



OKLAHOMA GAS and ELECTRIC COMPANY

2012 Arkansas Energy Efficiency Program Portfolio Annual Report

**Section 9: Annual Reporting Requirements, and Order No. 18 in Docket No. 06-004-R.
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1.0 Executive Summary

Executive Summary

Oklahoma Gas and Electric Company (“OG&E” or “Company”) hereby submits its Energy Efficiency (“EE”) program portfolio Annual Report for Plan Year (“PY”) 2012 to the Arkansas Public Service Commission (“APSC” or “Commission”) pursuant to Order No. 18 in Docket 06-004-R. This report is required to be filed annually by April 1, per Section 9 of the APSC Rules for Conservation and Energy Efficiency Programs.

HISTORY:

OG&E began implementation of Energy Efficiency Programs in Arkansas in December 2007 with its Quick Start Program Portfolio. The Quick Start Program continued through December 31, 2009. That portfolio contained seven programs in total; five OG&E administered programs and two state administered programs. The OG&E administered programs included; Livingwise® Student Energy Education, Residential Energy Audit, Commercial Lighting, Motor Replacement and Compact Fluorescents (“CFL”). The two state administered programs included are the Arkansas Weatherization Program (“AWP”), and the Energy Efficiency Arkansas (“EEA”) program. The CFL program was not launched with the other Quick-Start programs and was ultimately discontinued. The Quick-Start portfolio allowed OG&E to build a framework to deliver programs to over 65,000 customers in the Arkansas jurisdiction.

The initial Comprehensive Energy Efficiency (“CEE”) Portfolio was approved and implemented on February 3, 2010 and ended on June 30, 2011. That CEE portfolio included the continuation of the two statewide programs AWP and EEA, and three OG&E programs; Livingwise® Student Energy Education, Commercial Lighting and Motor Replacement programs. The Residential Energy Audit program was renamed the Custom Energy Report (“CER”) program and the new OG&E Weatherization program was introduced. The OG&E Weatherization program was established to offer weatherization for residential customers that would not otherwise qualify for the AWP.

The current Comprehensive Portfolio was approved on June 30, 2011 for the remainder of PY 2011. The PY’s 2012 and 2013 were subsequently approved on December 30, 2011. The two statewide programs, AWP and EEA, were continued as were OG&E’s Commercial Lighting program and the Livingwise® Student Energy Education program. The CER program was discontinued as an EE program but is still available through OG&E’s website. The OG&E Weatherization program was modified to a collaborative program with Arkansas Oklahoma Gas Corporation (“AOG”) to take advantage of administrative efficiencies and cost sharing. The Motor Replacement Program was incorporated into the new Commercial and Industrial Standard Offer Program (“C&I SOP”). In addition, new programs were created for both residential and nonresidential customers. For residential customers, the HVAC tune-up and duct repair program, the Window Unit A/C program, and the Multi-family program were created to provide a more diverse residential portfolio of programs. After the plan was approved, it was determined the Multi-family program could not be implemented as designed and was discontinued. For nonresidential customers, in addition to the C&I SOP, the Commercial Tune-up program was created to inspect and tune commercial HVAC systems.

The following table summarizes historical EE savings achieved by OG&E’s previous efforts:

	<u>Energy</u>	<u>Demand</u>
PY 2008	2,434,738 kWh	665.9 kW
PY 2009	5,607,951 kWh	921.3 kW
PY 2010	4,143,096 kWh	1,317.1 kW
PY 2011	4,985,328 kWh	1,520.2 kW

GOALS AND OBJECTIVES:

Order No. 15 in Docket 08-137-U established default energy savings goals as a percent of 2010 energy sales. The annual energy savings goals are shown in the following table.

<u>Program Year</u>	<u>Percent of 2010 Sales</u>	<u>Energy Savings Goals</u>
PY 2011	0.25	6,752,758 kWh
PY 2012	0.50	11,363,560 kWh
PY 2013	0.75	16,843,560 kWh

OG&E's energy savings goal for 2012 was 11,363,560 kWh or 0.5% of 2010 weather normalized sales as adjusted for self-direct exemptions. The 2012 EE portfolio actual results achieved for energy savings were 7,595,741 kWh.

MAJOR ACCOMPLISHMENTS:

The collaborative Weatherization Program with AOG was very successful and exceeded energy savings targets in 2012. The program has gained acceptance and momentum through word of mouth marketing from customers of both OG&E and AOG. Customer surveys indicate a very high level of satisfaction with the program. In six of the ten survey categories, ninety percent of customers were very satisfied or somewhat satisfied with the program. During the summer a third weatherization contractor was hired due to customer demand for the program. The success of the collaborative program was recognized by the Commission and OG&E was asked to give a presentation at a meeting of the Parties Working Collaboratively ("PWC").

In February 2012, the Company hired and trained an additional employee to manage its residential programs. In the summer of 2012, OG&E added a full time EM&V Specialist to work with the PWC and EM&V contractors. The addition of these two positions will free up the existing Program Manager in Ft. Smith to devote full time to the C&I Programs in 2013.

PROGRESS ACHIEVED:

The 2012 OG&E portfolio increased energy savings 52% over 2011. While the increase in performance was positive it did not keep pace with the increased energy savings target. The residential programs more than doubled savings and the commercial and industrial programs increased by ten percent. While the increase in savings was encouraging, OG&E only achieved 67% of the 2012 target, compared to 74% of target in 2011.

HIGH-LEVEL RECAP:

The 2012 portfolio produced 7,595,741 kWh or 67% of the energy savings goal. These on-going energy savings will accumulate over the life of the measures. The EE Program recoverable expenses of

\$3,030,641 for 2012 were 86% of the approved annual budget of \$3,524,157. Customer incentives and rebates account for 68% of the total program expenses.

HIGHLIGHTS OF WELL PERFORMING PROGRAMS:

OG&E achieved 108% of its 2012 residential goal. This is a significant increase over 2011 when only 59% of the residential portfolio goal was achieved. The primary driver of 2012 success is the OG&E/AOG Weatherization Program. During 2012, OG&E weatherized 1,631 homes, representing 7% of its residential customers in Arkansas. This program performed very well in 2012 and accounted for 86% of OG&E's residential portfolio energy savings.

The Student Energy Education program partnered with nine school districts where 1,817 sixth graders received Livingwise® kits and were educated on energy efficiency and conservation principles. The SEE program exceeded its energy savings target in 2012. This program continues to be well received by both students and teachers.

WHAT'S WORKING, WHAT'S NOT:

The residential portfolio of EE programs is working well. OG&E is reaching energy savings targets within its budgets and has successfully enhanced operating procedures. The current EM&V reports validate the impact and process success of OG&E's residential programs.

The C&I programs continue to have challenges in meeting expected energy savings. OG&E's marketing and sales efforts have not effectively penetrated the C&I customer base. In addition, the processes in place to document projects and calculate savings were not in total compliance with the updated TRM Version 2.0.

The Commercial Lighting Program achieved expected energy savings per project; however, it did not reach adequate participation levels to meet energy savings targets. The new C&I programs, Commercial Tune-Up and C&I SOP met planned participation levels, however, the size of the projects were much smaller than anticipated and the actual energy savings per project were well below expectations.

PLANNED CHANGES:

The Company realizes that it has not made consistent progress in meeting its targets in some areas. To address these issues, OG&E will dedicate one person to work specifically with its C&I programs. This will facilitate more customer and vendor contacts increasing program awareness. Increased direct mailings and targeted advertising to C&I customers will be initiated. OG&E is currently addressing TRM 2.0 compliance issues and putting more emphasis on its documentation processes. In addition, OG&E has created an internal team to identify strategies to secure energy savings to meet the increasing targets. This team will review best practices to enhance existing C&I programs and identify opportunities for new programs.

TRAINING ACHIEVEMENTS:

OG&E provided training to approximately 635 individuals in 2012. The training included weatherization contractors and crews, hosting seminars to explain how the residential program works and educating the commercial and industrial customers on the benefits of energy efficient lighting.

EM&V ACTIVITIES:

EnerNOC Utility Solutions was selected to perform the EM&V for all of the Energy Efficiency programs in the portfolio except the AWP and the OGE/AOG Weatherization program. ADM Associates, Inc. performs the EM&V for both the AWP and the OGE/AOG Weatherization Program. Using the same contractor for both weatherization programs ensures consistency in evaluation. For PY 2012 both EM&V contractors performed process and impact evaluations of the programs delivering measure by measure evaluated net savings. The three EM&V reports detail their finding and are in the appendix of this annual report.

LONG-TERM ENERGY SAVINGS:

The current program portfolio was developed to meet the energy efficiency targets established by the APSC in Order No.15 in Docket 08-137-U. The expected kW and kWh savings delivered by this portfolio, estimated kW and kWh savings from future portfolios and the cumulative kW and kWh savings from previous portfolios, are included in the Company's Load forecast. The IRP incorporates this information in its planning report.

EE OVERVIEW:

The following three tables provide an overview of the EE portfolio results for PY 2012:

Oklahoma Gas & Electric Company 07-075-TF EE Portfolio Summary by Program					
Program Name	Program Type	Market	2012		% of RBudget
			RBudget (\$)	Actual (\$)	
Weatherization	Weatherization	Res (All)	2,324,460	2,324,406	100%
Student Energy Efficiency LivingWise®	Public Education	Res (All)	82,353	82,273	100%
Custom Energy Report	Energy Audit or Evaluation	Res (All)	0	0	-
Commercial Lighting	Lighting	Small C&I (All)	316,331	278,078	88%
Commercial Motors	Motors, Pumps	Large C&I (All)	0	0	-
Energy Efficiency AR (Collaborative)	Public Education	Res / C&I (All)	25,977	25,929	100%
HVAC Tune Up & Duct Repair	HVAC Inspection or Tune-up	Res (All)	155,976	155,976	100%
Window Unit A/C	HVAC	Res (All)	12,065	4,311	36%
Commercial Tune-Up	HVAC Inspection or Tune-up	Small C&I (All)	127,323	73,038	57%
C&I Standard Offer Program	Standard Offer	Large C&I (All)	326,284	184,692	57%
Multi-Family	HVAC	Res (Multi-family)	0	0	-
AWP Weatherization	Weatherization	Res (Single-Family)	78,388	66,767	85%
Regulatory	-	-	75,000	60,040	80%
		Total	3,524,157	3,255,512	92%

EE Portfolio Summary by Cost Type

EE Program Cost Summary		2012 Total Cost			
Type		% of Total	RBudget (\$)	Actual (\$)	% of Total
Planning / Design		1%	20,308	0	0%
Marketing & Delivery		4%	154,561	275,198	8%
Incentives / Rebates		83%	2,911,401	2,214,622	68%
Evaluation, Measurement, and Verification		7%	250,000	210,475	6%
Administration		3%	112,887	495,176	15%
Regulatory		2%	75,000	60,040	2%
Total		100%	3,524,157	3,255,512	100%

Company Statistics

Program Year	Revenue and Expense					Energy				
	Total Revenue (a) (\$000's)	RBudget		Actual		Total Annual Energy Sales (d) MWh	Plan		Evaluated	
		EE Portfolio Spending (b) (\$000's)	Spending as % of Revenue (% = b/a)	EE Portfolio Spending (c) (\$000's)	Spending as % of Revenue (% = c/a)		EE Net Annual Energy Savings (e) MWh	Savings as % of Energy Sales (% = e/d)	EE Net Annual Energy Savings (e) MWh	Savings as % of Energy Sales (% = f/d)
2008	\$ 165,932	\$ 385	0.2%	\$ 322	0.2%	2,739,412	1,985	0.07%	2,435	0.09%
2009	\$ 140,287	\$ 421	0.3%	\$ 352	0.3%	2,558,917	3,971	0.16%	5,608	0.22%
2010	\$ 176,717	\$ 1,364	0.8%	\$ 1,305	0.7%	2,837,921	2,667	0.09%	4,143	0.15%
2011	\$ 180,406	\$ 2,680	1.5%	\$ 2,172	1.2%	2,802,634	6,991	0.25%	4,985	0.18%
2012	\$ 167,615	\$ 3,524	2.1%	\$ 3,256	1.9%	2,743,246	14,145	0.5%	7,596	0.28%

NOTE: This schedule should report program year data, when available. This schedule should not report forecasted data.
 Total revenue and total annual energy sales modified to reflect FERC Form AR Supplement Line 10 for "Total Sales to Ultimate Consumers".

2.0 Portfolio Impact

2.1 Annual Program Costs

Annual Program Cost									
RBudget (\$)	2010			2011			2012		
	RBudget (\$)	Actual (\$)	% of RBudget	RBudget (\$)	Actual (\$)	% of RBudget	RBudget (\$)	Actual (\$)	% of RBudget
Program Name									
Weatherization	1,129,500	1,103,808	98%	1,964,321	1,645,000	84%	2,324,460	2,324,406	100%
Student Energy Efficiency LivingWise®	61,000	49,405	81%	87,963	74,373	85%	82,353	82,273	100%
Custom Energy Report	7,000	61	1%	3,500	646	18%	0	0	-
Commercial Lighting	55,440	38,104	69%	118,763	66,689	56%	316,331	278,078	88%
Commercial Motors	7,500	11,244	150%	4,250	2,025	48%	0	0	-
Energy Efficiency AR (Collaborative)	32,045	30,950	97%	39,319	24,435	62%	25,977	25,929	100%
HVAC Tune Up & Duct Repair	0	0	-	35,443	11,442	32%	155,976	155,976	100%
Window Unit A/C	0	0	-	6,460	402	6%	12,065	4,311	36%
Commercial Tune-Up	0	0	-	50,884	6,370	13%	127,323	73,038	57%
C&I Standard Offer Program	0	0	-	141,589	109,419	77%	326,284	184,692	57%
Multi-Family	0	0	-	37,778	0	0%	0	0	-
AWP Weatherization	72,000	72,000	100%	114,582	130,358	114%	78,388	66,767	85%
Regulatory	0	0	-	75,000	0	0%	75,000	60,040	80%
Total	1,364,485	1,305,572	96%	2,679,852	2,071,159	77%	3,524,157	3,255,512	92%

2.2 Net Annual Savings (Energy & Demand)

Net Annual Savings (Energy & Demand)									
ENERGY kWh	2010			2011			2012		
	Energy Savings			Energy Savings			Energy Savings		
	kWh		% of Plan	kWh		% of Plan	kWh		% of Plan
	Plan	Evaluated		Plan	Evaluated		Plan	Evaluated	
Weatherization	1,557,324	1,994,946	128%	2,721,699	1,595,413	59%	2,994,261	3,638,503	122%
Student Energy Efficiency LivingWise®	115,850	700,216	604%	160,441	46,227	29%	152,120	291,628	192%
Custom Energy Report	168,067	17,864	11%	84,034	6,406	8%	0	0	-
Commercial Lighting	1,125,058	1,255,193	112%	1,797,729	1,531,936	85%	5,238,456	2,725,963	52%
Commercial Motors	63,219	174,887	277%	37,931	424,220	1118%	0	0	-
Energy Efficiency AR (Collaborative)	0	0	-	0	0	-	0	0	-
HVAC Tune Up & Duct Repair	0	0	-	43,720	17,049	39%	229,025	214,632	94%
Window Unit A/C	0	0	-	1,260	206	16%	2,423	2,161	89%
Commercial Tune-Up	0	0	-	227,991	20,845	9%	759,969	26,059	3%
C&I Standard Offer Program	0	0	-	1,688,328	1,080,273	64%	4,246,188	619,897	15%
Multi-Family	0	0	-	27,655	0	0%	0	0	-
AWP Weatherization	0	0	-	205,519	232,805	113%	522,485	76,898	15%
Total	3,029,518	4,143,106	137%	6,996,307	4,955,380	71%	14,144,927	7,595,741	54%

DEMAND kW	2010			2011			2012		
	Demand Savings			Demand Savings			Demand Savings		
	kW		% of Plan	kW		% of Plan	kW		% of Plan
	Plan	Evaluated		Plan	Evaluated		Plan	Evaluated	
Weatherization	611.0	782.2	128%	642.0	544.2	85%	515.8	1,006.0	195%
Student Energy Efficiency LivingWise®	11.0	63.6	578%	15.3	4.0	26%	15.2	36.1	237%
Custom Energy Report	55.0	5.8	11%	27.0	2.1	8%	0.0	0.0	-
Commercial Lighting	280.0	440.5	157%	451.0	413.3	92%	1,323.0	512.0	39%
Commercial Motors	13.0	25.1	193%	8.0	69.4	868%	0.0	0.0	-
Energy Efficiency AR (Collaborative)	0.0	0.0	-	0.0	0.0	-	0.0	0.0	-
HVAC Tune Up & Duct Repair	0.0	0.0	-	29.4	8.7	29%	154.5	96.8	63%
Window Unit A/C	0.0	0.0	-	1.1	0.2	15%	2.1	1.8	88%
Commercial Tune-Up	0.0	0.0	-	33.0	10.4	32%	112.0	21.8	19%
C&I Standard Offer Program	0.0	0.0	-	402.4	349.0	87%	1,140.9	154.0	13%
Multi-Family	0.0	0.0	-	13.0	0.0	0%	0.0	0.0	-
AWP Weatherization	0.0	0.0	-	27.0	114.6	425%	69.0	12.1	17%
Total	970.0	1,317.1	136%	1,649.2	1,515.8	92%	3,332.5	1,840.6	55%

Note:

- 1) 2010 kWh Savings has been replaced with annual kWh savings from the 2011 report which included lifetime savings of kWh.
- 2) 2011 Student Energy Education kW & kWh changed from 2011 Annual Report to reflect low end of Evaluated EM&V figures.

2.3 Methodology for Calculating Energy Savings

Methodology for Calculating Energy Savings							
Program Name	Total Savings	Deemed Savings		Custom Savings		Other Savings	
	Net Energy Savings	Net Energy Savings	% of a	Net Energy Savings	% of a	Net Energy Savings	% of a
	(a)	(b)		(c)		(d)	
	kWh	kWh		kWh		kWh	
Weatherization	3,638,503	3,638,503	100.0%	0	0.0%	0	0.0%
Student Energy Efficiency LivingWise®	291,628	291,628	100.0%	0	0.0%	0	0.0%
Custom Energy Report	0	0	-	0	-	0	-
Commercial Lighting	2,725,963	2,725,963	100.0%	0	0.0%	0	0.0%
Commercial Motors	0	0	-	0	-	0	-
Energy Efficiency AR (Collaborative)	0	0	-	0	-	0	-
HVAC Tune Up & Duct Repair	214,632	214,632	100.0%	0	0.0%	0	0.0%
Window Unit A/C	2,161	2,161	100.0%	0	0.0%	0	0.0%
Commercial Tune-Up	26,059	26,059	100.0%	0	0.0%	0	0.0%
C&I Standard Offer Program	619,897	619,897	100.0%	0	0.0%	0	0.0%
Multi-Family	0	0	-	0	-	0	-
AWP Weatherization	76,898	76,898	100.0%	0	0.0%	0	0.0%
Total Portfolio:	7,595,741	7,595,741	100.0%	0	0.0%	0	0.0%

3.0 Portfolio Programs

Program Overview

OG&E has developed energy efficiency programs to help customers manage their energy usage and to reduce load during periods of high peak demand. The programs allow OG&E the ability to alleviate potential power shortages and achieve energy savings by enabling customers to change their behavior, attitudes, awareness and knowledge about energy savings and the use of energy efficient technologies.

By implementing energy efficiency programs, demand for electricity will decrease which in turn avoids emissions that would otherwise be produced by increased power generation. Energy efficiency programs have the potential to significantly reduce the effect power generation has on the environment by reducing pollutants emitted during the process of generating electricity. These energy efficiency programs decrease electric demand for generation which reduces emissions.

All customer classes may benefit from energy efficiency programs. Hard-to-reach residential customers benefit by keeping more of their disposable income, maintaining the same quality of lifestyle and adopting a more energy efficient philosophy. Energy efficiency programs lower operating costs and enable the efficient use of energy throughout all customer classes. With lower operating costs and enhanced productivity, Arkansas businesses remain competitive in the global economy and avoid the outsourcing of jobs and services.

3.1 OG&E Weatherization Program

3.1.1 Program Description

Designed to target residential customers and allow them to participate in the program for free, this program allows customers the opportunity to participate in managing their energy costs and begin participating in the price response tariffs. The program targets all residential customers of single family homes which were built before 1997, specifically those that are severely energy inefficient. The program is designed to upgrade and improve the thermal envelope of the dwelling and the use of energy efficient appliances. Homes in all of the OG&E service territory were targeted to participate by having an energy audit performed utilizing blower door technology on the structure to capitalize on specific weatherization techniques.

OG&E serves more than 54,000 residential customers in Arkansas and has estimated there are as many as 30,000 homes in need of weatherization improvements. OG&E views the Weatherization Program as a key component in the EE area, and uses three independent contractors: DK Construction, based in Van Buren (Crawford County), Total Home Efficiency, based in south Fort Smith (Sebastian County) and Williams Energy Efficiency, based in Barling (East Sebastian County). The contractors received over 20 hours of training on weatherization techniques. Each contractor has certified Building Performance Institute (“BPI”) and RESNET auditors on staff. OG&E personnel also conducted in-the-field training throughout the course of the program which will continue throughout the remainder of the existing program. Some of the cost effective and energy saving equipment that was installed in the homes include: replacement of glass, and or windows, doors, ground cover for vapor barrier, compact fluorescent lighting, return air cavity sealing, CO detectors, and smoke detectors. Utilizing blower door technology the contractors were able to locate and seal larger areas of air infiltration on the homes. Contractors are encouraged to attend and receive additional education on weatherization of homes, both online and in classrooms, for improvement in proper home weatherization techniques. Additional training is recommended for National Certifications for each of the contractors.

The partnership with Arkansas Oklahoma Gas Corporation (“AOG”) has proved to be successful in the joint weatherization program. The ability to work together with other utilities is an ongoing effort to combine resources as well as to reach out to more customers in our adjoining market place. OG&E and AOG continued to work in an atmosphere of transparency with the existing contractors already in the program while OG&E recruited an additional contractor to help relieve the stress of the summer time heat for the existing contractors. OG&E and AOG, along with the efforts of Frontier Associates, continue to fine tune the software package to meet the criteria of the TRM put in place by the Arkansas Public Service Commission. The improvements were to help insure the software would capture more accurate field data as well as a split payment process for each of the utilities to pay the individual contractors assigned to the program. The contractors continued to weatherize homes even during another hot summer allowing OG&E customers to receive the rewards and benefits of maintaining or reducing their overall utility bills while increasing their comfort in the home.

3.1.2 Program Highlights

- Civic and community presentations highlighting the program were conducted throughout each town served by OG&E promoting the Weatherization Program.
- OG&E achieved 122% of planned energy savings.
- OG&E weatherized 1,631 home in 2012 (101% of plan).

3.1.3 Program Budget, Savings and Number of Measures

Weatherization											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$1,129,500	\$1,103,808	98%	611	1,557,324	782	1,994,946	128%	128%	500	699	140%
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$1,964,321	\$1,645,000	84%	642	2,721,699	544	1,595,413	85%	59%	1,300	953	73%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$2,324,460	\$2,324,406	100%	516	2,994,261	1,006	3,638,503	195%	122%	1,620	1,631	101%
3 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2010 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$1,806,094	\$1,691,071	94%	590	2,424,428	777	2,409,621	132%	99%	1,140	1,094	96%

*Net Annual Savings

3.1.4 Program Events and Training

Highlights of Events:

- Training events that included updates and additional weatherization techniques were held for contractors throughout the year.
- All of the OG&E and AOG contractors now have certified RESNET raters and/or BPI certified personnel on their staff.
- Civic and community presentations promoting the OG&E Weatherization Program were conducted throughout various towns served by OG&E.
- OG&E audited homes on a monthly basis for completion, proper application, and verification of work performed through program.

Program and Member Certification:

- Ryan Lee attended Building Performance Institute for field auditor certification.
- Robin Arnold is RESNET certified HERS home Rater.

3.1.5 Savings

- kW and Kwh savings were calculated using the TRM values applied through the EnerTrek software program by Frontier & Associates.
- Program Data was evaluated by ADM Associates for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- The OG&E Weatherization Program weatherized 1631 homes in 2012. This resulted in an annual energy (kWh) net savings of 3,638,503 and demand (kW) net savings of 1,006.
- OG&E weatherized 1631 homes for an average of 2,231kWh per residence and .62 kW per home.

3.1.6 Challenges and Opportunities

- Working in conjunction with the Community Clearinghouse, OG&E has been able to maintain a steady pace in obtaining and qualifying customers' homes in a timely manner for weatherization. As OG&E evaluated the opportunity to complete the desired number of homes in this program, the need was present to bring an additional contractor on in June 2012. With the assistance of this contractor, OG&E was able to meet its goal on homes weatherized.

3.1.7 Outlook for Continuation, Expansion, Reduction or Termination

- The OG&E Weatherization Program showed growth by performing more audits in 2012 than the prior months of the Quick Start Program and the Comprehensive Energy Efficiency Program. Using the Quick Start to launch this program showed that the program will be able to provide good opportunities for 2011-2013.

3.1.8 Planned or Proposed Changes to Program and Budget

- This Comprehensive program ended on June 30, 2011 and a new Energy Efficiency Program was approved on June 30, 2011 for the program years 2011-2013. The program was enhanced to include duplexes, condos, rental property or any residential customer in the Arkansas Territory. OG&E plans on exceeding the overall program goals for weatherization by performing an additional 3240 homes by the end of the 2014.

3.2 Student Energy Education Program (LivingWise®)

3.2.1 Program Description

The program provides 6th grade teachers and their students a curriculum on home energy efficiency. At the end of the curriculum a LivingWise® education kit provides the students the opportunity to participate with their families on energy awareness. LivingWise® education kit contains a CFL, air filter alarm, aerator, low-flow shower head, LED night light, thermometer and a student handbook on energy efficiency for the home and community. The students take the LivingWise® kit home and install the energy efficiency measures with the assistance of their parents.

OG&E agreed to provide a list of schools each semester to Resource Action Programs (RAP) for potential participation in the LivingWise® Program. RAP contacts the school, enrolls the teacher and quantifies the number of students. A list of enrolled schools and participation information is sent to OG&E each month. There was an overwhelming consensus from all participating teachers that it was an informative and easy curriculum and each teacher felt that with the uncertain environmental and energy situation, the teaching materials were both timely and important.

The selection process for LivingWise® begins with a list of potential elementary public schools for 6th grade classes that OG&E sends to LivingWise®. This is a turn-key program, where the following services are performed by LivingWise®:

- Contact the school
- Verify school address
- Speak with the teacher(s)
- Produce and mail the required number of kits for students and teachers
- Follow up with teachers on the class participation during the curriculum and then on the activities provided in the kit for the students to take home and interact with their parents.

3.2.2 Program Highlights

- The LivingWise® Program provided Energy Efficiency and Awareness training for 1,817 students from January 2012 through December 31, 2012, targeting 9 school districts in Arkansas.
- 59% of all eligible students participated in the program.
- Created OG&E customized box to improve the generic look for the LivingWise® Kits.
- OG&E utilized Community Coordinators along with key contact personnel for promotion of the program.

A report is then submitted to OG&E at the end of each semester detailing the activity, the results and the participation level and acceptance of the program.

- OG&E has had a 100% return rate from teachers responding to the follow-up surveys.

3.2.3 Program Budget, Savings and Number of Measures

Student Energy Efficiency LivingWise®											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$61,000	\$49,405	81%	11	115,850	64	700,216	578%	604%	1,200	1,199	100%
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$87,963	\$74,373	85%	15	160,441	4	46,227	26%	29%	1,840	1,813	99%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$82,353	\$82,273	100%	15	152,120	36	291,628	237%	192%	1,840	1,817	99%
3 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2010 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$77,105	\$68,684	89%	14	142,804	35	346,024	250%	242%	1,627	1,610	99%

*Net Annual Savings

3.2.4 Program Events and Timing

Sample of Events:

- None

3.2.5 Savings

- kW and kWh gross savings for the LivingWise[®] Kit were calculated in compliance with TRM 2 algorithms.
- Program Data was evaluated by EnerNOC for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- OG&E provided 1,817 kits to 6th Grade students for an annual kWh net savings of 291,628 and net demand savings of 36 kW.

3.2.6 Challenges and Opportunities:

- OG&E's success with this program has been through key contacts in each of the school districts. Each of the participating schools within the OG&E territory have embraced the concept and curriculum provided through Resource Actions.

3.2.7 Outlook for Continuation, Expansion, Reduction or Termination:

- OG&E will continue the LivingWise[®] curriculum through the 2013 program year with no major changes.

3.2.8 Planned or Proposed Changes to Program and Budget:

- This Comprehensive program ended on June 30, 2011 and a new Energy Efficiency Program was approved on June 30, 2011 for the program years 2011-2013. OG&E plans to continue its support for the Student Energy Education Program.

3.3 Custom Energy Report (CER) Program

3.3.1 Program Description:

The Custom Energy Report (CER) is a self-guided on-line home energy audit offered through the OG&E website. Customers are prompted to input items pertaining to the appliances and energy consuming devices (i.e. ceiling insulation, windows, doors, direction of home, number of individuals living in home, appliances, etc.) in their home. Upon completion of the survey, the customer will receive an e-mail of their personalized energy report providing analysis and recommendations on how to save energy.

This report is specific to the customer's house, living styles and choices. The energy savings tips are customized to their individual criteria and needs. Recommendations are provided that will direct the customer (in order of highest savings opportunities) on ways to save energy.

The goal of the CER is to aid residential customers in improving comfort while lowering energy costs in their homes. A mailed energy survey or online survey provides a personalized report showing where the home uses energy and recommends actions for saving energy. The report also includes a 12-month comparison of electricity use, energy costs and the trend for costs and breakdown of electricity used. The report is free of charge to OG&E customers.

Marketing efforts included direct mailings, media coverage, and OG&E website promotion.

Direct Options is the program administrator. They mail the surveys, receive the responses and prepare the report for OG&E residential customers.

3.3.2 Program Highlights:

- CER was discontinued as an Energy Efficiency Program in June 2011.

3.3.3 Program Budget, Savings and Number of Measures:

Custom Energy Report										
2010			Plan Savings		Evaluated Savings		% of Plan		2010	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$7,000	\$61	1%	55	168,067	6	17,864	11%	11%	500	697
2011			Plan Savings		Evaluated Savings		% of Plan		2011	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$3,500	\$646	18%	27	84,034	2	6,406	8%	8%	250	43
2012			Plan Savings		Evaluated Savings		% of Plan		2012	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a
2 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2011 - 2012	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$5,250	\$354	7%	41	126,051	4	12,135	10%	10%	375	370

*Net Annual Savings

3.3.4 Program Events and Training:

- <http://www.oge.com/residential-customers/save-energy-and-money/EnergyEfficiency/Pages/CEROpenWP.aspx>

3.3.5 Savings:

- No kW and kWh was claimed for the CER Program in 2012

3.3.6 Challenges and Opportunities:

- CER Program requires the customer to have internet access to perform the online energy audit. Customers must have a basic understanding of home energy usage and how to apply these assumptions in the model in order to receive a valuable audit.

3.3.7 Outlook for Continuation, Expansion, Reduction or Termination:

- N/A

3.3.8 Planned or Proposed Changes to Program and Budget:

- N/A

3.4 Commercial Lighting Program

3.4.1 Program Description

The purpose of the Commercial Lighting Program is to provide incentives to the OG&E Commercial and Industrial customers during change outs. The program targets commercial, public authority and industrial facilities of all sizes with a focus on the small to medium-sized facilities, where saturation rates and awareness levels of high efficiency lighting are expected to be lower than in larger operations. To encourage commercial customers to participate, incentives are offered for the following upgrades; T-12 to T-8 or T-5 lamps, upgrading HID to high efficiency T-8, or T-5's, installation of sensors, LED exit lighting, incandescent lighting to CFL's or the upgrade of parking lot lighting. The new program also encourages new construction to upgrade their lighting utilizing the 2006 IECC code for standards and guidelines. Incentives were based on lamp replacement or kW reduced on the structure.

The Energy Efficiency Lighting Program was designed to reach existing customers including large school districts, commercial, and industrial complexes. OG&E personnel continued to recruit and educate commercial customers on the advantages of upgrading their lighting systems, through educational seminars and booth displays at local vendor open houses. OG&E personnel utilized many different avenues and strategies to help entice customers to upgrade the lighting in each of the business including working with lighting manufacture representatives, conducting walk through audits and detailed audits.. The program is very well received with the incentives allowing for quicker payback on the lighting and enhanced lighting levels in their facilities. More of the commercial customers took advantage of the rebate while educating themselves on the benefits of more efficient lighting and controls.

3.4.2 Program Highlights

- Presentations were made at supply and distributor warehouses throughout the year.
- Civic and community presentations highlighting the program were conducted throughout each town served by OG&E promoting the lighting program.

3.4.3 Program Budget, Savings and Number of Measures:

Commercial Lighting											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$55,440	\$38,104	69%	280	1,125,058	440	1,255,193	157%	112%	15	23	153%
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$118,763	\$66,689	56%	451	1,797,729	413	1,531,936	92%	85%	35	24	69%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$316,331	\$278,078	88%	1,323	5,238,456	512	2,725,963	39%	52%	125	66	53%
3 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2010 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$163,511	\$127,624	78%	685	2,720,414	455	1,837,697	66%	68%	58	38	65%

*Net Annual Savings

3.4.4 Program Events and Training

Highlights of Events:

- OG&E conducted training events at Lighting Distributor warehouses in the Fort Smith area.
- Civic and community presentations promoting the OG&E Lighting Program were conducted throughout various towns served by OG&E.
- OG&E audited the lighting installations for completion, proper application, and verification of work performed through program.

3.4.5 Savings

- kW and kWh gross savings were calculated for each project using basic engineering formulas applied to pre and post lighting specifications.
- Program Data was evaluated by EnerNOC for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- The OG&E Commercial Lighting Program had 66 participants in 2012. This resulted in an annual energy net (kWh) savings of 2,725,963 and demand net (kW) savings of 512.

3.4.6 Challenges and Opportunities

- Notification of distributors and contractor on program advantages and opportunities.
- DOE regulations.

3.4.7 Outlook for Continuation, Expansion, Reduction or Termination

- OG&E plans to continue Energy Efficiency Commercial Lighting Program the program years approved by the Arkansas Public Service Commission. No plans for expansion are anticipated at this time.

3.4.8 Planned or Proposed Changes to Program and Budget

- OG&E plans to spend the approved budgeted amount and does not anticipate any changes to the goals or budget.

3.5 Motor Replacement Program

3.5.1 Program Description:

The program, which targets commercial and industrial customers and motor distributors, is designed to educate customers and motor distributors about the operating cost benefits of high efficiency motors and also provide an incentive to purchase such motors.

The OG&E Motor Replacement Program targeted commercial and industrial customers on the benefits of high efficiency motor replacements. This program was well received in the market place for the first half of 2011. OG&E paid \$5 per horsepower on NEMA Premium standards on 10 to 100 Horsepower upgrades.

3.5.2 Program Highlights:

- This program moved to C&I Standard Offer Program and not offered as a standalone program in 2012.

3.5.3 Program Budget, Savings and Number of Measures:

Commercial Motors											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$7,500	\$11,244	150%	13	63,219	25	174,887	193%	277%	25	21	84%
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$4,250	\$2,025	48%	8	37,931	69	424,220	868%	1118%	15	10	67%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a	-
2 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2011 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$5,875	\$6,635	113%	11	50,575	47	299,554	450%	592%	20	16	78%

*Net Annual Savings

3.5.4 Program Events and Training:

- N/A

3.5.5 Savings:

- No kW and kWh savings were claimed under the Motor Replacement Program in 2012.

3.5.6 Challenges and Opportunities:

- N/A

3.5.7 Outlook for Continuation, Expansion, Reduction or Termination:

- N/A

3.5.8 Planned or Proposed Changes to Program and Budget:

- N/A

3.6 Energy Efficiency Education Program

3.6.1 Program Description:

The Energy Efficiency Education Program provides information to all customers, of all classes, allowing them to make informed decisions about how they use energy and to look at alternatives to improve their consumption, thereby decreasing demand and energy usage.

OG&E has continued its support of the EEA Comprehensive Plan through three components: 1) Residential Education and Information Outreach; 2) Media Promotion; 3) Commercial and Industrial Education and Outreach, provided by the Arkansas Energy Office.

The Arkansas Energy Office (“AEO”) administered the collaborative efforts of the Arkansas utilities educational profile in training opportunities. The AEO also provided educational pamphlets, DVDs, and training materials to homeowners throughout the OG&E service territory. Multiple classes were held throughout the State of Arkansas on residential, commercial, and industrial energy efficient usage and design. Area industry plant engineers as well as CEOs, CFOs, and purchasing agents were updated on techniques of how to manage energy consumption in their plants. Courses on Refrigeration and Compressed Air were held in the Fort Smith area to update individual businesses on energy efficiency operations within the industrial segment.

3.6.2 Program Highlights:

- The Arkansas Energy office provides various methods of reaching all classifications of OG&E customers through radio, print, and seminars.
- The Arkansas Energy office offered training through Arkansas Manufacturing Solutions throughout the year in the OG&E territory.
- Additional information is submitted by the Arkansas Energy Office annual report.
- Comprehensive Program began February 3, 2010 and ended on June 30, 2011. The Energy Efficiency Program began on July 1, 2011 and continues on through December 2013.

3.6.3 Program Budget, Savings and Number of Measures:

Energy Efficiency AR (Collaborative)											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$32,045	\$30,950	97%	n/a	0	n/a	0	-	-	0	0	-
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$39,319	\$24,435	62%	0	0	0	0	-	-	0	0	-
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$25,977	\$25,929	100%	n/a	n/a	n/a	n/a	-	-	n/a	n/a	-
3 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2010 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$32,447	\$27,105	84%	0	0	0	0	-	-	0	0	-

*Net Annual Savings

3.6.4 Program Events and Training

Highlights of Events:

- Continued use of existing marketing materials including Tighten-Up Arkansas, radio and television ad campaign.
- Continued use of a website to educate and promote energy efficiency throughout Arkansas.
- Publishing of printed material for water heating, cooling, heating, air sealing, etc.
- As administrators of the program, the Arkansas Energy Office was able to accomplish a successful campaign utilizing the funds from the participating utilities.

Sample of Training Provided:

- March 28, 2012: Economics of Energy Efficiency, Aspen Hotel & Suites, Fort Smith. This workshop provided an overview of topics needed to better understand the economics around energy efficiency. It explained why energy conservation makes good business sense and how energy management practices will help the bottom line of your industry.
- April 17, 2012: Fundamentals of Compressed Air, Lake Point Conference Center ATU, Russellville, Arkansas. This workshop taught participants how to develop a system profile and addressed point-of-use issues, how to design and how to optimize the air system to its potential.

- May 3, 2012: Boiler and Steam System Efficiency; University of Arkansas Fayetteville. This workshop training objective was to teach basic and applied issues around improving industrial boiler and steam system performance.
- May 23, 24, 2012: Motor Systems Management, University of Arkansas Fayetteville. This workshop training covered the basic principles of induction motors: construction aspects, performance, nameplate ratings, enclosure types, industrial applications and real life case studies presented from a practical point of view. Also included in the class were case studies on energy savings due to variable speed applications (pumps and fans) by use of a VFD (Variable Speed Drive).
- September 6, 2012: Refrigeration Energy Management: Lake Point Conference Center ATU, Russellville, Arkansas. This workshop training objective addressed the main concepts of energy consumption in industrial refrigeration systems. It provided real world tips and implementable improvements to reduce energy consumption and cost, in a cost effective manner.
- October 17, 2012: HBA – Residential Energy 2009 Code Class Meeting, University of Arkansas Fort Smith, (Arkansas Home Builders Association). This workshop training objective addressed the proposed code qualifications for new construction on residential building. This 8-hour class highlighted differences between the existing 2003 code versus the 2009 IEC.
- October 31, 2012: Energy Management – Benchmarking: Lake Point Conference Center ATU, Russellville, Arkansas. This workshop training objective was to provide an introduction to energy management step of assessing current and past energy performance, energy data gathering and tracking, establishing baselines, benchmarking, and analyzing results.
- December 5-6, 2012, University of Arkansas Fayetteville. The training objective of this workshop was to identify the importance of energy conservation and highlight opportunities to optimize pumping systems for energy efficiency and other systems improvements.

3.6.5 Savings

- No kW or kWh savings were claimed under the Energy Efficiency Education Program.

3.6.6 Challenges and Opportunities

- OG&E, along with the AEO, has continued to provide updated material to all classifications of consumers throughout the OG&E territory. Challenges to residential, commercial and industrial consumers will be to initiate timely and important energy improvements to homes and businesses. Cost effective measures should be implemented in a timely manner to maintain

lower utilities. Education to the consumer is essential in stressing the importance of energy efficiency in all applications.

