in a TRC Benefit/Cost Ratio that was less than 1.0 for the program as a whole over the three-year timeframe.

<u>Water Heater Fuel Switching TRC Test</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total</u>
TRC NPV Benefits	\$ 191,686	\$ 184,063	\$ 176,828	\$ 552,577
TRC NPV Costs	\$ 179,519	\$ 171,884	\$ 164,535	\$ 515,939
TRC Net Benefits	\$ 12,167	\$ 12,179	\$ 12,293	\$ 36,639
TRC Benefit/Cost Ratio	1.07	1.07	1.07	1.07

[Note: TRC NPV Benefits includes electricity savings from fuel switching.  
TRC NPV Costs include the additional natural gas cost.]

<u>Benefits/Cost Component</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total</u>
Savings (MWh)	156	156	156	467
Capacity Savings (MW)	0.291	0.291	0.291	0.874
Total Resource Cost	\$ 88,960	\$ 88,960	\$ 88,960	\$ 266,880
Direct Participant Costs	69,060	69,060	69,060	\$ 207,180
Direct Utility Costs	\$ 40,940	\$ 40,940	\$ 40,940	\$ 122,820
Customer Incentives	21,040	21,040	21,040	\$ 63,120
CSP Labor	\$ -	\$ -	\$ -	\$ -
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ 19,900	\$ 19,900	\$ 19,900	\$ 59,700

[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]

<u>Water Heater Fuel Switching TRC Test</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Total</u>
TRC NPV Benefits	\$ 191,686	\$ 184,063	\$ 176,828	\$ 552,577
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TRC Benefit/Cost Ratio	1.07	1.07	1.07	1.07

[Note: TRC NPV Benefits includes electricity savings from fuel switching.  
TRC NPV Costs include the additional natural gas cost.]

**C. CUSTOMER ENERGY EDUCATION PROGRAM**

**1. Customer Education Program  
(Residential and Small Commercial Sector/Governmental Customers)**

**Objectives**

The Customer Education Program has several objectives:

1. Communicate conservation tips to UGI Electric customers and emphasize that there are many simple low-cost or no-cost steps to help customers' homes become more energy efficient.
2. Communicate the prices to compare and how they are calculated so that customers can make an informed choice when shopping for an electric generation supplier.
3. Communicate programs which help low income customers maintain service and other programs such as budget billing and efficiency rebates to help manage energy usage and bills

**Program Description**

UGI Electric will encourage energy efficiency on a total fuel cycle basis by promoting the use of natural gas distributed electricity generation where the direct end use of natural gas is more efficient and cost-effective under the TRC test.

**Program Components**

- Customer Education Program

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**Target Market**

UGI Electric serves approximately 62,000 electric customers in parts of Luzerne and Wyoming Counties. Approximately 87% of UGI Electric's electric customers are residential, 12% are commercial, and 1% is industrial. The audiences targeted for this education plan are:

- Individuals in households responsible for reviewing and paying utility bills
- Low-income households
- Senior citizens
- Minorities
- Rural households
- School-aged children
- Small business customers

### **Customer Eligibility Parameters**

<b>Customer type</b>	Residential and Small Commercial
<b>Building Type</b>	Residential and Small Commercial
<b>Building Vintage</b>	Existing and new construction
<b>Building ownership</b>	Owner or tenant

### **Program Description**

This Customer Education Program provides a delivery channel to educate customers about various low cost or no cost methods to lower their energy usage and reduce their electric bills.

### **Implementation Strategy**

The Customer Education Program has been developed with the intention of providing cost-efficient and effective consumer education while minimizing the cost of such efforts on customers. UGI Electric intends to follow the program tactics itemized below; however, UGI Electric reserves the right to change, eliminate, substitute and/or add to the list when necessary due to costs or other limitations. Should any change to the program be contemplated, UGI Electric will revise the program and submit the changes to the Office of Communications, the Office of Consumer Advocate, and the Office of Small Business Advocate for approval.

The Consumer Education Program may include the following tactics:

- 1) **TheEnergyGuyAtUGI.com** – Online content at TheEnergyGuyAtUGI.com to include:
  - a. Maintain do-it-yourself home energy audits.
  - b. Links to information on Customer Choice and How to Shop for an electric supplier
  - c. Links to information about low-income assistance programs
- 2) **Bill inserts** – Distribute conservation tips via bill inserts three to four times throughout the year. These bill inserts are separate from the monthly customer newsletter. Bill inserts serve as a vehicle to provide:
  - a. Seasonal energy conservation tips;
  - b. How to shop for an electric supplier and other customer choice information;
  - c. Information on low-income assistance programs; and
  - d. Specific information for residential, commercial and industrial customers.
- 3) **Energy Conservation brochure** – Keep current UGI Electric’s energy conservation brochure. This brochure includes energy conservations tips, how to shop information, low-income assistance program information, and directs customers to the UGI website for additional information.

- 4) **TV Advertising** – Continue with the public service conservation announcements on WBRE that have been part of Phase I of the EE&C Plan.
- 5) **Newspaper Advertising** – Continue to produce and run newspaper advertisements focused on energy conservation in UGI Electric’s service area covering topics such as:
  - a. The value of energy efficient light LED bulbs ~~such as CFL and LED~~
  - b. Setting water heater temperature no higher than 120 degrees
  - c. Low-income assistance programs
- 6) **Social Media** – Continue to use social media (e.g., Twitter, Facebook, etc) to communicate energy conservation messages.

**Evaluation, Measurement, and Verification**

UGI Electric will continue to conduct an internal audit and review of customer education materials.

UGI Electric conducted a focus group to measure customer awareness and knowledge of electric energy conservation information and UGI Electric’s efforts in that arena. The results of this exercise led UGI Electric to focus on direct mailing for C&I customers and email outreach for residential customers.

**Administrative Requirements**

UGI Electric Staff will oversee this program.

**Program Budget, Costs, and Cost-Effectiveness**

Because this program is solely designed to act as a supplement to the remaining measures and does not provide an opportunity to discretely measure energy savings, the TRC value is assumed to be zero. The annual budget allocation is shown in the table below.

Benefits/Cost Component	Year 1	Year 2	Year 3	Total
Savings (MWh)	-	-	-	-
Capacity Savings (MW)	-	-	-	-
Total Resource Cost	\$ 60,000	\$ 60,000	\$ 60,000	\$ 180,000
Direct Participant Costs	\$ -	\$ -	\$ -	\$ -
Direct Utility Costs	\$ 60,000	\$ 60,000	\$ 60,000	\$ 180,000
Customer Incentives	\$ -	\$ -	\$ -	\$ -
CSP Labor	\$ -	\$ -	\$ -	\$ -
CSP Materials and Supplies	\$ -	\$ -	\$ -	\$ -
Communications	\$ 60,000	\$ 60,000	\$ 60,000	\$ 180,000
[Note: Total Resource Cost equals Direct Participant Costs plus Overhead (CSP Labor, CSP Materials and Supplies, and Communications)]				



**SECTION 3: COST EFFECTIVENESS OF PLAN  
AND PROGRAM SUMMARY CHARTS**

UGI Electric designed its Phase II EE&C Plan to offer programs that, as a whole, meet the TRC test. The over Phase II EE&C Plan is cost-effective according to the TRC guidelines established by the Commission.

UGI Electric’s analysis indicates a TRC benefit-to-cost ratio of ~~1.38~~ 1.28 for the proposed Phase II portfolio. The analysis reveals that for the complement of Residential Programs, the TRC Benefit/Cost Ratio is 1.567. The TRC Benefit/Cost Ratio for the Commercial and Industrial Programs is 1.25. This benefit-to-cost ratio is in excess of the 1.0 minimum TRC test parameter applied to the larger EDCs’ EE&C Plans in the Act 129 proceedings. The Program Efficiency Analysis Summary is provided in the table, below.