3.6.7 Outlook for Continuation, Expansion, Reduction or Termination

- OG&E proposes to continue to support and contribute to the Arkansas Energy Office in its effort to promote and grow energy awareness throughout the Arkansas Territory for the remainder of the program.

3.6.8 Planned or Proposed Changes to Program and Budget

- OG&E agreed to participate with EEA in the new Energy Efficiency Program that was approved on June 30, 2011 for the program years 2011-2013. OG&E plans to continue its support for the Energy Efficiency Arkansas Program.

3.7 HVAC Tune-Up and Duct Repair Program

3.7.1 Program Description:

The HVAC Tune-Up and Duct Repair program is a comprehensive long-term energy efficiency program to reach customers who normally do not participate in annual services of an HVAC company. This residential program is for customers who need assistance in improving the efficiency of their existing HVAC equipment and/or assistance in sealing or repairing HVAC ductwork. This program helps the customer realize the need of regular scheduled maintenance on their equipment. The program will allow customers to maximize efficiency of existing equipment and increase the comfort in their home.

3.7.2 Program Highlights:

- The HVAC Tune-Up and Duct Repair program began with contractor meetings in March 2012, with a total of 7 contractors and 49 technicians in attendance.
- OG&E signed an agreement with 7 contractors to participate in the program.
- OG&E promoted the program through civic presentations, direct mail pieces and the Fort Smith Home Show as well as across the Fort Smith Territory.
- Audits were performed in the field with the service technician at the customer's residence.
- With the help of 7 HVAC companies in Fort Smith and Van Buren, and with the OG&E Weatherization crews; OG&E was able to complete 464 tune-ups which included 125 Duct & Plenum seals on homes throughout the OG&E Arkansas territory.

3.7.3 Program Budget, Savings and Number of Measures:

HVAC Tune Up & Duct Repair											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a	-
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$35,443	\$11,442	32%	29	43,720	9	17,049	29%	39%	50	77	154%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$155,976	\$155,976	100%	155	229,025	97	214,632	63%	94%	300	464	155%
2 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2011 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$95,710	\$83,709	87%	92	136,373	53	115,841	57%	85%	175	271	155%

*Net Annual Savings

3.7.4 Program Events and Timing:

Sample of Events:

- Training was held with each contractor on expectations of the program.
- Presentations were performed for local civic groups in various areas of the OG&E territory.
- Name solicitations were also done by direct mail campaigns and during the Greater Fort Smith Home Builders home show.

3.7.5 Savings:

- kW and kWh gross savings were calculated for each project using basic engineering formulas applied to pre and post conditions and Deemed savings based on the Filed projections.
- Program Data was evaluated by EnerNOC for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- OG&E performed services on 464 AC Systems for customers. Services included AC Tune Ups and Duct Repairs when needed. The HVAC Tune & Duct Repair Program resulted in an annual evaluated net energy savings of 214,632 kWh and annual evaluated net demand savings of 97 kW.

3.7.6 Challenges and Opportunities:

- Meeting with each technician on the program qualifications and expectations.

3.7.7 Outlook for Continuation, Expansion, Reduction or Termination:

- OG&E will continue its Residential HVAC Tune-Up and Duct Repair through 2013.

3.7.8 Planned or Proposed Changes to Program and Budget:

- This Energy Efficiency program will continue to be implemented through the budget years of 2012-2013.

3.8 Window Unit A/C Program

3.8.1 Program Description:

The objective of the Comprehensive Energy Efficient Window Unit A/C Program is to provide OG&E single family residential customers without central HVAC systems incentives for purchasing and installing high-efficiency window air conditioners. The program is designed to help increase energy efficiency of window unit sales, while reducing energy consumption, lowering energy costs, and increasing the comfort of the residential customers' home with window units.

3.8.2 Program Highlights:

OG&E has partnered with a local family owned hardware store which has outlets in 4 major areas of the Fort Smith service area, to help promote the program. Along with the local hardware stores, OG&E partnered with Home Depot and LOWES to promote the program.

3.8.3 Program Budget, Savings and Number of Measures:

Window Unit A/C											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a	-
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$6,460	\$402	6%	1	1,260	0	206	15%	16%	13	1	8%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$12,065	\$4,311	36%	2	2,423	2	2,161	88%	89%	25	30	120%
2 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2011 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$9,263	\$2,357	25%	2	1,842	1	1,184	63%	64%	19	16	82%

*Net Annual Savings

3.8.4 Program Events and Timing:

Sample of Events:

February 7, 2012: OG&E presented details of the program during an HVACR contractor meeting in Fort Smith.

3.8.5 Savings:

- kW and kWh gross savings were calculated for each project using basic engineering formulas applied to pre and post conditions and Deemed savings based on the Filed projections.
- Program Data was evaluated by EnerNOC for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- OG&E rebated 30 window AC units for customers. The result is an annual evaluated net energy savings of 2,161 kWh and annual evaluated net demand savings of 2 kW.

3.8.6 Challenges and Opportunities:

- This is a very limited market; OG&E estimates that only 700 homes are cooled with window units in the Fort Smith area.
- OG&E will continue to pursue additional avenues to help promote and meet target market areas for window unit sales.
- Consumers will continue to be educated on the benefits of high efficiency window units and encouraged to participate in the program through civic presentations in 2013.

3.8.7 Outlook for Continuation, Expansion, Reduction or Termination:

- OG&E will continue the Window Unit A/C Program for the remainder of the approved filing through 2013 with no significant changes.

3.8.8 Planned or Proposed Changes to Program and Budget:

- This Energy Efficiency program will continue to be implemented through the budget years of 2012-2013 with no changes to the format or additional budget.

3.9 Commercial Tune-Up Program

3.9.1 Program Description:

This is a comprehensive long term energy efficiency program targeted to commercial and industrial customers. The Commercial Tune-Up program will continue to offer financial incentives for air conditioning, foodservice, refrigeration and/or ventilation systems upgrades in efficiency. The intent of the program is to provide inducements for energy savings and peak demand reductions produced through any measured, verified, and inspected efficiency improvements.

3.9.2 Program Highlights:

- The Commercial Tune-Up program was initiated with a contractor meeting on July 22, 2011 with 15 contractors in attendance.
- Customers embraced the program with HVAC equipment upgrades.
- OG&E promoted the program through civic presentations and customer calls across the Fort Smith service area.

3.9.3 Program Budget, Savings and Number of Measures:

Commercial Tune-Up											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a	-
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$50,884	\$6,370	13%	33	227,991	10	20,845	32%	9%	3	2	67%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$127,323	\$73,038	57%	112	759,969	22	26,059	19%	3%	10	11	110%
2 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2011 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of	
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$89,104	\$39,704	45%	73	493,980	16	23,452	22%	5%	7	7	100%

*Net Annual Savings

3.9.4 Program Events and Timing:

Sample of Events:

- Presentations were performed for local civic groups in various areas of the OG&E service area.
- Direct calls were made with local contractors to educate and inform the dealers on the benefits of higher efficiency sales.

3.9.5 Savings:

- kW and kWh gross savings were calculated for each project using basic engineering formulas applied to pre and post conditions and Deemed savings based on the Filed projections.
- Program Data was evaluated by EnerNOC for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- OG&E performed Commercial Tune services for 11 customers. The program resulted in an annual evaluated net energy savings of 26,059 kWh and annual evaluated net demand savings of 22 kW.

3.9.6 Challenges and Opportunities:

- Meeting with each technician and HVAC companies on the program qualifications and expectations.
- Economic conditions in the Fort Smith market place have slowed energy efficiency improvements with many commercial customers.

3.9.7 Outlook for Continuation, Expansion, Reduction or Termination:

- OG&E will continue its Commercial HVAC Tune-Up and Duct Repair through 2013.

3.9.8 Planned or Proposed Changes to Program and Budget:

- This Energy Efficiency program will continue to be implemented through the budget years of 2012-2013 with no changes to the format or additional budget.

3.10 Commercial/Industrial Standard Offer Program

3.10.1 Program Description:

This is a comprehensive long term energy efficiency program targeted to Commercial and Industrial Power and Light rate customers. The program provides inducements for the energy savings and peak demand reductions produced through energy efficiency improvements. This program provides customized energy efficiency solutions to meet requirements unique to each facility. It has proven to be successful in helping to not only manage but to assist in upgrading existing equipment to higher efficiency. This program has an on-going opportunity to help industrial customers achieve higher efficiency standards while providing incentives to help lower payback periods. OG&E personnel made calls on individual industrial customers along with local Engineering firms to inform them of the new TRM2 standards set by the Arkansas Public Service Commission.

3.10.2 Program Highlights:

- The Commercial/Industrial Standard Offer program was promoted through various functions to Industrial customers throughout 2012.
- Contractors, Public School Districts, and customers embraced the program with HVAC equipment upgrades.
- OG&E promoted the program through various civic presentations across the Fort Smith Territory.

3.10.3 Program Budget, Savings and Number of Measures:

C&I Standard Offer Program											
2010			Plan Savings		Evaluated Savings		% of Plan		2010		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a	-
2011			Plan Savings		Evaluated Savings		% of Plan		2011		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$141,589	\$109,419	77%	402	1,688,328	349	1,080,273	87%	64%	5	6	120%
2012			Plan Savings		Evaluated Savings		% of Plan		2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$326,284	\$184,692	57%	1,141	4,246,188	154	619,897	13%	15%	12	22	183%
2 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2011 - 2012		
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants		% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual	Plan
\$233,936	\$147,055	63%	772	2,967,258	252	850,085	33%	29%	9	14	165%

*Net Annual Savings

3.10.4 Program Events and Timing:

Sample of Events:

- Presentations were performed for CEOs, CFOs and Industrial Energy Efficiency personnel and local civic groups in various areas of the OG&E territory.

3.10.5 Savings:

- kW and kWh gross savings were calculated for each project using basic engineering formulas applied to pre and post conditions.
- Program Data was evaluated by EnerNOC for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- OG&E completed 22 Standard Offer Program incentives resulting in an annual evaluated net energy savings of 619,897 kWh and an annual evaluated net demand savings of 154 kW.

3.10.6 Challenges and Opportunities:

- Economic conditions in the Fort Smith market place have slowed energy efficiency improvements with many industrial customers.
- Available dollars in O&M budgets for Industrial Plants.
- Projects may take up to 18 months from start to finish.

3.10.7 Outlook for Continuation, Expansion, Reduction or Termination:

- OG&E will continue its Commercial/Industrial Standard Offer through 2013.

3.10.8 Planned or Proposed Changes to Program and Budget:

- This Energy Efficiency program will continue to be implemented through the budget years of 2012-2013. Possible modified program for 2014.

3.11 Multi-Family Program

3.11.1 Program Description:

- The Multi-Family program was intended to target multi-family complex owners and or managers who needed assistance in improving the efficiency of their existing HVAC equipment. With the program, OG&E would offer incentive payments to apartment complex owners to upgrade from an existing air conditioning to a 16 SEER heat pump unit or a 16 SEER air conditioner with a 90+ AFUE furnace.

3.11.2 Program Highlights:

- Due to the size restrictions and characteristics of new equipment to be installed this program was discontinued at the end of 2011.

3.11.3 Program Budget, Savings and Number of Measures:

Multi-Family										
2010			Plan Savings		Evaluated Savings		% of Plan		2010	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a
2011			Plan Savings		Evaluated Savings		% of Plan		2011	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$37,778	\$0	0%	13	27,655	0	0	0%	0%	25	0
2012			Plan Savings		Evaluated Savings		% of Plan		2012	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
n/a	n/a	-	n/a	n/a	n/a	n/a	-	-	n/a	n/a
1 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2012	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$37,778	\$0	0%	13	27,655	0	0	0%	0%	25	0

*Net Annual Savings

3.11.4 Program Events and Timing:

Sample of Events:

- N/A

3.11.5 Savings:

- No savings were claimed in this program for 2012.

3.11.6 Challenges and Opportunities:

- N/A

3.11.7 Outlook for Continuation, Expansion, Reduction or Termination:

- N/A

3.11.8 Planned or Proposed Changes to Program and Budget:

- N/A

3.12 Arkansas Weatherization Program (AWP)

3.12.1 Program Description:

The Arkansas Weatherization Program was designed to promote energy efficiency in homes throughout the Fort Smith service area. This Program is monitored by the Arkansas Community Action Agencies Association. The Energy Efficiency Program is targeted to residential customers and allows the customer to participate in programs to assist in managing energy costs and to begin to utilize price response tariffs. This program focused on customers who owned their home and who have homes that were severely energy inefficient. The program design is to upgrade and improve the thermal envelope of the dwelling and the energy use of appliances.

OG&E continued their participation with the Arkansas Weatherization Program in conjunction with other utilities across the state. The Central Arkansas Development Council has control of the disbursement of funding for the collaborative. OG&E serves over 54,000 residential customers its Arkansas service area Region and has estimated as many as 30,000 homes needs weatherization improvements. It also estimates there are 10,000 severely energy inefficient homes in the service area. OG&E views the Weatherization Program as a key component in the DSM area. Presentations on the Weatherization Program were made to Civic and Senior Citizen Groups throughout the OG&E territory to inform customers of the program. Agency contractor crews installed key weatherization components in the homes to help upgrade the homes from energy inefficient to modern day standards. Some of the components that were installed are as follows: ceiling insulation, caulking, insulating foam, weather stripping, replacement of glass and, or windows, doors, ground cover, compact fluorescent lighting, duct and plenum repair, return air cavity sealing, CO detectors, smoke detectors, HVAC tune-ups, replacements, and indoor coil cleaning.

OG&E provided funding for the Arkansas Community Action Agency Associations to weatherize severely energy inefficient homes in the Fort Smith service area. Working with the Crawford-Sebastian Community Development Council, Inc., located in Fort Smith, and the Universal Housing Authority based in Russellville, the AWP program weatherized 45 severely energy inefficient residential homes in 2012. Many of these homes also utilized DOE monies, as well as LIHEAP funding and additional grants, for improvements to the home. Area counties served by the agencies are Crawford, Sebastian, Franklin, Johnson, and Logan.

3.12.2 Program Highlights:

- Energy Efficiency Arkansas Weatherization Program was launched on July 1, 2011.
- AWP weatherized 45 homes in 2012 at an average cost per home of \$1,483.71.
- Civic and community presentations on the program were conducted throughout each town served by OG&E promoting the Arkansas Weatherization Program.

- The Arkansas Weatherization Program was administered through the Central Arkansas Development Council.
- The Crawford-Sebastian Community Development Council Inc., Universal Housing Corporation, (Russellville based), performed audits and jobs in the OG&E District.

3.12.3 Program Budget, Savings and Number of Measures:

AWP Weatherization										
2010			Plan Savings		Evaluated Savings		% of Plan		2010	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$72,000	\$72,000	100%	n/a	n/a	n/a	n/a	-	-	n/a	n/a
2011			Plan Savings		Evaluated Savings		% of Plan		2011	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$114,582	\$130,358	114%	27	205,519	115	232,805	425%	113%	59	89
2012			Plan Savings		Evaluated Savings		% of Plan		2012	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$78,388	\$66,767	85%	69	522,485	12	76,898	17%	15%	59	45
3 Year Program Average			Plan Savings		Evaluated Savings		% of Plan		2010 - 2012	
Annual	Actual	% of	Demand*	Energy*	Demand*	Energy*	Demand*	Energy*	Number of Participants	% of
RBudget	Expenses	Budget	kW	kWh	kW	kWh	kW	kWh	Plan	Actual
\$88,323	\$89,708	102%	48	364,002	63	154,852	132%	43%	59	67

*Net Annual Savings

3.12.4 Program Events & Training:

Highlights of Events:

- Civic and community presentations on the program were conducted throughout the various towns served by OG&E promoting the Arkansas Weatherization Program.
- Met with key personnel from Crawford-Sebastian Community Development Council Inc., and Universal Housing Corporation on weatherization projects.

Program & Member Certification:

- N/A

3.12.5 Savings:

- kW and Kwh gross savings were calculated using the TRM values applied through the EnerTrek software program by Frontier & Associates.
- Program Data was evaluated by ADM Associates for TRM2 compliance and to establish realization rates that were applied to the gross kW and kWh values along with the Net/Gross ratios derived from free ridership and spillover determination.
- The Arkansas Weatherization Program (AWP) weatherized 45 homes in 2012. This resulted in an annual energy evaluated net savings of 76,898 kWh and demand evaluated net savings of 12 kW.
- OG&E weatherized 45 homes for an average of 1,709 kWh per residence and .27 kW per home.

3.12.6 Challenges & Opportunities:

- The ability to process lead generation in a timely manner continues to be a challenge in the program.
- Fluctuations in the funding process.

3.12.7 Outlook for Continuation, Expansion, Reduction or Termination:

- The Weatherization Program had a 49% drop in energy audits performed in 2012.

3.12.8 Planned or Proposed Changes to Program & Budget:

- This Comprehensive program ended on June 30, 2011 and a new Energy Efficiency Program was approved on June 30, 2011 for the program years 2011-2013. OG&E plans to continue its support for the Arkansas Weatherization Program.

4.0 Benefit Cost Results

Benefit Cost

Cost-Effectiveness Test	2012 Program Year						
	Annual Energy Savings			Lifetime Energy Savings	Total Resource Cost (TRC)		TRC Levelized Cost
	Net	Gross	Effective		Net Benefits (\$000's)	Ratio	
Program	kWh	kWh	Net-To-Gross Ratio (NTGR)	MWh			
Weatherization	3,638,503		1.01	56,760	1,280	1.55	0.022551
Student Energy Efficiency LivingWise®	291,628		0.92	3,174	58	1.76	0.018217
Custom Energy Report	0						
Commercial Lighting	2,725,963		0.80	35,700	1,032	2.37	0.028903
Commercial Motors	0						
Energy Efficiency AR (Collaborative)	0						
HVAC Tune Up & Duct Repair	214,632		0.80	2,603	-55	0.74	-0.021232
Window Unit A/C	2,161		0.80	31	-2	0.59	-0.057432
Commercial Tune-Up	26,059		0.80	427	-81	0.30	-0.189429
C&I Standard Offer Program	619,897		0.80	10,148	247	1.84	0.024386
Multi-Family	0						
AWP Weatherization	76,898		1.00	1,175	-65	0.51	-0.055596
EE Portfolio Total	7,595,741			110,016	2,414		0.021942

Cost-Effectiveness Test	2012 Program Year							
	Participant Cost Test (PCT)		Ratepayer Impact Measure (RIM)		Program Administrator Cost (PAC)		Other Test Societal Test - (ST)	
	Net Benefits (\$000's)	Ratio	Net Benefits (\$000's)	Ratio	Net Benefits (\$000's)	Ratio	Net Benefits (\$000's)	Ratio
Program								
Weatherization	2,538	2.37	-1,112	0.74	835	1.36	1,343	1.57
Student Energy Efficiency LivingWise®	151	3.04	-50	0.72	47	1.57	62	1.81
Custom Energy Report								
Commercial Lighting	2,057	3.70	-422	0.80	1,415	6.09	1,076	2.43
Commercial Motors								
Energy Efficiency AR (Collaborative)								
HVAC Tune Up & Duct Repair	81	1.53	-126	0.54	-7	0.95	-52	0.76
Window Unit A/C	2	2.27	-3	0.41	-2	0.55	-2	0.60
Commercial Tune-Up	-30	0.64	-62	0.35	-40	0.45	-80	0.31
C&I Standard Offer Program	532	3.19	-170	0.75	334	2.81	259	1.84
Multi-Family								
AWP Weatherization	-6	0.91	-50	0.52	-12	0.82	-64	0.52
EE Portfolio Total	5,326		-1,996		2,569		2,541	

5.0 Supplemental Requirements

5.1 Training

EXTERNAL TRAINING (contractors, trade allies, consumer groups, etc.)										
Event No.	Date	Class	Class Description	Training Location	Sponsor	No. of Attendees (A)	Length of Session (B)	Training Session Man-hours (A x B)	Any Certificates Awarded? (Y or N)	# of Certificates Awarded
1	03/05/12	Res A/C Tune and Duct Program	A/C Tune For Residential Applications	Rib Eye Steak House	OG&E	10	2	20	n	
2	3/12 - 3/16/2012	Res A/C Tune and Duct Program	A/C Tune For Residential Applications for Techs	Various Locations	OG&E	10	2	15	n	
3	3/19, 3/23/2012	Res A/C Tune and Duct Program	A/C Tune For Residential Applications for Techs	Various Locations	OG&E	30	2	45	n	
4	03/29/12	Res A/C Tune and Duct Program	A/C Tune for Residential Applications for Techs	Various Locations	OG&E	9	2	13.5	n	
5	04/25/12	Ar Comm Lighting Prgm	Introduction to Ar Comm Lighting Program	Wholesale Electric Supply	OG&E	22	1	22	n	
6	09/17/12	Enertrek Updates	Updates on Entries into Enertrek	OGE Office	OG&E	7	4	28	n	
Totals:	Sessions:	6				88		143.5		0

INTERNAL TRAINING (Utility or Administrator Staff)										
Event No.	Date	Class	Class Description	Training Location	Sponsor	No. of Attendees (A)	Length of Session (B)	Training Session Man-hours (A x B)	Any Certificates Awarded? (Y or N)	# of Certificates Awarded
1	06/05/12	Benefits of Building Healthier Home	Model Techniques for Existing Homes	Office Webinar	RESNET	1	1	1	n	
2	05/16/12	Robotics & Motion Control	Robotics & Motion Control for Industrial	University of Arkansas Fort Smith	AMS	1	7	7	y	1
3	7/15-16/2012	AWP Conference	Meeting for Community Action Agencies	Springdale, Arkansas	ACAAA	120+	16	16	n	
4	09/27/12	Green Building Summit	Building Green Commercial Buildings	Oklahoma City, Oklahoma	Oklahoma Builders Association	300+	8	8	n	
1	03/29/12	Economics of Energy Efficiency (Ryan Lee)	Using Energy Wisely	Fort Smith, AR	AMS	15	8	8	n	1
2	04/17/12	Fundamentals of Compressed Air (Ryan Lee)	Compressed Air Systems	Russellville	AMS	22	8	8	n	1
3	05/16/12	Robotics and Motion Control (Ryan Lee)	Robotics in Industry	Fort Smith, AR	AMS	30	8	8	n	1
4	05/23/12	Motors Systems Management (Ryan Lee)	Motors in Industry	Fort Smith, AR	AMS	18	14	14	n	1
5	7/15-16/2012	AWP Conference (Ryan Lee)	State Meeting for Community Agencies	Springdale, AR	ACAAA	120 +	16	16	n	
6	BPI	BPI Class (Ryan Lee)	Building Professionals	Rogers, AR	OG&E	8	40	40	n	
Totals:	Sessions:	11				635		126		5

5.2 Lost Contribution to Fixed Cost

Lost Contribution to Fixed Cost (LCFC)						
Program Name	LCFC Energy Savings			LCFC		
	MWh			(\$)		
	2011	2012	2013	2011	2012	2013
Weatherization	193	2,956		\$ 7,094	\$ 108,492	
Student Energy Efficiency LivingWise®	23	260		\$ 814	\$ 9,548	
Custom Energy Report	0	0		\$ -	\$ -	
Commercial Lighting	707	2,781		\$ 19,238	\$ 69,129	
Commercial Motors	0	0		\$ -	\$ -	
Energy Efficiency AR (Collaborative)	0	0		\$ -	\$ -	
HVAC Tune Up & Duct Repair	2	105		\$ 82	\$ 3,870	
Window Unit A/C	0	1		\$ 1	\$ 54	
Commercial Tune-Up	5	38		\$ 168	\$ 1,190	
C&I Standard Offer Program	218	1,819		\$ 4,857	\$ 41,339	
Multi-Family	0	0		\$ -		
AWP Weatherization	251	474		\$ 9,062	\$ 17,403	
	LCFC Total:			\$ 41,317	\$ 251,024	\$ -
	Total Actual Portfolio Expense:			\$ 2,071,159	\$ 3,255,512	\$ -
	LCFC as a % of Portfolio Total:			2.0%	7.7%	-

Note: Commercial Motors is reported under the C&I Standard Offer Program.

5.3 Utility Performance Incentives

Utility Performance Incentives				
2010 Annual Energy Sales (MWh)	Sales as Adjusted for SD Exemptions			
	2011	2012	2013	
2,700,703	2,700,703	2,272,712	2,245,808	
Portfolio Level Summary	2011	2012	2013	
	RBudget (\$)	\$ 2,679,852	\$ 3,524,157	
	Actual Expense (\$)	\$ 2,071,159	\$ 3,255,512	
Net Savings	2011	2012	2013	
	Commission Established % Goal	0.25%	0.50%	0.75%
	MWh Goal	6,752	11,364	16,844
	MWh Achieved	4,985	7,596	
	% of Goal Achieved	74%	67%	0%
Incentive Calculations	2011	2012	2013	
	Portfolio Net Benefits (\$)	\$ 1,321	\$ 2,414	
	10% of Portfolio Net Benefits (\$)	\$ 132	\$ 241	\$ -
	Incentive Cap	0.00%	0.00%	0.00%
	Maximum Allowed Incentive \$	\$ -	\$ -	\$ -
	Eligible Incentive \$'s	\$ -	\$ -	\$ -

5.4 Challenges and Opportunities

See each individual program to see specific challenges facing each program.

5.5 Market Maturity

Program Name	Market Assessment		
	<u>Present Program</u>	<u>Future Program</u>	<u>Maturity 10 Yr Outlook</u>
OG&E Weatherization	Impacted 0.5% of the available homes in the Ft. Smith Service area are eligible to participate in the Program.	An additional 3240 homes to be impacted in current program, this would leave 24,000+ homes to be weatherized.	At the rate of 1,620 homes per year, OG&E can effectively cover the Ft. Smith service area in 19 years. OG&E would increase the market size to homes built before 2000 in the mix to help generate additional leads, which would open the market penetration of homes.
AWP Program	This program reaches out to the hard to reach, severely energy efficient homes in the Ft Smith service area.	Upgrades in the program standards and procedures with the changes to the program costs to participate in the program. The AWP should be able to reach the goals for 2012-2013 program. Crawford, Sebastian community Development and Universal Housing has been beneficial to utilizing the tools offered through the AWP collaborative funding.	Saturation will never be achieved with the housing stock in the OG&E Ft Smith market. The number of participants will continue to grow in need of assistance as the job market and economy remain stagnate to growth.
LivingWise®	The LivingWise® program reaches 1800 students per year which accounts for 80% of all 6 th grade students in the Ft Smith Service Area.	The LivingWise Program has been expanded to reach 1800 students each year, capturing 80% of the available 6 th grade students.	A saturation level will never be achieved. The market will continue to produce new students each year, all having the need to learn more about Energy Efficiency.
Commercial Motors	Program merged into the SOP Program in 2012.	n/a	n/a
Residential HVAC Tune-up	This program has been received in a	Program was enhanced with an additional 200	Market saturation will never be achieved. New homeowners will

& Duct Repair	positive manner. Education of homeowners proves critical on proper care of the HVAC equipment and duct work.	homes in the market place.	need to be educated on the advantages of proper refrigerant charge and correct sizing of the equipment for ultimate performance in the home.
Window AC Unit	The Window Unit AC market has a narrow window of opportunity.	Marketing Energy Star® window units in big box stores as well as local hardware stores will be critical on the success of the program.	Education on the advantages of installing Energy Star® window units will be a must in all future advertising as well as the market place. This market is seasonal at best and provides a narrow window for achievement.
Commercial Lighting	The Commercial Lighting program was enhanced with the new filing in July 2011. With the enhancements and the new lighting regulations, sales of more efficient lighting will continue to grow in the market.	Lighting upgrades will continue to grow as the market is evolving with the new Energy Standards enacted by the Federal Government. OG&E will continue to reach out to educate the public authority, commercial and light industrial customer with new and innovative lighting needs.	Saturation will never be achieved in the Commercial Lighting area. The addition of energy efficiency LED fixtures in the market, will help the consumer to have a variety of choices for the future lighting needs. Along with the new and innovative lighting controls, appliances and fixtures are in an ever changing environment for energy efficiency. This will continue to help lower overall operating cost and increase building efficiency.
Commercial & Industrial Standard Offer Program	The SOP program has allowed industrial customers the choice of variety of changes packaged together, if needed, to target applications in need of energy efficiency upgrades.	OG&E increased the kW and kWh reductions in 2012-2013 program, in anticipation of a larger window to help commercial & industrial customer to help make energy efficiency upgrades in their business.	The Energy Policy Act of 1992 and the Energy Independence and Security Act of 2007 standards, will have an impact on the applications of motor upgraded. As premium efficiency motors become the new standard in energy efficiency a market saturation will allow incentives to go away.
Commercial HVAC Tune-Up Program	This program has allowed contractors to offer upgrades before and after turning up the HVAC equipment.	OG&E has increased the kW & kWh reductions for 2012-2013 programs, in order to reach more commercial businesses to improve the efficiency of their existing equipment and or to upgrade their HVAC equipment to higher EER's.	A saturation level will never be achieved as Commercial businesses continue to explore ways to reduce overall energy costs. Education of proper maintained and equipment operation will be key to help move consumers to maintain their HVAC equipment in their businesses.

Education Cooperative	The focus on Education is continual. There must be a constant marketing presence in the education the consumer on advantages to managing their cost in utility usage.	Continue marketing to the consumer through both cooperative and self-direct marketing tactics on management of utility usage.	Saturation will never be achieved. The market will continue to produce new home owners, and energy users each year, all having a need to be educated in energy usage in their homes, businesses, and industries.
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5.6 Staffing

Programs	Back Office Support (hours per week)	Program Management (hours per week)	Sales (hours per week)	Hours per week to manage Programs	FTE
Weatherization	5	35		40	1
HVAC Tune-Up and Duct Repair	1	3	6	10	0.25
Window Unit A/C	0.25	3.25	3.5	7	0.175
Commercial Lighting	5	10	5	20	0.5
Commercial Tune-Up	3	4	8	15	0.375
C&I Standard Offer	3	4	8	15	0.375
Student Energy Education	0.5	2.5		3	0.075
Totals	17.75	61.75	30.5	110	2.75

Current staffing levels should be sufficient to support the existing program. OG&E has 2 FTE's working full time managing the programs and an EM&V Specialist and Clerical Support making up the remaining .75 FTE. EM&V Specialist and Clerical Support also have additional responsibilities in Oklahoma Programs.

5.7 Stakeholder Activities

Date	Stakeholder	Number of Attendees	Purpose
3/5/2012	HVAC Contractors	10	To train Contractor on Residential Tune-Up / Duct Seal Program
3/12 - 3/16/2012	HVAC Contractors	10	To train Contractors on Residential Tune-Up / Duct Seal Program
3/19 - 3/23/2012	HVAC Contractors	30	To train Contractor HVAC Technicians on Residential Tune – Up / Duct Seal Program
3/29/2012	HVAC Contractors	9	To train Contractor HVAC Technicians on Residential Tune – Up / Duct Seal Program
4/25/2012	Lighting Distributors	22	To inform and train Lighting contractors on Commercial Lighting Program
9/17/2012	Weatherization Contractors	7	To update contractors on ENERTREK entries
9 /7/2012	Consumer Group	24	To inform low- income families on how to use the Smart Grid Meters to manage utility bills
12/7/2012	Weatherization Contractors	11	To update Weatherization Auditors on how to inform consumers in the weatherization program on how to use and take advantage of the Smart Grid.

5.8 Estimation of EE Resources Potential

OG&E uses demand side measures in the IRPs filed each year. One option of the demand side management includes the EE programs. The IRP filed in 2012 outlined the EE program savings in both energy and peak reduction for the next 10 years. Combining the EE programs with other OG&E demand side programs (Load Reduction, Smart Hours and IVVC) provides a comprehensive plan to reduce load through conservation efforts. These opportunities allow customers to receive savings on their utility bills or receive EE rebates for efficiency improvements. This IRP filing included the program goals for the EE program in both Oklahoma and Arkansas. As new EE programs are designed and approved, they will be integrated into the IRP planning to meet the systems energy requirements. These savings will continue over the lifetime of the improvements. This table shows the values included in the 2012 IRP plan.

	2013	2014	2015
Peak Reduction (MW)	50	61	71
Energy Savings (GWh)	198	247	294

5.9 Information Provided to Consumers to Promote EE

Refer to the appendix 6.0 for examples used in the promotion of EE Programs.

6.0 Appendix A: EM&V Contractor Report

Attach as an appendix, any materials or documentation which is deemed useful in explaining or clarifying the results or performance of any program conducted during the program year. At minimum, the appendix should include any study or research relied upon in the delivery or EM&V of any program conducted during the program year. If any such items **include confidential information shall be redacted** in the public version of the document.

EM&V Contractor Report

OG&E has three different EM&V Reports associated with evaluated savings for PY2012. ADM & Associates provided Results for both the AWP Program and OG&E's Weatherization Program while EnerNOC provided results for the remaining programs. OG&E is attaching each of these reports as provided to OG&E in the attached exhibits.

Attachments:

- Attachment B) contains ADM's evaluation for the AWP Program.
- Attachment C) contains ADM's evaluation of OG&E/AOG's Weatherization Program.
- Attachment D) contains EnerNOC's evaluation of the remaining programs.
- Attachment E) contains Energy Efficiency Arkansas (Collaborative)
- Attachment F) contains Frontier's Cost Effective Analysis

6.0 Appendix B:

Evaluation of 2012 Arkansas Weatherization Program

Submitted to:

Arkansas Community Action Agencies Association

Arkansas Oklahoma Gas Corporation

CenterPoint Energy

Oklahoma Gas and Electric

American Electric Power – Southwestern Electric Power Company

Empire District Electric Company

Entergy

SourceGas Arkansas

March 2013

Final Report

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1. Executive Summary

This report is to provide a summary of the evaluation effort of the 2012 Arkansas Weatherization Program. This report provides verified gross savings estimates for the evaluated program, as well as a process and documentation review.

1.1 Summary of Arkansas Weatherization Program

In 2012, the Arkansas Weatherization Program (AWP) provided residential energy audits and energy efficiency installations to customers within the following gas and electric utility service territories:

- American Electric Power – Southwestern Electric Power Company (AEP-SWEPCO); Empire District Electric Company (EDEC);
- Entergy;
- Oklahoma Gas and Electric (OG&E);
- Arkansas Oklahoma Gas Corporation (AOG);
- CenterPoint Energy (CenterPoint); and
- SourceGas Arkansas (SGA).

Participating homes were evaluated in order to determine potential energy efficiency measures that would improve overall building efficiency and reduce energy usage. The AWP is designed to use both gas utility and electric utility funds to assist customers with the costs of the in-home audit and installation of energy efficiency improvements. Under the AWP, customers are responsible for a portion of the audit cost, as well as a portion of resulting equipment or measures to be installed in the home. The program is offered in conjunction with the Department of Energy (DOE) Weatherization Assistance Program (WAP), which provided federal assistance to fund the customer co-payment in the AWP for income-qualified households. Customers are able to pay their own co-payment or, if eligible for the WAP, receive these federal funds for the energy efficiency improvements in their homes.

In order to qualify for the AWP, customer homes must meet specific criteria indicating that the residence is severely energy-inefficient. The AWP is designed based on the “whole home” approach to residential energy efficiency, where energy efficiency measures are chosen and implemented based on total cost and energy savings rather than focusing on a specific fuel type or measure category.

Local community action agencies work with customers to enroll in the program and determine AWP and WAP eligibility. After the customer is approved and the in-home audit is performed, optimal energy efficiency measures for AWP (and WAP, for eligible

customers) are identified through the use of National Energy Audit Tool (NEAT) or Mobile Home Energy Audit (MHEA) software. The local agencies then use their internal crews or hire contractors to install these measures in the home. Resulting savings are calculated and recorded for the purposes of EM&V and cost-effectiveness testing.

Table 1-1 identifies core program stages and includes key activities performed throughout the program process.

Table 1-1 Key Activities and Program Stages

<i>Program Stage</i>	<i>Key Activities</i>
Program Design Planning	<ul style="list-style-type: none"> • ACAAA, CADC and utilities discuss program delivery and make design changes. • Necessary modifications made to program structure and operations. • Key parties meet to discuss program expectations and goals.
Training and Implementation Planning	<ul style="list-style-type: none"> • Community action agencies, contractors, and other program operations staff attend program-relevant training sessions. • ACAAA, CADC, and local agencies discuss implementation and program updates.
Program Promotion	<ul style="list-style-type: none"> • Community action agencies market the program to local customers. • Utility representatives may cross-promote the AWP with other programs.
Program Participation	<ul style="list-style-type: none"> • Customers apply for the AWP and home eligibility is determined. • WAP eligibility is determined. • Participants receive in-home audits and measures are identified. • Contractors install measures that are either stipulated based on NEAT or MHEA software or are agreed upon with the customer (depending on whether or not WAP funds are used for the co-pay).
Data Processing and Monitoring	<ul style="list-style-type: none"> • Measures and associated savings are calculated and recorded. • Agencies update CADC, ACAAA, and utilities with participation data throughout the year. • Utilities, ACAAA, CADC, and local agencies continue to communicate regarding program progress and participation.

1.2 Evaluation Objectives

The evaluation of the 2012 Arkansas Weatherization Program (AWP) consisted of several objectives and tasks. These evaluation objectives were related to program savings verification, savings analysis, and process review. Specifically, the objectives of this evaluation include:

- Documentation review of deemed savings calculations. The Evaluators reviewed all savings calculations for measures included in the Technical Reference Manual, Versions 2.0 and 1.0, (TRM), in order to ensure that measure savings were properly calculated according to TRM protocols.

- Tracking database and documentation review. The Evaluators conducted a tracking database review according to the guidelines defined in Protocol A of the TRM. Additionally, post-implementation field forms and other program materials were reviewed for completeness, accuracy, and overall structure.
- Participant survey. A sample of participants from the 2012 program year was given a survey in order to provide feedback related to their experience with the Arkansas Weatherization Program. This survey addressed topics including customer satisfaction, decision making, and energy efficiency preferences.
- On-site field verification. The Evaluators scheduled and conducted site visits to participant homes in order to verify complete and proper measure installation, to conduct post-implementation measurements, and to follow-up with participants regarding their experience with the program.
- Community Action Agency Interviews. The Evaluators conducted interviews with the local community action agencies responsible for promoting the program, interacting with customers, and coordinating program implementation tasks. These interviews provided insight into overall program processes and characteristics of the target customer segments.
- Program staff interviews. Interviews were conducted with utility staff and third party implementation staff (members of ACAAA). These interviews provided insight into recent program changes, specific program processes, potential future improvements to program operation, and overall program performance.

1.3 Summary of Findings

Table 1-2 and Table 1-3 present net savings for electric utilities and gas utilities, respectively. Table 1-4 presents the net impact by measure. Due to program design factors, target customer segment characteristics, and lack of participant spillover, the net-to-gross ratio for the Arkansas Weatherization Program is 1 for the 2012 program year.

Table 1-2 Net Verified Savings by Electric Utility

<i>Electric Utility</i>	<i># of Homes</i>	<i>Realization Rate</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
AEP-SWEPCO	59	71%	24.46	85,310	892,550
EDEC	4	106%	1.54	8,357	87,174
Entergy	445	95%	272.4	981,539	12,061,252
OG&E	45	86%	12.12	76,898	980,086
Total	553	92%	310.52	1,152,105	14,021,063

Table 1-3 Net Verified Savings by Gas Utility

<i>Gas Utility</i>	<i># of Homes</i>	<i>Realization Rate</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AOG	26	83%	4,864	103.6	62,434
CenterPoint	436	69%	172,709	3,055.33	2,466,857
SGA	32	91%	9,957	170.31	152,729
Total	494	70%	187,530	3,329.24	2,682,020

Table 1-4 Net Verified Savings by Measure Type – Overall

Measure	Realization Rate	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)	Realization Rate	Annual Savings (Therms)	Peak Demand Savings (Therms)	Lifetime Savings (Therms)
AC Tune-Up	100%	3.06	7,035	35,173	-	-	-	-
Air Infiltration	102%	126.96	370,776	3,707,762	101%	103,877	2,617.80	1,038,766
Ceiling Insulation	60%	114.26	225,641	4,512,819	74%	27,860	452.32	557,203
Central AC Replacement	141%	9.70	21,966	329,490	-	-	-	-
Floor Insulation	100%	-	29,234	584,673	100%	7,838	113.49	156,758
Gas Furnace Replacement	-	-	-	-	61%	6,918	132.13	138,369
Gas Furnace Tune-Up	-	-	-	-	100%	504	10.72	1,511
Heat Pump Replacement	100%	5.69	41,378	620,670	-	-	-	-
Lighting	117%	36.50	349,952	2,274,688	-	-	-	-
Low Flow Showerhead	100%	0.10	1,140	11,400	100%	93	0.10	933
Refrigerator Replacement	100%	11.85	87,162	1,656,078	-	-	-	-
Storm Windows	100%	-	20	394	100%	126	-	2,520
Water Heater Insulation	100%	0.27	3,638	47,294	111%	294	0.52	3,822
Water Heater Replacement	-	-	-	-	100%	161	1.26	1,771
Water Pipe Insulation	100%	1.37	4,312	56,056	100%	942	0.90	10,358
Window AC Replacement	100%	0.76	1,011	12,840	-	-	-	-
Window Replacement	100%	-	8,332	166,636	100%	38,084	-	761,680
Window Sealing	9%	-	509	5,090	1%	833	-	8,330
Total	92%	310.52	1,152,105	14,021,063	70%	187,530	3,329.24	2,682,020

The Arkansas Weatherization Program was evaluated for overall effectiveness, performance, and design, and the Evaluators developed conclusions with consideration of the seven comprehensiveness factors developed by the Arkansas Public Service Commission. Following a review of present program offerings and interviews with utility staff, community action agency staff, and participating customers, the Evaluators found that:

- The AWP has made efforts to provide education, training, and marketing in order to reduce barriers to increased energy efficiency. The Arkansas Community Action Agencies Association (ACAAA) has promoted the program and provided informative outreach to contractors and customers through the use of training sessions and educational courses. However, as the agencies are able to determine their own level of program involvement, the current promotion and outreach strategies may not effectively reduce barriers to energy efficiency in all regions. Individual community action agencies that have not engaged the program or have been involved to a lesser degree likely represent an existing

barrier to customer program involvement in their local areas. As federal Weatherization Assistance Program (WAP) funding levels have a significant bearing on agency ability and resources, recent and future funding reductions may further strengthen barriers to program-generated energy efficiency.

- Based on the Commission's Order in docket no. 13-002-U, all of the utility EE programs, including the AWP, will be revised through the Collaborative process outlined in the Order. In addition, the WAP is in the process of being transferred from the Department of Human Services to the Arkansas Energy Office. With this transfer, the WAP may be modified in ways that can enhance program delivery. However, the agencies that have been highly active in the program have reported that they plan to continue recruiting participants or appealing to customers who are able to provide their own co-payment for program services. Further success of the program will likely be significantly influenced by the utilities' and agencies' responses to potentially decreased or absent federal funding levels and any agency-level reorganization. If WAP-eligible participation becomes difficult to obtain, program funding and design modifications may be necessary in order to further appeal to non-WAP-eligible customers.
- The offerings through the AWP have continued to cover all typical and available end-uses. Equipment offered within the program includes lighting, HVAC, water heating, and a full complement of building envelope measures including insulation, air sealing, ENERGY STAR® windows and appliances, and others. In addition to providing full weatherization services, the program involves a wide range of residential measures which are directed towards general energy efficiency. The "whole house" approach to participant home improvements is conducive to providing a comprehensive set of measures in each home.
- The AWP is effectively addressing the comprehensive needs of its targeted residential customers. The program is designed to identify the lowest-cost, highest-efficiency measures and provide them to customers where the measures will be most effective. The AWP targets severely inefficient homes and accurately select the most effective measures from a wide range of options. This minimizes "cream skimming", as the measures are typically chosen on behalf of the customer based on specific customer needs, cost, and resulting energy savings. The program operates in conjunction with the statewide Weatherization Assistance Program (WAP) to minimize or completely offset costs to WAP-eligible customers. Additionally, participating customers may experience non-energy benefits, such as increased ability to pay their utility bills, improved comfort and overall living space, and information regarding how to properly operate their equipment.
- While the agencies have successfully engaged a substantial portion of the target customer market, some segments may not be fully served by the program. As specific agencies covering individual regions may be less active in the program

due to preference or resources, customers in those areas may not have equal opportunity to participate in the program. Additionally, participation by customers not receiving WAP federal funding has been very limited thus far, and it appears that the program is having difficulty engaging customers who are financially able to pay for a portion of their home weatherization. This is likely due to the fact that non-WAP-eligible customers who are able to provide a co-payment may not believe that they are the target market for the program. If the AWP seeks to recruit substantial participation from private co-pay customers, it is likely that the promotional structure of the program will have to be modified. Upcoming program design changes implemented by the collaborative for 2015-2017 may include additional financing mechanisms to further encourage non-WAP-eligible customer participation.

- The AWP enables the delivery of cost-effective energy efficiency to utility customers throughout Arkansas. The program is designed to identify and implement the most cost-effective and energy efficient measures available for customer residences, and leverages federal funding for energy efficiency projects. However, the extensive waiting list for customers receiving WAP funding has substantially decreased the potential for higher participation rates and increased implementation timeliness. Community action agency resources correlate with WAP funding levels, and these factors have a significant influence on operational efficiency and overall AWP performance due to the inherent connection between the two programs. At present, current AWP resources and operational methods are sufficient for delivering cost-effective, steady energy efficiency over time, but program potential may be limited by statewide resources.
- The existing EM&V procedures within the AWP are fairly sufficient in allowing for support of the implementation process and calculation of energy savings. Community action agencies and contractors collected sufficient inputs and measurements for the majority of program measures. The post-implementation verification process conducted by the agencies has been beneficial in ensuring that reported data are accurate and reliable. There were some issues with data collection and tracking information, particularly with regard to inputs for specific measures. With the implementation of new TRM protocols, it will be necessary to modify the data collection process by collecting additional on-site information as specified in the TRM 2.0 and TRM 3.0. If implementation and measurement are not fully completed according to TRM protocols, it is possible that savings will not be accurately estimated for certain measures. Additionally, there appear to be some organizational or consistency issues with the tracking database, resulting in mismatched data or missing fields. It is crucial to resolve these issues prior to the program year end, as they may have a bearing on claimed savings, on-site verification, and overall evaluation results.

During the savings verification process, the Evaluators conducted on-site verification visits to participant homes in order to collect ex post measurements of implemented measures. Although the information collected was valuable in supporting the gross savings calculations, additional information would further support the verification process. The Evaluators propose performing the following data collection activities during the evaluation process in future program years:

- Evaluator-conducted baseline air infiltration measurements for a small sample of participant homes prior to the implementation work being performed. This would provide the Evaluators with verified baseline values for some homes, which could be incorporated into the ex post verification process and serve as a comparison to contractor baseline values.
- Additional questions added to the Evaluators' field visit questionnaire regarding whether the customer has made any changes to their building envelope, or taken any actions that may potentially alter the leakage rates in their homes. This would assist in identifying homes where the customer has taken specific actions that may cause energy usage to differ from expected levels.

Additionally, the Evaluators make the following recommendations in order to improve program operations and overall performance for future program years:

- **Make efforts to align the goals and objectives of the various parties involved in administering and implementing the AWP.** While the overall program has a clear set of objectives and goals, the level of interest and involvement in the program varies across and among the agencies and utilities. While some agencies operate the AWP as a high priority, others view it as a supplementary component of the WAP, and plan their resources based on WAP funding. This causes their involvement in AWP promotion and recruitment to be dependent on WAP funding availability rather than AWP resources. If a future program objective is to obtain participation from non-WAP customers, it may be necessary to modify the program promotion strategy or consult with the local agencies to determine the most optimal method of coordinating AWP and WAP-based objectives. For example, promoting the AWP as an important component of a utility's portfolio of energy efficiency programs may emphasize the fact that the AWP is not exclusively for WAP-eligible customers.
- **Continue improving overall understanding of TRM protocols and database software in order to reduce inconsistencies in savings expectations and ensure that collected data are sufficient.** As TRM specifications are updated over time, agencies may be required to collect additional measure inputs and it is important to clarify these requirements as early as possible in the program year. During the 2012 program year, some data were not included in the Frontier database because these data were either not collected by the agencies or were not submitted to Frontier for processing. In order to avoid delays in the savings

calculation and verification process, data collected from agencies should be reviewed regularly and any errors or missing data should be resolved as soon as possible. Real-time consistency and completeness checks using the stipulated TRM as a guideline will serve to standardize the methods used by the agencies and their contractors, and result in more complete savings estimates.

- **Standardize measure terminology with TRM language.** Some measure names listed in the AWP database were not consistent with TRM nomenclature, such as “Vented Space Heater” (AWP tracking) vs. “Direct Vent Heater” (TRM 2.0). Although the Evaluators and utility staff were able to match the tracking data measures with items in the TRM, standardizing the terminology would reduce the likelihood for calculation errors and increase the overall efficiency of this process.
- **Ensure that the AWP is cost-effective for both WAP-eligible and non-WAP participants.** As private co-pay participants are able to select which measures to install, there is risk of implementing projects in these homes that do not meet cost-effectiveness targets. It is important that the program maintains its whole-house, high-priority energy efficiency focus in order to remain consistent with AWP design structure and goals. This may involve encouraging or requiring private co-pay participants to implement the most cost-effective measures first before selecting specific improvements that may not be as beneficial to the program.
- **Take upcoming WAP and regulatory environment changes and trends into consideration when planning future AWP operational and promotional strategies.** The currently structured AWP functions in the context of community action agency resources and statewide funding levels. Reorganization of the statewide program or local agencies has the potential to significantly affect AWP operation and performance. If WAP-eligible customers continue to comprise the bulk of participation then funding reductions for the statewide program may directly correlate to reduced AWP savings. Program potential should be evaluated in the context of these external factors, and anticipating changes in the statewide environment may provide valuable insight when planning future AWP goals and expectations.
- **Ensure that data are available as needed from all parties involved in the AWP.** Throughout the program year, there were several updates, revisions, and corrections to the Frontier savings database, utility tracking data, and agency implementation data. As there are many parties involved in administering and evaluating the AWP, it is necessary to keep records of all previous data and keep it available for review. In the 2012 program year, there were instances where installation data at the agency level were only available in hardcopy format, which increased the data transfer lead time and created inefficiencies in the review process. Community action agencies, utilities, and the database provider should all maintain electronic copies of program data in order to minimize these

data transfer difficulties. This will allow for all parties to review crucial program data, and decrease the effort required to provide additional information when it is requested.

1.4 Report Organization

The report is organized as follows:

- Chapter 2 presents the impact findings and discusses the methods used for, and the results obtained from, estimating gross savings for the program;
- Chapter 3 presents the key findings from in-depth interviews with utility staff members, ACAAAA, and individual community action agencies;
- Chapter 4 summarizes the results from the customer telephone survey conducted with 2012 AWP participants;
- Chapter 5 presents and discusses the methods used for, and results obtained from, the process review of the program; and
- Chapter 6 presents key conclusions and recommendations from the evaluation of the program.
- Chapter 7 presents an appendix containing the instrument used to conduct the participant survey effort.

2. Impact Findings

This section presents the results of the gross savings verification and savings calculation review for the Arkansas Weatherization Program (AWP) in the 2012 program year.

2.1 Glossary of Terms

As a first step to detailing the evaluation methodologies, the Evaluators provide a glossary of terms to follow:

- *Ex Ante* – A program parameter or value used by implementers/sponsoring utilities in estimating savings before implementation
- *Ex Post* – A program parameter or value as verified by the Evaluators following completion of the evaluation effort
- *Deemed Savings* – A savings estimate for homogenous measures, in which an assumed average savings across a large number of rebated units is applied
- *Gross Savings* – Energy savings as determined through engineering analysis, statistical analysis, and/or onsite verification
- *Gross Realization Rate* – Ratio of Ex Post Savings / Ex Ante Savings
- *Free-Ridership* – Percentage of participants who would have implemented the same energy efficiency measures in a similar timeframe absent the program.
- *Spillover* – Savings generated by a program that are not incentivized. Examples of this include a customer that is introduced to energy efficiency through one rebated project and due to this undertakes other projects for which they do not apply for a program incentive.
- *Net Savings* – Gross savings factoring off free-ridership and adding in spillover.
- *Net-to-Gross-Ratio (NTGR)* = $(1 - \text{Free-Ridership \%} + \text{Spillover \%})$, also defined as Net Savings / Gross Savings
- *Ex Ante Net Savings* = Ex Ante Gross Savings x Ex Ante Free-Ridership Rate
- *Ex Post Net Savings* = Ex Post Gross Savings x Ex Post Free-Ridership Rate
- *Net Realization Rate* = Ex Post Net Savings / Ex Ante Net Savings

2.2 Summary of Ex Ante Savings

The Arkansas Weatherization Program is designed to use both electric and gas utility funds to assist customers with the cost of the in-home audit and energy efficient measures. Table 2-1 presents the overall ex ante savings by measure.

Table 2-1 Ex Ante Savings by Measure Type - Overall

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AC Tune-Up	3.06	7,035	35,173	-	-	-
Air Infiltration	126.53	363,209	3,632,089	103,353	2,602.15	1,033,526
Ceiling Insulation	245.05	378,372	7,567,431	37,636	29.01	752,716
Central AC Replacement	6.90	15,541	233,115	-	-	-
Floor Insulation	-	29,234	584,673	7,838	113.49	156,758
Gas Furnace Replacement	-	-	-	11,295	217.39	225,908
Gas Furnace Tune-Up	-	-	-	504	10.72	1,511
Heat Pump Replacement	5.69	41,408	621,120	-	-	-
Lighting	32.99	299,968	1,949,792	-	-	-
Low Flow Showerhead	0.10	1,140	11,400	93	0.10	933
Refrigerator Replacement	11.85	87,162	1,656,078	-	-	-
Storm Windows	-	20	394	126	-	2,520
Water Heater Insulation	0.27	3,638	47,294	265	0.47	3,450
Water Heater Replacement	-	-	-	161	1.26	1,771
Water Pipe Insulation	1.37	4,312	56,056	942	0.90	10,358
Window AC Replacement	0.76	1,011	12,840	-	-	-
Window Replacement	-	8,332	166,636	38,084	-	761,680
Window Sealing	-	5,418	54,176	67,069	-	670,685
Total	434.58	1,245,798	16,628,267	267,365	2,975.49	3,621,814

2.2.1 Ex Ante Savings for Electric Utilities

The participating electric utilities are AEP-SWEPCO, EDEC, Entergy, and OG&E. Table 2-2 presents the savings results of the evaluation of the 2012 AWP for electric utilities. Table 2-3 through Table 2-6 summarize the ex ante savings by measure for each electric utility.

Table 2-2 Ex Ante Savings by Electric Utility

<i>Electric Utility</i>	<i># of Homes</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>
AEP-SWEPCO	59	61.69	120,318
EDEC	4	2.57	7,890
Entergy	445	347.33	1,028,130
OG&E	45	22.99	89,459
Total	553	434.58	1,245,798

Table 2-3 Ex Ante Savings by Measure Type – AEP-SWEPCO

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>
AC Tune-Up	-	-
Air Infiltration	17.55	33,168
Ceiling Insulation	40.10	48,057
Central AC Replacement	-	-
Floor Insulation	-	4,174
Gas Furnace Replacement	-	-
Gas Furnace Tune-Up	-	-
Heat Pump Replacement	-	-
Lighting	2.86	26,291
Low Flow Showerhead	-	-
Refrigerator Replacement	1.01	7,430
Storm Windows	-	-
Water Heater Insulation	0.01	68
Water Heater Replacement	-	-
Water Pipe Insulation	0.17	528
Window AC Replacement	-	-
Window Replacement	-	455
Window Sealing	-	147
Total	61.69	120,318

Table 2-4 Ex Ante Savings by Measure Type - EDEC

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>
AC Tune-Up	-	-
Air Infiltration	0.42	653
Ceiling Insulation	1.48	1,314
Central AC Replacement	-	-
Floor Insulation	-	264
Gas Furnace Replacement	-	-
Gas Furnace Tune-Up	-	-
Heat Pump Replacement	-	-
Lighting	0.45	4,085
Low Flow Showerhead	-	-
Refrigerator Replacement	0.20	1,486
Storm Windows	-	-
Water Heater Insulation	-	-
Water Heater Replacement	-	-
Water Pipe Insulation	0.03	88
Window AC Replacement	-	-
Window Replacement	-	-
Window Sealing	-	-
Total	2.57	7,890

Table 2-5 Ex Ante Savings by Measure Type - Entergy

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>
AC Tune-Up	2.55	6,083
Air Infiltration	105.25	311,967
Ceiling Insulation	188.61	304,194
Central AC Replacement	6.60	14,908
Floor Insulation	-	20,806
Gas Furnace Replacement	-	-
Gas Furnace Tune-Up	-	-
Heat Pump Replacement	5.47	39,376
Lighting	27.72	251,454
Low Flow Showerhead	0.05	570
Refrigerator Replacement	9.23	67,844
Storm Windows	-	16
Water Heater Insulation	0.21	2,890
Water Heater Replacement	-	-
Water Pipe Insulation	1.01	3,168
Window AC Replacement	0.64	861
Window Replacement	-	1,055
Window Sealing	-	2,939
Total	347.33	1,028,130

Table 2-6 Ex Ante Savings by Measure Type – OG&E

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>
AC Tune-Up	0.51	952
Air Infiltration	3.32	17,421
Ceiling Insulation	14.86	24,807
Central AC Replacement	0.30	633
Floor Insulation	-	3,990
Gas Furnace Replacement	-	-
Gas Furnace Tune-Up	-	-
Heat Pump Replacement	0.22	2,032
Lighting	1.97	18,138
Low Flow Showerhead	0.05	570
Refrigerator Replacement	1.41	10,402
Storm Windows	-	4
Water Heater Insulation	0.05	680
Water Heater Replacement	-	-
Water Pipe Insulation	0.17	528
Window AC Replacement	0.13	150
Window Replacement	-	6,822
Window Sealing	-	2,331
Total	22.99	89,459

Table 2-7 presents the ex ante electric savings that were not associated with any AWP utility provider, although the source and context of these savings is unclear. The ex ante savings may be attributable to municipal utilities or co-op utilities, although the specific entities are not identified within the tracking data. This table is a reflection of the non-program ex ante electric savings that are claimed within the tracking system, and these savings are not applicable to any specific service provider.

Table 2-7 Ex Ante Savings by Measure Type – Non-Program (Electric)

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>
AC Tune-Up	0.60	1,176
Air Infiltration	28.48	38,218
Ceiling Insulation	54.01	56,582
Central AC Replacement	1.51	3,300
Floor Insulation	-	1,528
Gas Furnace Replacement	-	-
Gas Furnace Tune-Up	-	-
Heat Pump Replacement	-	-
Lighting	5.81	52,776
Low Flow Showerhead	0.05	570
Refrigerator Replacement	1.55	11,391
Storm Windows	-	4
Water Heater Insulation	0.02	204
Water Heater Replacement	-	-
Water Pipe Insulation	0.11	352
Window AC Replacement	-	-
Window Replacement	-	2,988
Window Sealing	-	691
Total	92.13	169,781

2.2.2 Ex Ante Savings for Gas Utilities

The participating gas utilities are AOG, CenterPoint, and SourceGas. Table 2-8 presents the savings results of the evaluation of the 2012 AWP for gas utilities. Table 2-9 through Table 2-11 summarize the ex ante savings by measure for each gas utility.

Table 2-8 Ex Ante Savings by Gas Utility

<i>Gas Utility</i>	<i># of Homes</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>
AOG	26	5,848	96.58
CenterPoint	436	250,543	2,730.41
SGA	32	10,974	148.50
Total	494	267,365	2,975.49

Table 2-9 Ex Ante Savings by Measure Type - AOG

<i>Measure</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>
AC Tune-Up	-	-
Air Infiltration	3,294	80.69
Ceiling Insulation	1,406	1.06
Central AC Replacement	-	-
Floor Insulation	181	2.61
Gas Furnace Replacement	612	11.10
Gas Furnace Tune-Up	58	1.04
Heat Pump Replacement	-	-
Lighting	-	-
Low Flow Showerhead	8	0.01
Refrigerator Replacement	-	-
Storm Windows	-	-
Water Heater Insulation	-	-
Water Heater Replacement	-	-
Water Pipe Insulation	62	0.06
Window AC Replacement	-	-
Window Replacement	126	-
Window Sealing	101	-
Total	5,848	96.58

Table 2-10 Ex Ante Savings by Measure Type - CenterPoint

<i>Measure</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>
AC Tune-Up	-	-
Air Infiltration	95,606	2,426.91
Ceiling Insulation	33,635	26.03
Central AC Replacement	-	-
Floor Insulation	4,435	67.07
Gas Furnace Replacement	10,223	198.50
Gas Furnace Tune-Up	445	9.68
Heat Pump Replacement	-	-
Lighting	-	-
Low Flow Showerhead	8	0.01
Refrigerator Replacement	-	-
Storm Windows	126	-
Water Heater Insulation	235	0.42
Water Heater Replacement	161	1.03
Water Pipe Insulation	805	0.77
Window AC Replacement	-	-
Window Replacement	37,921	-
Window Sealing	66,941	-
Total	250,543	2,730.41

Table 2-11 Ex Ante Savings by Measure Type – SourceGas

<i>Measure</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>
AC Tune-Up	-	-
Air Infiltration	4,452	94.55
Ceiling Insulation	2,595	1.92
Central AC Replacement	-	-
Floor Insulation	3,222	43.81
Gas Furnace Replacement	460	7.78
Gas Furnace Tune-Up	-	-
Heat Pump Replacement	-	-
Lighting	-	-
Low Flow Showerhead	76	0.08
Refrigerator Replacement	-	-
Storm Windows	-	-
Water Heater Insulation	30	0.05
Water Heater Replacement	-	0.23
Water Pipe Insulation	75	0.07
Window AC Replacement	-	-
Window Replacement	38	-
Window Sealing	26	-
Total	10,974	148.50

Table 2-12 presents the ex ante gas savings that were not associated with any AWP utility provider, although the source and context of these savings is unclear. As there are few non-program gas utility providers in the state of Arkansas, the “non-program” ex ante gas savings may represent propane customers or possibly tracking database errors that claim gas savings for homes that are not serviced by a gas utility. Therefore, Table 2-12 is a reflection of the non-program ex ante gas savings that are claimed within the tracking system, and these savings are not applicable to any specific service provider.

Table 2-12 Ex Ante Savings Values by Measure Type – Non-Program (Gas)

<i>Measure</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>
AC Tune-Up	-	-
Air Infiltration	13,480	335.85
Ceiling Insulation	3,897	3.05
Central AC Replacement	-	-
Floor Insulation	605	9.16
Gas Furnace Replacement	891	18.39
Gas Furnace Tune-Up	24	0.59
Heat Pump Replacement	-	-
Lighting	-	-
Low Flow Showerhead	8	0.01
Refrigerator Replacement	-	-
Storm Windows	76	-
Water Heater Insulation	10	0.02
Water Heater Replacement	26	0.13
Water Pipe Insulation	66	0.06
Window AC Replacement	-	-
Window Replacement	11,996	-
Window Sealing	14,389	-
Total	45,468	367.25

2.3 Gross Savings Calculation Methodology

For equipment and retrofits rebated through the 2012 program, calculation methodologies were performed as described in the applicable TRM. Table 2-13 identifies the sections in the applicable TRM that were used for verification of measure-level savings under the AWP.

Table 2-13 TRM Sections by Measure Type

<i>Measure</i>	<i>TRM Version</i>	<i>Section in TRM</i>
AC Tune-Up	1.0	3.1
Air Infiltration	2.0	2.2.9
Ceiling Insulation	2.0	2.2.2
Central AC Replacement	2.0	2.1.6
Floor Insulation	2.0	2.2.4
Gas Furnace Replacement	2.0	2.1.3
Gas Furnace Tune up	1.0	2.4
Heat Pump Replacement	2.0	2.1.8
Lighting	2.0	2.5.1
Low Flow Showerhead	2.0	2.3.5
Refrigerator Replacement	1.0	2.27
Water Heater Insulation	2.0	2.3.2
Water Heater Replacement	1.0	2.20
Water Heater Pipe	1.0	2.22
Window AC Replacement	2.0	2.1.10
Window Replacement	2.0	2.2.7

Three measures accounted for the majority of the gross savings for the AWP: air infiltration reduction, ceiling insulation, and the replacement of incandescent lamps with compact fluorescent lamps (CFLs). The calculation methodologies for these measures are detailed in the following sections. In these examples, energy units are expressed in kWh.

2.3.1 Air Infiltration Reduction Savings Calculations

The deemed savings values for air infiltration reduction were developed through EnergyGauge, a simulation software program. Multiple equipment configurations were simulated in each of the four Arkansas weather zones in developing savings values denominated in deemed savings per CFM₅₀ of air leakage rate reduction. Table 2-14 summarizes the deemed savings values for Weather Zone 7 (from TRM V2.0).

Table 2-14 Deemed Savings Values for Air Infiltration Reduction, Zone 7

<i>Equipment Type</i>	<i>kWh Savings / CFM50</i>	<i>kW Savings / CFM50</i>	<i>Therm Savings / CFM50</i>	<i>Peak Therms / CFM50</i>
Electric AC with Gas Heat	0.2387	0.0002171	0.0790	0.001853
Gas Heat Only (no AC)	0.0565	n/a	0.0790	0.001853
Elec. AC with Resistance heat	1.7891	0.0001584	n/a	n/a
Heat Pump	1.1295	0.0001584	n/a	n/a

The following example considers a residence in Weather Zone 7 with electric AC and gas heat. If the residence had a leakage rate of 16,100 CFM₅₀ before air infiltration

reduction and a leakage rate of 7,220 CFM₅₀ after, then the residence would have an annual gross savings of 2,120 kWh.

$$\text{Air Infiltration Savings} = 0.2387 \frac{\text{kWh Savings}}{\text{CFM}_{50}} \cdot (16,100 \text{ CFM}_{50 \text{ pre}} - 7,220 \text{ CFM}_{50 \text{ post}})$$

$$\text{Air Infiltration Savings} = 2,120 \text{ kWh}$$

It should be noted that as the air infiltration calculation is based on whole house leakage reduction, this calculation accounts for leakage reductions from a wide range of building shell improvements. These improvements include door sweeps, structural repairs, and window sealing measures. Although window sealing was performed on many homes that received overall air infiltration work, this air infiltration calculation inherently includes the leakage reduction resulting from the window sealing measure. Therefore, homes that claimed ex ante savings for both the air infiltration and window sealing measures only received verified gross savings for the air infiltration measure.

2.3.2 Ceiling Insulation Savings Calculations

The deemed savings values for ceiling insulation were developed through EnergyGauge, a simulation software program. Multiple equipment configurations were simulated in each of the four Arkansas weather zones in developing savings values denominated in deemed savings per square footage of ceiling area. Table 2-15 summarizes the deemed savings values for Weather Zone 8 (from TRM V2.0).

Table 2-15 Deemed Savings Values for Ceiling Insulation, Zone 8

Ceiling Insulation Base R- Value	AC/Gas Heat kWh/sq ft	Gas Heat (no AC) Therms/sq ft	AC/Electrical Resistance kWh/sq ft	Heat Pump kWh/sq ft	AC Peak Savings kW/ sq ft	Peak Gas Savings Therms/sq ft
0 to 4	1.53	0.145	4.8	2.83	0.00115	0.00244
5 to 8	0.756	0.0841	2.65	1.53	0.00038	0.00140
9 to 14	0.451	0.0547	1.68	0.969	0.00029	0.00090
15 to 22	0.28	0.0359	1.1	0.629	0.00013	0.00059

The following example considers a residence in Weather Zone 8 with a heat pump, and a pre-retrofit R-value of ceiling insulation in the range of 9 to 14. If the residence has a ceiling area of 1,200 sq. ft., then the residence would have an annual gross savings of 1,163 kWh.

$$\text{Ceiling Insulation Savings} = 0.969 \frac{\text{kWh}}{\text{ft}^2} \cdot (1,200 \text{ ft}^2) = 1,163 \text{ kWh}$$

Upon conducting savings verification for the ceiling insulation measures, the Evaluators found that the calculations used in the Frontier database to estimate measure savings were not performed in accordance with the TRM ceiling insulation formula. Further discussion of this issue suggested that the ceiling insulation ex ante savings values presented in the database were actually calculated by using the TRM formula for attic knee wall insulation. This caused the ex ante savings for ceiling insulation to be inflated above the appropriate levels. Therefore, the verified savings and realization rates for ceiling insulation were lower than initially reported.

2.3.3 Compact Fluorescent Lamps (CFLs) Savings Calculations

The deemed savings for compact fluorescent lamps can be calculated by using the following equation.

$$kWh_{savings} = (kW_{pre} - kW_{post}) \times AOH \times ISR \times IEF_E$$

The inputs, which assume the following prerequisite knowledge, can be found in Section 2.5.1 of TRM V2.0:

- The quantity and wattages of both pre and post fixtures;
- Whether or not the retrofits were indoor or outdoor; and
- Whether or not the space is air conditioned.

For example, if an air-conditioned residence replaced (5) indoor 75W incandescent lamps with (5) 23W CFLs, then the residence would have an annual gross savings of 188.7 kWh.

$$CFLs\ Savings = (5 \cdot 0.075 - 5 \cdot 0.0023)kW \cdot 803.6hr \cdot 0.86 \cdot 1.05 = 188.7\ kWh$$

2.4 Net Savings Determination

The Evaluators assessed the Arkansas Weatherization Program's overall design, operation, and customer base to identify the likelihood for free-ridership and savings spillover during the 2012 program year. Feedback obtained from customers, community action agencies, and utility staff indicates that the likelihood for program free-ridership is very low. As a high percentage of AWP participants qualified for and participated in the income-qualified statewide Weatherization Assistance Program (WAP), they are unlikely to be candidates for free-ridership in the AWP. The promotional structure of the AWP targets customer groups who would be very unlikely to pursue these weatherization projects in the absence of the program, and who would likely not seek out an energy audit at their own cost.

Additionally, participants who were visited by Evaluator field staff were asked a series of questions related to program savings spillover, and none of these customers identified any potential spillover savings. The Evaluators conclude that the most appropriate net-to-gross ratio to apply to the Arkansas Weatherization Program for the 2012 year is 1, indicating that there are no significant levels of free-ridership or spillover savings.

2.5 On-site Verification Procedure

In addition to TRM verification, the Evaluators conducted on-site field verification of a sample of participant homes. This process involved reviewing tracking information and inspecting the completeness and accuracy of the implemented measures. Collected field data were incorporated into the gross savings analysis.

2.5.1 Verification Sampling Methodology

The Evaluators conducted a simple random sample of participants for the ex-post verification process. The sample size for verification surveys is calculated to meet 90% confidence and 10% precision (90/10). The sample size to meet 90/10 requirements is calculated based on the coefficient of variation of savings for program participants. Coefficient of Variation (CV) is defined as:

$$CV(x) = \frac{\text{Standard Deviation } (x)}{\text{Mean}(x)}$$

Where x is the average Therms or kWh savings per participant. Without data to use as a basis for a higher value, it is typical to apply a CV of .5 in residential program evaluations. The resulting sample size is estimated at:

$$n_0 = \left(\frac{1.645 * CV}{RP} \right)^2$$

Where,

1.645 = Z Score for 90% confidence interval in a normal distribution

CV = Coefficient of Variation

RP = Required Precision, 10% in this evaluation

With 10% required precision (RP), this calls for a sample of 68 for programs with a sufficiently large population. However, for programs with lower levels of participation, a finite population correction is used to maintain cost-effective verification while meeting precision goals. For the AWP, the Evaluators applied a finite population correction factor as follows:

$$n = \frac{n_0}{1 + n_0/N}$$

Where

n_0 = Sample Required for Large Population

N = Size of Population

n = Corrected Sample

The AWP had a total of 641 participants for the 2012 program year. After applying the population correction factor, the program calls for a sample size of 61 participants.

In total, the Evaluators scheduled 65 on-site verification visits to customer homes. As some participants cancelled appointments or were unavailable during the scheduled appointment time, the Evaluators were able to visit and verify measures in 54 of these homes. In order to collect verification data for the remaining residences, the Evaluators conducted telephone verification with 10 additional participant homes in order to verify that all recorded measures had been installed and were functioning properly.

2.5.2 Verification Procedure

The primary goal of field verification was to ensure that the reported measures were installed and operating correctly in participant homes. Participants were given VISA gift cards for their time; these were in the amount of either \$25 or \$50 depending on the estimated length of the visit. During the on-site visits, the Evaluators' field technicians accomplished the following:

- Verified the implementation status of the measures; verified that the measures were indeed installed, that they were installed correctly, and were functioning properly. Photographs were taken of most of the installed measures.
- Data collected at each site focused on obtaining more specific information regarding the characteristics of the home where the measures were implemented.
- Interviewed customers to obtain additional information on customer satisfaction with the measures as well as information related to potential spillover savings.

2.6 Verified Savings by Measure

After reviewing the tracking data and inputs for savings calculations, the Evaluators provided verified gross savings according to TRM protocols. Savings from the following measures were verified and matched the calculations provided by Frontier Associates:

- AC Tune Up;
- Air Infiltration;
 - The post CFM₅₀ measurements from the Evaluator's on-site data collection effort were considered when calculating savings.
- Floor Insulation;
- Gas Furnace Tune Up;
- Heat Pump Replacement;
- Refrigerator Replacement;

- Water Heater Replacement; and
- Window AC.

The savings calculated in this evaluation differed from Frontier Associates' calculations for several items in the applicable TRM. The Evaluators verified measure-level savings according to the applicable TRM guidelines and obtained results that differed from Frontier Associates' calculations for the following measures:

- Ceiling Insulation
 - According to TRM V2.0, savings are calculated by multiplying a deemed value (which is dependent on the weather zone, the initial R-value, and the heating and cooling equipment types) with the square feet of insulated ceiling space. However, the Evaluators were unable to reproduce the savings provided by Frontier Associates. By multiplying all possible combinations of deemed values with the reported square feet of ceiling space, the Evaluators explored the possibility of a Frontier Associates' savings values being a result of a simple lookup error, but this does not appear to be the case. The Evaluators calculated savings by applying the methodology outlined in Section 2.2.2 of TRM V2.0.
- Central AC Replacement
 - Frontier Associates provided sufficient data to calculate savings according to Section 2.1.6 of TRM V2.0. However, the Evaluators were not able to reproduce the majority of the savings reported by Frontier Associates. The savings calculated by Frontier Associates appear to include an error and are underestimating savings.
- Gas Furnace Replacement
 - Frontier Associates provides a field "GC_Efficiency" that designates the efficiency of the new gas furnace as 90% AFUE, 95% AFUE, none, or below Energy Star. According to Section 2.1.3 of TRM V2.0, "Equipment must, at a minimum, meet the ENERGY STAR efficiency levels to be eligible. Current ENERGY STAR levels require the AFUE, as reported by AHRI, to be 90 percent or higher." Frontier Associates reported savings for participants with gas furnace efficiencies that were not compliant with the aforementioned requirement. The Evaluators did not apply savings for these participants.
- Lighting
 - Originally, TRM V1.0 assumed 2.28 hours of use per day (as shown in section 2.28). However, this value has since been updated for TRM 1 to 2.20 hours of use per day. Frontier Associates used TRM V1.0, but used the outdated value of 2.28 hours of use per day in their calculations of

savings for CFLs. The Evaluators used TRM V2.0 to calculate savings and assumed all retrofits were performed indoors in air-conditioned spaces.

- Water Heater Insulation
 - Frontier Associates initially mislabeled Therms savings as Peak Therms and Peak Therms savings as Therms savings. In section 2.3.2, TRM V2.0 presents deemed savings values which are a function of tank size and jacket thickness. Given the inputs provided in the tracking data, there were several instances of claimed savings referencing an incorrect deemed value.
- Water Pipe Insulation
 - Frontier Associates initially aggregated Therms savings and kWh savings into a single column mislabeled as kWh savings. As a result, no Therms savings were claimed for this measure until a final database correction occurred after the end of the program year. When calculating savings, the Evaluators disaggregated Therms savings from kWh savings as appropriate.

Savings for some of the measure types could not be verified due to a lack of information within the tracking data received or within the TRM. These measures include:

- Low-Flow Showerheads
 - Savings could not be verified due to a lack of information within the tracking data received. Section 2.24 of TRM V1.0 provides tables with savings based on the quantity of showerheads installed and the number of showers present in the residence - this information was not available in the tracking data. However, the Evaluators applied Frontier Associates savings to the gross realized savings totals because the values were within the bounds of what could be calculated from TRM V1.0 and because the measure only accounts for 0.099% of the overall claimed kWh savings and 0.050% of the overall claimed Therms savings.
- Storm Windows, Window Sealing
 - These measures are not detailed in the TRM. The Storm Windows measure only accounts for 0.002% of the overall claimed kWh savings and 0.047% of the overall claimed Therms savings. The Window Sealing measure accounts for 0.435% of the overall claimed kWh savings and 25.085% of the overall claimed Therms savings. However, the Evaluators determined that most of the claimed Window Sealing savings were already accounted for under the Air Infiltration measure. The Evaluators only attributed savings to the Window Sealing measure for homes that did not also perform the Air Infiltration measure.

- Window Replacement
 - In section 2.2.7, TRM V2.0 provides savings based on weather zone, equipment type, and whether the window is single or double paned. The tracking data received by the evaluators did not include the square footage of windows or information regarding whether the windows were single or double paned. The evaluators assumed double paned windows, but square footage was not available. This measure accounts for 0.669% of the overall claimed kWh savings and 14.244% of the overall claimed Therms savings.

Table 2-16 presents the savings results of the evaluation of the 2012 Arkansas Weatherization Program, by measure. Total savings summarizes the savings calculations performed as per TRM protocols for the AWP. As discussed above, the net-to-gross ratio for the 2012 program year is 1.

Table 2-16 Net Verified Savings by Measure Type – Overall

Measure	Realization Rate	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)	Realization Rate	Annual Savings (Therms)	Peak Demand Savings (Therms)	Lifetime Savings (Therms)
AC Tune-Up	100%	3.06	7,035	35,173	-	-	-	-
Air Infiltration	102%	126.96	370,776	3,707,762	101%	103,877	2,617.80	1,038,766
Ceiling Insulation	60%	114.26	225,641	4,512,819	74%	27,860	452.32	557,203
Central AC Replacement	141%	9.70	21,966	329,490	-	-	-	-
Floor Insulation	100%	-	29,234	584,673	100%	7,838	113.49	156,758
Gas Furnace Replacement	-	-	-	-	61%	6,918	132.13	138,369
Gas Furnace Tune-Up	-	-	-	-	100%	504	10.72	1,511
Heat Pump Replacement	100%	5.69	41,378	620,670	-	-	-	-
Lighting	117%	36.50	349,952	2,274,688	-	-	-	-
Low Flow Showerhead	100%	0.10	1,140	11,400	100%	93	0.10	933
Refrigerator Replacement	100%	11.85	87,162	1,656,078	-	-	-	-
Storm Windows	100%	-	20	394	100%	126	-	2,520
Water Heater Insulation	100%	0.27	3,638	47,294	111%	294	0.52	3,822
Water Heater Replacement	-	-	-	-	100%	161	1.26	1,771
Water Pipe Insulation	100%	1.37	4,312	56,056	100%	942	0.90	10,358
Window AC Replacement	100%	0.76	1,011	12,840	-	-	-	-
Window Replacement	100%	-	8,332	166,636	100%	38,084	-	761,680
Window Sealing	9%	-	509	5,090	1%	833	-	8,330
Total	92%	310.52	1,152,105	14,021,063	70%	187,530	3,329.24	2,682,020

2.7 Verified Savings for Electric Utilities

The Arkansas Weatherization Program is designed to use both electric and gas utility funds to assist customers with the cost of the in-home audit and energy efficient measures. The participating electric utilities are AEP-SWEPCO, EDEC, Entergy, and OG&E. Table 2-17 presents the savings results of the evaluation of the 2012 AWP for electric utilities. Table 2-18 through Table 2-21 summarize the savings by measure for each electric utility.