**Budget and Parity Analysis Summary**

Customer Class	Total Budget (2015-2018)	% of Total EEC Budget
Residential	<del>\$2,890,685</del> <u>\$2,906,885</u>	<del>43.7%</del> <u>43.6%</u>
C&I	<del>\$2,769,105</del> <u>\$2,771,880</u>	41.7%
Program Administration	\$975,000	<del>14.6%</del> <u>14.7%</u>
<b>Total</b>	<del>\$6,634,790</del> <u>\$6,653,765</u>	----- -

**Program Efficiency Analysis  
Summary**

<u>Customer Class</u>	<u>TRC NPV Benefits</u>	<u>TRC NPV Cost</u>	<u>TRC Net Benefits</u>	<u>TRC Benefit/Cost Ratio</u>
<u>Residential</u>	<u>\$ 7,627,019</u>	<u>\$ 4,876,263</u>	<u>\$ 2,750,756</u>	<u>1.56</u>
<u>C&amp;I</u>	<u>\$ 4,512,706</u>	<u>\$ 3,600,420</u>	<u>\$ 912,286</u>	<u>1.25</u>
<u>Internal Staff, Program Setup and Development</u>	<u>\$0</u>	<u>\$975,000</u>	<u>\$(975,000)</u>	<u>"NA"</u>
<u>Total</u>	<u>\$ 12,139,724</u>	<u>\$ 9,451,682</u>	<u>\$ 2,688,042</u>	<u>1.28</u>

**Program Efficiency Analysis Summary**

Customer Class	TRC NPV Benefits	TRC NPV Cost	TRC Net Benefits
Residential	<del>\$ 7,615,612</del> \$22,846,836	<del>\$ 4,857,782</del> \$14,573,349	<del>\$ 2,757,830</del> \$8,273,490
C&I	<del>\$ 4,512,705</del> \$13,538,118	<del>\$ 3,600,419</del> \$10,801,260	<del>\$ 912,286</del> \$2,736,858
Additional Staff, Program Setup and Development	\$0	\$975,000	(\$975,000)
Total	<del>\$ 12,128,318</del> \$36,384,954	<del>\$ 9,433,201</del> \$26,349,609	<del>\$ 2,695,116</del> \$10,035,348

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**SECTION 4: PROGRAM MANAGEMENT  
AND IMPLEMENTATION STRATEGIES**

**A. SUMMARY OF UGI ELECTRIC’S ANTICIPATED MANAGEMENT AND IMPLEMENTATION STRATEGIES**

**1. Description of Types of Services to Be Provided by UGI Electric, as well as Consultants and Conservation Service Providers**

After evaluating program needs and the capacity of UGI Electric’s administrative personnel in Phase I, UGI Electric has transitioned much of the administration of the programs in its Plan to CSPs. CSPs will continue to play an essential role in administering Phase II of the Plan, and UGI Electric will endeavor to keep the same CSPs in administrative management of programs, where appropriate, to maintain continuity and customer satisfaction going forward.

The respective roles of CSPs, trade allies, and market partners were identified in the respective program descriptions in Section 2 of the Phase II EE&C Plan.

**2. Risk Management Strategies**

UGI Electric is aware of the risk factors associated with potential performance of its EE&C Plan. It carefully considered factors such as the uncertainty of customer participation and willingness to undertake conservation measures. The three general categories of risk are: technical, financial, and market.

UGI Electric recognizes that technical risks regarding certain measures may arise from defects in materials or workmanship, improper installation, or equipment failure once implemented. UGI Electric intends to employ quality assurance measures and evaluation, measurement, and valuation processes as part of its EE&C Plan. The EM&V process will aid in identifying technical problems and risks and in pinpointing improvements that may be considered in the annual review process.

Financial risks associated with Plan implementation include the level of Plan costs, including measure and installation costs or administrative costs. UGI Electric anticipates that ongoing monitoring of program activities and expenditures as well as interim adjustments based on current data will aid in mitigating financial risk. The EM&V process will inform the need to adjust or eliminate measures or entire programs as experiences are gained with the implementation of the EE&C Plan. UGI Electric anticipates identifying such changes in its annual reports to the Commission.

Finally, market risks do exist with regard to implementation of the Phase II EE&C Plan, including the ability to have the program reach its intended target markets, the program’s ability to achieve the projected market penetration, and behavioral risks such as free-ridership. Obviously, uncertainties regarding consumers’ willingness to participate in

UGI Electric's Phase II EE&C Plan will impact the success of the entire Plan. As with other risks identified above, the Company's close monitoring of its Phase II EE&C Plan will assist it in detecting and correcting barriers to participation and the need to refocus education efforts to gain greater customer participation, if necessary. UGI Electric anticipates that adjustments may be made to outreach and program education strategies, including adjusting the incentive levels identified presently in the EE&C Plan, changing its portfolio of measures, or reworking the EE&C Plan as a whole.