Table 2-17 Net Verified Savings by Electric Utility

<i>Electric Utility</i>	<i># of Homes</i>	<i>Realization Rate</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
AEP-SWEPCO	59	71%	24.46	85,310	892,550
EDEC	4	106%	1.54	8,357	87,174
Entergy	445	95%	272.4	981,539	12,061,252
OG&E	45	86%	12.12	76,898	980,086
Total	553	92%	310.52	1,152,105	14,021,063

Table 2-18 Net Verified Savings by Measure Type – AEP – SWEPCO

<i>Measure</i>	<i>Realization Rate</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
AC Tune-Up	-	-	-	-
Air Infiltration	102%	17.61	33,859	338,595
Ceiling Insulation	9%	2.09	4,466	89,313
Central AC Replacement	-	-	-	-
Floor Insulation	100%	-	4,174	83,484
Gas Furnace Replacement	-	-	-	-
Gas Furnace Tune-Up	-	-	-	-
Heat Pump Replacement	-	-	-	-
Lighting	131%	3.58	34,331	223,149
Low Flow Showerhead	-	-	-	-
Refrigerator Replacement	100%	1.01	7,430	141,170
Storm Windows	-	-	-	-
Water Heater Insulation	100%	0.01	68	884
Water Heater Replacement	-	-	-	-
Water Pipe Insulation	100%	0.17	528	6,864
Window AC Replacement	-	-	-	-
Window Replacement	100%	-	455	9,092
Window Sealing	-	-	-	-
Total	71%	24.46	85,310	892,550

Table 2-19 Net Verified Savings by Measure Type – EDEC

Measure	Realization Rate	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings(kWh)
AC Tune-Up	-	-	-	-
Air Infiltration	102%	0.42	667	6,666
Ceiling Insulation	44%	0.34	579	11,571
Central AC Replacement	-	-	-	-
Floor Insulation	100%	-	264	5,280
Gas Furnace Replacement	-	-	-	-
Gas Furnace Tune-Up	-	-	-	-
Heat Pump Replacement	-	-	-	-
Lighting	129%	0.55	5,274	34,279
Low Flow Showerhead	-	-	-	-
Refrigerator Replacement	100%	0.20	1,486	28,234
Storm Windows	-	-	-	-
Water Heater Insulation	-	-	-	-
Water Heater Replacement	-	-	-	-
Water Pipe Insulation	100%	0.03	88	1,144
Window AC Replacement	-	-	-	-
Window Replacement	-	-	-	-
Window Sealing	-	-	-	-
Total	106%	1.54	8,357	87,174

Table 2-20 Net Verified Savings by Measure Type – Entergy

Measure	Realization Rate	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)
AC Tune-Up	100%	2.55	6,083	30,413
Air Infiltration	102%	105.60	318,467	3,184,667
Ceiling Insulation	70%	108.38	212,522	4,250,444
Central AC Replacement	143%	9.40	21,333	319,995
Floor Insulation	100%	-	20,806	416,116
Gas Furnace Replacement	-	-	-	-
Gas Furnace Tune-Up	-	-	-	-
Heat Pump Replacement	100%	5.47	39,376	590,640
Lighting	114%	29.87	286,388	1,861,521
Low Flow Showerhead	100%	0.05	570	5,700
Refrigerator Replacement	100%	9.23	67,844	1,289,036
Storm Windows	100%	-	16	318
Water Heater Insulation	100%	0.21	2,890	37,570
Water Heater Replacement	-	-	-	-
Water Pipe Insulation	100%	1.01	3,168	41,184
Window AC Replacement	100%	0.64	861	10,935
Window Replacement	100%	-	1,055	21,104
Window Sealing	5%	-	161	1,610
Total	95%	272.40	981,539	12,061,252

Table 2-21 Net Verified Savings by Measure Type – OG&E

<i>Measure</i>	<i>Realization Rate</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
AC Tune-Up	100%	0.51	952	4,760
Air Infiltration	102%	3.33	17,783	177,835
Ceiling Insulation	33%	3.45	8,075	161,491
Central AC Replacement	100%	0.30	633	9,495
Floor Insulation	100%	-	3,990	79,793
Gas Furnace Replacement	-	-	-	-
Gas Furnace Tune-Up	-	-	-	-
Heat Pump Replacement	99%	0.22	2,002	30,030
Lighting	132%	2.50	23,960	155,739
Low Flow Showerhead	100%	0.05	570	5,700
Refrigerator Replacement	100%	1.41	10,402	197,638
Storm Windows	100%	-	4	76
Water Heater Insulation	100%	0.05	680	8,840
Water Heater Replacement	-	-	-	-
Water Pipe Insulation	100%	0.17	528	6,864
Window AC Replacement	100%	0.13	150	1,905
Window Replacement	100%	-	6,822	136,440
Window Sealing	15%	-	348	3,480
Total	86%	12.12	76,898	980,086

Table 2-22 presents the electric savings that were not associated with any AWP utility provider, although the source and context of these savings is unclear. The savings may be attributable to municipal utilities or co-op utilities, although the specific entities are not identified within the tracking data. This table is a reflection of the non-program electric savings that are claimed within the tracking system, and these savings are not applicable to any specific service provider.

Table 2-22 Net Verified Savings by Measure Type – Non-Program (Electric)

<i>Measure</i>	<i>Realization Rate</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
AC Tune-Up	100%	0.60	1,176	5,880
Air Infiltration	102%	28.57	39,015	390,145
Ceiling Insulation	56%	21.35	31,645	632,901
Central AC Replacement	146%	2.18	4,814	72,210
Floor Insulation	100%	-	1,528	30,562
Gas Furnace Replacement	-	-	-	-
Gas Furnace Tune-Up	-	-	-	-
Heat Pump Replacement	-	-	-	-
Lighting	116%	6.41	61,469	399,549
Low Flow Showerhead	100%	0.05	570	5,700
Refrigerator Replacement	100%	1.55	11,391	216,429
Storm Windows	100%	-	4	88
Water Heater Insulation	100%	0.02	204	2,652
Water Heater Replacement	-	-	-	-
Water Pipe Insulation	100%	0.11	352	4,576
Window AC Replacement	-	-	-	-
Window Replacement	100%	-	2,988	59,762
Window Sealing	1%	-	8	76
Total	91%	60.84	155,164	1,820,531

2.8 Verified Savings for Gas Utilities

The Arkansas Weatherization Program is designed to use both electric and gas utility funds to assist customers with the cost of the in-home audit and energy efficient measures. The participating gas utilities are AOG, CenterPoint, and SourceGas. Table 2-23 presents the savings results of the evaluation of the 2012 AWP for gas utilities. Table 2-24 through Table 2-26 summarize the savings by measure for each gas utility.

Table 2-23 Net Verified Savings by Gas Utility

<i>Gas Utility</i>	<i># of Homes</i>	<i>Realization Rate</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AOG	26	83%	4,864	103.6	62,434
CenterPoint	436	69%	172,709	3,055.33	2,466,857
SGA	32	91%	9,957	170.31	152,729
Total	494	70%	187,530	3,329.24	2,682,020

Table 2-24 Net Verified Savings by Measure Type – AOG

<i>Measure</i>	<i>Realization Rate</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AC Tune-Up	-	-	-	-
Air Infiltration	101%	3,311	81.18	33,109
Ceiling Insulation	69%	975	16.31	19,509
Central AC Replacement	-	-	-	-
Floor Insulation	100%	181	2.61	3,622
Gas Furnace Replacement	22%	132	2.40	2,646
Gas Furnace Tune-Up	100%	58	1.04	174
Heat Pump Replacement	-	-	-	-
Lighting	-	-	-	-
Low Flow Showerhead	100%	8	0.01	85
Refrigerator Replacement	-	-	-	-
Storm Windows	-	-	-	-
Water Heater Insulation	-	-	-	-
Water Heater Replacement	-	-	-	-
Water Pipe Insulation	100%	62	0.06	678
Window AC Replacement	-	-	-	-
Window Replacement	100%	126	-	2,512
Window Sealing	10%	10	-	100
Total	83%	4,864	103.60	62,434

Table 2-25 Net Verified Savings by Measure Type – CenterPoint

<i>Measure</i>	<i>Realization Rate</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AC Tune-Up	-	-	-	-
Air Infiltration	101%	96,091	2,441.50	960,911
Ceiling Insulation	75%	25,193	410.81	503,867
Central AC Replacement	-	-	-	-
Floor Insulation	100%	4,435	67.07	88,702
Gas Furnace Replacement	63%	6,439	124.00	128,776
Gas Furnace Tune-Up	100%	445	9.68	1,336
Heat Pump Replacement	-	-	-	-
Lighting	-	-	-	-
Low Flow Showerhead	100%	8	0.01	85
Refrigerator Replacement	-	-	-	-
Storm Windows	100%	126	-	2,520
Water Heater Insulation	111%	261	0.46	3,389
Water Heater Replacement	100%	161	1.03	1,771
Water Pipe Insulation	100%	805	0.77	8,857
Window AC Replacement	-	-	-	-
Window Replacement	100%	37,921	-	758,412
Window Sealing	1%	823	-	8,230
Total	69%	172,709	3,055.33	2,466,857

Table 2-26 Net Verified Savings by Measure Type – Source Gas

<i>Measure</i>	<i>Realization Rate</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AC Tune-Up	-	-	-	-
Air Infiltration	101%	4,475	95.12	44,746
Ceiling Insulation	65%	1,691	25.20	33,827
Central AC Replacement	-	-	-	-
Floor Insulation	100%	3,222	43.81	64,433
Gas Furnace Replacement	75%	347	5.73	6,947
Gas Furnace Tune-Up	-	-	-	-
Heat Pump Replacement	-	-	-	-
Lighting	-	-	-	-
Low Flow Showerhead	100%	76	0.08	763
Refrigerator Replacement	-	-	-	-
Storm Windows	-	-	-	-
Water Heater Insulation	110%	33	0.06	433
Water Heater Replacement	-	-	0.23	-
Water Pipe Insulation	100%	75	0.07	823
Window AC Replacement	-	-	-	-
Window Replacement	100%	38	-	756
Window Sealing	-	-	-	-
Total	91%	9,957	170.31	152,729

Table 2-27 presents the gas savings that were not associated with any AWP utility provider, although the source and context of these savings is unclear. As there are few non-program gas utility providers in the state of Arkansas, the “non-program” gas savings may represent propane customers or possibly tracking database errors that claim gas savings for homes that are not serviced by a gas utility. Therefore, Table 2-27 is a reflection of the non-program gas savings that are claimed within the tracking system, and these savings are not applicable to any specific service provider.

Table 2-27 Net Savings by Measure Type – Non-Program (Gas)

<i>Measure</i>	<i>Realization Rate</i>	<i>Annual Savings (Therms)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AC Tune-Up	-	-	-	-
Air Infiltration	101%	13,549	337.87	135,488
Ceiling Insulation	77%	2,995	50.01	59,902
Central AC Replacement	-	-	-	-
Floor Insulation	100%	605	9.16	12,096
Gas Furnace Replacement	57%	512	9.73	10,237
Gas Furnace Tune-Up	100%	24	0.59	71
Heat Pump Replacement	-	-	-	-
Lighting	-	-	-	-
Low Flow Showerhead	100%	8	0.01	85
Refrigerator Replacement	-	-	-	-
Storm Windows	100%	76	-	1,520
Water Heater Insulation	117%	12	0.02	154
Water Heater Replacement	100%	26	0.13	286
Water Pipe Insulation	100%	66	0.06	726
Window AC Replacement	-	-	-	-
Window Replacement	100%	11,996	-	239,912
Window Sealing	7%	963	-	9,634
Total	68%	30,831	407.58	470,111

3. In-Depth Interview Findings

As part of the evaluation of the 2012 Arkansas Weatherization Program, the Evaluators conducted in-depth interviews with utility staff members involved in managing and operating the program, as well as ACAA representatives and community action agency directors. These interviews were designed to explore various aspects of program performance, including overall design, operational efficiency, and opportunities for future improvement.

As the evaluation of the 2011 program year provided details regarding program operation and design, the 2012 evaluation interviews are intended to explore any changes in the program and any new developments over the past year. The 2012 evaluation seeks to follow-up on key issues and draw comparisons between program years where appropriate.

This section presents key findings and issues identified through these interviews.

3.1 Utility Staff and ACAA Interviews

3.1.1 Data Quality and Availability

Utility staff mentioned that there were some delays in the reporting process, and that Frontier reports had been received two to three months after the implementation work had been completed. Interviewed staff explained that this was likely due to one of several factors including agency reporting delays, savings calculation lead times, or the post-implementation verification process. Utility staff indicated that it was difficult to manage expectations for program performance because at any given time it was unclear how many homes had been serviced under the AWP. Some utility members reported that there had been times when they did not have access to the Frontier database.

Additionally, reports received from Frontier were not always consistent in terms of the data fields included, where some reports did not contain savings values or the correct number of homes. However, utility staff reported that these issues had been improved since the 2011 program year, and that the modifications to the Frontier database had been positive. For example, previous issues such as apparent negative savings numbers, absent measure types, and mislabeling of project details had been for the most part resolved.

3.1.2 Community Action Agency Involvement

Utility staff indicated that working with the agencies had been fairly similar to the 2011 year, in that there were variations in their ability or willingness to participate in the AWP. Some agencies expressed concern over future federal funding availability, as they typically use these funding expectations to plan for future weatherization activity. Utility

staff also mentioned that some agencies declined to actively participate in the program due to the specific requirements of the AWP. As the AWP uses different documentation and data collection procedures than the statewide WAP, some agencies were reluctant to take on these new tasks or modify their implementation and verification methods.

Utility staff commentary indicated that ACAA had made efforts to provide outreach to agencies who were not actively participating in the AWP. These outreach activities included holding informational meetings and consulting with the agencies to determine whether they required assistance with any specific aspect of the program. Other utility staff reported that the community action agencies in their service territory had remained fairly active in the AWP throughout the program year; these staff members generally attributed this high level of activity to agency resources, staffing, and past knowledge and experience with the program.

3.1.3 Recruiting Private Co-payment Customers

When asked about the presence of AWP participants who are not eligible for WAP-funding, the majority of utility staff members explained that there were existing barriers to participation for these customers. These barriers included the AWP eligibility requirements, the method currently used to promote the program through the agencies, and the customer perspective that the AWP is not intended for use by customers who are able to provide a private co-payment for services. Utility staff reported that many customers likely believe that the AWP is an income-qualified program due to its strong connection with the income-qualified WAP. Other utility staff members indicated that even if private co-payment customers decide to participate in the program, there are issues with the fact that they are able to determine which measures to install in their homes. This is because a private co-payment customer may elect to implement a measure that does not meet a sufficient savings-to-investment ratio or is not necessarily as cost-effective as the full set of measures recommended by NEAT or MHEA. This would result in lower cost-effectiveness for the program as a whole. Utility staff reported that it would be difficult to manage the participation of these private co-pay customers because they would not fall into the same program structure and set of rules.

Another issue mentioned by the utilities was that agency equipment cannot be used for projects that are outside of the federal program. This requires renting equipment or using CADC equipment that may not be located near the project location. Overall, utility staff members stated that they would like to achieve increased participation from private co-payment customers, but that these existing barriers are well-established and difficult to reduce. Obtaining significant participation from non-WAP customers may require modifications to core aspects of program structure, such as cost-effectiveness requirements for non-WAP customers, program eligibility requirements, equipment allocation, or how the program is presented to customers.

3.1.4 Program Efficiency and Performance

When asked about the overall performance of the program and its progress in meeting its goals, the majority of utility staff members noted that they had not met their participation or savings targets for the 2012 program year. Interviewed staff explained that this was likely due to several factors related to program design and operation. One of the commonly cited factors contributing to lower than expected participation rates was the current availability and future uncertainty of federal funding for the community action agencies from the WAP.

Utility staff explained that while the AWP is a separate entity from the federally-funded WAP, the success of the AWP is somewhat dependant on WAP activity and performance. Utility staff stated that many agencies prioritize the WAP over the AWP, and that they typically elect to use available federal funding before seeking out AWP-specific projects. Additionally, interviewed staff mentioned that the agencies had been strongly encouraged to expend ARRA funds before AWP funds in order to meet statewide WAP ARRA production targets. Utility staff explained that there appear to be bottlenecks in several areas of program operation, including wait list times, agency implementation, data transfers, savings calculations, and data reporting. While some of these issues have been partially resolved since prior program years, utility staff indicated that operational efficiency has continued to present a challenge for all parties in the AWP.

3.1.5 Communication and Collaborative Efforts

Interviewed utility staff members commonly reported that communication throughout the AWP had been somewhat limited and unclear over the past year. As the TRM requirements are changing and there have been modifications to the data collection and savings calculation processes, the 2012 program year has required utilities and agencies to coordinate their efforts in meeting the new guidelines. However, utility staff explained that it is difficult to determine which parties are aware of the most current requirements and future plans for the AWP, which causes difficulties in working as a cohesive group of utilities and agencies. It appears that each entity may have a different interpretation of the current program requirements or market environment, and communicating all relevant program details has been a challenge.

Utility staff members noted that with such a large number of organizations working on the AWP, there have been periods where program leadership was somewhat undefined. Interview respondents indicated that some individuals are making efforts to coordinate all relevant parties and maintain program consistency, but that this is difficult due to the various organization types involved. Although CADDC and ACAA are able to coordinate many of the agencies' efforts, the parties working within the AWP may perceive an overall lack of program-wide coordination. These findings suggest that one of the most beneficial and realistic improvements to the program may be to ensure that all parties understand the interests, goals, and operational processes of each other

agency and utility, and to have a central information resource that presents each party with the same set of relevant program requirements, program performance and planned operational changes.

3.2 Community Action Agency Interviews

In order to gain insight into the implementation-level operation and management of the program, the Evaluators conducted interviews with community action agencies located within the service territories of participating AWP utilities. These interviews were designed to address several topics related to program administration, and to provide agencies with an opportunity to submit feedback regarding their experiences with the AWP. Specifically, topics addressed during these interviews included:

- Overall level of engagement with the AWP, and forecasted level of engagement in future years;
- Specific methods used in promoting the program, interacting with customers, performing measure installations, and conducting verification procedures;
- Status of the regulatory environment and its effects on agency operation in the context of the program;
- Perceived customer awareness of Arkansas Weatherization Program and its measure offerings; and
- Agency satisfaction with elements of program operation such as communicating with utilities, program structure, and past and future program changes.

In total, the Evaluators conducted interviews with nine of the 15 currently active community action agencies. This section presents the results of these interviews, highlighting key trends and findings among respondents.

3.2.1 Participant Recruitment Process

Agency staff members provided information related to how they promote the AWP and work with customers throughout the application and participation process. Overall, agency staff indicated that they provide several types of services to local residents and have community assistance programs in addition to their weatherization services. As many of these customers are in need of financial assistance, they are typically strong candidates for the income-qualified WAP funding component. The majority of interviewed agencies explained that they perform the implementation work on customer homes without knowing whether they will receive utility funds through the AWP. The agencies send their implementation documentation for processing by the utilities and CADC, and are reimbursed if the project qualifies for AWP funds. This suggests that the agencies' primary concern when deciding whether to perform a project is their existing level of non-AWP funds. If they have the work performed prior to knowing whether the cost will be reimbursed by the AWP, the agencies must have sufficient funds to

complete the project. This may reduce agency reliance on AWP funds and the AWP overall, as they appear primarily focused on the availability of Low Income Home Energy Assistance Program (LIHEAP), Department of Energy (DOE), and American Recovery and Reinvestment Act (ARRA) funds.

Several agency staff members explained that their current marketing and promotion of the program is very minimal or non-existent due to the substantial wait list for WAP funds. In terms of wait list structure, agencies reported that potential participants are prioritized based on a set of criteria including income level and number of residents in the home. A point system established by the state is applied to all wait listed customers, and customers receive an additional point for every six months that they have been on the list. Some agencies reported that the waiting time was up to one year, while other agencies cited a lead time of two to three years. One agency director reported that the agency had stopped promoting the program early in 2012 because the wait list was longer than expected. Another agency director stated that they were no longer referring customers to the WAP because the majority of customers are not interested in the program when they learn of the wait time.

3.2.2 Agency Involvement with AWP

The interviewed agencies varied in their level of involvement with the AWP. Some of the agencies had completed more than 100 homes under the program, while others had serviced fewer than 10 homes. One agency director explained that their agency had not participated in the AWP, but planned to become involved in the program during the 2013 program year.

Agencies with lower AWP participation rates stated several reasons for these lower activity levels. Two of the agencies reported that the AWP has different requirements than the WAP in terms of data collection, which has caused challenges in the implementation process. Several agencies mentioned that the AWP had originally been more complex and that it had required more effort in administration. However, these agencies indicated that the program's requirements had become more standardized, and that these challenges had been partially or fully resolved. One agency director cited recent improvements in program operation, for example mentioning that the reimbursement process had been streamlined in the past year.

Several agencies indicated that they already conduct weatherization services in customer homes outside of the AWP by using DOE and LIHEAP funding, and that adding the AWP component would require them to take on additional staff members and equipment. These agencies explained that federal funding levels are not fully specified for the upcoming year, and it would be difficult to hire additional staff without a reliably steady source of funds. These responses suggest that some agencies do not have sufficient resources to fully engage the AWP, which may serve as a barrier to participation in the future. This is likely primarily related to the program environment and funding levels, as well as potential reorganization of agencies.

Several agencies explained that after they had received funding through the American Recovery and Reinvestment Act (ARRA), they had focused on expending this funding along with DOE and LIHEAP funds. Agency staff mentioned that due to the structure of ARRA funding, it was most efficient to first use ARRA funds and service homes outside of the AWP before focusing on the co-pay structure of the utility-sponsored program. Agencies who had serviced few or no homes under the AWP in 2012 explained that they had been weatherizing homes using only federal funding, and that they would be more likely to engage in the AWP if those funding levels are diminished.

3.2.3 Measure Implementation Process

Agency staff members provided details related to the methodologies and tasks involved in providing services to customer homes. All of the interviewed agencies stated that they have staff members who are able to conduct some or all of the program services, while the majority of agencies indicated that they typically hire subcontractors for specific needs. Agency staff explained that bids are received from contractors on an annual basis, and that specialty contractors are used for work such as equipment tune-ups and some building shell measures.

Interviewed agency staff also mentioned that a home may be visited on multiple occasions during the participation process; this occurs due to the structure of the implementation and audit crews. For instance, a residence is first visited by an audit crew in order to take baseline measurements and record data for NEAT or MHEA software processing. An implementation crew arrives during a separate appointment to install the specified measures, but a third crew may be required depending on the scope of services needed. Agencies reported that after the work has been completed, the subcontractors typically take their own ex-post measurements for reporting purposes. Interviewed staff reported that agency representatives also visit residences after the work has been completed in order to conduct verification measurements and administer the customer satisfaction survey. This suggests that many residents are visited multiple times before the work has been completed. Participant survey results do not indicate that this has caused negative impacts on customer satisfaction, although ideally the implementation process would be structured to minimize the number of home visits required.

3.2.4 Collaborative Working Relationships

When asked about the quality of communication among the parties involved in the AWP, agency staff typically stated that communication had been most effective between the agencies and ACAAAA, or between the agencies and their respective utility. Agency staff explained that program-wide communication occurs regularly but that these meetings are generally focused on overall program planning rather than coordination between the relevant parties. The majority of agency staff members reported that their communication with the utilities typically consisted of periodic updates regarding

program performance. Few agency staff members reported having regular communication with other community action agencies throughout the program year.

Additionally, interviewed agency staff explained that the interests and goals of the local agencies, the relevant government organizations (such as the Department of Energy), and the utilities do not always align, and that it is somewhat difficult to coordinate these objectives into a single program. For example, it would be challenging to incorporate a change into the program design structure unless all involved parties were to agree, which is difficult to accomplish in a timely manner. These comments suggest that the current collaborative structure is sufficient for operating the program as it is designed, but that it would likely be difficult to implement specific improvements or take the ideas and interests of each party into consideration.

3.2.5 Future Program Changes

When asked about their intentions to continue participating in the Arkansas Weatherization Program, several of the interviewed agencies stated that they were not certain whether federal funding levels would remain stable and sufficient in future years. Several agency directors explained that as the fiscal year ends in March, details regarding the future funding of weatherization services will likely be unclear for the first few months of the year. While the federal funding for weatherization is not a direct component of the AWP, it does have significant bearing on the activity levels and abilities of each community action agency and on the ability to provide the required AWP co-pay for WAP-eligible customers. According to interviewed staff members, none of the agencies received indication of a DOE allocation for the upcoming year, and ARRA distributions ended in 2012. Two agency directors mentioned that LIHEAP funds are one of the main reasons that the agencies are able to continue conducting weatherization services.

Additionally, agency staff members were uncertain how organizational changes for the statewide WAP would impact the operation of the AWP. Agency directors explained that the agencies view their weatherization abilities from a funding perspective, and that any change to funding or organizational structure in either the AWP or WAP is likely to have an effect on their overall operation. Several agencies indicated that they continually analyze their resources and plan their weatherization activities based on specific funding availability; this could result in exclusively weatherizing non-AWP homes and only using federal funds, or exclusively using AWP utility funds if federal funding is not available.

Agency staff members were asked whether they had strategies for operating weatherization services if federal funding levels are significantly reduced. Several agency directors indicated that they would like to seek out additional private co-pay participants, but that this had been difficult given the structure of the program. As the majority of current participants are eligible for the income-qualified federal

weatherization program, they are unlikely to have the ability or desire to expend their own funds for whole house energy efficiency improvements.

The majority of interviewed agencies discussed the possibility of a statewide reorganization and reduction in the number of agency offices. Agency directors reported that they expected to either be incorporated into another agency or become responsible for a wider service territory. This would likely concentrate the available funds into a few offices rather than 15 separate entities, but it is unclear how this would affect overall program operation. Overall, agency staff members indicated that several structural changes will likely occur over the course of the next year, which is expected to have significant effects on implementation structure, collaborative efforts, and program administration.

4. Participant Survey Findings

This chapter presents findings from participant surveys for the 2012 program year of the Arkansas Weatherization Program (AWP). The surveys were administered individually to program participants over the phone, and each program participant was given the same survey. The survey was designed to illuminate key aspects of customers' experiences with the program, including their motivations for participating, prior knowledge of energy efficiency measures, perspectives on saving energy, and satisfaction with the program. Additionally, customers were asked to provide demographic data. In total, 227 program participants responded to the survey.

The data collected from this survey provides insight into participants' overall program experience, specifically addressing:

- Customer motivations and awareness of the program;
- Customer familiarity with energy efficiency;
- Decision making behaviors;
- Customer satisfaction; and
- Customer demographics.

The charts, tables, and graphs will be described throughout this chapter of the report, and implications of the findings will also be discussed as they relate to the program's functioning.

4.1 Participant Motivations and Familiarity with Energy Efficiency

This section details findings related to how participants learned about the Arkansas Weatherization Program and discovering the extent of their prior experience with energy efficiency practices. Table 4-1 illustrates that the majority of participants (61%) heard about the program through "word-of-mouth" from friends, family, or other personal acquaintances. This suggests that the program has great traction within the respective communities, and is likewise being talked about with high praise. This is in agreement with the high levels of participant satisfaction, as discussed later in this chapter. It appears that indirect marketing rather than formal promotional materials is the most influential factor in informing customers about the AWP. Direct marketing approaches such as letters in the mail, newspaper and magazine ads, and contact with the local community action agency make up 25% of the responses, and can therefore be recognized as effective in marketing the program.

Table 4-1 How Participants Learned of the Program

How did you learn of the Arkansas Weatherization Program?	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
	Information that came in the mail	7%
	Newspaper or magazine article/ad	6%
	Contractor	2%
	Word of mouth from friends, relatives, or others	61%
	TV ad	3%
	Radio ad	0%
	Utility bill message	0%
	Utility website	0%
	Retailer / in store	0%
	Local community action agency	12%
	Other	10%
	Don't know	2%

Respondents were able to provide more than one response for this question. Percentages displayed are percentages of respondents rather than percentages of responses. Therefore, the total exceeds 100%.

Participants were then asked about their reasons for participating. As shown in Table 4-2, the majority of program participants were primarily interested in reducing their utility bills or receiving the improvements at no cost. This is aligned with the design and purpose of the AWP, as the primary objective is to provide services to customers who are in need of significant energy reduction. Additionally, as nearly all AWP participants are eligible for Weatherization Assistance Program (WAP) funds, they are unlikely to have the ability to make these improvements on their own. Several respondents providing responses of “other” reported that they participated in order to have specific equipment or a portion of their home (such as caulking) repaired.

Table 4-2 Most Important Factors for Participation

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
Which was the most important factor in your decision to participate in this program?	To reduce my monthly electric bill	22%
	To reduce my monthly gas bill	19%
	Save energy	16%
	AWP paid for some or all of the improvements	17%
	Recommendation from a friend, relative, neighbor	1%
	It is the right thing to do	1%
	Help save the environment	0%
	Contractor recommendation	0%
	Community Action Agency Recommended	2%
	Other	15%
	Don't know	7%

In order to further understand participants' reasons for participating in the AWP, the survey asked a series of questions relating to their understanding of the concept of energy efficiency prior to participation in the program. For these questions, participants responded on a scale of 1 to 5, where "5" is very familiar, "1" is very unfamiliar, and "3" is neutral, i.e. neither familiar or unfamiliar.

The findings suggest that the majority of participants had some familiarity with energy efficient improvements prior to the start of the program. Table 4-3 shows that just over half of the respondents (52%) stated that they were at least somewhat familiar with the installation of various energy efficiency home improvements while Table 4-4 shows that the vast majority of program participants (67%) were at least somewhat familiar with various household energy saving activities, such as washing clothes with cold water, changing light bulbs, and adjusting heating systems. While this does not necessarily indicate that these participants engaged in these purchases or behaviors, they likely have an understanding of what would be required to incrementally reduce their energy use. A greater percentage of respondents reported being familiar with energy saving activities rather than energy saving purchases, which may suggest that these customers are more likely to take no-cost or low-cost actions when attempting to reduce their energy consumption.

Table 4-3 Participants' Past Familiarity with EE

How would you rate your past familiarity with the benefits of installing various energy efficiency <i>improvements</i> similar to those offered by the Arkansas Weatherization Program prior to having the audit performed?	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
	Very Familiar	36%
	Somewhat Familiar	16%
	Neither Familiar or Unfamiliar	19%
	Somewhat Unfamiliar	7%
	Very Unfamiliar	11%
	Don't Know	11%

Table 4-4 Participants' Familiarity with Energy Savings Activities

How would you rate your past familiarity with various household energy saving <i>activities</i> such as washing with cold water, reducing your use of light fixtures, and adjusting heating system settings prior to having the audit performed?	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
	Very Familiar	42%
	Somewhat Familiar	25%
	Neither Familiar or Unfamiliar	17%
	Somewhat Unfamiliar	5%
	Very Unfamiliar	3%
	Don't Know	8%

Table 4-5 provides a comparison to the previous two tables by asking participants about their familiarity with energy efficiency as a result of the AWP. The results suggest that the AWP has successfully increased customer familiarity with energy efficiency and energy efficiency options. Compared to responses related to pre-program knowledge, a lower percentage of respondents reported being somewhat or very unfamiliar with energy efficiency options after participating in the AWP. Similarly, 70% of respondents reported that they were somewhat or very familiar with energy efficiency options and practices as a result of their AWP participation. These results suggest that the AWP increased the general awareness regarding energy efficiency, which may lead to additional energy saving behaviors over time.

Table 4-5 Current Familiarity with Energy Efficiency as a Result of AWP

How would you rate your current familiarity with energy efficiency and energy efficient options for your home as a result of your participation in the Arkansas Weatherization Program?	<i>Response</i>	<i>Percentage of Respondent (N = 227)</i>
	Very Familiar	56%
	Somewhat Familiar	24%
	Neither Familiar or Unfamiliar	5%
	Somewhat Unfamiliar	2%
	Very Unfamiliar	4%
	Don't Know	9%

4.2 Participant Involvement with and Future Perspectives on Energy Efficiency

Upon establishing a baseline of understanding about participants' familiarity with energy efficiency, the survey then asked participants about their previous, current and potential future involvement with implementation of energy efficiency improvements in their homes. Table 4-6 shows that 56% of respondents claimed to be performing energy-saving activities. Of those that claimed to be performing energy saving activities, most stated that they washed with cold water or replaced light bulbs. Other less common responses included changing air filters and using less hot water.

Table 4-6 Participants' Prior Energy Saving Activities

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
Prior to the audit, did you perform any common household energy saving activities?	Yes	56%
	No	43%
	Don't Know	1%

Participants were then asked whether they had purchased and installed any energy efficient equipment in the past year without receiving a financial incentive; Table 4-7 shows those results. The vast majority (88%) claimed that they had not installed any such equipment. Those who had replaced equipment stated that they replaced refrigerators, air conditioners, heaters, and stovetops, most commonly because their previous equipment was failing.

Table 4-7 Participants' Prior Installation of Energy Saving Equipment

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
In the past year, have you installed any energy efficient equipment in your home, besides those installed through the AWP that you have not received an incentive for?	Yes	12%
	No	88%

Participants were then asked about their likelihood to use energy efficiency techniques and implement energy efficiency measures in the future. As shown in Table 4-8, 91% of program participants stated that they now take additional action to save energy in their homes. When asked to elaborate on these activities, participants primarily cited common, low-cost improvements such as installing CFL light bulbs, washing clothes in cold water, and adjusting their heating system. Alternatively, some people stated that they are taking shorter showers, using less hot water, and unplugging devices when they are not in use.

Table 4-8 Participants' Likelihood to Employ Energy-Saving Activities post-AWP

As a result of your experience with the program, do you now take additional action to save energy in your home?	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
	Yes	91%
	No	7%
	Don't Know	2%

Respondents were then asked if they would buy energy efficient measures in the future, even if incentives were not offered. The majority (87%) of participants stated that they would be likely to do this. It is unclear which actions participants will specifically take in the future, but based on their other survey responses and the target participant segment for the AWP, these customers are likely to continue purchasing low-cost measures and making minor efficiency improvements.

Table 4-9 Likelihood to Purchase Energy Efficiency Measures Without Incentive

As a result of your experience with the Arkansas Weatherization Program, would you buy energy efficient measures in the future, even if financial incentives were not offered?	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
	Yes	87%
	No	9%
	Don't Know	4%

4.3 Participant Satisfaction

This section presents the findings from survey questions geared toward understanding participants' satisfaction with the program. Participants were asked about various elements of the program's functioning; the results can be found in Table 4-10. These elements include the information provided by the agency, the quality of installation work, the performance of the equipment installed, and the savings on utility bills. The vast majority of responses show that participants were very satisfied. The performance of the equipment installed received the highest percentage of "very satisfied" responses with 87%. This reflects positively on the installation contractors and verification work performed by the community action agencies.

Table 4-10 Participant Satisfaction with Various Program Elements

<i>Program Element</i>	<i>Very satisfied</i>	<i>Somewhat satisfied</i>	<i>Neither satisfied nor dissatisfied</i>	<i>Somewhat dissatisfied</i>	<i>Very dissatisfied</i>	<i>Don't know</i>	<i>N</i>
Information provided by the community action agency	81%	10%	6%	0%	0%	2%	227
The quality of installation work by the contractor	81%	10%	7%	1%	1%	0%	227
The performance of the equipment installed	87%	9%	3%	-	1%	0%	227
The savings on your monthly utility bills	66%	12%	15%	0%	1%	5%	227
The effort required for the application process	74%	11%	12%	-	1%	3%	227
The wait-time to receive services	52%	19%	15%	7%	5%	2%	227
Information provided by utilities on how to reduce your utility bill	61%	17%	11%	1%	1%	8%	227
Improvement in home comfort	83%	10%	5%	0%	0%	1%	227
Usefulness of the energy audit	78%	9%	8%	-	1%	4%	227
Overall program experience	85%	8%	4%	1%	1%	0%	227

The program element with the lowest average satisfaction was wait time. Some customers stated that they were on the wait list for two to three years before they received an appointment with their respective agency. This is in agreement with commentary received from the participating agencies and utility staff, who commonly mentioned that the long wait times for weatherization appointments had a negative impact on customer satisfaction. Some participant responses suggest that they were not aware of the lead time involved in the AWP, and ensuring that prospective participants are informed of the time and effort required in the participation process may partially mitigate negative customer feedback in the future. Although some participants expressed dissatisfaction with individual program elements, 85% of respondents stated that they were very satisfied with their overall program experience, while another 8% stated that they were somewhat satisfied overall.

The table below provides an aggregation of overall program satisfaction by averaging the percent of responses for each individual program element. Taking all program elements into account, three-quarters of respondents stated they were very satisfied and 11% reported being somewhat satisfied.

Table 4-11 Average Participant Satisfaction Levels across Program Elements

<i>Average of Satisfactions with Program Elements</i>	<i>Very satisfied</i>	<i>Somewhat satisfied</i>	<i>Neither satisfied nor dissatisfied</i>	<i>Somewhat dissatisfied</i>	<i>Very dissatisfied</i>	<i>Don't know</i>
	75%	11%	9%	1%	1%	3%

Overall, the levels of satisfaction with the program — taken for both individual program elements and the program overall – indicate that program participants were, in general, satisfied with the program. The number of customers claiming dissatisfaction is fairly minor given the scale of the program. The results suggest that the primary source of participant dissatisfaction with the program is related to the length of the appointment waiting list.

4.4 Participant Demographics

This section presents the results from survey questions intended to provide insight into the demographic data of participants. The survey also included questions related to participant residence characteristics; residence characteristics include the age, square footage, heating type, and water heating type of participating homes. Additionally, respondents were asked about the number of bedrooms, bathrooms, showers, and total residents in their homes.

Table 4-12 Home Construction Dates

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
When was your home built?	Before 1970	55%
	1970's	22%
	1980's	9%
	1990-1994	1%
	1995-1999	2%
	2000-2005	-
	Don't know	9%
	Refused	1%

Table 4-13 Approximate Square Footages of Participant Homes

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
What is the approximate square footage of your home?	Less than 1,000	11%
	1,001 - 1,500	34%
	1,501 - 2,000	11%
	2,001 - 2,500	3%
	Greater than 2,500	3%
	Don't know	36%
	Refused	2%

Table 4-14 Number of Bedrooms in Participant Homes

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
How many bedrooms are there in your home?	1	1%
	2	29%
	3	59%
	4	10%
	Don't Know/Refused to Answer	1%

Table 4-15 Number of Bathrooms in Participant Homes

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
How many bathrooms are there in your home?	1	69%
	2	28%
	3	1%
	Don't Know/Refused	2%

Table 4-16 Number of Showers in Participant Homes

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
How many showers are there in your home?	0	5%
	1	76%
	2	17%
	3	0%
	Don't Know/Refused	2%

Table 4-17 Number of Residents in Home Year-Round

	<i>Response</i>	<i>Percentage of Respondents (N = 227)</i>
How many people live in your home year round, including yourself?	1	41%
	2	38%
	3	8%
	4	7%
	5	4%
	7	0%
	Don't Know/Refused	1%

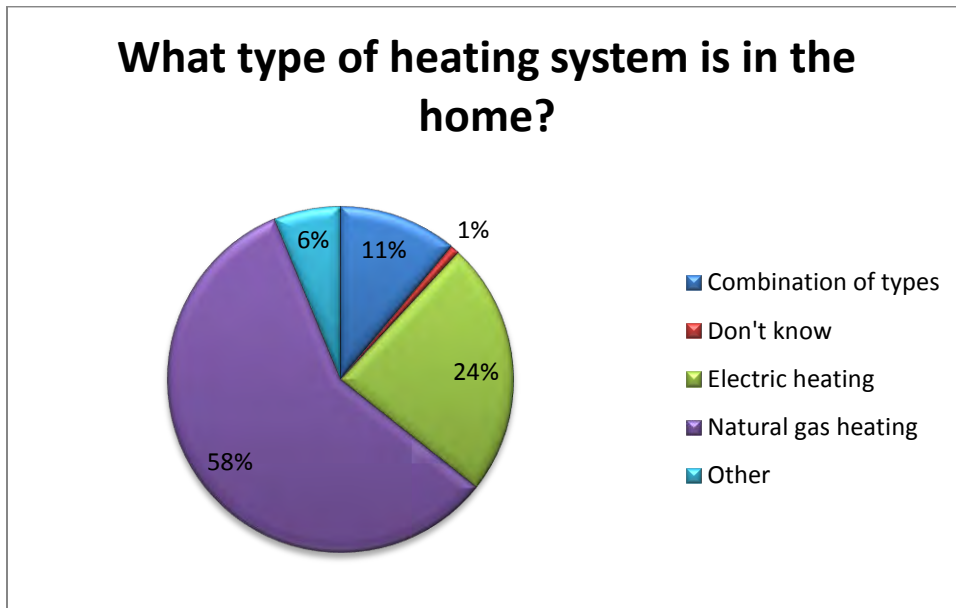


Figure 4-1 Types of Heating Systems in Participant Homes

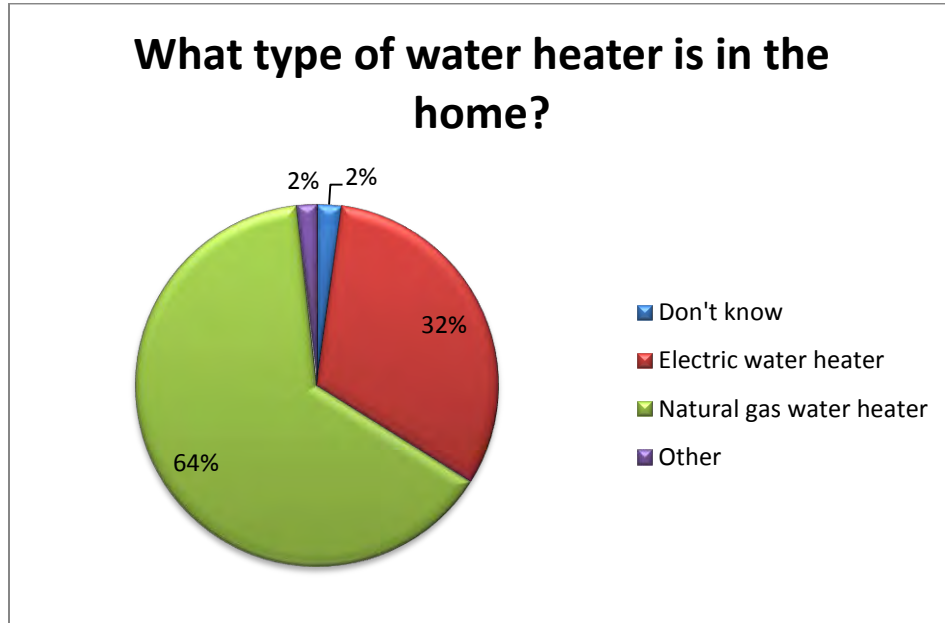


Figure 4-2 Types of Water Heaters in Participant Homes

Table 4-18 Income Ranges of Participants

	Response	Percentage of Respondents (N = 227)
Please indicate which range your total household income falls. Is the total annual income of your household:	Less than \$25,000	60%
	\$25,000 - \$35,000	13%
	\$36,000 - \$50,000	1%
	\$51,000 - \$75,000	0%
	\$76,000 - \$100,000	0%
	Greater than \$100,000	0%
	Don't Know/Refused to Answer	26%

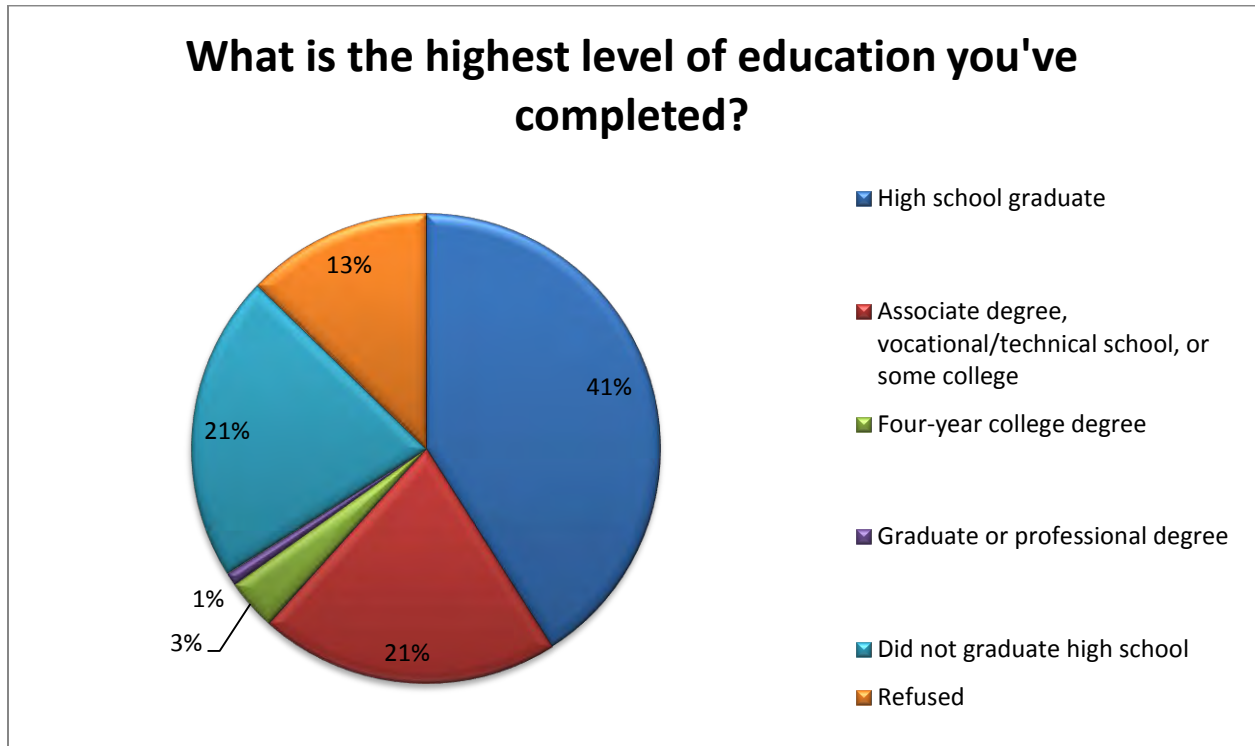


Figure 4-3 Reported Participant Education Levels

5. Program Process Review

In 2012, the Arkansas Weatherization Program (AWP) provided residential energy audits and energy efficiency installations to customers within the following gas and electric utility service territories:

- American Electric Power – Southwestern Electric Power Company (AEP-SWEPCO);
- Empire District Electric Company (EDEC);
- Entergy;
- Oklahoma Gas and Electric (OG&E);
- Arkansas Oklahoma Gas Corporation (AOG);
- CenterPoint Energy (CenterPoint); and
- SourceGas Arkansas (SGA).

Participating homes were evaluated in order to determine potential energy efficiency measures that would improve overall building efficiency and reduce residential energy usage. The AWP provided funds for the installation of various measures, including:

- Ceiling, floor and wall insulation;
- Duct insulation and repair;
- Window sealing and replacement;
- Furnace, air conditioner, and heat pump tune-up and replacement;
- Water heater insulation and replacement;
- Lighting retrofits; and
- Low flow shower heads.

Program structure has remained fairly consistent between the 2011 and 2012 program years. As with prior years, customers who do not receive funding through the statewide income-qualified Weatherization Assistance Program (WAP) are responsible for a portion of the audit cost, as well as a portion of the resulting equipment or measures to be installed in the home.

In order to qualify for the AWP, customer homes must meet specific criteria indicating that the residence is severely energy-inefficient. Participants must be a residential customer of at least one utility that is involved in the AWP. The program is available

only to residences built prior to 1997. Additionally, participant homes must meet three of the following seven criteria¹:

- Ceiling insulation less than or equal to R-30;
- Wall insulation equal to R-0;
- Floor insulation equal to R-0;
- Single pane windows with no storm windows attached;
- Non-working heating system or heating system with less than 70% AUE;
- Non- working cooling system or cooling system with SEER of 8 or less; and
- Air infiltration problems identified through a) visual inspection of duct-work, walls, floors, ceilings, doors, and windows; or b) pre-blower door test.

In the 2012 program year, private co-pay customers paid between \$50 and \$200 for the audit upfront depending on how many participating utilities the customer had. For customers qualifying for WAP funding, the combined federal and utility sources fully cover the cost of the initial energy audit, and up to approximately \$8,000 can be spent on associated energy efficiency measures. Energy efficiency measures for WAP and AWP participants are identified through the use of National Energy Audit Tool (NEAT) or Mobile Home Energy Audit (MHEA) software, which determines the most cost-effective and energy-saving measures for each home.

The AWP has continued to use a “whole home” approach to residential energy efficiency, where energy efficiency measures are chosen and implemented based on total cost and energy savings rather than focusing on a specific fuel type or measure category. Participating homes are serviced by one or more of the participating utilities, and may also be serviced by municipal co-ops. If the home has natural gas and electric service provided by participating utilities, or is all-electric, the participant receives the maximum funds through the program. In order to maintain cost-effectiveness, homes that are neither all-electric nor serviced by two participating utilities receive a lower level of assistance through the program.

Local community action agencies work with customers to enroll in the program and determine AWP and WAP eligibility. After the customer is approved and the in-home audit is performed, optimal energy efficiency measures for AWP (and WAP, for eligible customers) are identified through the use of NEAT or MHEA software. The local agencies then use their internal crews or hire contractors to install these measures in the home. Resulting savings are calculated and recorded for the purposes of EM&V and cost-effectiveness testing.

¹ Eligibility requirements are taken from AWP [program](http://www.apscservices.info/pdf/07/07-079-tf_62_1.pdf) design filed March 15, 2011 with the Commission. These can be found at: http://www.apscservices.info/pdf/07/07-079-tf_62_1.pdf. The Commission Order approving the design was order # 20 located at: http://www.apscservices.info/pdf/07/07-079-tf_76_1.pdf issued on June 30, 2011.

5.1 Interview and Survey Data Collection Summary

The process evaluation of the 2012 Arkansas Weatherization Program included several sets of explorative interviews and surveys. These were designed to gain perspectives and insight from program staff, utility customers, and installation contractors regarding the performance and operation of the program. Specifically, the survey and interview tasks included:

- Participant survey. A sample of participants from the 2012 program year was given a survey in order to provide feedback related to their experience with the Arkansas Weatherization Program. This survey addressed topics including customer satisfaction, decision making, and energy efficiency preferences.
- Community Action Agency Interviews. The Evaluators conducted interviews with the local community action agencies responsible for promoting the program, interacting with customers, installing approved measures, and coordinating program implementation tasks. These interviews provided insight into overall program processes and characteristics of the target customer segments.
- Program staff interviews. Interviews were conducted with utility staff and third party implementation staff (members of ACAAA). These interviews provided insight into recent program changes, specific program processes, potential future improvements to program operation, and overall program performance.

Table 5-1 below summarizes the survey and interview data collection for this process evaluation effort, including data collection type, number of respondents, and additional details.

Table 5-1 Interview and Survey Data Collection Summary

<i>Target</i>	<i>Component</i>	<i>Activity</i>	<i>N</i>	<i>Details</i>
Program Management Staff	Empire Electric Program Manager	Interview	1	The program manager and operational staff are responsible for coordinating program data, managing reimbursements to local agencies, planning for overall program activity and savings expectations, and communicating with utility and ACAA staff as necessary throughout the program year.
	AOG Program Manager	Interview	1	
	OG&E Program Manager and Staff	Interview	3	
	SourceGas Program Manager	Interview	1	
	SWEPCO Program Manager and Staff	Interview	2	
	CenterPoint Program Manager	Interview	1	
	Entergy Program Manager	Interview	1	
ACAAA Staff	AWP Coordination Staff	Interview	2	The Energy Policy Coordinator and other ACAA staff are responsible for coordinating efforts among the local agencies and providing information to the utility program managers.
Community Action Agency Directors	Black River Area Development Corp. (BRAD)	Interview	1	The community action agency directors are responsible for coordinating the audit and installation crews throughout the measure implementation process. Additionally, local agencies promote the program and reach out to customers who are potential participants in the AWP. Agency directors plan program operations and activity, and manage agency funding throughout the program year.
	Central Arkansas Development Council (CADC)	Interview	1	
	Community Action Program for Central AR Inc. (CAPCA)	Interview	1	
	Crowley's Ridge Development Council (CRDC)	Interview	1	
	Crawford-Sebastian Community Development Council, Inc. (C-SCDC)	Interview	1	
	Community Services Office, Inc. (CSO)	Interview	1	
	Southwest Arkansas Development Council, Inc. (SWADC)	Interview	1	
	Pine Bluff Jefferson County Economic Opportunities Commission, Inc. (PBJCEOC)	Interview	1	
	Ozark Opportunities, Inc. (OOI)	Interview	1	
Program Participants	2012 AWP Participants	Survey	227	This constituted a random sample of program participants who had received at least one measure through the Arkansas Weatherization Program.

5.2 Post-Implementation Verification Review

As per the February 8, 2012 Supplemental Guidance Regarding Evaluation Strategies memorandum, the evaluation includes an assessment of internal quality assurance and quality control procedures conducted by program operations staff. As per the memorandum, the goals of this QA/QC assessment include:

- Identifying the goals for the inspection and verification of the Arkansas Weatherization Program;
- Determining the specific parameters used in the verification process and whether these parameters are appropriate for the program;
- Identifying the target and actual confidence and precision levels for the inspection and verification activities;
- Reviewing the internal M&V participant selection process and the sampling techniques employed by program implementation staff;
- Reviewing site inspection documents and findings, and evaluating any savings adjustments that were made; and
- Providing recommendations for the design and operation of future verification activities.

As part of the quality control process, community action agency staff members perform post-implementation verification and inspections on a sample of participant residences. The Evaluators conducted telephone calls with community action agencies including Central Arkansas Development Council (CADC), which has coordinated verification efforts among the local agencies. The discussion involved identifying the methodology and structure of the existing post-implementation verification process. The Evaluators reviewed the field forms used during this process in order to gain insight into the information gathered during verification, and to identify any opportunities for increasing the effectiveness and accuracy of the quality control procedures.

5.2.1 Overall Verification Methodology

Community action agency staff members conduct verification visits continually throughout the program year as projects are completed. Agency staff reported that they visit each site in order to ensure that the work has been performed correctly. Additionally, CADC staff visit the agencies in order to review documentation and visit a sample of participant homes which are randomly selected. This process is intended to ensure that all homes receive verification measurements and inspections, and that homes are inspected by both the post-implementation audit crew and an agency representative.

The objective during the verification visits is to verify that all recorded measures have been properly installed and are operational. The agency staff members perform a visual inspection of each measure and compare the implemented work to the reported measures in the field work form. If any issues are discovered with measure installation or if any measures are found to be missing from the home, the inspector notifies the installation crew or subcontractors in order to repair or replace a measure. Agency representatives reported that few errors or missing measures had been identified throughout the course of the verification visits, and that savings adjustments were not

required because any errors are quickly resolved. This ensures that when a project is finalized, the reported installation data match the actual work that was performed.

5.2.2 Agency Verification Results

The interviewed community action agency weatherization directors explained that there had not been any systematic errors or inconsistencies in the work performed by subcontractors or agency installation crews. Additionally, although there had been occasional instances of damaged or improperly installed measures, these had significantly decreased in frequency over time. Agency staff attributed this to the fact that the installation crews and subcontractors had become more familiar with AWP requirements, standards, and implementation methodologies.

In addition to agency staff verification of measures, the subcontractors performing implementation work typically take their own post-installation measurements and inspect the measures to ensure that they are functioning properly. Agency staff reported that the installation contractors are aware of the post-implementation verification process, and understand that they will be required to revisit participant homes if an error or discrepancy is discovered.

The introduction of new TRM protocols has required the agencies to conduct additional measurement and verification procedures in order to satisfy the stipulated data requirements. Several agency directors reported that the continued introduction of new TRM requirements has increased overall administration and verification efforts, but that the process had become fairly streamlined in terms of data collection.

5.2.3 Overall Review Findings

Overall, the Evaluators conclude that the Arkansas Weatherization Program currently has sufficient internal verification procedures to provide accurate and complete implementation data. The current procedures involve conducting post-implementation verification on all participant homes, which allows the agencies to identify any outstanding discrepancies between contractor reports and actual implementation. As CADC typically reviews contractor and agency reports during visits to the agency offices, there are several quality control procedures in place to ensure that reported data are accurate and reliable.

In terms of data collection and transfer, it is crucial that the community action agencies and their subcontractors collect all data required by the applicable TRM. Tracking data reviewed for the 2012 year suggests that some inputs are not currently being collected, which creates difficulties during the third-party verification process. Additionally, it would be beneficial for the EM&V process for the agencies to submit all collected data and details to Frontier Associates or CADC for verification, processing, and record keeping. Supplementary implementation data such as specific measures implemented for air infiltration work, for example, may be beneficial during the ex-post verification process. As the TRM receives updates and revisions, data requirements may increase, and the

agencies should be prepared to modify their verification procedures in order to meet any new guidelines.

5.3 Survey Documentation Review

As part of their internal record keeping and program evaluation, ACAA and the local community action agencies administer surveys to customers who have participated in the AWP. The purpose of these surveys is to gather information regarding customer satisfaction, and general feedback from customers regarding their experience with the agencies and program as a whole.

In the 2011 program year, agencies used different survey instruments with variations in formatting and content. Starting in 2012, the agencies began to use more standardized survey instruments in order to maintain consistency among the organizations. In some cases the surveys have been slightly customized, but the overall content is fairly consistent across agencies.

The standardized survey has three distinct sections: customer information, satisfaction questionnaire, and write-in responses. The survey starts by asking meta-level questions to identify the customer and to provide descriptive information about the survey, such as the following: agency to which the customer is affiliated, date completed, customer name, job number, address and county. This is followed by the customer satisfaction component. Survey respondents answer questions on a scale of 1-4, where 1 represents “very dissatisfied” and 4 represents “very satisfied.” 2 and 3 are “dissatisfied” and “satisfied,” respectively. The questions address selected elements of the program experience, including:

- Were you satisfied with the information supplied in the energy audit?
- Were you satisfied with the material used for the weatherization work?
- Were you satisfied with the workmanship of the delivered service?
- Were you satisfied with the speed of delivered services?
- Were you satisfied with the Weatherization Program as a whole?

The majority of respondents indicated partial or high satisfaction with each element, and many customers rated all program elements with a rating of “very satisfied”. Very few respondents provided ratings indicating dissatisfaction.

Finally, the survey asks for three write-in responses. The first asks the respondent to explain any 1s or 2s (indicating dissatisfaction) from the previous section. The second asks for any additional comments or suggestions about the program and the last explains that signing the bottom page confirms that the work has been completed and asks if any measures were not properly installed. The majority of customers did not provide open-ended responses for any of these fields, and customers who did complete these sections typically provided positive commentary. Some customers explained that

they were very thankful for the program's services or praised the work that had been completed by the implementation contractors. In a few cases, customers identified issues that they had experienced during their participation process. These responses typically conveyed some level of misunderstanding, such as when customers had expected more or different work to be performed on their homes.

Three of the community action agencies administered a prior version of the AWP survey form, which only addresses one satisfaction element. It is possible that these surveys were conducted prior to the standardization of survey forms across agencies.

Although the Evaluators conduct satisfaction and decision making surveys with a sample of AWP participants, it is recommended that the local agencies continue administering these surveys. This will provide an opportunity to monitor customer satisfaction over time, and identify any issues as they arise. Additionally, the surveys allow customers to provide feedback regarding their experiences with installation contractors and measure implementation, which is a valuable communication channel.

In terms of additions or modifications to the survey instrument, it may be beneficial to ask an additional question regarding how participants learned of the program. The survey instrument provided by CADC currently contains this question, and it would likely provide insight to agencies who are interested in the effectiveness of their promotional efforts. However, the survey should be limited to a few important questions rather than comprehensively covering all aspects of the program experience. Relatively brief surveys minimize time and effort burdens on customers, and may contribute to more accurate or complete results.

5.4 Training Session Activity Review

The Evaluators reviewed a list of training courses attended in 2012 by the community action agencies that participated in the Arkansas Weatherization Program. Training courses were held in a variety of locations including the cities of Bentonville, Little Rock, Jacksonville, Fort Smith, Springdale and Rogers.

In total there were 490 attendees at 209 training sessions, with between one and 32 attendees were per class. About half of the courses offered certificates and, in total, 334 certificates were awarded. The training sessions averaged nearly 14 hours in length and resulted in more than 6,500 person-hours of training. Training sessions were held throughout the year but nearly a third of the classes were held in the month of July.

Classes covered a wide variety of topics including courses on weatherization (e.g., weatherization in general, wall insulation, HVAC, and mobile home weatherization), health and safety issues (e.g., OSHA requirements, worksite safety), energy audits, and on the NEAT and MHEA software. A number of courses also pertained to more administrative topics such as teamwork, providing information to the public, procurement, and program administrative requirements.

The training courses were sponsored by a number of groups including the community action agencies, a community and technical college, the Weatherization Assistance Program, the Department of Energy, and the Arkansas Community Action Agencies Association (ACAAA).

Training topics were similar to those covered in 2011. Moreover, the total number of hours spent on training declined somewhat from the prior year. This may reflect a decreasing need for training because a pool of trained staff has been developed during prior years' activity to administer and deliver the weatherization services. However, continued training is recommended to keep current staff informed of changes to program operations, new weatherization techniques, and to refresh previously taught content.

5.5 Waiting List and Deferral Records Review

In addition to the utility funding that partially offset the costs of in-home audits and measure installations, the majority of customers were eligible to receive federal funds through the Department of Energy Weatherization Assistance Program (WAP). This funding was available to customers who met specific socioeconomic criteria, and was used to cover the costs of the required AWP co-pay for audit and equipment installation and servicing. Due to the large number of applicants for the federal WAP funds, customers were assigned to waiting lists after working with local community action agencies to determine eligibility.

The Evaluators reviewed information related to the number of customers who were placed on waiting lists to receive WAP federal funding by community action agencies that participated in the AWP during 2012. At the end of the 2012 calendar year, there were more than 3,000 customers on the WAP waiting list for participating agencies. Participating agencies had between 52 and 1,053 prospective participants in the waiting list phase, suggesting that the 2013 program year will begin with many customers in the pipeline for AWP participation. As nearly all of the participants in the AWP have moved through WAP channels to receive federal funding, there is likely high potential for engaging customers who have a broader range of socioeconomic characteristics. Additionally, reductions in federal funding or other market factors may make it necessary to recruit customers who are able to participate in the AWP without assistance from the WAP.

Community action agencies that participated in the AWP during 2012 provided information related to the number of walk-aways / deferrals they have experienced with customers who were seeking to participate in the WAP. Walk-aways / deferrals typically occur when a residence is in a condition that the weatherization measures would not be cost effective. Such conditions include substantial roof leakage, otherwise damaged building structure, or other characteristics that prevent the home from satisfying program criteria. In 2012, 500 deferrals were made by agencies that participated in the

AWP. When feasible, the agencies often seek alternative funds to assist in home repairs that would then make the home eligible for weatherization.

5.6 Arkansas Weatherization Program Logic Model

Figure 5-1 presents a logic model for the Arkansas Weatherization Program, divided into stages to represent the phases involved in administering and operating the program

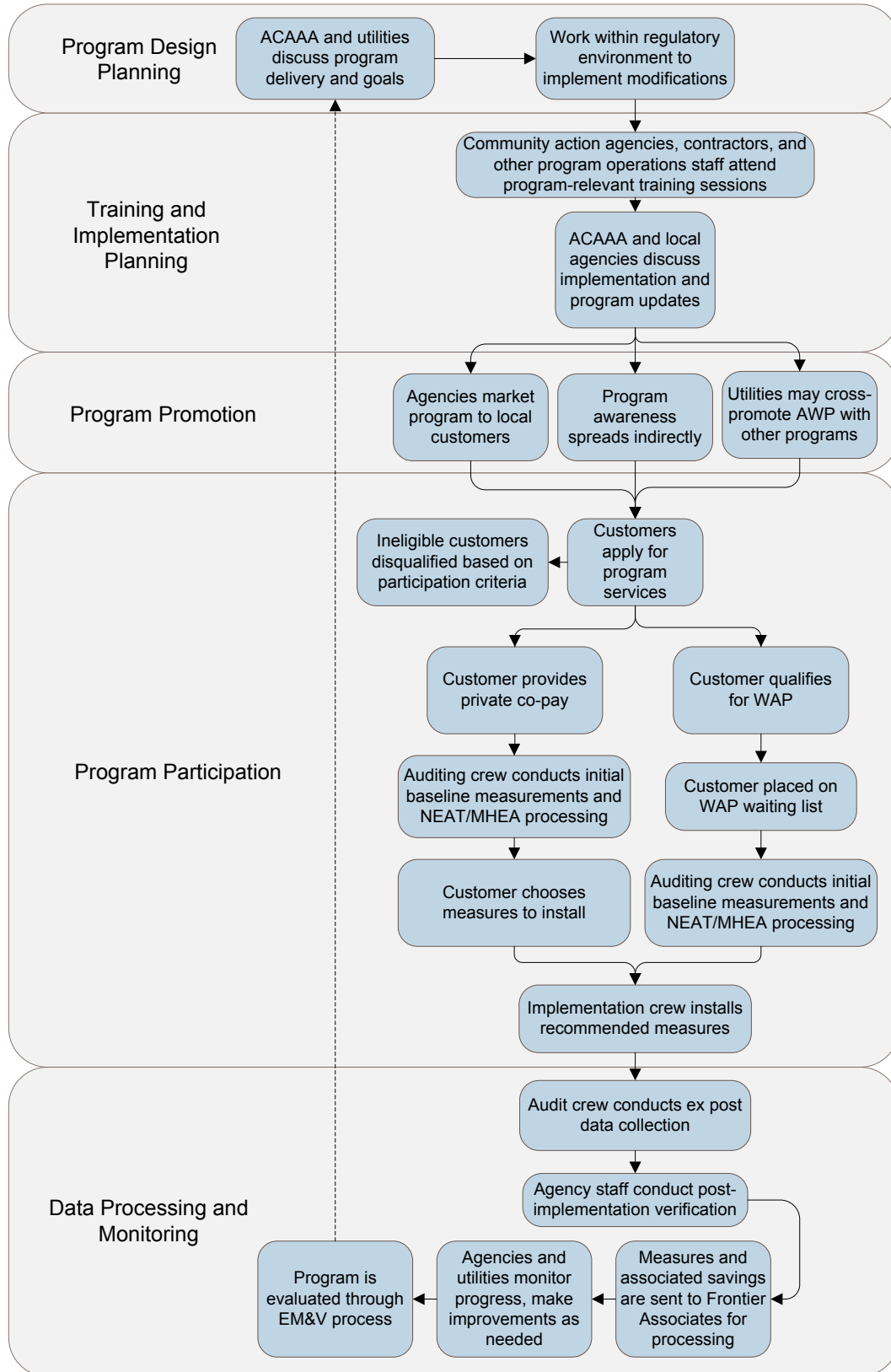


Figure 5-1 Arkansas Weatherization Program Logic Model

5.7 Arkansas Weatherization Program 2012 Participation

In 2012, the Arkansas Weatherization Program serviced a total of 641 homes, which is a reduction from the 810 homes in the 2011 program year. Services provided to residences included in-home energy audits as well as the installation of various energy efficiency measures. The program was promoted and implemented through local community action agencies, which were responsible for communicating with potential participants and enrolling them in the program. Table 5-2 displays total participation disaggregated by the community agency associated with the participant.

Table 5-2 Total Participation by Community Action Agency

<i>Agency Name</i>	<i>Percentage of Participating Homes</i>
Central Arkansas Development Council	50%
Southwest Arkansas Development Council	11%
Universal Housing Development Council	10%
Crowley's Ridge Development Council	8%
Pine Bluff-Jefferson County Economic Opportunities Commission	6%
Crawford-Sebastian Community Development	6%
Community Action Program for Central Arkansas	3%
Community Services Office	3%
Office of Human Concern	2%
Ozark Opportunities	0.2%
N	641

The AWP is offered in all investor-owned utility service territories and is funded by participating gas utilities and electric utilities throughout Arkansas. Depending on the location of customers and the fuel sources used in their homes, services for each customer are funded by one gas utility, one electric utility, or both a gas and an electric utility. Table 5-3 cross-tabulates participation by the gas and/or electric utility associated with the participant. "N/A" represents projects performed in homes with only one utility source or with a utility service provider that is not part of the AWP.

Table 5-3 Participation by Associated Utility

Electric Utility	Gas Utility			
	Arkansas Oklahoma Gas	CenterPoint	Source Gas	N/A
Entergy	-	322	2	122
OG&E	20	-	13	12
AEP-SWEPCO	3	41	2	13
Empire Electric	-	-	4	-
N/A	3	73	11	-

Figure 5-2 displays a comparison between 2012 and 2011 in terms of participation rates by month. Overall, the 2012 program year experienced less participation seasonality and lower participation rates than the 2011 year. Participation rates in 2012 were higher at the end of the year than in 2011, but the 2012 AWP experienced a slight decline in the summer months.

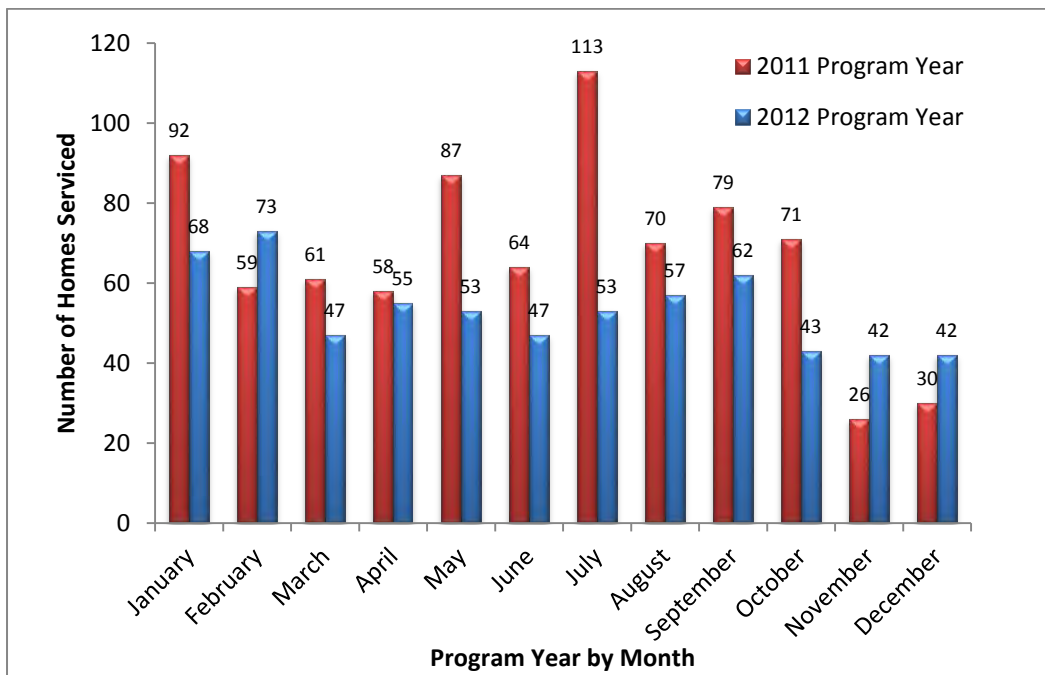


Figure 5-2 Participation Rates by Month, 2011 vs. 2012

A total of 3,690 separate measure installations were performed in the 2012 program year, as compared with 4,736 in the 2011 year. Table 5-4 displays the number of installations by measure type, arranged by the most commonly installed measures. CFL installations were the most common measure type, followed by air infiltration. Air conditioning and gas furnace tune-ups accounted for a small number of installations.

Table 5-4 Total Installations by Measure

<i>Measure</i>	<i>Number of Installations</i>
CFL	601*
Air Infiltration	619
Water Heater Pipe	335
Ceiling Insulation	387
Window Replacement	327*
Water Heater Jacket	141
Gas Furnace Replacement	111
Energy Star Refrigerator	151
Floor Insulation	62
Low Flow Showerhead	21
Storm Windows	92*
Window AC Replacement	43
Foundation	2
Water Heater Replacement	33
Central AC Replacement	64
Central HP Replacement	34
AC Tune-Up	25
Gas Furnace Tune-Up	23
Window Sealing	270*
Vented Space Heater	205
Heat Pump Tune-up	1
Sill Box Insulation	5
Smart Thermostat	64

*Values are based on total number of projects rather than on total number of units installed.

The average square footage of participating residences was 1,273 while the median square footage was 1,214. Homes ranged from 264 square feet to 2,982 square feet.

5.8 Tracking Database Review

The Evaluators received a tracking database developed by Frontier Associates, a consulting firm working with the implementation contractor and participating utilities. This tracking database was evaluated for overall organization and content.

Frontier Associates develops and maintains a participant tracking database that includes a full list of all participants, the measures that were installed in their homes, and the kWh and Therms savings associated with each measure. The Evaluators

received periodic tracking data updates as well as final tracking exports. These tracking files were evaluated for overall organization and content.

According per protocol A of the TRM V2.0, tracking data should be checked for:

- Participating Customer Information;
- Measure Specific Information;
- Vendor Specific Information;
- Program Tracking Information;
- Program Costs;
- Marketing & Outreach Activities; and
- Premise Characteristics;

Table 5-5 below summarizes the goals and activities of the Database Review of the Arkansas Weatherization Program.

Table 5-5 Database Review Goals & Activities

<i>Category</i>	<i>Activity</i>
Participating Customer Information	The dataset should contain unique customer identifiers and full customer contact information.
Measure Specific Information	The tracking data should identify all measures that were installed in each participant home, with associated energy savings.
Vendor Specific Information	The dataset should include the name of the installation contractor associated with each participant.
Program Tracking Information	If possible, the dataset needs to include the dates in which the installations, as well as the initial residential energy audit, were performed.
Program Costs	Not applicable. Cost summaries are recorded and separately reviewed by the utilities.
Marketing & Outreach Activities	In addition to information gathered during the tracking data review and program staff interviews, the Evaluators conducted participant surveys to gather information related to participant interaction with program marketing and outreach.
Premise Characteristics	The dataset should include all measure inputs needed for savings verification, including relevant square footage measurements.

Overall, the tracking data were found to contain sufficient information in most areas. Participant contact information was present for nearly all customers, and addresses were found to be accurate during the field verification process. The measure-specific information was fairly complete in the final version of the tracking data, although previous data exports showed incomplete measure inputs or did not include specific measures. Other project data were fairly complete, although initial versions of the data

did not include installation dates or audit dates for many participants. This is likely an issue with how the report is requested from the database, as the Evaluators received several permutations of the same participant data. Additionally, some measure inputs were not included in the tracking data because they had not been provided to Frontier. This is more of an issue with the data collection and transfer methods used by the community action agencies; the newer TRM protocols require additional inputs that were not previously necessary. In the future, the EM&V process will be most efficient if all measure inputs necessary to calculate savings are included in the final tracking data.

Tracking data included information regarding which community action agency and which vendor, if any, had implemented the weatherization work. It would be beneficial to include agency and contractor contact information for evaluation purposes, although these details were obtained separately through requests to CADC.

The tracking data did not specifically include information related to program marketing and outreach. Results of internal participant surveys were obtained separately from ACAA, and the tracking data contained information focused on the specific work performed rather than supplemental information. It is likely not necessary to include marketing and outreach information in the Frontier database, as the Evaluators and ACAA are able to collect, record, and monitor these data in separate spreadsheets.

Premise characteristics were fairly complete, including square footage, residence type, and heating type. Some initial exports of the tracking data showed mislabeled heating types or utility providers, which required some error checking and revisions to the data. If the database is able to remain consistent in its labeling and categorization of these items, then the premise data will be sufficient in future program years.

5.8.1 Energy Savings Calculation Data

As discussed above, the tracking data was found to include sufficient information for the majority of the measures. However, the tracking data did not include sufficient information for the following measures:

- Low-flow Showerheads
 - TRM V1.0 presents savings values as a function of the number of low-flow showerheads installed and the number of showers per household. The tracking data did not present the number of showerheads installed or the number of showers per household.
- Window Replacement
 - The tracking data did not present the square footage of windows, which is a necessary input in the TRM V2.0 for savings calculation.
- Storm Windows, Window Sealing

- These measures are not detailed in the TRM. Additionally, the Evaluators determined that most of the claimed Window Sealing savings were already accounted for under the Air Infiltration measure. The Evaluators only attributed savings to the Window Sealing measure for homes that did not also perform the Air Infiltration measure.

Several of the column headings are ambiguous. For instance, the column heading "Current_Rvalue" does not specify to which measure this is referring. In addition, the weather zone of each household is necessary for many of the savings calculations. This information was used by Frontier Associates to calculate savings; however, it was not presented in the tracking data.

Several measures did not contain ex ante savings values for the entirety of the 2012 program year. These measures included:

- Smart Thermostats
- Storm Windows
- Foundation Insulation
- Sillbox Insulation
- Vented Space Heater
- Window Sealing
- Heat Pump Tune up

The lack of savings values for these measures was primarily due to measure inputs that had not been provided to Frontier through CADC and the other community action agencies. Some of these measures were updated with ex ante savings values in March 2013, although the final tracking data contained instances of missing savings values for individual homes and measure types. However, multiple updates to the tracking data after the close of the 2012 program year caused delays in the savings finalization and utility annual reporting process.

The Evaluators recommend that the community action agencies ensure that all relevant and up-to-date implementation data are continually provided to the database management firm in order to minimize difficulties in data collection and savings calculation at the end of the program year. This may involve agreeing upon a data cut-off date in order to assemble all necessary data in time for savings processing and reporting.

In summary, the recommended changes to the tracking data include:

- Providing a complete set of necessary data;
- Considering a data transmission cut-off date for agencies to provide information to the database provider;

- Providing column headings that limit the opportunity for ambiguity; and
- Providing the weather zone of each household.

5.9 Comprehensiveness Factors

The Arkansas Public Service Commission has in place a set of criteria in order to determine whether a DSM portfolio or program qualifies as “Comprehensive”. These criteria are:

- **Factor 1:** *Whether the programs and/or portfolio provide, either directly or through identification and coordination, the education, **training**, marketing, or outreach needed to address market barriers to the adoption of cost-effective energy efficiency measures;*

The AWP has made efforts to provide education, training, and marketing in order to reduce barriers to increased energy efficiency. The Arkansas Community Action Agency Association (ACAAA) has promoted the program and provided informative outreach to contractors and customers through the use of training sessions and educational courses. However, as the agencies are able to determine their own level of program involvement, the current promotion and outreach strategies may not effectively reduce barriers to energy efficiency in all regions. Individual community action agencies who have not engaged the program or have been involved to a lesser degree likely represent an existing barrier to customer program involvement in their local areas. As funding levels have a significant bearing on agency ability and resources, recent and future funding reductions may further strengthen barriers to program-generated energy efficiency.

- **Factor 2:** *Whether the programs and/or portfolio, have adequate **budgetary**, management, and program delivery resources to plan, design, implement, oversee and evaluate energy efficiency programs;*

Based on the Commission’s Order in docket no. 13-002-U, all of the utility EE programs, including the AWP, will be revised through the Collaborative process outlined in the Order. In addition, the WAP is in the process of being transferred from the Department of Human Services to the Arkansas Energy Office. With this transfer, the WAP may be modified in ways that can enhance program delivery. However, the agencies that have been highly active in the program have reported that they plan to continue recruiting participants or appealing to customers who are able to provide their own co-payment for program services. Further success of the program will likely be significantly influenced by the utilities’ and agencies’ responses to potentially decreased or absent federal funding levels and any agency-level reorganization. If WAP-eligible participation becomes difficult to obtain, program funding and design modifications may be necessary in order to further appeal to non-WAP-eligible customers.

- **Factor 3:** *Whether the programs and/or portfolio, reasonably address all major end-uses of electricity or natural gas, or electricity and natural gas, as appropriate;*

The offerings through the AWP have continued to cover all typical and available end-uses. Equipment offered within the program includes lighting, HVAC, water heating, and a full complement of building envelope measures including insulation, air sealing, ENERGY STAR® windows and appliances, and others. In addition to providing full weatherization services, the program involves a wide range of residential measures which are directed towards general energy efficiency. The “whole house” approach to participant home improvements is conducive to providing a comprehensive set of measures in each home.

- **Factor 4:** *Whether the programs and/or portfolio, to the maximum extent reasonable, comprehensively address the needs of customers at one time, in order to avoid **cream-skimming** and lost opportunities*

The AWP is effectively addressing the comprehensive needs of its targeted residential customers. The program is designed to identify the lowest-cost, highest-efficiency measures and provide them to customers where the measures will be most effective. The AWP targets severely inefficient homes and accurately select the most effective measures from a wide range of options. This minimizes “cream skimming”, as the measures are typically chosen on behalf of the customer based on specific customer needs, cost, and resulting energy savings. The program operates in conjunction with the statewide Weatherization Assistance Program (WAP) to minimize or completely offset costs to WAP-eligible customers. Additionally, participating customers may experience non-energy benefits, such as increased ability to pay their utility bills, improved comfort and overall living space, and information regarding how to properly operate their equipment.

- **Factor 5:** *Whether such programs take advantage of opportunities to address the comprehensive needs of **targeted customer sectors** (for example, schools, large retail stores, agricultural users, or restaurants) or to leverage non-utility program resources (for example, state or federal tax incentive, rebate, or lending programs)*

While the agencies have successfully engaged a substantial portion of the target customer market, some segments may not be fully served by the program. As specific agencies covering individual regions may be less active in the program due to preference or resources, customers in those areas may not have equal opportunity to participate in the program. Additionally, participation by customers not receiving WAP federal funding has been very limited thus far, and it appears that the program is having difficulty engaging customers who are financially able to pay for a portion of their home weatherization. This is likely due to the eligibility requirements and operational structure of the program, where customers who are able to provide a co-payment may not qualify

for services or believe that they are the target market for the program. If the AWP seeks to recruit substantial participation from private co-pay customers, it is likely that either the promotional structure of the program or the eligibility requirements will have to be modified.

- **Factor 6:** *Whether the programs and/or portfolio enables the delivery of all achievable, **cost-effective** energy efficiency within a reasonable period of time and maximizes net benefits to customers and to the utility system;*

The AWP enables the delivery of cost-effective energy efficiency to utility customers throughout Arkansas. The program is designed to identify and implement the most cost-effective and energy efficient measures available for customer residences, and leverages federal funding for energy efficiency projects. However, the extensive waiting list for customers receiving WAP funding has substantially decreased the potential for higher participation rates and increased implementation waiting time for the AWP. Community action agency resources correlate with WAP funding levels, and these factors have a significant influence on operational efficiency and overall AWP performance due to the inherent connection between the two programs. At present, AWP resources and operational methods are sufficient for delivering cost-effective, steady energy efficiency over time, but program potential may be limited by statewide resources.