UGI Electric views the EM&V portion of its Plan as crucial to inform potential Plan adjustments given the risks identified above. The annual review process will be a significant aspect of the EE&C Plan that will drive program changes, as necessary.

### **3. Human Resource and Contractor Resource Staffing Issues**

UGI Electric anticipates that it will utilize CSPs, in large part, to accomplish the goals of its Phase II EE&C Plan. UGI Electric has laid the groundwork to establish relationships with contractors in its service territory and CSPs in order to fully implement the array of programs identified in its EE&C Plan. UGI Electric will continue to utilize an RFP program to find and employ new CSPs as needed. UGI Electric has appropriately incorporated internal administrative costs into its Phase II EE&C Plan budget. The implementation strategy and schedules with regard to each program are detailed in the program descriptions contained in Section 2 of the Plan.

Administrative costs for UGI Electric's Phase II EE&C Plan constitute approximately 15% of the total Plan budget. These costs are in line with other EDCs' comparable claimed administrative costs. These costs were developed based on UGI Electric's best estimate and available information regarding employment of the energy efficiency programs contained in its Plan.

**SECTION 5: QUALITY ASSURANCE, EVALUATION,  
MEASUREMENTS, AND VERIFICATION AND REPORTING**

Particular quality assurance and evaluation, measurements, and verification processes for each program are detailed in the program descriptions in Section 2 of the Plan. Quality control is integral to the design and delivery of all programs in UGI Electric's Phase II EE&C Plan. QC measures will be deployed at various stages of program implementation to ensure the highest standards of operational efficiency. These measures will include, but will not be limited to the following:

- Ongoing tracking of program activities and costs through dedicated UGI Electric employees and various CSPs;
- Applying rigorous screening and qualifying protocols to engaging new CSPs, where needed; and
- Conducting measure verification to prevent and/or identify fraud.

These QC processes will strive to:

- Prevent errors from beginning to end in any given program process;
- Detect and correct errors as early as possible;
- Eliminate the causes of errors as well as the errors themselves; and
- Optimizing UGI Electric's Phase II EE&C Plan based on best practices and lessons learned.

The program CSP, or UGI Electric Staff if no CSP is involved, will track all of the data necessary to audit and verify all program activity outcomes. For each program in the Plan, this data may include, but not be limited to, the following:<sup>17</sup>

- Participant information: account number, rate class, copy of most recent electric bill, copy of most recent natural gas bill, if applicable, EE&C customer segment, and contact information;
- Project information: site (facility) location, project specifications, total project cost, project application date, project approval date, and project completion date;
- Program information: program code, program type (rebate, custom, point of sale, etc.), CSP involved, incentive type, and amount;
- Measure information: make and model number of new appliance, type and quantity of measures installed, efficiency rating, and service rendered;

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<sup>17</sup> Note that not all data will be relevant to all programs.

- Expenditures and energy savings;
- Trade ally information: contact information, dates of program involvement, and installation standards used;
- Retailer information: retail location, contact information, and type and quantity of products sold; and
- New construction information: developer contact information, builder contact information, and confirmation of new account activation (most recent bill).

CSPs shall provide periodic reports to UGI Electric for measurement and verification.

UGI Electric will conduct a self-review on an annual basis and report to the Commission within three months after the end of each program year.

## **SECTION 6: PHASE II ENERGY EFFICIENCY AND CONSERVATION RIDER**

For Phase II, UGI Electric proposes an annual average budget of approximately \$2.5 million, which equates to a maximum of \$7.5 million over the three years of the Plan. The budget includes the annual spending limits for the programs, as well as the Company's annual administrative costs of \$325,000 to implement and administer Phase II of the Plan each year. UGI Electric proposes to limit its annual average spending on EE&C measures to 2% of its jurisdictional revenues for the twelve months ending May 31, 2008, which was approximately \$125.3 million with gross receipts tax (\$125.3 million x 2% = \$2.5 million).