- **Factor 7:** *Whether the programs and/or portfolio, have evaluation, measurement, and verification "EM&V") procedures **adequate** to support program management and improvement, calculation of energy, demand and revenue impacts, and resource planning decisions.*

The existing EM&V procedures within the AWP are fairly sufficient in allowing for support of the implementation process and calculation of energy savings. Community action agencies and contractors collected sufficient inputs and measurements for the majority of program measures. The post-implementation verification process conducted by the agencies has been beneficial in ensuring that reported data are accurate and reliable. There were some issues with data collection and tracking information, particularly with regard to inputs for specific measures. With the implementation of new TRM protocols, it will be necessary to modify the data collection process by collecting additional on-site information as specified in the TRM 2.0 and TRM 3.0. If implementation and measurement are not fully completed according to TRM protocols, it is possible that savings will not be recognized for certain measures. Additionally, there appear to be some organizational or consistency issues with the tracking database, resulting in mismatched data or missing fields. In several instances, as noted in Section 2.6, there were difficulties in verifying savings estimates provided by Frontier Associates. It is crucial to resolve these issues prior to the program year end, as they may have a bearing on claimed savings, on-site verification, and overall evaluation results.

6. Conclusions & Recommendations

Following a review of present program offerings and interviews with utility staff, community action agency staff, and participating customers, the Evaluators found that:

- The Arkansas Community Action Agencies Association (ACAAA) has promoted the program and provided informative outreach to contractors and customers through the use of training sessions and educational courses. However, as the agencies are able to determine their own level of program involvement, the current promotion and outreach strategies may not effectively reduce barriers to energy efficiency in all regions. Individual community action agencies that have not engaged the program or have been involved to a lesser degree likely represent an existing barrier to customer program involvement in their local areas. As funding levels have a significant bearing on agency ability and resources, recent and future funding reductions may further strengthen barriers to program-generated energy efficiency.
- Based on the Commission's Order in docket no. 13-002-U, all of the utility EE programs, including the AWP, will be revised through the Collaborative process outlined in the Order. In addition, the WAP is in the process of being transferred from the Department of Human Services to the Arkansas Energy Office. With this transfer, the WAP may be modified in ways that can enhance program delivery. However, the agencies that have been highly active in the program have reported that they plan to continue recruiting participants or appealing to customers who are able to provide their own co-payment for program services. Further success of the program will likely be significantly influenced by the utilities' and agencies' responses to potentially decreased or absent federal funding levels and any agency-level reorganization. If WAP-eligible participation becomes difficult to obtain, program funding and design modifications may be necessary in order to further appeal to non-WAP-eligible customers.
- The AWP is effectively addressing the comprehensive needs of its targeted residential customers. The AWP targets severely inefficient homes and accurately select the most effective measures from a wide range of options. This minimizes "cream skimming", as the measures are typically chosen on behalf of the customer based on specific customer needs, cost, and resulting energy savings. Additionally, participating customers may experience non-energy benefits, such as increased ability to pay their utility bills, improved comfort and overall living space, and information regarding how to properly operate their equipment.
- While the agencies have successfully engaged a substantial portion of the target customer market, some segments may not be fully served by the program. As specific agencies covering individual regions may be less active in the program

due to preference or resources, customers in those areas may not have equal opportunity to participate in the program. Additionally, participation by customers not receiving WAP federal funding has been very limited thus far, and it appears that the program is having difficulty engaging customers who are financially able to pay for a portion of their home weatherization. If the AWP seeks to recruit substantial participation from private co-pay customers, it is likely that either the promotional structure of the program or the eligibility requirements will have to be modified.

- The AWP is designed to identify and implement the most cost-effective and energy efficient measures available for customer residences, and leverages federal funding for energy efficiency projects. However, the extensive waiting list for customers receiving WAP funding has substantially decreased the potential for higher participation rates and increased implementation waiting times for the AWP. At present, AWP resources and operational methods are sufficient for delivering cost-effective, steady energy efficiency over time, but program potential may be limited by statewide resources.
- The post-implementation verification process conducted by the agencies has been beneficial in ensuring that reported data are accurate and reliable, although there were some issues in tracking data accuracy and data collection timeliness. With the implementation of new TRM protocols, it will be necessary to modify the data collection process by collecting additional on-site information as specified in the TRM 2.0 and TRM 3.0. If implementation and measurement are not fully completed according to TRM protocols, it is possible that savings will not be recognized for certain measures. Additionally, there appear to be some organizational or consistency issues with the tracking database, resulting in mismatched data or missing fields. It is crucial to resolve these issues prior to the program year end, as they may have a bearing on claimed savings, on-site verification, and overall evaluation results.

Additionally, the Evaluators make the following recommendations in order to improve program operations and overall performance for future program years:

- **Make efforts to align the goals and objectives of the various parties involved in administering and implementing the AWP.** While the overall program has a clear set of objectives and goals, the level of interest and involvement in the program varies across and among the agencies and utilities. While some agencies operate the AWP as a high priority, others view it as a supplementary component of the WAP, and plan their resources based on WAP funding. This causes their involvement in AWP promotion and recruitment to be dependent on WAP funding availability rather than AWP resources. If a future program objective is to obtain participation from non-WAP customers, it may be necessary to modify the program promotion strategy or consult with the local agencies to determine the most optimal method of coordinating AWP and WAP-

based objectives. For example, promoting the AWP as an important component of a utility's portfolio of Energy Efficiency programs may emphasize the fact that the AWP is not exclusively for WAP-eligible customers.

- **Continue improving overall understanding of TRM protocols and database software in order to reduce inconsistencies in savings expectations and ensure that collected data are sufficient.** As TRM specifications are updated over time, agencies may be required to collect additional measure inputs and it is important to clarify these requirements as early as possible in the program year. During the 2012 program year, some data were not included in the Frontier database because these data were either not collected by the agencies or were not submitted to Frontier for processing. In order to avoid delays in the savings calculation and verification process, data collected from agencies should be reviewed regularly and any errors or missing data should be resolved as soon as possible. Real-time consistency and completeness checks using the stipulated TRM as a guideline will serve to standardize the methods used by the agencies and their contractors, and result in more complete savings estimates.
- **Standardize measure terminology with TRM language.** Some measure names listed in the AWP database were not consistent with TRM nomenclature, such as "Vented Space Heater" (AWP tracking) vs. "Direct Vent Heater" (TRM 2.0). Although the Evaluators and utility staff were able to match the tracking data measures with items in the TRM, standardizing the terminology would reduce the likelihood for calculation errors and increase the overall efficiency of this process.
- **Ensure that the AWP is cost-effective for both WAP-eligible and non-WAP participants.** As private co-pay participants are able to select which measures to install, there is risk of implementing projects in these homes that do not meet cost-effectiveness targets. It is important that the program maintains its whole-house, high-priority energy efficiency focus in order to remain consistent with AWP design structure and goals. This may involve encouraging or requiring private co-pay participants to implement the most cost-effective measures first before selecting specific improvements that may not be as beneficial to the program.
- **Take upcoming WAP and regulatory environment changes and trends into consideration when planning future AWP operational and promotional strategies.** The currently structured AWP functions in the context of community action agency resources and statewide funding levels. Reorganization of the statewide program or local agencies has the potential to significantly affect AWP operation and performance. If WAP-eligible customers continue to comprise the bulk of participation then funding reductions for the statewide program may directly correlate to reduced AWP savings. Program potential should be evaluated in the context of these external factors, and anticipating changes in the

statewide environment may provide valuable insight when planning future AWP goals and expectations.

- **Ensure that data are available as needed from all parties involved in the AWP.** Throughout the program year, there were several updates, revisions, and corrections to the Frontier savings database, utility tracking data, and agency implementation data. As there are many parties involved in administering and evaluating the AWP, it is necessary to keep records of all previous data and keep it available for review. In the 2012 program year, there were instances where installation data at the agency level were only available in hardcopy format, which increased the data transfer lead time and created inefficiencies in the review process. Community action agencies, utilities, and the database provider should all maintain electronic copies of program data in order to minimize these data transfer difficulties. This will allow for all parties to review crucial program data, and decrease the effort required to provide additional information when it is requested.

7. Appendix A: Participant Survey Instrument

This section presents the instrument used in conducting telephone surveys with participants of the 2012 Arkansas Weatherization Program.

Arkansas Weatherization Program

Participant Telephone Survey

ID No. _____

Customer Name: _____

Date of interview: _____

Date data entered _____

.....
Hello. May I please speak with [CONTACT NAME]: _____)?

Hello. My name is _____ and I'm calling from Research America on behalf of the Arkansas gas and electric utilities about the Arkansas Weatherization Program your household participated in this year. Our records indicate that your home was weatherized by [AGENCY NAME], on or near [INSTALLATION DATE]. Are you the person who is most familiar with your household's participation in this program?
(IF NOT RIGHT PERSON) May I please speak to the person who would know the most about your household's participation in this program?

REPEAT INTRODUCTION AND CONTINUE

(IF RIGHT PERSON) We are conducting a study to evaluate the Arkansas Weatherization Program, known as the AWP. AWP and community agency staff will use the results of this evaluation to determine the effectiveness of the program and to make improvements. We would like to include your opinions about the program in our evaluation. The interview will take approximately 10 minutes. May I ask you some questions about the work performed? Your responses will remain completely confidential.

Q-1 Our records indicate that you participated in the Arkansas Weatherization Program this year by completing an energy audit and receiving several energy efficient measures installed in your home. Do you recall participating in this program?

- Yes [SKIP TO Q-4]
- No [GO TO Q-2]
- Don't know [GO TO Q-2]

Q-2 Is there anyone else in your household who may be familiar with your household's participation in the program?

- Yes [GO TO Q-3]

- No [THANK RESPONDENT AND TERMINATE INTERVIEW]
- Don't know [THANK RESPONDENT AND TERMINATE INTERVIEW]

Q-3 May I speak with that person?

- Yes [RETURN TO Q-1 AND BEGIN QUESTIONS WITH NEW RESPONDENT]
- No [THANK RESPONDENT AND TERMINATE INTERVIEW]
- Don't know [THANK RESPONDENT AND TERMINATE INTERVIEW]

RESPONDENT BACKGROUND

As a reminder, your responses to this survey will be kept completely confidential. I'll begin with a few questions about your decision to participate in the program.

Q-4 How did you learn of the Arkansas Weatherization Program? [SELECT ALL THAT APPLY]

- Information that came in the mail
- Newspaper or magazine article/ad
- Contractor
- Word of mouth from friends, relatives, or others
- TV ad
- Radio ad
- Utility bill message (*Specify which utility*) _____
- Utility website (*Specify which utility*) _____
- Retailer / in store
- Local community action agency
- Other (*Specify*) _____
- Don't know [DO NOT READ]

Q-5 What is the main reason you decided to participate in the program? [SELECT ALL THAT APPLY]

- To reduce my monthly gas bill
- To reduce my monthly electric bill
- The AWP paid for some or all of the improvements
- Contractor recommendation
- Utility recommendation or information (*Specify which utility*) _____
- Recommendation from a friend, relative, neighbor
- Community action agency recommendation
- It is the right thing to do
- Help save the environment
- Save energy
- Other (*Specify*) _____

Q-5A Of the things you mentioned, which was the most important?

- To reduce my monthly gas bill
- To reduce my monthly electric bill
- The AWP paid for some or all of the improvements
- Contractor recommendation
- Utility recommendation or information (*Specify which utility*)

- Recommendation from a friend, relative, neighbor
- Community action agency recommendation
- It is the right thing to do
- Help save the environment
- Save energy
- Other (*Specify*) _____

MEASURE INSTALLATION

Next, I have some questions about the work that was performed in your home through the Arkansas Weatherization Program.

Q-6 Since the work was performed, have you removed or replaced any of the equipment or energy efficiency improvements implemented in your home through the program?

- Yes (*Please specify which items have been removed or replaced*):

- No
- Don't know

[IF CUSTOMER RECEIVED A REPLACEMENT APPLIANCE THROUGH THE PROGRAM, ASK Q-7, ELSE SKIP TO Q-8]:

Q-7 Our records indicate that you received one or more replacement appliances through the Arkansas Weatherization Program. Please indicate whether the following equipment was in good, fair, poor, or non-operational working condition at the time it was removed and replaced: [READ EACH APPLIANCE APPLICABLE TO SPECIFIC RESPONDENT AND REPEAT RESPONSE OPTIONS "good, fair, poor, or non-operational condition" IF NECESSARY]

- Refrigerator: _____
- Heating system: _____
- Air conditioner: _____
- Water heater: _____

OVERALL ENERGY EFFICIENCY DECISION MAKING

Q-8 In the past year, have you installed any energy efficient equipment in your home, besides those installed through the AWP, that you have not received an incentive for?

- Yes [ASK Q-8A]
- No [SKIP TO Q-9]

Q-8A What type of equipment did you install?

List all indicated: _____

Q-8B What motivated you to install this equipment? [VERBATIM]

Q-8C On a scale of 1-10, where 1 is “Not important at all” and 10 is “Very Important”, how important was information you’ve received from utility staff or local community action agencies in your decision to install this equipment? [RECORD NUMBER] # _____

Q-8D Why didn’t you apply for or receive financial assistance or incentives for those items?

- Didn’t know about financial incentives
- Didn’t know whether the measures qualified for financial incentives
- Financial incentive was insufficient
- No financial incentive was offered
- Other (please specify): _____

Q-8E Which, if any, of these energy efficiency improvements were recommended during the Weatherization Program energy audit? [VERBATIM]:

Q- 9 On a scale of 1 to 5, where “5” is very familiar and “1” is very unfamiliar, and a “3” is neutral, how would you rate your past familiarity with the benefits of installing various energy efficiency improvements similar to those offered by the Arkansas Weatherization Program prior to having the audit performed?

- 5: Very familiar
- 4: Somewhat familiar
- 3: Neither familiar nor unfamiliar
- 2: Somewhat unfamiliar
- 1: Very unfamiliar
- 99: Don’t know

Q-9A On a scale of 1 to 5, where “5” is very familiar and “1” is very unfamiliar, and a “3” is neutral, how would you rate your past familiarity with various household energy saving activities such as washing with cold water, reducing your use of light fixtures, and adjusting heating system settings prior to having the audit performed?

- 5: Very familiar

- 4: Somewhat familiar
- 3: Neither familiar nor unfamiliar
- 2: Somewhat unfamiliar
- 1: Very unfamiliar
- 99: Don't know

Q-9B Prior to the audit, did you perform any common household energy saving activities? If so, which activities?

- Yes (*please explain*): _____

- No
- Don't know

Q-10 On a scale of 1 to 5, where "5" is very familiar and "1" is very unfamiliar, how would you rate your current familiarity with energy efficiency and energy efficient options for your home as a result of your participation in the Arkansas Weatherization Program?

- 5: Very familiar
- 4: Somewhat familiar
- 3: Neither familiar nor unfamiliar
- 2: Somewhat unfamiliar
- 1: Very unfamiliar
- 99: Don't know

Q-11 As a result of your experience with the Arkansas Weatherization Program, would you buy energy efficient measures in the future, even if financial incentives were not offered?

- Yes
- No
- Don't know

Q-11A As a result of your experience with the program, do you now take additional action to save energy in your home, such as wash with cold water, reduce your use of light fixtures, and adjust heating system settings?

- Yes (*please explain*): _____

- No
- Don't know

PROGRAM SATISFACTION

Now I'd like to ask you about your satisfaction with several aspects of this program.

Q-12 On a scale of 1 to 5, where “5” is very satisfied and “1” is very dissatisfied, and a “3” is neutral, how would you rate your satisfaction with the following? [RECORD AS ‘99’ IF DON’T KNOW]

<i>Element of Program Experience</i>	<i>Very Satisfied</i> [5]	<i>Somewhat Satisfied</i> [4]	<i>Neither Satisfied or Dissatisfied</i> [3]	<i>Somewhat Dissatisfied</i> [2]	<i>Very Dissatisfied</i> [1]	<i>Don't Know</i> [99]
Information provided by the community action agency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The quality of installation work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance of the equipment installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The savings on your monthly utility bills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The effort required for the application process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wait-time to receive services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information provided by utilities on how to reduce your utility bill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improvement in home comfort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Usefulness of the energy audit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall program experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q-13 (If any item in Q-12 rated 2 or 1) Why were you dissatisfied with [Program Element]? [VERBATIM]:

Q-14 Are there any changes or improvements you would like to see for the Arkansas Weatherization Program? [VERBATIM]:

DEMOGRAPHICS

Finally, I have a few questions about your household. As a reminder, your responses will remain confidential.

Q-15 When was your home built? [IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF YEAR RANGES UNTIL RESPONDENT INDICATES ONE]

- Verbatim_____
- Before 1970's
- 1970's
- 1980's
- 1990-1994
- 1995-1999
- 2000-2005
- 2006 or newer
- Don't know [DON'T READ]
- Refused

Q-16 What is the approximate square footage of your home? [IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF SIZE RANGES UNTIL RESPONDENT INDICATES ONE]

- Verbatim_____
- Less than 1,000
- 1,001-1,500
- 1,501-2,000
- 2,001-2,500
- Greater than 2,500
- Don't know [DON'T READ]
- Refused

Q-17 How many bedrooms are there in your home?

- Quantity:_____
- Don't know [DON'T READ]
- Refused

Q-18 What type of heating system do you have in your home?

- Natural gas heating
- Electric heating
- Combination of types (*Specify*):_____
- Other (*Specify*):_____
- Don't know [DON'T READ]

Q-19 What type of water heater do you have in your home?

- Natural gas water heater
- Electric water heater
- Other (*Specify*):_____
- Don't know [DON'T READ]

Q-20 How many bathrooms are there in your home?

- Quantity:_____
- Don't know [DON'T READ]
- Refused

Q-21 How many showers are there in your home?

- Quantity: _____
- Don't know [DON'T READ]
- Refused

Q-22 Including yourself, how many people currently live in your home year-round?

- Quantity: _____
- Don't know [DON'T READ]
- Refused

Q-23 I'm going to read off a list of income ranges, please indicate which range your total household income falls. Is the total annual income of your household:

- Less than \$25,000
- \$25,000 - \$35,000
- \$36,000 - \$50,000
- \$51,000 - \$75,000
- \$76,000 - \$100,000
- Greater than \$100,000
- Don't know [DON'T READ]
- Refused

Q-24 What's the highest level of education you've completed? [DON'T READ]

- Did not graduate high school
- High school graduate
- Associates degree, vocational/technical school, or some college
- Four-year college degree
- Graduate or professional degree
- Don't know
- Refused

Q-25 Do you have any other comments that you would like to relay to AWP staff about energy efficiency in residences or about these programs in general? [VERBATIM]

Q-26. Would you be willing to allow the evaluator to visit your home in order to verify the installation of items through this program? This visit will take between 30 minutes and one hour. To thank you for your time, you will receive a Visa gift card for between \$25 and \$50 for your participation at the end of the visit.

- Yes (*"Thank you, the evaluator will contact you within the next few weeks to set up a time and day to come by for this visit"*)
- No

This completes the survey. Your input is greatly appreciated and will be used to help improve the Arkansas Weatherization Program in the future. Thank you very much for your time!

6.0 Appendix C:

Evaluation of 2012 AOG/OG&E Weatherization Program

Submitted to:
Arkansas Oklahoma Gas Corporation
Oklahoma Gas and Electric

March 2013

Final Report

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1. Executive Summary

The purpose of this report is to provide a summary of the evaluation effort of the 2012 AOG/OG&E Weatherization Program. This report provides verified gross and net savings findings for the evaluated program, and presents the results of the program process evaluation.

1.1 Overview of AOG/OG&E Weatherization Program

In 2012, the AOG/OG&E Weatherization Program provided residential energy audits and energy efficiency installations to customers within the service territory of Arkansas Oklahoma Gas Corporation (AOG) and Oklahoma Gas and Electric (OG&E). Participating homes were evaluated in order to determine potential energy efficiency measures that would improve overall building efficiency and reduce residential energy usage. The program provided funds for the installation of various measures, including insulation, lighting, air infiltration, and refrigerator replacement.

The AOG/OG&E Weatherization Program is designed to provide utility funds to customers in order to assist customers with the costs of the in-home audit and installation of energy efficiency improvements. Eligible customers receive funds from both AOG and OG&E in this co-funded program. As with the 2011 program year, total utility funding is a maximum of \$3,000 per participant home.

Eligible OG&E customers include homeowners or leaseholders of a single family home, duplex condos, townhouses or mobile home constructed prior to 1997. Participants must meet three of the following eligibility criteria¹:

- Attic insulation less than or equal to R-22;
- Wall insulation equal to or less than R-4;
- Floor insulation equal to R-0;
- Single pane windows with no storm windows attached;
- Heating system less than or equal to 78% AFUE;
- Cooling system with SEER of 10 or less; and
- Air infiltration problems identified through either a pre-blower door test or visual inspection procedures.

These criteria have been specified and modified as needed in order to direct the program towards homes with substantial energy efficiency needs. This allows the

¹ Eligibility requirements are taken from AOG informational materials. Obtained from:
<https://www.aogc.com/energyefficiency.aspx#aogwp>

program to have a significant energy impact on each serviced home, and contributes to overall program cost effectiveness.

The following table identifies core program stages and includes key activities performed throughout the program process.

Table 1-1 Key Activities and Program Stages

<i>Program Stage</i>	<i>Key Activities</i>
Program Design Planning	<ul style="list-style-type: none"> • AOG and OG&E discuss program objectives and make any necessary modifications to program design. • Utilities work with regulatory environment to approve any necessary aspects of the program.
Program Training and Promotion	<ul style="list-style-type: none"> • Contractors and other program operations staff attend program-relevant training sessions. • Contractors promote the program through the use of service trucks, uniforms, and in-person promotion.
Program Participation	<ul style="list-style-type: none"> • Customers apply for the program. • Participants receive in-home audits and potential measures are identified. • One of the two participating contractor firms installs measures, with total utility funds not to exceed \$3,000.
Data Processing and Monitoring	<ul style="list-style-type: none"> • Measures and associated savings are calculated and recorded by Frontier Associates. • AOG and OG&E monitor program progress and cooperate to make program improvements and maintain customer satisfaction. • Program is evaluated through the use of measurement and verification activities

1.2 Evaluation Objectives

The evaluation of the 2012 AOG/OG&E Weatherization Program consisted of several objectives and tasks. These evaluation objectives were related to program savings verification, net savings analysis, and process review. Specifically, the objectives of this evaluation include:

- Documentation review of deemed savings calculations. The Evaluators reviewed all savings calculations for measures included in the Technical Reference Manual, Versions 2.0 and 1.0, (TRM), in order to ensure that measure savings were properly calculated according to TRM protocols.
- Tracking database and documentation review. The Evaluators conducted a tracking database review according to the guidelines defined in Protocol A of the TRM. Additionally, post-implementation field forms and other program materials were reviewed for completeness, accuracy, and overall structure.

- Participant survey. A sample of participants from the 2012 program year were given a survey in order to provide feedback related to their experience with the AOG/OG&E Weatherization Program. This survey included a net-to-gross survey instrument and addressed topics including customer satisfaction, decision making, and energy efficiency preferences.
- Non-participant survey. The Evaluators conducted a survey with a sample of non-participant utility customers in order to gather information related to their awareness of and previous involvement with utility-sponsored energy efficiency programs. This information was used in an estimation of potential non-participant savings spillovers, which may be applied at the energy efficiency portfolio level.
- On-site field verification. The Evaluators scheduled and conducted site visits to participant homes in order to verify complete and proper measure installation, to conduct post-implementation measurements, and to follow-up with participants regarding their experience with the program.
- Installation contractor interviews. The Evaluators conducted interviews with each contractor responsible for performing program services on participant homes. These interviews were related to specific program processes, interactions with participating customers, and contractors' perspective on and satisfaction with the performance of the program.
- Program staff interviews. Interviews were conducted with utility staff as well as the residential implementation contractors servicing participant homes. These interviews provided insight into recent program changes, specific program processes, potential future improvements to program operation, and overall program performance.

1.3 Summary of Findings

Table 1-2 presents gross savings for AOG and OG&E, including utility-level realization rates. The program free-ridership rate for the 2012 year was calculated as 2%. The participant spillover rate for gas savings was calculated as 4.4%, while the participant spillover rate for electric savings was calculated as 3.0% of program gross realized savings. Table 1-3 presents the net savings by utility. Table 1-4 presents the net impact by measure for AOG and OG&E.

Table 1-2 Gross Savings for AOG and OG&E

Utility	# of homes	Peak Demand Savings (Therms)	Annual Savings (Therms)	Lifetime Savings (Therms)	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)	Gross Realization Rate
AOG	1,360	4,403.00	218,194	3,290,253				100%
OG&E	1,631				998.39	3,601,734	53,322,336	98%

Table 1-3 Net Savings for AOG and OG&E

Utility	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)	Peak Demand Savings (Therms)	Annual Savings (Therms)	Lifetime Savings (Therms)
AOG	-	-	-	4,376.31	223,450	3,369,509
OG&E	1,006.29	3,638,503	53,866,693	-	-	-

Table 1-4 Net Savings by Measure Type, AOG and OG&E

Measure	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)	Peak Demand Savings (Therms)	Annual Savings (Therms)	Lifetime Savings (Therms)
Air Infiltration	137.68	730,040	7,300,400	2,552.40	107,365	1,073,647
Ceiling Insulation	761.23	1,931,115	38,622,301	1,821.25	113,214	2,264,275
CFL	87.62	842,014	5,473,091	-	-	-
Energy Star Refrigerator	16.08	118,592	2,253,257	-	-	-
Water Heater Measures	3.68	16,742	217,644	2.66	2,872	31,587
Total	1,006.29	3,638,503	53,866,693	4,376.31	223,450	3,369,509

After reviewing the AOG/OG&E Weatherization Program for 2012, the Evaluators conclude that:

- The AOG/OG&E Weatherization Program has continued to provide sufficient training, education, and outreach to the customers and contractors in the utilities' service territories. Installation contractors have gained further familiarity with program data collection and overall operation, and will receive ongoing training as needed. Additionally, the program has gained recognition and momentum in the customer base, resulting in continued program awareness through indirect word of mouth marketing. Widespread program awareness and steady participation rates indicate that the program is functioning as a stable entity in the AOG and OG&E service territories.

- The AOG/OG&E Weatherization Program has sufficient budget and staff to meet its goals. Adding a third installation contractor during the 2012 program year has allowed for further flexibility and efficiency in servicing customer homes, and contractors anticipate that they will continue to have the resources to meet participation demands. The AOG and OG&E partnership has continued to allow the program to serve a wide pool of customers in the utilities' service territories, and utility staff members have effectively coordinated their financial and operational resources. The evaluation findings suggest that the program will have access to sufficient resources during future program years, even if participation rates are to increase over time.
- The set of program offerings in 2012 address the major areas for potential energy savings in customer homes. Air infiltration and attic insulation measures have provided the majority of program savings, and are typically used as primary methods to reducing residential energy loads. The remaining program measures include lighting and water heater insulation, and the program as a whole focuses on cost effectiveness at the measure and project level. Program staff monitors costs and customer needs and continually consider modifications to program measure offerings and services over time.
- The AOG/OG&E Weatherization Program serves as a significant benefit to residential customers whose homes qualify as severely energy inefficient. The program provides services to customers who likely would not otherwise make major efficiency improvements to their homes, and may not have the opportunity to participate in other utility-sponsored energy efficiency programs. The program has successfully targeted this group of customers and has made minor modifications to program criteria in order to expand its services to additional residences with high savings potential. In this regard, the AOG/OG&E Weatherization Program has a specific and unique role in the utilities' energy efficiency portfolios.
- Feedback from program staff, implementation contractors, and participating customers indicates that the AOG/OG&E Weatherization Program is successfully engaging its targeted customer market. Program funding structure, services offered, and eligibility requirements are conducive to providing significant energy saving services to a large portion of high priority homes. Further potential modifications to program eligibility criteria, such as accepting newer or larger homes into the program, would likely further increase the participant pool while maintaining the core objectives of the program.
- The program focuses on providing cost-effective gas and electric energy efficiency services to low-efficiency residences. Many participant residences receive utility service from both AOG and OG&E, which increases the direct utility benefit of implementing measures such as air infiltration and insulation. The

program has additional indirect benefits for non-participating municipal or co-op utility providers in homes that receive utility services from these organizations.

- The AOG/OG&E Weatherization Program's internal M&V process is largely adequate and accurate in savings calculations. The quality assurance and verification procedures currently conducted by utility staff appear to be sufficient for monitoring contractor implementation quality and ensuring the accuracy of ex ante installation records. The Evaluators' field data were fairly consistent with reported tracking data values, indicating that overall measure implementation is recorded accurately and consistently. As with the 2011 program year, the participant tracking data required some corrections and modifications to reconcile particular inconsistencies regarding participant counts and savings totals for OG&E customers. Additionally, it may be beneficial to include contractor field notes in the tracking database in order to provide supplementary information regarding measure installation. This would allow for a more in-depth and informed verification process.

During the savings verification process, the Evaluators conducted on-site verification visits to participant homes in order to collect ex post measurements of implemented measures. Although the information collected was valuable in supporting the gross savings calculations, additional information would further support the verification process. The Evaluators propose performing the following data collection activities during the evaluation process in future program years:

- Evaluator-conducted baseline air infiltration measurements for a small sample of participant homes prior to the implementation work being performed. This would provide the Evaluators with verified baseline values for some homes, which could be incorporated into the ex post verification process and serve as a comparison to contractor baseline values.
- Additional questions added to the Evaluators' field visit questionnaire regarding whether the customer has made any changes to their building envelope, or has taken any actions that may potentially alter the leakage rates in their homes. This would assist in identifying homes where the customer has taken specific actions that may cause energy usage to differ from expected levels.

The comprehensiveness objectives for the program were largely met during the 2012 program year. The Evaluators identified few specific, systematic or persistent issues with program operation and design. Consideration of the following recommendations may benefit program performance and efficiency in future years:

- **Continue to standardize participant tracking data within the program database in order to minimize inaccuracies in ex ante reporting or M&V activities.** The gross savings verification chapter of the report identifies specific areas of the tracking data that may benefit from accuracy checks and database programming consistency. Additionally, it may be beneficial to consider including

contractor field notes in the tracking database in order to provide insight into any specific issues that may arise with an individual home during the verification process.

- **Maintain the current limited marketing structure but consider adopting direct marketing methods if needed.** The program has experienced immediate uptake from interested customers, and participation rates may level off as the program matures. To overcome existing barriers in customer participation, ensure that the customer base is aware of program structure and understands that the program does not require customers to make significant financial investments. Potential modifications may include increased contractor-driven program promotion and media events such as in-home demonstrations.
- **Explore the possibility of making modifications to program services over time as new options become available or as customer needs change.** There may be further appropriate services to provide within some customer homes, such as wall insulation or heating system improvements. As the program focuses on cost-effectiveness and providing measures with the most energy benefit, it is likely that the currently implemented measures would remain a priority in the program. Any additional services may be implemented on an individual basis based on budget, residence need, and overall energy reduction.
- **As mentioned by utility staff members, program eligibility requirements may be slightly modified in order to target a more broad range of customers.** This may be a beneficial area of research to pursue in future program years. Based on program objectives, it will be important to ensure that any such changes preserve the program's focus on severely energy inefficient homes that will receive significant benefit from the available measures.

1.4 Report Organization

The report is organized as follows:

- Chapter 2 presents the impact findings and discusses the methods used for, and the results obtained from, estimating gross and net savings for the program;
- Chapter 3 presents the results and findings from interviews with program operational staff and participating installation contractors;
- Chapter 4 presents the results and findings of the participant and non-participant surveys;
- Chapter 5 presents and discusses the methods used for, and results obtained from, the overall process review of the program; and
- Chapter 6 presents key conclusions and recommendations from the evaluation of the program.

- Chapters 7 and 8 present appendices containing the instruments used in the participant and non-participant survey efforts.

2. Impact Findings

This section presents the results of the net and gross savings verification and savings calculation review for the AOG/OG&E Weatherization Program in the 2012 program year.

2.1 Glossary of Terms

As a first step to detailing the evaluation methodologies, the Evaluators provide a glossary of terms to follow:

- *Ex Ante* – A program parameter or value used by implementers/sponsoring utilities in estimating savings before implementation
- *Ex Post* – A program parameter or value as verified by the Evaluators following completion of the evaluation effort
- *Deemed Savings* – A savings estimate for homogenous measures, in which an assumed average savings across a large number of rebated units is applied
- *Gross Savings* – Energy savings as determined through engineering analysis, statistical analysis, and/or onsite verification
- *Gross Realization Rate* – Ratio of Ex Post Savings / Ex Ante Savings
- *Free-Ridership* – Percentage of participants who would have implemented the same energy efficiency measures in a similar timeframe absent the program
- *Spillover* – Savings generated by a program that are not incentivized. Examples of this include a customer that is introduced to energy efficiency through one rebated project and due to this undertakes other projects for which they do not apply for a program incentive.
- *Net Savings* – Gross savings factoring off free-ridership and adding in spillover
- *Net-to-Gross-Ratio (NTGR)* = $(1 - \text{Free-Ridership \%} + \text{Spillover \%})$, also defined as Net Savings / Gross Savings
- *Ex Ante Net Savings* = Ex Ante Gross Savings x Ex Ante Free-Ridership Rate
- *Ex Post Net Savings* = Ex Post Gross Savings x Ex Post Free-Ridership Rate
- *Net Realization Rate* = Ex Post Net Savings / Ex Ante Net Savings

2.2 Summary of Ex Ante Savings

The AOG-OG&E Weatherization Program generated savings through the implementation of several energy efficient measure types, such as ceiling insulation, CFLs, air infiltration reduction, and water heater insulation. Table 2-1 and Table 2-2 present the overall ex ante savings for AOG and OG&E by measure, respectively.

Table 2-1 Ex Ante Savings by Measure Type – AOG

<i>Measure</i>	<i>Peak Demand Savings (Therms)</i>	<i>Annual Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
Air Infiltration	2,567.97	104,839	1,048,393
Ceiling Insulation	1,832.36	110,551	2,211,016
CFL	-	-	-
Energy Star Refrigerator	-	-	-
Water Heater Measures	3.18	3,337	36,702
Total	4,403.50	218,727	3,296,110

Table 2-2 Ex Ante Savings by Measure Type – OG&E

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
Air Infiltration	136.60	722,663	7,226,625
Ceiling Insulation	755.26	1,911,600	38,231,998
CFL	106.07	957,227	6,221,976
Energy Star Refrigerator	6.14	45,447	863,501
Water Heater Measures	4.33	19,680	255,840
Total	1,008.39	3,656,617	52,799,940

The following table presents the ex ante gas and electric savings that were not associated with either AOG or OG&E as utility providers, although the source and context of these savings is unclear. The ex ante savings may be attributable to municipal utilities or co-op utilities, although the specific entities are not identified within the tracking data. As there are few non-program gas utility providers in the state of Arkansas, the “non-program” ex ante gas savings may represent propane customers or possibly tracking database errors that claim gas savings for homes that are not serviced by a gas utility. Therefore, this table is a reflection of the non-program ex ante savings that are claimed within the tracking system, and these savings are not applicable to any specific service provider.

Table 2-3 Ex Ante Savings by Measure Type – Non-Program

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Annual Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
Air Infiltration	12.69	13,534.51	135,345	188.20	7,723.89	77,239
Ceiling Insulation	62.01	41,659.23	833,185	188.20	9,074.10	181,482
CFL	-	-	-	-	-	-
Energy Star Refrigerator	-	-	-	-	-	-
Water Heater Measures	-	-	-	0.19	198.00	2,178
Total	74.70	55,194	968,530	376.59	16,996	260,899

2.3 Gross Savings Calculation Methodology

For equipment and retrofits rebated through the 2012 program, calculation methodologies were performed as described in the applicable TRM. Table 2-4 identifies the sections in the applicable TRM that were used for verification of measure-level savings under the AOG/OG&E Weatherization Program.

Table 2-4 TRM Sections by Measure Type

<i>Measure Type</i>	<i>TRM Version</i>	<i>TRM Section</i>
Air Infiltration	2.0	2.2.9
Ceiling Insulation	2.0	2.2.2
CFL	2.0	2.5.1
Refrigerator Replacement	1.0	2.27
Water Heater Jacket	2.0	2.3.2
Water Heater Pipe	1.0	2.22

Three measures were responsible for nearly all of the gross savings for the AOG/OG&E Weatherization Program: air infiltration reduction, ceiling insulation, and the replacement of incandescent lamps with compact fluorescent lamps (CFLs). The calculation methodologies for these measures are detailed in the following sections. In these examples, energy units are expressed in kWh.

2.3.1 Air Infiltration Reduction Savings Calculations

The deemed savings values for air infiltration reduction were developed through EnergyGauge, a simulation software program. Multiple equipment configurations were simulated in each of the four Arkansas weather zones in developing savings values denominated in deemed savings per CFM50 of air leakage rate reduction. The following table summarizes the deemed savings values for Weather Zone 7 (from TRM V2.0).

Table 2-5 Deemed Savings Values for Air Infiltration Reduction, Zone 7

Equipment Type	kWh Savings / CFM50	kW Savings / CFM50	Therm Savings / CFM50	Peak Therms / CFM50
Electric AC with Gas Heat	0.2387	0.0002171	0.0790	0.001853
Gas Heat Only (no AC)	0.0565	n/a	0.0790	0.001853
Elec. AC with Resistance heat	1.7891	0.0001584	n/a	n/a
Heat Pump	1.1295	0.0001584	n/a	n/a

The following example considers a residence in Weather Zone 7 with electric AC and gas heat. If the residence had a leakage rate of 16,100 CFM₅₀ before air infiltration reduction and a leakage rate of 7,220 CFM₅₀ after, then the residence would have an annual gross savings of 2,120 kWh.

$$\text{Air Infiltration Savings} = 0.2387 \frac{\text{kWh Savings}}{\text{CFM}_{50}} \cdot (16,100 \text{ CFM}_{50 \text{ pre}} - 7,220 \text{ CFM}_{50 \text{ post}})$$

$$\text{Air Infiltration Savings} = 2,120 \text{ kWh}$$

2.3.2 Ceiling Insulation Savings Calculations

The deemed savings values for ceiling insulation were developed through EnergyGauge, a simulation software program. Multiple equipment configurations were simulated in each of the four Arkansas weather zones in developing savings values denominated in deemed savings per square footage of ceiling area. Table 2-6 summarizes the deemed savings values for Weather Zone 8 (from TRM V2.0).

Table 2-6 Deemed Savings Values for Ceiling Insulation, Zone 8

Ceiling Insulation Base R- Value	AC/Gas Heat kWh/sq ft	Gas Heat (no AC) Therms/sq ft	AC/Electrical Resistance kWh/sq ft	Heat Pump kWh/sq ft	AC Peak Savings kW/ sq ft	Peak Gas Savings Therms/sq ft
0 to 4	1.53	0.145	4.8	2.83	0.00115	0.00244
5 to 8	0.756	0.0841	2.65	1.53	0.00038	0.00140
9 to 14	0.451	0.0547	1.68	0.969	0.00029	0.00090
15 to 22	0.28	0.0359	1.1	0.629	0.00013	0.00059

The following example considers a residence in Weather Zone 8 with a heat pump, and a pre-retrofit R-value of ceiling insulation in the range of 9 to 14. If the residence has a

ceiling area of 1,200 sq. ft., then the residence would have an annual gross savings of 1,163 kWh.

$$\text{Ceiling Insulation Savings} = 0.969 \frac{\text{kWh}}{\text{ft}^2} \cdot (1,200 \text{ ft}^2) = 1,163 \text{ kWh}$$

2.3.3 Compact Fluorescent Lamps (CFLs) Savings Calculations

The deemed savings for compact fluorescent lamps can be calculated by using the following equation.

$$\text{kWh}_{\text{savings}} = (\text{kW}_{\text{pre}} - \text{kW}_{\text{post}}) \times \text{AOH} \times \text{ISR} \times \text{IEF}_E$$

The inputs, which assume the following prerequisite knowledge, can be found in Section 2.5.1 of TRM V2.0:

- The quantity and wattages of both pre and post fixtures;
- Whether or not the retrofits were indoor or outdoor; and
- Whether or not the space is air conditioned.

For example, if an air-conditioned residence replaced (5) indoor 75W incandescent lamps with (5) 23W CFLs, then the residence would have an annual gross savings of 188.7 kWh.

$$\text{CFLs Savings} = (5 \cdot 0.075 - 5 \cdot 0.0023) \text{ kW} \cdot 803.6 \text{ hr} \cdot 0.86 \cdot 1.05 = 188.7 \text{ kWh}$$

2.4 On-site Verification Procedure

In addition to TRM verification, the Evaluators conducted on-site field verification of a sample of participant homes. This process involved reviewing tracking information and inspecting the completeness and accuracy of the implemented measures. Collected field data were incorporated into the gross savings analysis.