Consistent with the Commission's *Phase II Implementation Order*, UGI Electric proposes a separate Section 1307 mechanism to recover the budgeted costs for administration of Phase II of the Plan, as discussed more fully in Mr. McAllister's Direct Testimony. Phase II EE&C Plan cost recovery will be accomplished utilizing the Phase II Energy Efficiency and Conservation Rider, described more fully below.

Act 129 requires larger EDCs to recover the costs of their EE&C plans through a reconcilable adjustment clause under Section 1307 of the Public Utility Code. *See* 66 Pa. C.S. § 2806.1(k)(1). In its *Phase II Implementation Order*, the Commission reemphasized this requirement and directed EDCs to implement a separate mechanism "designed to recover, on a full and current basis, without interest, from each customer class, all prudent and reasonable EE&C costs that have been assigned to each class." *Phase II Implementation Order*, at p. 118. Consequently, UGI Electric proposes to recover the costs of its Phase II EE&C Plan through a reconcilable Phase II EEC Rider established under Section 1307 of the Public Utility Code, and approved by the Commission in its *Phase II Implementation Order*. The Phase II EEC Rider is reflected in the distribution charges for each customer class rather than appearing as a separate line item on customers' bills.

The costs that will be recovered by the Phase II EEC Rider consist of all the costs of creating, designing, and implementing the Phase II EE&C programs included in the Plan, which include, but are not limited to: (1) labor costs incurred to manage and administer the programs on an ongoing basis; (2) the cost to measure and verify program results; and (3) the cost of incentives offered to customers to participate in the programs.

UGI Electric will recover the expenditures incurred under the Phase II EE&C Plan on a year-to-year basis. As a result, the Phase II EEC Rider was designed to track actual yearly expenditures. Act 129 and the Secretarial Letter require that EE&C programs be supported by the same customer classes that will receive the direct energy and conservation benefits of those programs. 66 Pa. C.S. § 2806.1(a)(11). Accordingly, under UGI Electric's Plan, the cost of Phase II EE&C programs that target specific customer classes are directly assigned to those classes for purposes of developing the recovery charges. UGI Electric will, therefore, continue to separately calculate the applicable EE&C costs and revenues for each of the major customer classes on its system, including: (1) residential; (2) small non-residential; and (3) large non-residential including governmental customers.

The Company will adjust the Phase II EE&C Rider for actual program expenses and revenues each year. UGI Electric also will submit a filing to reconcile previous revenues and expenses and will propose new rates effective for the subsequent year based on the projected budget and sales for that planning year, as well as to account for over and under collections incurred for the previous year.

~~As set forth in its accompanying Petition, if the Commission does not approve UGI Electric's Phase II EE&C Plan prior to the expiration of the Phase I EE&C Plan on May 31, 2015, UGI Electric requests to continue its currently approved Phase I EE&C Plan beyond May 31, 2015, pending approval of the Phase II EE&C Plan. During this interim time period, UGI Electric would continue to track program costs and revenues. UGI Electric would then count the continuation costs toward the budgets established for Plan Year 1 of Phase II. Moreover, the continuation costs would not exceed the program or customer class budgets established for Plan Year 1 of Phase II. UGI Electric also proposes to recover these continuation costs through the proposed Phase II EEC Rider. Alternatively, if the Commission does not approve a continuation of the current Plan or approve the Phase II EE&C Plan by May 31, 2015, UGI Electric will suspend its EE&C programming as of June 1, 2015, until such time as the Commission approves the Phase II EE&C Plan. UGI Electric will continue to recover costs of Plan Year 3 of the current EE&C Plan through its Phase I EEC Rider, as approved by the Commission in the Phase I Order.~~