2.4.1 Verification Sampling Methodology

The Evaluators conducted a simple random sample of participants for the ex-post verification process. The sample size for verification surveys is calculated to meet 90% confidence and 10% precision (90/10). The sample size to meet 90/10 requirements is calculated based on the coefficient of variation of savings for program participants. Coefficient of Variation (CV) is defined as:

$$CV(x) = \frac{\text{Standard Deviation}(x)}{\text{Mean}(x)}$$

Where x is the average Therms or kWh savings per participant. Without data to use as a basis for a higher value, it is typical to apply a CV of .5 in residential program evaluations. The resulting sample size is estimated at:

$$n_0 = \left(\frac{1.645 * CV}{RP} \right)^2$$

Where,

1.645 = Z Score for 90% confidence interval in a normal distribution

CV = Coefficient of Variation

RP = Required Precision, 10% in this evaluation

With 10% required precision (RP), this calls for a sample of 68 for programs with a sufficiently large population. In total, the Evaluators conducted on-site visits for 75 program participants.

2.4.2 Verification Procedure

The primary goal of field verification was to ensure that the reported measures were installed and operating correctly in participant homes. Participants were given VISA gift cards for their time; these were in the amount of either \$25 or \$50 depending on the estimated length of the visit. During the on-site visits, the Evaluators' field technicians accomplished the following:

- Verified the implementation status of the measures; verified that the measures were indeed installed, that they were installed correctly, and were functioning properly. Photographs were taken of most of the installed measures.
- Data collected at each site focused on obtaining more specific information regarding the characteristics of the home where the measures were implemented.
- Interviewed customers to obtain additional information on customer satisfaction with the measures as well as information related to potential spillover savings.

2.5 Net Savings Analysis

This section provides methodologies and results of the net savings analysis for the AOG/OG&E Weatherization Program. For this program, net savings incorporated participant free-ridership as well as participant spillover savings.

2.5.1 Participant Free-ridership

Several criteria are used for determining what portion of a customer's savings for a particular project should be attributed to free ridership. The first criterion is based on the response to the question: "Would you have been financially able to have an audit performed and install these energy efficient measures without the Weatherization

Program provided by AOG and OG&E?” If a customer answered “No” to this question, a free ridership score of 0% is assigned to the project. That is, if a customer required financial assistance from the AOG/OG&E Weatherization Program to undertake the project, then that customer is not deemed a free rider.

For decision makers that indicated that they were able to undertake the energy efficiency project without financial assistance from the program, three factors are analyzed to determine what percentage of savings may be attributed to free ridership. The three factors are:

- Plans and intentions of respondent to have an audit conducted or install similar measures without support from the program;
- The respondent’s previous knowledge of energy efficiency options and benefits; and
- The respondent’s previous experience with energy efficiency improvements in their home.

For each of these factors, rules are applied to develop binary variables indicating whether or not a participant’s behavior showed free ridership. These rules are applied to answers to questions on the participant survey questionnaire.

The first factor requires determining if a participant stated that his or her intention was to install an energy efficiency measure even without the program. The answers to a combination of several questions are used with a set of rules to determine whether a participant’s behavior indicates likely free ridership. Two binary variables are constructed to account for customer plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

The first, more restrictive criteria indicating customer plans and intentions that likely signify free ridership are as follows:

- The respondent answered “yes” to the following two questions: “For the work that was performed in your home following the audit, did you have existing plans to have this work performed prior to your participation in the Weatherization Program?” and “For the work that was performed in your home following the audit, would you still have made these improvements in your home if you had not participated in the AOG and OG&E Weatherization Program?”
- The respondent answered “definitely would have” to the following question: “How likely is it that you would have hired a professional contractor to perform a home audit like the Weatherization Program offers if you had not participated in the Weatherization Program sponsored by AOG and OG&E?”

- The respondent answered “did not affect timing of purchase and installation” to the following question: “Did the program cause you to have the energy efficient work performed earlier than you otherwise would have without the program?”

The second, less restrictive criteria indicating customer plans and intentions that likely signify free ridership are as follows:

- The respondent answered “yes” to the following two questions: “For the work that was performed in your home following the audit, did you have existing plans to have this work performed prior to your participation in the Weatherization Program?” and “For the work that was performed in your home following the audit, would you still have made these improvements in your home if you had not participated in the AOG and OG&E Weatherization Program?”
- Either the respondent answered “definitely would have” or “probably would have” to the following question: “How likely is it that you would have hired a professional contractor to perform a home audit like the Weatherization Program offers if you had not participated in the Weatherization Program sponsored by AOG and OG&E?”
- Either the respondent answered “did not affect timing of purchase and installation” to the following question: “How did the availability of information and financial incentives through the Business Energy Efficiency Program affect the timing of your purchase and installation of [Equipment/Measure]?” or the respondent indicated that that while program information and financial incentives did affect the timing of equipment purchase and installation, in the absence of the program they would have purchased and installed the equipment within the next two years.

The second factor requires determining if a customer had previously implemented energy efficient measures in their home on their own and whether they were previously aware of specific opportunities for improving their energy efficiency.

The criterion indicating that program influence may signify a lower likelihood of free ridership is that either of the following conditions are true:

- The respondent answered “somewhat unfamiliar” or “very unfamiliar” to either of the following questions: “Prior to the audit, how familiar were you with the benefits of installing various energy efficiency improvements similar to those offered by the AOG and OG&E Weatherization Program?” and “Prior to the audit, how familiar were you with various household energy saving activities such as washing with cold water, reducing your use of light fixtures, and adjusting heating system settings?”
- The respondent answered “much more knowledgeable than before participating” to the following question: “As a result of your experience with the AOG and

OG&E Weatherization Program, how much more knowledgeable would you say you are about energy efficiency and energy efficient options for your home?”

The third factor requires determining if a participant in the program indicated that he or she had previously installed energy efficient measures similar to those they received through the program, and whether the participant had already been conducting energy saving activities in their home.

The criteria indicating that previous experience may signify a higher likelihood of free ridership are as follows:

- The respondent answered “yes” to the following questions: “Before you participated in the AOG and OG&E Weatherization Program, had you purchased and used any energy efficient measures in your home without financial assistance?” and “Prior to the audit, did you perform any common household energy saving activities such as washing with cold water, reducing your use of light fixtures, and adjusting heating system settings?”
- The respondent answered “very likely” to either of the following questions: “When you were replacing low-cost items such as light bulbs in your home before you participated in this program, how likely were you to replace it with energy efficient equipment?” and “When you were replacing larger items such as appliances in your home before you participated in this program, how likely were you to replace it with energy efficient equipment?”

The four sets of rules just described are used to construct four different indicator variables that address free ridership behavior. For each customer, a free ridership value of either 0 or 1 is assigned based on the combination of variables. Quantifiable program spillover will be added to the program net savings after free-ridership is calculated.

The following table displays each possible indicator variable combination, along with the associated free-ridership score. As free-ridership is assigned to overall savings as a binary variable, participants with a score of 33% are assigned a free-ridership score of 0, and participants with a score of 67% will be assigned a free-ridership score of 1. It should be noted that the customer’s financial ability to independently implement the project is not included in the table. As mentioned above, the financial ability variable acts as a screening question, where any participant who indicates that they would not have been financially able to independently implement the weatherization work is assigned a free-ridership score of 0.

Table 2-7 Indicator Variable Combinations with Associated Free-ridership Score

<i>Plans and Intentions to Install Measures without Program (I)?</i>	<i>Plans and Intentions to Install Measures without Program (II)?</i>	<i>Low Prior Energy Efficiency Knowledge?</i>	<i>Had Previous Experience with Measures?</i>	<i>Associated Free-ridership Score</i>	<i>Binary applied Free-ridership</i>
Y	Y	Y	Y	100%	1
N	N	N	Y	33%	0
Y	Y	N	N	100%	1
N	Y	Y	N	0%	0
Y	Y	N	Y	100%	1
Y	Y	Y	N	67%	1
N	N	N	N	0%	0
N	N	Y	N	0%	0
N	Y	N	N	33%	0
N	N	Y	Y	0%	0
N	Y	N	Y	67%	1
N	Y	Y	Y	33%	0

Table 2-8 displays each combination of indicator variables, along with the percentage of responding participants falling into each category. After applying the financial ability variable to these groups, the overall free-ridership level of the AOG-OG&E Weatherization Program is 2%. In conjunction with free-ridership, participant spillover savings (3.0% for electric, 4.4% for gas) are applied to gross realized savings in order to obtain program net savings.

Table 2-8 Distribution of Respondents across Indicator Variable Combinations

<i>Indicator Variable Combination</i>	<i>Associated Free-ridership Score (as binary variable)</i>	<i>Percentage of Respondents in Category</i>
YYYY	1	1%
NNNY	0	42%
YYNN	1	0%
NYYN	0	1%
YYNY	1	0%
YYYN	1	0%
NNNN	0	13%
NNYN	0	12%
NYNN	0	0%
NNYY	0	26%
NYNY	1	4%
NYYY	0	1%
Total Free-ridership rate		2%

2.5.2 Participant Spillover

The participant survey and on-site verification visits addressed participant spillover. This was done through a battery of questions designed to:

- 1) Assess the behaviors taken by customers after their program participation where they installed energy efficient equipment; and
- 2) Obtain the respondent’s self-reported value for how important they felt information from AOG and/or OG&E was in inducing this non-incentivized behavior.

In total, 339 unique participants responded to the spillover instrument. Of these respondents, 45 indicated that they had purchased and installed one or more measures for which they did not receive an incentive. These respondents were then asked to rate on a scale of 1-10 how important the information from AOG or OG&E was in influencing their decision to purchase this equipment. If the respondent rated information from the utilities at 6 or higher, the savings associated with their installation were attributed to the program. Table 2-9 below summarizes the measures identified during the spillover assessment.

Table 2-9 AOG/OG&E Weatherization Program Participant Spillover Summary

<i>Measures</i>	<i>Number of Instances Qualifying for Spillover</i>
High efficiency Water Heater	6
High Efficiency Furnace	6
Low flow Showerheads	2
High Efficiency Central AC	5
High Efficiency Refrigerator	8
High Efficiency Lighting	16
High Efficiency Dishwasher	4
Energy Star® Windows	4
Total	51

The majority of cited measures are not included in the AOG-OG&E Weatherization Program offerings. As the program does not take a “whole house” approach to implementation, and is limited to \$3,000 worth of improvements on customer homes, highly cost-effective measures such as air infiltration and attic insulation are prioritized over measures such as appliance replacement. Rather than adding these spillover measure types to program services, the program may benefit from recommending these measures to participants in order to encourage them to independently make further efficiency improvements. Participants who indicated that they had purchased a measure that was included in AOG/OG&E services were asked whether they had removed any of the items implemented during their participation in the program. This was to prevent

double-counting savings for measures that were implemented by the utilities, then removed and replaced by customers.

Savings estimates were calculated by determining average likely spillover savings per customer in the sample of 339 unique respondents. In cases where some details were not collected, available inputs from survey data and conservative inputs for values were applied (such as assuming that all high efficiency central air conditioners were in the 14.00 – 14.99 SEER range) and applying TRM V2.0 savings calculations. For cited measures that are included in program offerings, the average savings for a participant receiving this measure were applied. The per-customer savings values were then extrapolated to the full population of AOG/OG&E Weatherization Program participants, providing participant spillover of:

- 9,619 Therms;
- 108,804 kWh; and
- 30.1 kW.

This represented 3% of gross realized electric savings, and 4.4% of gross realized gas savings, which is a substantial level of spillover for this type of residential program.

2.6 Verified Savings by Measure

After reviewing the tracking data and inputs for savings calculations, the Evaluators provided verified gross savings according to protocols from the applicable TRM. Savings from the following measures were verified and matched the calculations provided by Frontier Associates:

- Air Infiltration
 - Accounts for 48% of claimed Therms savings and 20% of claimed kWh savings.
- Ceiling Insulation
 - Accounts for 51% of claimed Therms savings and 52% of claimed kWh savings.

The savings calculated in this evaluation differed from Frontier Associates' calculations for several items. The Evaluators verified measure-level savings according to applicable TRM guidelines and obtained results that differed from Frontier Associates' calculations for the following measures:

- CFLs
 - Originally, TRM V1.0 assumed 2.28 hours of use per day (as shown in section 2.28). However, this value has since been updated for TRM 1 to 2.20 hours of use per day. Frontier Associates used TRM V1.0, but used the outdated value of 2.28 hours of use per day in their calculations of

savings for CFLs. The Evaluators used TRM V2.0 to calculate savings and assumed all retrofits were performed indoors in air-conditioned spaces.

- Refrigerator Replacement
 - In section 2.27, TRM V1.0 provides deemed savings values based on retrofit type. However, the savings Frontier Associates reports differs from the values in TRM V1.0.

Savings for the water heater measures (water heater jacket and water heater pipe) could not be verified due to a lack of information within the tracking data received. For water heater jacket, Section 2.21 of TRM V1.0 provides tables with savings values based on jacket thickness, type of water heating, and tank size. However, the tracking data received by the Evaluators did not include jacket thickness or tank size. The Evaluators applied the ex ante Frontier Associates reports to ex post savings, as these measures represented only 0.54% of the total gross kWh savings and 1.5% of the total gross Therms savings. These details would ideally be included in future tracking data exports in order to calculate ex post savings estimates.

The following table presents the savings results of the evaluation of the 2012 AOG/OG&E Weatherization Program, by measure type. Total savings summarizes the savings calculations performed by applicable TRM protocols for the program. Table 2-10 includes gross realized savings by measure for AOG and OG&E, including any savings that are not attributable to either AOG or OG&E but that were reported in the tracking database. Net savings are presented by utility in the following section.

Table 2-10 Verified Gross Savings by Measure Type

Measure	Peak Demand Savings (kW)	Annual Savings (kWh)	Lifetime Savings (kWh)	Realization Rate	Peak Demand Savings (Therms)	Annual Savings (Therms)	Lifetime Savings (Therms)	Realization Rate
Air Infiltration	136.60	722,663	7,226,625	100%	2,567.97	104,839	1,048,392.80	100%
Ceiling Insulation	755.26	1,911,600	38,231,998	100%	1,832.36	110,551	2,211,015.72	100%
CFL	86.93	833,505	5,417,782	87%	-	-	-	-
Energy Star Refrigerator	15.96	117,394	2,230,486	258%	-	-	-	-
Water Heater Measures	3.65	16,573	215,444	84%	2.68	2,804	30,844.28	84%
Total	998.39	3,601,734	53,322,336	98%	4,403.00	218,194	3,290,253	100%

2.7 Verified Savings by Utility

In the AOG/OG&E Weatherization Program, the participating utilities are AOG and OG&E. Savings not attributable to either of these utilities are listed as “Non-Program”.

These utilities may have included municipal utilities, Co-Ops, or non-participating investor owned utilities. Table 2-11 presents the AOG/OG&E Weatherization Program net savings results for each utility, and Table 2-12 through Table 2-13 summarize the gross savings by measure for each utility.

Table 2-11 Verified Net Savings for AOG and OG&E

<i>Utility</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Annual Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
AOG	-	-	-	4,376.31	223,450	3,369,509
OG&E	1,006.29	3,638,503	53,866,693	-	-	-
Total	1,006.29	3,638,503	53,866,693	4,376.31	223,450	3,369,509

Table 2-12 Verified Net Savings for AOG by Measure

<i>Measure</i>	<i>Peak Demand Savings (Therms)</i>	<i>Annual Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
Air Infiltration	2,552.40	107,365	1,073,647
Ceiling Insulation	1,821.25	113,214	2,264,275
CFL	-	-	-
Energy Star Refrigerator	-	-	-
Water Heater Measures	2.66	2,872	31,587
Total	4,376.31	223,450	3,369,509

Table 2-13 Verified Net Savings for OG&E by Measure

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>
Air Infiltration	137.68	730,040	7,300,400
Ceiling Insulation	761.23	1,931,115	38,622,301
CFL	87.62	842,014	5,473,091
Energy Star Refrigerator	16.08	118,592	2,253,257
Water Heater Measures	3.68	16,742	217,644
Total	1,006.29	3,638,503	53,866,693

Table 2-14 presents the gas and electric savings that were not associated with either AOG or OG&E, although as mentioned above the actual nature and accuracy of these savings is unclear. This table is a reflection of the non-program gas and electric savings that are claimed within the tracking system, and these savings are not applicable to any specific service provider.

Table 2-14 Net Savings by Measure Type – Non-Program

<i>Measure</i>	<i>Peak Demand Savings (kW)</i>	<i>Annual Savings (kWh)</i>	<i>Lifetime Savings (kWh)</i>	<i>Peak Demand Savings (Therms)</i>	<i>Annual Savings (Therms)</i>	<i>Lifetime Savings (Therms)</i>
Air Infiltration	12.79	13,672.68	136,726.82	187.06	7,909.94	79,099.40
Ceiling Insulation	62.50	42,084.52	841,690.50	187.06	9,292.67	185,853.50
CFL	-	-	-	-	-	-
Energy Star Refrigerator	-	-	-	-	-	-
Water Heater Measures	-	-	-	0.16	170.75	1,878.29
Total	75.29	55,757	978,417	374.28	17,373	266,831

3. Utility Staff and Contractor Interviews

3.1 Utility Staff Member Interviews

As part of the evaluation of the 2012 AOG-OG&E Weatherization Program, the Evaluators conducted in-depth interviews with utility staff members involved in managing and operating the program. These interviews were designed to explore various aspects of program performance, including overall design, operational efficiency, and opportunities for future improvement.

As the evaluation of the 2011 program year provided details regarding program operation and design, the 2012 evaluation interviews are intended to explore any changes in the program and any new developments over the past year. The 2012 evaluation seeks to follow-up on key issues and draw comparisons between program years where appropriate.

This section provides an overview of program structure and processes, and identifies any key areas that have been modified since the 2011 program year. These findings are based on utility staff in-depth interviews, as well as program documentation and periodic communications with program and regulatory staff.

3.1.1 Overall Program Design

The program provides utility funds to fully offset the cost of energy audits and associated energy efficiency measures. The AOG/OG&E Weatherization Program is funded by the utilities via ratepayers, where program participants receive no-cost in-home energy audits and energy-efficiency improvements. Utility funding is currently set to a maximum of \$3,000 per home.

Interviewed program staff indicated that future program design changes are currently being considered. These include possibly expanding eligibility criteria, such as allowing newer homes or larger homes to participate in the program. This would increase the total number of eligible customers, and may allow the program to recruit participants in additional localized areas of the utilities' service territories.

3.1.1 Program Success and Goals

Both AOG and OG&E staff indicated that the weatherization program was able to reach its goals for the 2012 program year. The utilities decided to close the program prior to the end of the calendar year, completing the final 2012 home weatherization project in November. The 2012 program year will also include some homes that were weatherized by OG&E in 2011, but that did not become finalized until the beginning of the 2012 year. The savings from these 96 homes are attributable to the 2012 program.

Utility staff members mentioned that there has been positive feedback from past and current program participants, and that customers have reported very few issues with the

work that has been performed. This is consistent with results from the participant survey, where respondents provided positive and complimentary commentary regarding their program experiences. Utility staff members indicated that they have made efforts to address any customer concerns immediately in order to maintain customer satisfaction and correct any issues with the participation and implementation process.

3.1.2 AOG and OG&E Program Partnership

As with the 2011 program year, utility staff members in 2012 indicated that working relationships between AOG and OG&E have been positive and effective. Interview respondents explained that one of the most important aspects of this working relationship is to maintain consistency and accuracy in program records and processes, which is accomplished through regular communication and periodic program updates. One issue mentioned during the 2011 program evaluation was the challenge of accurately distributing the correct funding amounts from each utility; interviewed staff indicated that the two parties are now familiar with the process and have mitigated the likelihood of errors in budgeting or allocation. Utility staff members reported that the two parties have become more proficient in managing and operating the program, which has allowed for a fairly steady program year. Overall, interviewed staff indicated that communication between parties has been sufficient and straightforward, and that the utility partnership has continued to function effectively.

3.1.3 Data Collection and Tracking

During the in-depth interviews, utility staff members reported that there had been some issues in retrieving reliable, consistent data from the program tracking system maintained by Frontier. This is consistent with the 2011 program year, where there were difficulties in obtaining complete program data in a timely manner. Utility staff explained that some of the issues from the 2011 program year had carried over into the 2012 year, but that these had largely been addressed and resolved at the end of the 2012 year. For example, there had been mislabeling issues where some participants were incorrectly classified as either AOG or OG&E customers. An important aspect of the 2012 program year was resolving these types of classification and data entry issues, as continued inaccuracies can potentially lead to errors in savings estimation, funding allocation, and verification efforts. Further information regarding the consistency and completeness of program tracking data can be found in the Tracking Database Review (Section 3.3) of this report.

3.1.4 Program Contractors

In the AOG/OG&E Weatherization Program, contractors conduct energy audits of customer homes and complete energy efficiency improvements for qualifying participants. In the 2012 program year, a third contractor was added in order to allow for greater participation rates and more flexibility in appointment scheduling. All contractor staff members undergo regular training in order to stay current with industry techniques,

safety protocols, and regulatory requirements. Interviewed utility staff indicated that adding additional contractors is fairly unlikely unless participation rates increase sharply. A more likely scenario would be for the existing contractors to take on additional staff in order to meet any significant increases in participation demand. Interviewed utility staff reported that all three contractors have been performing as expected, with few challenges in coordination, record-keeping, or installation work. Additionally, utility staff explained that if an error or issue is discovered during the quality assurance and verification process, the contractors are contacted and notified of any changes or improvements that need to be made. This serves to monitor the quality of work that is being conducted, and continually improve the accuracy and quality of services offered by the program over time.

3.1.5 Market Reach and Participation

As discussed during the 2011 evaluation of the AOG-OG&E Weatherization Program, the marketing strategy for the program is fairly simple and conservative. The installation contractor staff member uniforms and trucks display the name of the weatherization program, which serves as the primary method of direct marketing. There is additional information on the utility websites and customers can inquire about the program via telephone, but the need for a large-scale marketing effort has been low. As the program receives several hundred inquiries per month from potential participants, it appears that program awareness is high and that participation rates are sufficient.

Utility staff members explained that the AOG-OG&E marketing structure has been very effective, allowing both utilities to continue obtaining higher participation rates than they experience in the Arkansas Weatherization Program (AWP). This higher rate of participation is also likely due to a fairly minimal program wait list of between a few days and two weeks.

As discussed above, further changes to program eligibility requirements may be implemented in order to increase the potential market for the program. The majority of the customer population does not currently qualify to participate in the program, as the eligibility criteria are designed to target severely energy inefficient homes. Therefore, any changes to program eligibility requirements would likely be fairly minor and incremental in order to remain consistent with program objectives.

3.2 Installation Contractor Interview Findings

The residential audits and measure installation activities are performed by three contractors based in the AOG-OG&E service territories. These three contractors each have several crews that are dispatched to homes based on residence location, participation load, and crew availability. After the initial audit is performed, an implementation crew proceeds to install the recommended measures. Finally, a post-implementation review is conducted in order to gather information such as resulting air infiltration levels and to ensure that the measures have been properly implemented.

The Evaluators conducted telephone surveys with management staff of the three contracting firms responsible for conducting the audit and implementation phases of the program in participant homes. The survey approach was to gain insight into contractor methodology, involvement with the program, and perspective on program structure and performance. Additionally, contractors were given an opportunity to identify any changes or improvements that they would like to see in the program.

This section summarizes the results of the contractor interviews, focusing on overall program operation and performance.

3.2.1 Program Marketing

The interviewed contractors were asked about their involvement in marketing and promoting the AOG-OG&E Weatherization Program. Respondents explained that AOG and OG&E conduct some program marketing, and that the contractors do not typically conduct promotional campaigns involving mailings or media-based advertising. All of the contractors mentioned that much of the marketing for the program occurs on-site at participant homes. Contractor crews display the program logo and are typically approached by neighbors and friends of participants while the work is being conducted. This allows the contractors to refer customers to the program, and increases overall program awareness. Additionally, one contractor explained that the crews can place yard signs on customer lawns during the audit appointment, and leave them displayed until the work is complete. These on-site promotional methods are low-cost and require few resources, but appear to be effective in spreading program awareness and interest.

When asked whether program marketing could be improved, the interviewed contractors generally stated that current program awareness is fairly widespread, and that the stable participation rates reflect an adequate marketing structure.

3.2.2 Audit and Implementation Crews

Contractors provided information related to the structure of and methods used by their audit and implementation crews. All AOG-OG&E Weatherization Program contractors operate at least two crews, and customer homes are typically visited twice. The first visit involves audit staff collecting residence data that is used in the EnerTrek software to identify cost-effective measures. Measure implementation work and post-installation measurements such as a blower door test occur during the second visit. Contractors stated that the visits typically take place within the same week, with the implementation visit often occurring one or two days after the audit. The implementation crew keeps detailed records of the work performed on the home, such as the methodology used during blower door testing and the specific work performed during air infiltration improvements. In future program years, it would be beneficial for the Evaluators to review these site records as they may provide information that would be useful during verification visits and survey efforts.

The interviewed contractors mentioned that the post-installation measurements had initially taken place during a third visit to the home, but that the implementation crews now include staff who are certified to take these measurements. This has reduced the level of inconvenience for customers and has increased overall operational efficiency.

In terms of contractor training, respondents explained that new staff members are trained by experienced crew members and receive ongoing training in order to remain current with Arkansas regulations and best practice methodologies. Additionally, contractors explained that their audit staff is comprised of Building Performance Institute (BPI) certified auditors, who have received specialized and thorough energy audit training. Further certifications and training are available to contractor staff if necessary.

When asked whether they had sufficient staffing and operational resources to effectively meet participation demands, the contractors stated that their current resources are sufficient. One contractor explained that they would be able to hire additional crews as necessary, but that this had not yet become an issue. Overall, the interviewed contractors indicated that their crews have been operating fairly smoothly and that there had been few issues in implementing program services.

3.2.3 Participant Feedback

The weatherization program contractors provided information regarding customer feedback during and after the participation process. The participating contractors have received many calls from customers who state that they are seeing significant energy savings in their homes. Additionally, many customers have indicated that they are very satisfied with the work that has been performed. Other customers have contacted the contracting firms and mentioned that they decided to participate in the program because of a recommendation from a friend or neighbor. This suggests that the contractors are contributing to customer satisfaction levels and motivating them to refer others to the program.

When asked whether many customers had followed up with the contractors to request additional energy efficiency improvements after participating in the program, respondents stated that a small percentage of participants had done this. However, one contractor explained that as the contractors do not promote their other services during the on-site visits, the majority of customers do not seek additional weatherization work. Some customers have expressed interest in paying for further improvements, but have not followed through with these projects due to the cost. Interviewed contractors stated that participants are typically only able to receive the weatherization program's energy efficiency improvements because they are provided at no cost to the customer, and that it would be unlikely for these participants to fund further projects at their own expense. These results are in agreement with the participant survey and field visits, which indicated that program free-ridership was fairly minimal.

3.2.4 Program Services and Structure

Interviewed contractors provided feedback related to their experiences working with AOG and OG&E during the program year, and generally stated that the working relationship is effective and beneficial. Contractors stated that they are able to communicate with AOG and OG&E when necessary, and exchange periodic program updates regarding participation, any operational issues, and upcoming program changes.

In terms of the program design, contractors stated that the majority of participant homes would benefit from further energy efficiency improvements that are not covered by AOG-OG&E Weatherization Program offerings. However, one contractor explained that as the program focuses on highly cost-effective measures, it would be difficult to implement further improvements in participant homes while maintaining an adequate savings-to-investment ratio. Additionally, contractors stated that given the available program budget and resources, the current measure offerings are sufficient.

With regard to program criteria, the contractors noted that the participation requirements limit the potential participant pool to homes that will receive the most energy savings through the program. One contractor mentioned that gradually expanding these criteria, such as allowing larger or newer homes to participate, may contribute to high participation rates over time. However, contractors stated that the potential market for the program is fairly large, and that they anticipate steady participation in future program years.

The interviewed contractors also indicated that they were satisfied with the design and operation of the AOG-OG&E Weatherization Program, and that they planned to remain active participants in future program years. Overall, the results of these interviews suggest that the contractors value the program as a part of their business, and are motivated to continue their program involvement. There do not appear to be any specific issues with the work performed by these contractors or with their interactions on a customer level. All three contractors and their crews are continually becoming more experienced with the AOG-OG&E Weatherization Program and will likely serve as a valuable resource in future program years.

4. Participant and Non-Participant Survey Findings

4.1 Participant Survey Design

The following section presents key findings from surveys conducted with customers who participated in the 2012 AOG and OG&E Weatherization Program in Arkansas. The participant survey was designed to capture information related to the decision making behaviors and perspectives of weatherization participants. The survey focused on aspects of the customer program experience including the implementation of energy efficient measures and behaviors, perspectives on saving energy, and satisfaction with the program.

Specifically, data collected via participant surveying is used in evaluating:

- Customer awareness of the program;
- Customer implementation of energy efficient measures and behaviors;
- Customer decision making behaviors; and
- Customer satisfaction with the program.

Additionally, results from the participant survey are incorporated into the net-to-gross savings analysis. Participants are asked a series of questions that factor into the estimation of program free-ridership as well as program savings spillover. These specific questions and the methodology used to estimate net-to-gross savings are discussed in section 2.5 of this report.

4.2 Participant Motivations and Awareness

This section details the survey findings related to participant preferences, program awareness, and prior energy efficiency behaviors. Participant respondents were first asked about how they learned of the AOG-OG&E Weatherization Program. As shown in Table 4-1, the majority of participants stated that they learned about the program through their friends, relatives, or other personal acquaintances. Relatively few participants indicated that they had learned of the weatherization program through direct AOG or OG&E marketing channels such as bill inserts, advertisements, or the utility websites. This suggests that the AOG-OG&E Weatherization Program is being effectively marketed indirectly by the utilities' customer base. As the program is in its third year, enough time has passed to allow knowledge of the program to spread from past participants to new customers. The program has not been strongly advertised by AOG and OGE in past years, and it may not require high levels of direct marketing in order to develop substantial levels of customer awareness.

Table 4-1 How Participants Learned of the Program

	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
How did you learn of the Weatherization Program sponsored by AOG and OG&E?	Word of mouth from friends, relatives, etc.	87%
	OG&E bill message	8%
	AOG bill message	6%
	Information that came in the mail	5%
	Newspaper or magazine article/ad	3%
	Contractor	3%
	TV ad	1%
	OG&E or AOG website	1%
	Retailer/in store	1%
	Other	1%
	Don't know	1%

*Respondents were able to provide multiple responses. The percentages shown are percentages of respondents rather than percentages of responses. Thus, the total exceeds 100%.

Participants were then asked why they decided to participate in the AOG-OG&E Weatherization Program. Table 4-2 displays the distribution of responses, where respondents were able to provide more than one response. Participants most commonly indicated that they participated in the program in order to reduce their gas or electric utility bills; the majority of respondents selected at least one of these options. Only 15% of respondents reported that they participated because the measures and improvements were provided at no cost to the customer. These results suggest that participants were primarily concerned with the financial benefits of participating in the program, particularly the long-term effects of increasing residential energy efficiency.

When asked to elaborate and identify the most important factor in their decision to participate in the program, 61% of respondents cited reducing their utility bills as their primary motivation. Participants are likely interested in receiving the highest long-term energy savings possible through the program. As the AOG-OG&E Weatherization Program seeks to implement the most cost-effective energy saving measures in customer homes, it appears that participant interests and the interests of the utilities are fairly aligned.

Table 4-2 Motivations for Participating in the Program

What is the main reason you decided to participate in the program? (Select all that apply)	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	To reduce my monthly electric bill	64%
	To reduce my monthly gas bill	50%
	To save energy	27%
	Recommendation from a friend, relative, neighbor	17%
	AOG and OG&E paid for some or all of the improvements	15%
	Environmental/Personal reasons	12%
	Other	4%
	Contractor recommendation	3%
	Utility recommendation or information	2%
	Don't know	1%

*Respondents were able to provide multiple responses. The percentages shown are percentages of respondents rather than percentages of responses. Thus, the total exceeds 100%.

In order to gauge participants' independent energy efficiency behaviors, respondents were asked a series of questions regarding their energy efficiency knowledge and decision making prior to participating in the program. When asked about their familiarity with energy efficiency measures and behaviors prior to their participation in the program, survey respondents rated themselves as having a fairly high level of familiarity in these areas. As shown in Table 4-3 and Table 4-4, the majority of respondents indicated that they were at least somewhat familiar with residential energy efficient improvements and energy saving behaviors.

Only 21% of respondents reported that they were somewhat or very unfamiliar with the type of energy saving improvements offered through the weatherization program. Similarly, only 12% of respondents reported that they had been somewhat or very unfamiliar with basic energy saving activities such as managing lighting and lowering heating temperatures. It is likely that the majority of participants understood the general concepts behind reducing energy usage in their homes, and that the AOG-OG&E Weatherization Program provides specific guidance and motivation to actually adopt these types of measures and behaviors.

Table 4-3 Prior Customer Awareness of Energy Efficiency Measures

How would you rate your past familiarity with the benefits of installing various energy efficiency improvements similar to those offered by the AOG and OG&E Weatherization Program prior to having the audit performed?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Very familiar	26%
	Somewhat familiar	27%
	Neither familiar nor unfamiliar	23%
	Somewhat unfamiliar	10%
	Very unfamiliar	11%
	Don't know	2%

Table 4-4 Prior Customer Awareness of Energy Saving Behaviors

How would you rate your past familiarity with various household energy saving activities such as washing with cold water, reducing your use of light fixtures, and adjusting heating system settings prior to having the audit performed?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Very familiar	43%
	Somewhat familiar	29%
	Neither familiar nor unfamiliar	14%
	Somewhat unfamiliar	6%
	Very unfamiliar	6%
	Don't know	2%

When asked about their current level of familiarity with energy efficiency and energy efficient options for their home as a result of participating in the program, more than 80% of respondents reported that they were now somewhat or very familiar with these concepts. Additionally, this series of questions allowed for comparison between pre-participation and post-participation knowledge. The majority of respondents (54%) indicated that they were more familiar with energy saving improvements and behaviors after participating in the AOG-OG&E Weatherization Program than they had been prior to participating.

These results suggest that the program is providing useful information to participants with regard to specific actions they can take to continue saving energy in their homes. Although it is unclear to what extent past participants will continue to implement energy saving improvements, it appears that participants generally consider themselves more aware of the direct effects that various actions can have on their overall energy usage.

Table 4-5 Current Participant Familiarity with Energy Efficiency Opportunities

How would you rate your current familiarity with energy efficiency and energy efficient options for your home as a result of your participation in the AOG and OG&E Weatherization Program?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Very familiar	50%
	Somewhat familiar	33%
	Neither familiar nor unfamiliar	9%
	Somewhat unfamiliar	3%
	Very unfamiliar	4%
	Don't know	1%

4.3 Participant Energy Efficiency Involvement

Respondents were then asked a series of questions related to their prior and current involvement with making energy efficiency improvements in their homes. When asked how likely they would typically be to replace low-cost items such as light bulbs with energy efficient measures, a majority (68%) of respondents reported that they are very likely to do this. Similarly, 72% of respondents reported that they are very likely to replace large items such as appliances with energy efficient options. However, it should be noted that response bias may be a factor in certain survey responses. Response bias occurs when responses do not represent respondents' actual beliefs due to the influence of external factors such as social acceptance. Specifically, social desirability bias is the tendency for respondents to answer questions in a way that is seen as socially acceptable, which may skew results.² Due to this, some customers may overestimate their involvement and interest in energy efficient practices. Although responses to these types of questions should not be used to predict future energy saving behaviors on the part of participants, these survey results suggest that many participants perceive themselves as actively engaging in energy saving behaviors on a regular basis.

Respondents were then objectively asked whether they had previously performed any common energy saving activities prior to having the weatherization audit performed. Sixty-nine percent of respondents indicated that they had conducted such activities, and were asked to provide further details regarding these behaviors. The majority of these respondents explained that they had been performing such activities as washing with cold water, managing and monitoring central heating temperature, and turning off lights when not in use.

² Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). Measurement and control of response bias. *Measures of social psychological attitudes*, 1, 17-59.

Table 4-6 Prior Customer Involvement with Energy Saving Behaviors

Prior to the audit, did you regularly perform any common household energy saving activities? If so, which activities?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Yes	69%
	No	31%

When asked whether they had purchased and installed any energy efficient measures or equipment prior to participating in the AOG-OG&E Weatherization Program, 64% of respondents indicated that they had done this. Upon providing further details, the majority of these respondents reported that they had been in the process of exchanging existing incandescent lights for CFLs. Respondents also commonly reported that they had previously upgraded one or more common appliances such as dishwashers, refrigerators, or air conditioners to Energy Star® models. Approximately five percent of these participants stated that they had independently made building shell or weatherization improvements such as caulking or replacing windows, or installing insulation.

Table 4-7 Prior Customer Involvement with Energy Efficiency Measures

Before you participated in the AOG and OG&E Weatherization Program, had you purchased and used any energy efficient measures or equipment in your home?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Yes	64%
	No	35%
	Don't know	1%

Approximately one-third of all survey respondents reported that they would have implemented one or more of the energy efficiency measures from the AOG-OG&E Weatherization Program even if they had not participated. When asked which measures they would have been likely to implement on their own, the majority of these respondents reported that they would have installed attic insulation. Additionally, 58% stated that they would have performed weather sealing on their doors or windows, and 30% reported that they would have upgraded the efficiency of their lighting. These results suggest that participants were already aware of the major weatherization improvements that could be performed in their homes, and that some of them may have made efforts to implement these changes if they had not participated in the program. However, this survey item does not directly correlate to a specific level of free-ridership, as other factors such as financial ability and timing of implementation are not directly addressed by this question. It should be noted that the net savings estimation section of this report provides the full methodology for free-ridership assessment, and that the presentation of individual survey items is intended to provide insight into participants' perspectives and decision making behavior.

Table 4-8 Reported Energy Efficiency Purchases in Absence of Program

Which of the following improvements would you have made even if you had not participated in the audit and installation provided by the AOG and OG&E Weatherization Program?	<i>Response</i>	<i>Percentage of Respondents (N = 115)</i>
	Adding attic insulation	71%
	Weather sealing windows and doors	58%
	Modifying thermostat settings	18%
	Upgrading lighting efficiency	30%
	Adding low flow equipment to faucets and showers	10%
	Exchanging refrigerator for an Energy Star® model	10%
	Making thermal improvements to water heater	6%
	Other	3%
Don't know	2%	

Participants who indicated that they would have been likely to implement one or more weatherization measures even if they had not participated in the program were asked about when they would have made these improvements. The majority of respondents reported that the AOG-OG&E Weatherization Program allowed them to implement the project(s) one to two years earlier than they otherwise would have. Approximately one-quarter of respondents indicated that it would have been three to five years before they would have independently implemented the energy efficient measure(s).

Table 4-9 Effect of Program on Timing of Energy Efficiency Improvements

How much sooner did you make these energy efficiency improvements than you otherwise would have without the AOG-OG&E Weatherization Program?	<i>Response</i>	<i>Percentage of Respondents (N = 85)</i>
	Four to five years sooner	12%
	Three years sooner	12%
	Two years sooner	26%
	One year sooner	41%
	Don't know	9%

Overall, survey responses indicate that while a portion of participants may have had prior knowledge of energy saving measures or intentions to implement energy efficient equipment, the AOG-OG&E Weatherization Program had significant influence over the timing, quality, type, and efficiency level of these projects.

4.4 Post-participation Energy Efficiency Perspectives

Participants were asked a series of questions in order to gauge how the AOG-OG&E Weatherization Program has affected their knowledge of and involvement with energy

saving measures and practices. More than one-third of all respondents reported that they are currently much more knowledgeable about energy efficiency and energy saving options for their home as a result of participating in the program. Only five percent of respondents indicated that they are no more knowledgeable after participating, which suggests that the program is providing useful and lasting information to customers.

Table 4-10 Post-participation Familiarity with EE Measures and Behaviors

As a result of your experience with the AOG and OG&E Weatherization Program, how much more knowledgeable would you say you are about energy efficiency and energy efficient options for your home?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Much more knowledgeable	38%
	Somewhat more knowledgeable	42%
	Slightly more knowledgeable	14%
	No more knowledgeable	5%
	Don't know	1%

Additionally, nearly 90% of respondents stated that they would be likely to independently purchase energy efficient measures as a result of their participation in the program. Based on open-ended survey responses, these purchases would likely primarily include CFLs and other low-cost, easy-to-install measures.

When asked whether they currently take actions to save energy in their homes, such as washing with cold water or managing their lighting loads, 84% of respondents reported that they do conduct such practices. This is an increase from the 69% of respondents who indicated that they performed these activities prior to participating, suggesting that the program is increasing participants' likelihood to consider additional efforts in managing their residential energy usage.

Table 4-11 Reported Likelihood to Independently Purchase EE Measures

As a result of your experience with the AOG and OG&E Weatherization Program, would you buy energy efficient measures in the future, even if financial incentives were not offered?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Yes	88%
	No	8%
	Don't know	4%

Table 4-12 Post-participation Energy Efficiency Behaviors

As a result of your experience with the program, do you now take additional action to save energy in your home, such as wash with cold water, reduce your use of light fixtures, and adjust heating system settings?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Yes	84%
	No	15%
	Don't know	1%

Participants were asked whether they had removed or replaced any of the energy efficiency measures that were implemented through the AOG-OG&E Weatherization Program, with only five percent of respondents indicated that they had done this. Open-ended responses indicate that these removals and replacements primarily consisted of exchanging burned-out CFLs.