# **APPENDIX A**

Program/Measure	Measure Life (Years)	Measure Cost	Energy Savings (kWh/year)	Demand Savings (kW)
<b>Residential LED Program</b>				
Residential LED	15	\$ 19.00	37.8	0.00495
Residential LED - LI	15	\$ 19.00	37.8	0.00495
<b>Home Energy Audit Program</b>				
LED	15	\$ 55.80	226.5	0.02970
Aerator	12	\$ 4.00	218.6	0.02900
Smart Strip	10	\$ 33.00	55.5	0.00696
Pipe Wrap	13	\$ 30.00	100.0	0.00800
<b>School Energy Education Program</b>				
LED	15	\$ 9.30	37.8	0.00495
Showerhead	9	\$ 6.00	361.3	0.02900
Aerator	12	\$ 2.00	195.9	0.02600
<b>Residential Appliance Rebates</b>				
CAC-15-SFD	14	\$ 1,319.00	173.0	0.17420
CAC-15-SFA	14	\$ 1,230.23	165.5	0.14300
CAC-15-MF	14	\$ 856.10	163.0	0.08060
CAC-16-SFD	14	\$ 2,499.23	235.0	0.23270
CAC-16-SFA	14	\$ 2,410.41	227.3	0.19370
CAC-16-MF	14	\$ 1,741.19	232.9	0.11700
Clothes Washer	11	\$ 50.00	176.5	0.02118
Room AC	9	\$ 40.00	10.4	0.01830
Thermostat - CAC - SFD	11	\$ 64.00	37.9	0.00000
Thermostat - CAC - SFA	11	\$ 64.00	36.1	0.00000
Thermostat - CAC - MF	11	\$ 64.00	34.8	0.00000
ASHP-15-SFD	12	\$ 1,004.75	176.7	0.03055
ASHP-15-SFA	12	\$ 1,004.75	176.7	0.05330
ASHP-15-MF	12	\$ 781.39	72.3	0.02015
ASHP-16-SFD	12	\$ 1,269.59	450.9	0.05330
ASHP-16-SFA	12	\$ 1,269.59	450.9	0.05330
ASHP-16-MF	12	\$ 1,046.23	160.9	0.03575
MS Ductless-SFD	15	\$ 3,570.80	4,300.5	0.45210
MS Ductless-SFA	15	\$ 2,856.64	3,573.2	0.41520
MS Ductless-MF	15	\$ 1,428.32	1,296.9	0.31185
Thermostat - ASHP - SFD	11	\$ 64.00	293.2	0.00000
Thermostat - ASHP - SFA	11	\$ 64.00	246.7	0.00000
Thermostat - ASHP - MF	11	\$ 64.00	73.8	0.00000
Dishwasher	10	\$ 10.00	26.7	0.00342
Energy Star Refrigerator	12	\$ 32.14	48.8	0.05333
Dehumidifier	12	\$ 20.21	149.9	0.03772
<b>Residential Recycling</b>				
Refrigerator	8	\$ 120.00	1,072.2	0.12000
Freezer	8	\$ 120.00	1,058.1	0.11800
Room A/C	4	\$ 60.00	188.0	0.19200
<b>Residential WH Pilot</b>				
WH Pilot	13	\$ 1,500.00	3,338.0	0.20000
<b>C&amp;I Custom</b>				
C&I Custom	15	\$ 555,000.00	847,000.0	121.00000
<b>C&amp;I HVAC Tune-Up</b>				
Basic Package - No Economizer	3	\$ 100.00	1,686.0	0.00000
Basic Package - Economizer	3	\$ 100.00	1,686.0	0.00000
Refrigerant/Airflow (1 Comp.)	3	\$ 165.00	864.0	0.00000
Refrigerant/Airflow (2 Comp.)	3	\$ 330.00	1,457.0	0.00000
Thermostat Modification	3	\$ 50.00	682.0	0.00000
Economizer Adjustment	3	\$ 200.00	1,674.0	0.00000
Thermostat Replacement	3	\$ 195.00	687.0	0.00000
Economizer Control Package	3	\$ 190.00	1,045.0	0.00000

Program/Measure	Measure Life (Years)	Measure Cost	Energy Savings (kWh/year)	Demand Savings (kW)	Alternate Fuel Avoided Measure Cost	Alternative Fuel Energy Usage (Mcf/year)	Alternative Fuel Demand Increase (Mcf)
Clothes Dryer Direct Use Clothes Dryer Replacement	15	\$ 830.00	1,075	0.123	\$ 600.00	7	0.001
Space Heat Direct Use Space Heat Replacement	15	\$ 4,850.00	5,379	8.754	\$ 3,500.00	40	0.065
Water Heater Direct Use Water Heater Replacement	13	\$ 900.00	3,338	0.381	\$ 800.00	25	0.003
Solar Water Heater Direct Use Water Heater Replacement	13	\$ 900.00	2,106	0.378	\$ 800.00	25	0.003
C&I CHP CHP	15	\$ 160,000.00	406,000	58.000	\$ -	1,843	0.210

Education Program		1			
	TRC Benefits	TRC Costs	Net Benefits	B/C	
Education	\$ -	\$ -	\$ -	0.00	
Education Program	\$ -	\$ 171,092	\$ (171,092)	0.00	
Residential LED Program		2			
	TRC Benefits	TRC Costs	Net Benefits	B/C	
Residential LED	\$ 2,413,621	\$ 1,244,257	\$ 1,169,364	1.94	
Residential LED - LI	\$ 796,062	\$ 410,084	\$ 385,978	1.94	
Residential LED Program	\$ 3,209,683	\$ 1,853,948	\$ 1,355,735	1.73	
Home Energy Audit Program		5			
	TRC Benefits	TRC Costs	Net Benefits	B/C	
LED	\$ 163,883	\$ 41,370	\$ 122,513	3.96	
Aerator	\$ 132,626	\$ 2,966	\$ 129,661	44.72	
Smart Strip	\$ 28,796	\$ 24,466	\$ 4,330	1.18	
Pipe Wrap	\$ 64,730	\$ 22,242	\$ 42,488	2.91	
Thermostat	\$ 34,451	\$ -	\$ 34,451	0	
Home Energy Audit Program	\$ 424,487	\$ 427,730	\$ (3,244)	0.99	
School Energy Education Program		3			
	TRC Benefits	TRC Costs Net	Benefits	B/C	
LED	\$ 99,736	\$ 25,171	\$ 74,565	3.96	
Showerhead	\$ 624,444	\$ 16,239	\$ 608,205	38.45	
Aerator	\$ 434,012	\$ 5,413	\$ 428,599	80.18	
School Energy Education Progra	\$ 1,158,192	\$ 218,696	\$ 939,496	5.3	
Residential Appliance Rebates		26			
	TRC Benefits	TRC Costs	Net Benefits	B/C	
CAC-15-SFD	\$ 3,655	\$ 30,089	\$ (26,434)	0.12	
CAC-15-SFA	\$ 437	\$ 3,508	\$ (3,071)	0.12	
CAC-15-MF	\$ 430	\$ 2,441	\$ (2,011)	0.18	
CAC-16-SFD	\$ 4,965	\$ 57,013	\$ (52,048)	0.09	
CAC-16-SFA	\$ 600	\$ 6,873	\$ (6,273)	0.09	
CAC-16-MF	\$ 615	\$ 4,965	\$ (4,350)	0.12	
Clothes Washer	\$ 76,561	\$ 28,515	\$ 48,046	2.68	
Room AC	\$ 5,198	\$ 31,253	\$ (26,055)	0.17	
Thermostat - CAC - SFD	\$ 2,007	\$ 4,446	\$ (2,439)	0.45	
Thermostat - CAC - SFA	\$ 211	\$ 493	\$ (281)	0.43	
Thermostat - CAC - MF	\$ 204	\$ 493	\$ (289)	0.41	
ASHP-15-SFD	\$ 3,629	\$ 25,214	\$ (21,585)	0.14	
ASHP-15-SFA	\$ 454	\$ 3,152	\$ (2,698)	0.14	
ASHP-15-MF	\$ 186	\$ 2,451	\$ (2,265)	0.08	
ASHP-16-SFD	\$ 9,259	\$ 31,859	\$ (22,600)	0.29	
ASHP-16-SFA	\$ 1,157	\$ 3,982	\$ (2,825)	0.29	
ASHP-16-MF	\$ 413	\$ 3,282	\$ (2,869)	0.13	
MS Ductless-SFD	\$ 191,223	\$ 162,916	\$ 28,307	1.17	
MS Ductless-SFA	\$ 19,861	\$ 16,291	\$ 3,569	1.22	
MS Ductless-MF	\$ 7,210	\$ 8,146	\$ (936)	0.89	

Thermostat - ASHP - SFD	\$	13,479	\$	3,869	\$	9,610	3.48
Thermostat - ASHP - SFA	\$	1,444	\$	493	\$	952	2.93
Thermostat - ASHP - MF	\$	432	\$	493	\$	(61)	0.88
Dishwasher	\$	19,394	\$	10,380	\$	9,015	1.87
Energy Star Refrigerator	\$	66,922	\$	53,731	\$	13,192	1.25
Dehumidifier	\$	34,284	\$	5,645	\$	28,639	6.07
Residential Appliance Rebates	\$	464,231	\$	657,440	\$	(193,209)	0.71

#### Residential Recycling

3

	TRC Benefits	TRC Costs	Net Benefits	B/C
Refrigerator	\$ 660,859	\$ 128,319	\$ 532,540	5.15
Freezer	\$ 652,168	\$ 128,319	\$ 523,849	5.08
Room A/C	\$ 32,971	\$ 34,218	\$ (1,247)	0.96
Residential Recycling	\$ 1,345,998	\$ 518,980	\$ 827,018	2.59

#### Residential WH Pilot Program

1

	TRC Benefits	TRC Costs	Net Benefits	B/C
WH Pilot	\$ 41,551	\$ 21,387	\$ 20,164	1.94
Residential WH Pilot Program	\$ 41,551	\$ 21,387	\$ 20,164	1.94

#### Direct Use

4

	TRC Benefits	TRC Costs	Net Benefits	B/C
Water Heater Replacement	\$ 254,207	\$ 150,297	\$ 103,910	1.69
Solar Water Heater	\$ 5,244	\$ 13,687	\$ (8,444)	0.38
Clothes Dryer Replacement	\$ 187,939	\$ 137,953	\$ 49,987	1.36
Space Heat Replacement	\$ 524,082	\$ 658,057	\$ (133,975)	0.80
Direct Use	\$ 971,472	\$ 988,509	\$ (17,037)	0.98

#### C&I Custom

2

	TRC Benefits	TRC Costs	Net Benefits	B/C
C&I Custom	\$ 2,353,977	\$ 1,582,603	\$ 771,374	1.49
CHP	\$ 1,128,364	\$ 763,045	\$ 365,319	1.48
C&I Custom	\$ 3,482,341	\$ 2,616,544	\$ 865,797	1.33

#### C&I HVAC Tune-Up

8

	TRC Benefits	TRC Costs	Net Benefits	B/C
Basic Package - No Economizer	\$ 101,483	\$ 25,664	\$ 75,820	3.95
Basic Package - Economizer	\$ 101,483	\$ 25,664	\$ 75,820	3.95
Refrigerant/Airflow (1 Comp.)	\$ 52,006	\$ 42,345	\$ 9,660	1.23
Refrigerant/Airflow (2 Comp.)	\$ 43,850	\$ 42,345	\$ 1,504	1.04
Thermostat Modification	\$ 61,576	\$ 19,248	\$ 42,328	3.2
Economizer Adjustment	\$ 72,772	\$ 37,070	\$ 35,702	1.96
Thermostat Replacement	\$ 41,714	\$ 15,569	\$ 26,145	2.68
Economizer Control Package	\$ 2,904	\$ 542	\$ 2,362	5.36
C&I HVAC Tune-Up	\$ 477,788	\$ 467,937	\$ 9,851	1.02

#### Small Commercial Direct Use

4

	TRC Benefits	TRC Costs	Net Benefits	B/C
Water Heater Replacement	\$ 190,655.30	\$ 112,722.70	\$ 77,932.60	1.69

Solar Water Heater	\$	5,243.80	\$	2,566.40	\$	2,677.40	2.04
Clothes Dryer Replacement	\$	32,889.40	\$	24,141.70	\$	8,747.70	1.36
Space Heat Replacement	\$	399,300.30	\$	330,284.60	\$	69,015.70	1.21
Small Commercial Direct Use	\$	628,088.80	\$	526,460.90	\$	101,627.90	1.19