Table 4-13 Post-participation Measure Replacement

Since the work was performed, have you removed or replaced any of the equipment or energy efficiency improvements implemented in your home through the program?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Yes	5%
	No	95%

The participant survey also included a series of questions intended to identify potential spillover savings for the AOG-OG&E Weatherization Program. These questions included determining whether participants had independently implemented energy efficiency improvements and whether the weatherization program was a significant factor in the decision to install these measures. Any non-incentivized measure whose purchase was influenced by the AOG-OG&E Weatherization Program is a potential candidate for contributing to overall program net savings.

When asked whether they had independently purchased and installed any energy efficient measures since participating in the program, nearly one-quarter of respondents reported that they had implemented one or more measures without receiving an incentive. Participants in this group were then asked to rate the importance of information and assistance from the AOG-OG&E Weatherization Program in their decision to purchase and install this equipment on a scale of 1 to 10, where 1 signified “not at all important” and 10 signified “very important”. Twelve percent of respondents provided a rating of 6 or higher, indicating that the program was a significant factor in their purchasing decision. When asked to elaborate on the type of measures purchased and installed, respondents provided a range of responses, including lighting, central AC

replacements, refrigerator replacements, and other appliance replacements. The post-participation implementations represented by this portion of respondents represent likely spillover savings for the AOG-OG&E Weatherization Program.

Table 4-14 Independent Implementation of Energy Efficiency Measures

In the past year, have you installed any energy efficient equipment in your home, besides those installed through the Weatherization Program, that you have not received an incentive for?	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
	Yes	23%
	No	76%
	Don't know	1%

4.5 Participant Satisfaction

Survey respondents were asked about their levels of satisfaction with selected elements of their experience with the 2012 AOG-OG&E Weatherization Program. Results were provided on a scale of 1 to 5, with 1 representing “very dissatisfied” and 5 representing “very satisfied”. As displayed in Table 4-15, respondents generally reported high satisfaction levels with the majority of program elements. Other than their overall program experience, respondents reported being the most satisfied with the service provided by AOG and/or OG&E staff. This was followed by high satisfaction ratings for the information provided by the installation contractor, the quality of the installation work, and the performance of the measures installed. Very few respondents reported being dissatisfied with any aspects of their experience with the installation process or with the contractor who visited their home. The respondents who indicated that they were at all dissatisfied with these elements primarily stated that they had expected more measures to be included under the program, or that one or more measures had required repair or replacement after being installed. These statements represent a small portion of participants, and any indications of negative experiences primarily appear to be anecdotal in nature.

One-quarter of respondents provided “don’t know” satisfaction ratings for the savings on their monthly utility bills, while another 18% of respondents provided a “neutral” rating for this program element. In open-ended responses, some participants explained that they had expected a more noticeable change in their monthly bills as a result of installing these energy efficient measures. This is not uncommon for residential retrofit and weatherization programs, as customers may not have had time to observe a significant reduction in energy bills, or may not have closely monitored savings over time. Even with significant utility bill savings over time, participants may not be aware of the specific savings levels unless they have made direct comparisons between pre-participation and post-participation billing amounts. Additionally, some respondents provided open-ended responses indicating that they would like to receive additional

information about how much energy they have saved as a result of the program; this type of information may be beneficial in motivating past participants to continue making efforts in reducing their residential energy usage.

Table 4-15 Participant Satisfaction with Selected Program Elements

Program Element	Satisfaction Rating (N = 300)					
	Very satisfied	Somewhat satisfied	Neutral	Somewhat dissatisfied	Very dissatisfied	Don't know
Overall program experience	82%	13%	2%	1%	2%	0%
Service provided by AOG and/or OG&E staff	81%	11%	5%	0%	2%	1%
Information provided by the contractor	78%	13%	5%	1%	3%	0%
Quality of installation work by the contractor	78%	14%	5%	1%	2%	0%
Performance of the equipment installed	78%	13%	4%	1%	2%	2%
Effort required for the application process	75%	15%	4%	2%	2%	2%
Usefulness of the energy audit	73%	16%	8%	0%	2%	1%
Improvement in home comfort	62%	20%	12%	0%	2%	4%
Information provided by AOG and/or OG&E on how to reduce your utility bills	60%	16%	13%	1%	1%	9%
Savings on your monthly utility bills	36%	18%	18%	1%	1%	25%

Many participants provided positive commentary regarding their experiences with the AOG-OG&E Weatherization Program. These comments included praise for the installation contractors and the overall participation process. Several participants stated that they intended to inform their friends or neighbors of the program, and that they hoped it would continue into future years. Specific commentary included:

“The program is absolutely wonderful. It was a great way to help with energy.”

“I appreciate their help and would like to be informed of upcoming programs.”

“I would just like to say it is a wonderful program and would recommend to anyone. Thank you.”

Overall, the results from the satisfaction portion of the survey indicate that participants are very satisfied with their program experiences, and that they highly value the information and services offered by the program. As the incidents of dissatisfaction were sparse and fairly anecdotal, there do not appear to be any systematic issues related to

participant satisfaction. Participant responses suggest that they primarily value a straightforward and low-effort participation process, as well as open communication and information from both utility staff members and the installation contractors. It appears that the AOG-OG&E Weatherization Program is effectively addressing these values and maintaining positive relationships with participating customers.

4.6 Participant Demographics

This section presents the results of a series of survey questions related to participants' demographics and residence characteristics. Residence characteristics include the age, square footage, heating type, and water heating type of participating homes. Additionally, respondents were asked about the number of bedrooms, bathrooms, showers, and total residents in their homes.

Table 4-16 Reported Age of Participant Homes

	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
When was your home built?	Before 1970	46%
	1970's	27%
	1980's	16%
	1990-1994	5%
	1995-1999	4%
	2000-2005	0.3%
	Don't know	2%

Table 4-17 Reported Square Footage of Participant Homes

	<i>Response (in square feet)</i>	<i>Percentage of Respondents (N = 300)</i>
What is the approximate square footage of your home?	Less than 1,000	3%
	1,001 - 1,500	36%
	1,501 - 2,000	42%
	2,001 - 2,500	9%
	Greater than 2,500	2%
	Don't know/No answer	9%

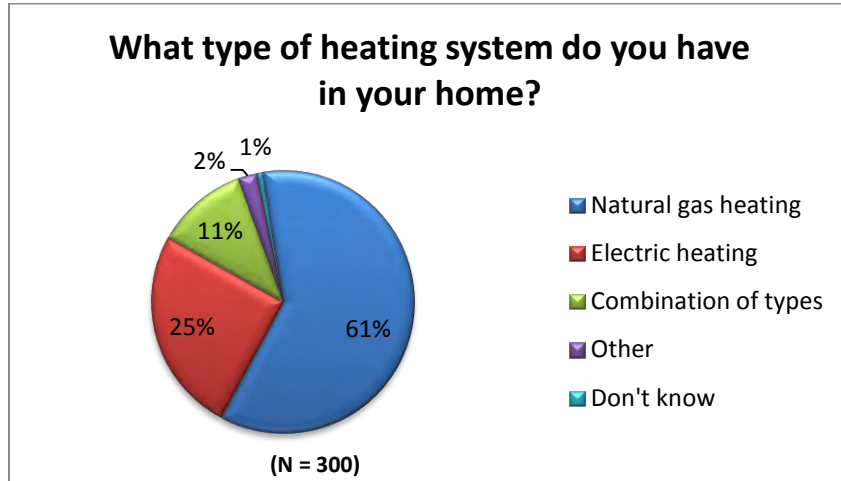


Figure 4-1 Reported Participant Residence Heating Type

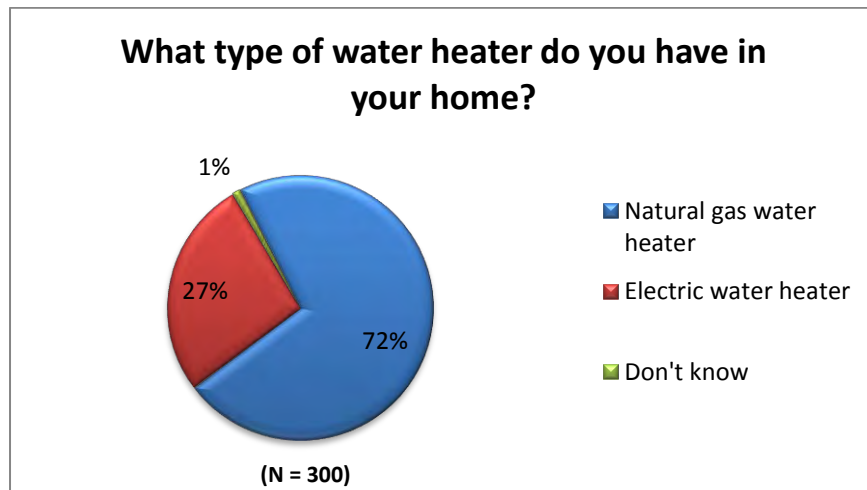


Figure 4-2 Reported Participant Residence Water Heating Type

Table 4-18 Other Reported Participant Residence Characteristics

Residence characteristic type	Average number reported	Median number reported	N
Bedrooms	2.9	3	296
Bathrooms	1.8	2	297
Showers	1.6	2	298
Total residents	2.3	2	295

Error! Not a valid bookmark self-reference. and Table 4-20 display overall participant income and education levels. Demographic and residence metrics may be compared over time in order to identify any patterns or changes in the participant population across program years.

Table 4-19 Reported Participant Income Ranges

	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
Please indicate which range your total household income falls. Is the total annual income of your household:	Less than \$25,000	26%
	\$25,000 - \$35,000	18%
	\$36,000 - \$50,000	17%
	\$51,000 - \$75,000	18%
	\$76,000 - \$100,000	9%
	Greater than \$100,000	1%
	Don't know/No answer	11%

Table 4-20 Reported Participant Education Levels

	<i>Response</i>	<i>Percentage of Respondents (N = 300)</i>
What is the highest level of education you have completed?	High school graduate	36%
	Associates degree, vocational/technical school, or some college	33%
	Four-year college degree	17%
	Did not graduate high school	7%
	Graduate or professional degreee	5%
	No answer	2%

4.7 Non-participant Survey Findings

The Evaluators conducted a telephone survey with 100 OG&E customers who were not listed as participants of any OG&E energy efficiency programs. The purpose of this survey was to obtain information regarding non-participant program awareness, demographics, decision making behavior, and other characteristics. The results of this survey may provide insight into any notable differences between the participant and non-participant groups.

One primary objective for the OG&E non-participant survey was to estimate potential non-participant spillover savings resulting from the OG&E portfolio of energy efficiency programs³. This section presents the results of this non-participant survey effort, including overall spillover findings.

Non-participant customers were first asked about the type of equipment they currently have in their homes. Table 4-21 displays the distribution of responses for gas vs. electric heating systems, water heaters, and dryers. The majority of non-participants indicated that they owned a gas heating system, while 79% of respondents reported that they have an electric clothes dryer. Responses for water heaters were more evenly split, with 58% of non-participants stating that they own a gas water heater.

Table 4-21 Non-Participant Reported Equipment Types

<i>Equipment Type</i>	<i>Gas</i>	<i>Electric</i>	<i>Don't know/ Not applicable</i>	<i>N</i>
Heating system	66%	30%	4%	100
Tank style water heater	58%	38%	4%	100
Clothes dryer	14%	79%	7%	100

Non-participant customers were then asked to provide the age of their existing equipment in order to gauge general potential for unit replacement or repair. As shown in Table 4-22, the majority of respondents reported that their air conditioners and heating systems were less than 10 years old. Only 15% of respondents indicated that their air conditioner was more than 15 years old, while one-quarter of respondents stated that their heating system was more than 15 years old. These results suggest that non-participant heating systems and air conditioners may be properly functioning or new units, which would likely reduce the need for tune-ups or replacement.

³ A separate non-participant survey effort was conducted with AOG customers. These results were detailed in the portfolio level report of AOG energy efficiency programs.

Table 4-22 Non-Participant Reported Equipment Age

Equipment Type	Equipment Age Range (in years)						N
	Less than 5	5 - 10	10 - 15	15 - 20	More than 20	Don't know	
Air conditioner	33%	21%	21%	10%	5%	10%	94
Heating system	28%	23%	15%	13%	12%	9%	95

Respondents were then asked whether their existing equipment was energy efficient. Specifically, customers indicated whether their appliances were Energy Star® rated. Results are displayed in Table 4-23, where a high percentage of respondents reported that their equipment is energy efficient.

Table 4-23 Efficiency Type of Installed Non-Participant Equipment

Equipment Type	Energy Star?			N
	Yes	No	Don't know	
Water heater	78%	11%	11%	18
Clothes washer	67%	20%	13%	15
Clothes dryer	50%	36%	14%	14
Dishwasher	40%	20%	40%	5
Refrigerator	65%	36%	18%	17
Freezer	75%	-	25%	4
Other	75%	-	25%	4

All non-participant respondents were asked if they had ever heard of any local utility energy efficiency programs. As shown in Table 4-24, 41% of respondents indicated that they were aware of at least one OG&E program, while a small percentage of respondents indicated awareness of programs sponsored by other utilities in Arkansas. Although the customers reporting program awareness represent a relatively high percentage of non-participant respondents, these respondents likely vary in their level of understanding and knowledge regarding OG&E energy efficiency programs. Customers may have only seen advertisements for a specific program, while others may have actually considered applying for participation.

Table 4-24 Non-Participant Awareness of Utility Energy Efficiency Programs

	<i>Response</i>	<i>Percentage of Respondents (N = 100)</i>
Have you heard of any energy efficiency programs that are being offered by the electric or gas utilities?	Yes, OG&E	41%
	Yes, CenterPoint	3%
	Yes, SourceGas	5%
	Yes, Entergy	2%
	Yes, AEP/SWEPCO	3%
	Yes, AOG	5%
	Yes, Empire Electric	-
	Yes, Other	-
	No	55%
	Don't know	-

Respondents who reported that they were aware of one or more OG&E energy efficiency programs were then asked how they learned of these programs; Table 4-25 displays the results. Forty-four respondents reported that they had received information regarding OG&E programs either in the mail or through bill messages. Another 20% of respondents indicated that they had learned of the program(s) from friends or relatives. Very few respondents stated that they had learned of the program(s) through retailers or contractors. These results suggest that non-participants are most likely to learn of OG&E programs through direct mailings or word of mouth, rather than other conventional advertising methods or through retailers. This is somewhat in agreement with the awareness methods reported by AOG/OG&E Weatherization Program participants, where 87% indicated that they had learned of the program through word of mouth.

Table 4-25 How Non-Participants Learned of OG&E Energy Efficiency Programs

	<i>Response</i>	<i>Percentage of Respondents (N = 45)</i>
How did you hear about OG&E's energy efficiency programs?	Received information in the mail	31%
	Recommendation from friends, relatives, or others	20%
	OG&E bill message	13%
	OG&E brochure	9%
	TV advertisement	9%
	Read newspaper or magazine article/advertisement	4%
	Retailer/in store	2%
	Radio advertisement	2%
	Contractor	2%
	Don't know	7%

Respondents indicating awareness of OG&E energy efficiency programs were then asked to rate their satisfaction with selected marketing elements of those programs. As shown below, satisfaction ratings were fairly high for each category, with few customers indicating that they were dissatisfied with program marketing quality. Specifically, customers rated that they were very satisfied with the marketing in terms of informing them what they need to do to participate, which suggests that the accessibility of programs may not be a primary barrier to participation.

Table 4-26 Non-Participant Satisfaction with Program Marketing Elements

<i>Program marketing satisfaction element</i>	<i>Average rating (5-point scale)</i>	<i>N</i>
Why you should participate	4.0	23
What you need to do to participate	4.2	22
General appeal	3.6	25

When asked whether they had ever participated in an OG&E energy efficiency program, the majority of these respondents (85%) reported that they had not done this. Of the three respondents who indicated that they had participated in an OG&E program, two reported that they had participated in the OG&E Weatherization Program while one reported that they had participated in the Living Wise Program. However, these customers were not included in program participation records and may have participated under a different name or utility account number.

All non-participant respondents were asked to rate their likelihood of participating in an OG&E energy efficiency program within the next year. Only 12% of respondents reported that they were very likely to do this, while nearly half of the respondents indicated that they were somewhat unlikely or very unlikely to do this. When asked why they were unlikely to participate, respondents most commonly reported that they do not currently need to replace any of their existing equipment, or that they cannot currently afford to purchase high efficiency equipment that would qualify for a rebate. The respondents who reported that they are not able to afford high efficiency equipment may be candidates for the AOG/OG&E Weatherization Program, although the program eligibility criteria may be a barrier for this group.

Several non-participant respondents provided open-ended commentary indicating that they would be interested in learning more about energy efficiency programs. The majority of these non-participants had stated that they were unaware of any utility-sponsored efficiency programs, but that they would be likely to participate in the near future.

Table 4-27 Non-Participant Likelihood to Participate in EE Programs

How likely are you to participate in a OG&E energy efficiency program within the next year?	<i>Response</i>	<i>Percentage of Respondents (N = 100)</i>
	Very likely	12%
	Somewhat likely	25%
	Neither likely nor unlikely	7%
	Somewhat unlikely	12%
	Very unlikely	36%
	Don't know	8%

When asked what they would be likely to purchase through an OG&E energy efficiency program, 11 participants indicated that they would be likely to purchase high efficiency air conditioning. Another nine non-participants reported that they would likely purchase Energy Star® appliances, while six respondents stated that they would likely purchase insulation. These responses suggest that while the majority of non-participants are not planning to pursue an OG&E program in the near future, they are most interested in fairly large energy efficiency improvements rather than minor upgrades such as CFLs.

OG&E Non-participant demographics were compared with AOG/OG&E Weatherization Program participant demographics in order to identify any notable differences between the two groups. Figure 4-3 displays a comparison between the reported income levels of non-participants and participants, and suggests that the two groups have fairly similar income ranges. A higher percentage of AOG/OG&E Weatherization Program participants are in the income range of below \$35,000, and 7% of non-participants reported annual income of over \$100,000 as compared to one percent of program participants.

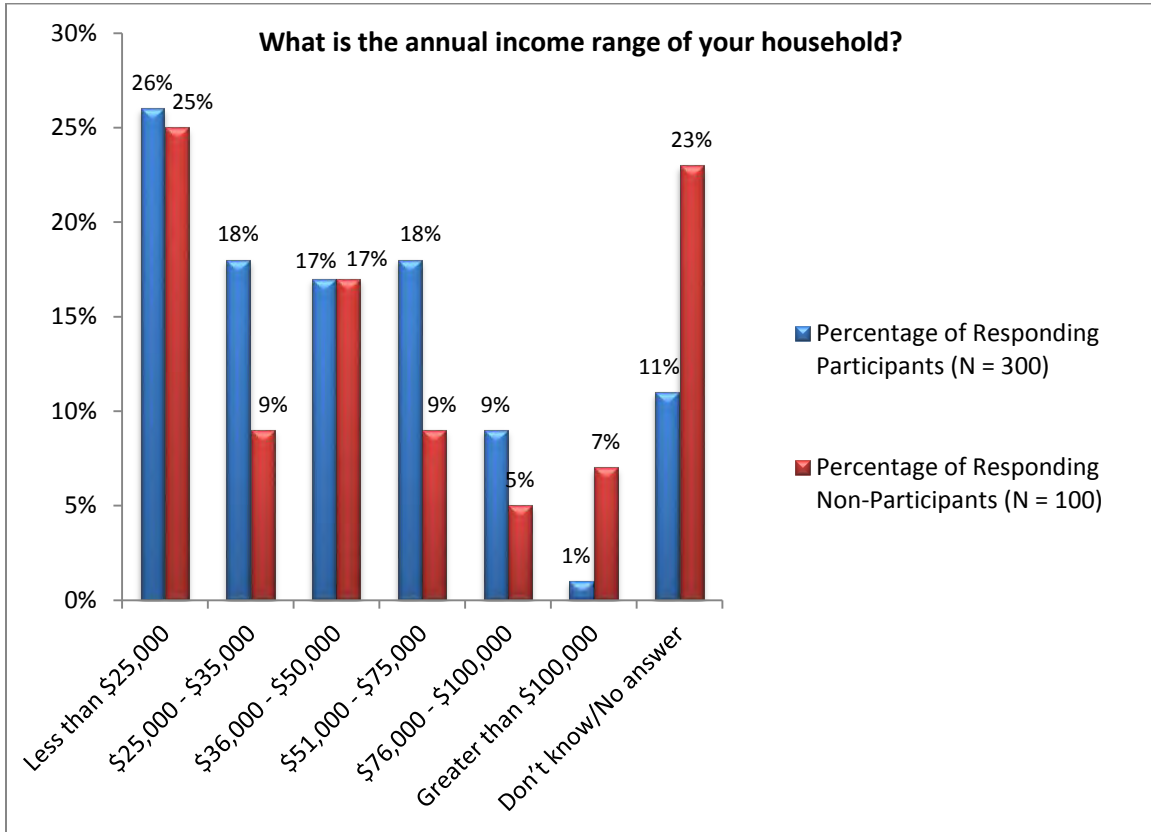


Figure 4-3 Participant vs. Non-Participant Income Ranges

Figure 4-4 displays a comparison between AOG/OG&E Weatherization Program participant and OG&E non-participant reported education levels. The majority of respondents in both groups reported had graduated high school or completed some college or vocational school. Twelve percent of non-participants reported that they had completed a graduate or professional degree as compared to five percent of program participants.

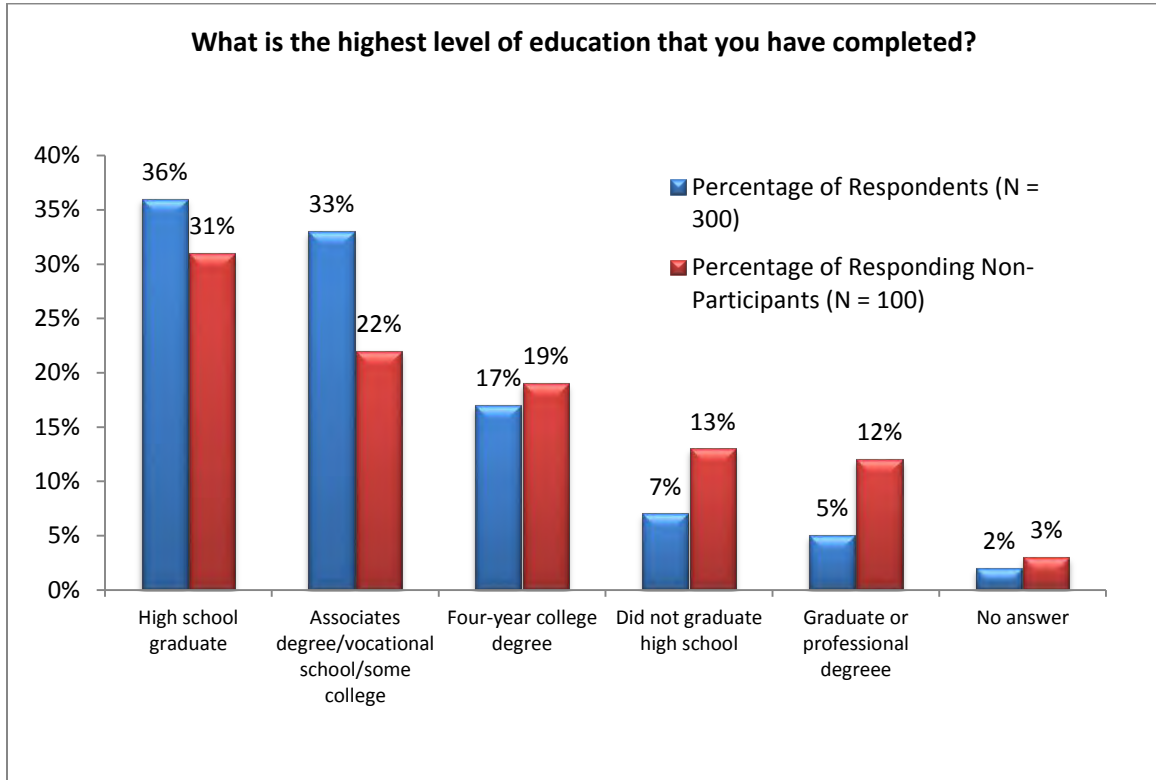


Figure 4-4 Participant vs. Non-Participant Education Levels

Figure 4-5 displays a comparison between the residence square footage of AOG/OG&E Weatherization Program participants and OG&E non-participants. More than one-quarter of non-participant respondents indicated that their residence is greater than 2,000 square feet, as compared with 11% of program participants. On average, non-participant respondents reported having larger homes than participant respondents, which would correlate to larger areas of conditioned space and potentially higher energy usage.

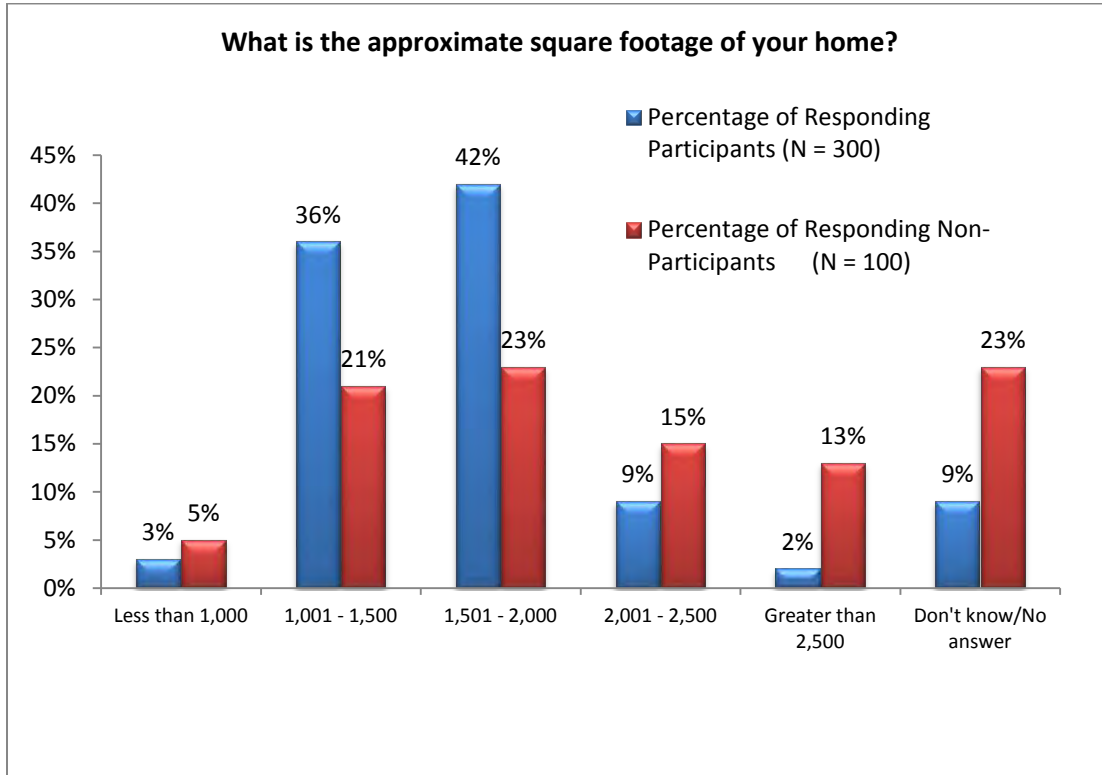


Figure 4-5 Participant vs. Non-Participant Residence Square Footage

Figure 4-6 displays a comparison between the age of AOG/OG&E Weatherization Program participant and OG&E non-participant homes. On average, program participants reported living in older homes, and 11% of non-participants stated that they live in a home that was built after the year 2000. As the AOG/OG&E Weatherization Program requires participant homes to be built prior to 1997, these respondents would not be eligible to participate. However, they may be eligible for other OG&E and utility-sponsored programs such as equipment rebates or OG&E’s Custom Energy Report Program.

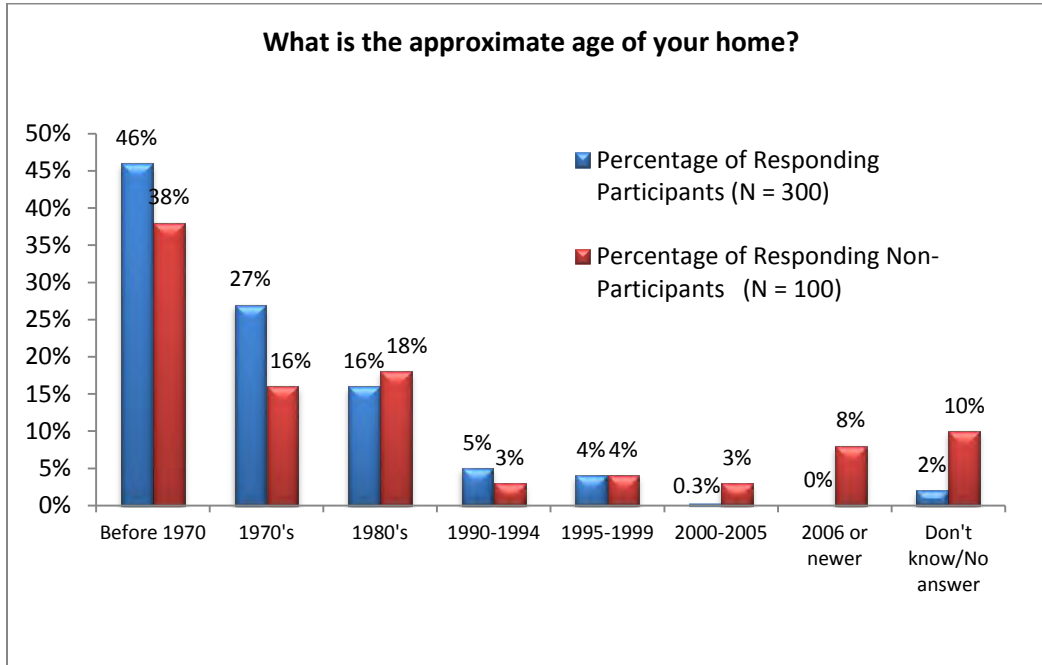


Figure 4-6 Participant vs. Non-Participant Residence Age

The overall set of OG&E non-participant findings suggests that one of the primary barriers for program participation may be related to customers' level of understanding and knowledge with regard to their energy saving opportunities. Although a substantial percentage of non-participants indicated awareness of one or more utility-sponsored program, few were able to provide specific program names or further details regarding their program knowledge. This suggests that while customers may believe that they are aware of the available energy efficiency incentives and offerings, they likely do not have a complete understanding of how the various options may apply to their home.

Additionally, many non-participants indicated that they did not want to spend money on new equipment. As the heating and cooling systems owned by these respondents were fairly new, it is unlikely that they would be interested in purchasing new units without a significant offset of the initial costs. The open-ended commentary suggests that non-participants may be more likely to pursue minor efficiency improvements with or without associated incentives, such as replacing their lighting with CFLs and adjusting thermostat settings. If rebates are available, non-participants are most interested in more major purchases such as large appliances and building shell measures.

5. Program Process Review

In 2012, the AOG/OG&E Weatherization Program provided residential energy audits and energy efficiency installations to customers within the service territory of Arkansas Oklahoma Gas Corporation (AOG) and Oklahoma Gas and Electric (OG&E). Participating homes were evaluated in order to determine potential energy efficiency measures that would improve overall building efficiency and reduce residential energy usage. The program provided funds for the installation of various measures, including insulation, lighting, air infiltration, and refrigerator replacement.

The AOG/OG&E Weatherization Program is designed to provide utility funds to customers in order to fully offset the costs of energy efficiency audits and resulting energy efficiency measures and installations. Eligible customers receive funds from both AOG and OG&E in this co-funded program, covering up to \$3,000 of services.

Eligible OG&E customers include homeowners or leaseholders of a single family home, duplex condos, townhouses or mobile home constructed prior to 1997. Participants must meet three of the following eligibility criteria⁴:

- Attic insulation less than or equal to R-22;
- Wall insulation equal to or less than R-4;
- Floor insulation equal to R-0;
- Single pane windows with no storm windows attached;
- Heating system less than or equal to 78% AFUE;
- Cooling system with SEER of 10 or less; and
- Air infiltration problems identified through either a pre-blower door test or visual inspection procedures.

These criteria are designed to target severely energy inefficient residences; this helps to ensure that each participating home has the potential to generate a substantial amount of energy savings through the program.

Customers who are interested in participating in the program contact program staff members to sign up for the in-home audit. Program contractors contact customers within 48 hours of receiving customer information, and the audit is scheduled. During the in-home audit, contractors determine customer eligibility and identify potential energy efficiency measures for the residence. After the measures are installed, utility staff members perform post-inspections in order to verify that all measures have been properly implemented. In 2012, staff members performed these quality control

⁴ Eligibility requirements are taken from AOG informational materials. Obtained from: <https://www.aogc.com/energyefficiency.aspx#aogwp>

procedures with 10% of participating homes. Section 5.2 provides details related to the utilities' verification procedures.

5.1 Interview and Survey Data Collection Summary

The process evaluation of the 2012 AOG/OG&E Weatherization Program included several sets of explorative interviews and surveys. These were designed to gain perspectives and insight from program staff, utility customers, and installation contractors regarding the performance and operation of the program. Specifically, the survey and interview tasks included:

- Participant survey. A sample of participants from the 2012 program year were given a survey in order to provide feedback related to their experience with the AOG/OG&E Weatherization Program. This survey included a net-to-gross survey instrument and addressed topics including customer satisfaction, decision making, and energy efficiency preferences.
- Non-participant survey. The Evaluators conducted a survey with a sample of non-participant utility customers in order to gather information related to their awareness of and previous involvement with utility-sponsored energy efficiency programs.
- Installation contractor interviews. The Evaluators conducted interviews with each contractor responsible for performing program services on participant homes. These interviews were related to specific program processes, interactions with participating customers, and contractors' perspective on and satisfaction with the performance of the program.
- Conduct program staff interviews. Interviews were conducted with utility staff as well as the residential implementation contractors servicing participant homes. These interviews provided insight into recent program changes, specific program processes, potential future improvements to program operation, and overall program performance.

Table 5-1 below summarizes the survey and interview data collection for this process evaluation effort, including data collection type, number of respondents, and additional details.

Table 5-1 Interview and Survey Data Collection Summary

Target	Component	Activity	N	Details
Program Staff	AOG Program Staff	Interview	1	The program manager and operational staff are responsible for coordinating program data, managing program resources, directing installation contractors, and communicating with AOG or OG&E staff as needed during the program process.
	OG&E Program Staff	Interview	3	
Installation Contractors	DK Construction, Total Home Efficiency, Williams Energy Efficiency	Interview	3	The AOG/OG&E Weatherization Program utilizes three installation contractors who conduct residential audits, measure implementation, and collect ex ante measure data.
Program Participants	AOG and OG&E Participants	Survey	300	This constituted a random sample of program participants who had received at least one measure through the AOG/OG&E Weatherization Program.
Non-Participants	OG&E Non-participants	Survey	100	This constituted a general population survey of OG&E's residential non-participant customers and included questions related to several OG&E energy efficiency programs.
	AOG Non-participants	Survey	100*	*This non-participant survey was conducted and included as a part of the AOG portfolio-level report.

5.2 Post-Implementation Verification Review

As per the February 8, 2012 Supplemental Guidance Regarding Evaluation Strategies memorandum, the evaluation includes an assessment of internal quality assurance and quality control procedures conducted by program operations staff. The goals of this QA/QC assessment include:

- Identifying the goals for the inspection and verification of the AOG/OG&E Weatherization Program;
- Determining the specific parameters used in the verification process and whether these parameters are appropriate for the program;
- Identifying the target and actual confidence and precision levels for the inspection and verification activities;
- Reviewing the internal M&V participant selection process and the sampling techniques employed by program implementation staff;
- Reviewing site inspection documents and findings, and evaluating any savings adjustments that were made; and
- Providing recommendations for the design and operation of future verification activities.

As part of the quality control process, utility staff members perform post-implementation verification and inspections on a sample of participant residences. The Evaluators conducted telephone calls with program managers and other utility staff to determine the methodology and structure of the existing post-implementation verification process. The Evaluators reviewed the field forms used during this process in order to gain insight into the information gathered during verification, and to identify any opportunities for increasing the effectiveness and accuracy of the quality control procedures.

5.2.1 Overall Verification Methodology

AOG/OG&E Weatherization Program utility staff members conduct post-implementation verification visits continually throughout the program year. Sites are randomly selected weekly from the population of participants who have recently received program services. Interviewed program staff reported that this sample typically represents approximately 10% of all homes serviced under the program. The utility program manager typically conducts these visits.

The objective during the verification visits is to verify that all recorded measures have been properly installed and are operational. The utility staff members perform a visual inspection of each measure that has been recorded in the contractor installation form. Throughout the visit, the inspector completes the Weatherization Quality Control Form detailing the inspection findings. If any issues are discovered with measure installation or if any measures are found to be missing from the home, the inspector records this information and contacts the installation contractor to investigate the cause of this. In cases where a measure is not functioning properly, such as damaged or loose air infiltration work, the contractor would be scheduled to return to the home in order to repair the measure. Typically this would not result in any savings adjustment for the participant, as the utility ensures that the measures reported on the installation form are ultimately properly implemented in the residence.

5.2.2 Utility Verification Results

Utility staff reported that very few issues have been found through these verification visits, and that the majority of issues occurred during the initial years of the program. As the contractors have become more familiar with the program structures and measures offered, implementation issues have been greatly reduced. Additionally, any issues found with measure installation are promptly addressed and rectified by the appropriate contractor in order to ensure that reported installation data match actual installation rates.

The post-implementation verification procedure also provides an opportunity for utility staff to receive feedback from customers who have received services through the program. Staff members reported that very few issues had been brought up by

participating customers, and that the majority of participants appear to be very satisfied with the work that has been performed.

5.2.3 Field Form Review

The Evaluators conducted a document review of the field form used during the utility inspection procedures. Both AOG and OG&E use the same inspection form when conducting these verification visits. The form was reviewed for completeness, level of detail, and general structure. Overall, the verification form was found to be sufficient and comprehensive. The form includes fields for each measure type, as well as premise characteristics and general participant information. Specific information addressed within the inspection form includes:

- **Measure Breakdown:** All AOG/OG&E Weatherization Program measure types are represented on the inspection form, and there are fields for additional non-program measure types such as minor roof repair, appliance tune-ups, and appliance replacement. For each measure, input fields are included so that the inspector may record measure quantity and measurements such as blower door test values.
- **Marketing Check:** The inspection form includes fields indicating whether the customer was given specific marketing materials during the visit, such as educational pamphlets and information regarding the utility website.
- **Premise Characteristics:** The form requests residence configuration, structure type, heating and cooling type, and appliance fuel type (including fireplaces).
- **Health and Safety:** This section of the form checks for smoke alarms, carbon monoxide detectors, and ventilation throughout the home.
- **Inspection Notes:** The field form includes a section for comments or descriptive details related to the site visit. These may be useful for indicating any unique details regarding the installation or measurement process.

From this review, it is apparent that the field inspection form contains sufficient detail to accurately record a comparison between contractor-reported implementation data and inspected residence data. In general, the field inspection serves as an initial verification of contractor work before the program tracking data are sent to the Evaluators for ex-post verification. The level of detail in the inspection form provides an opportunity for utility staff members to record any quantities or other details that may be missing from the contractor report.

As the inspection form includes fields for measures that are not part of the AOG/OG&E Weatherization Program, these fields may not be necessary unless utility staff members are taking note of additional non-program work that has been conducted on the home. Additionally, if these measures are in consideration as future program offerings, these

fields may be needed as program services change. However, it is recommended that any unnecessary or unused data fields be removed from the inspection form.

5.2.4 Contractor Verification

In addition to utility staff verification of measures, the implementation contractors conduct separate post-implementation inspections. These inspections are performed during the installation visit, and include visual inspection of all installed measures and blower door testing for air infiltration. This contractor inspection is typically performed by the BPI (Building Performance Institute) certified auditor who conducted the initial residence audit, or by another qualified staff member of the installation crew. Utility staff and interviewed installation contractors reported that these auditors ensure the presence and proper functioning of all measures implemented, and record the results on a separate inspection form. The data from these forms are then provided to the utilities for tracking and follow-up verification purposes.

5.2.5 Overall Review Findings

Overall, the Evaluators conclude that the AOG/OG&E Weatherization Program currently has sufficient internal verification procedures to provide accurate and complete implementation data. The existing procedures allow utility staff to randomly sample participant homes and identify any errors or potential areas of improvement with regard to contractor implementation. Although the existing inspection form is sufficient for recording measure inputs under the current TRM, it will be beneficial to augment or modify the inspection form as needed to comply with any new TRM protocols. Additionally, if the utilities introduce variations within measure categories (such as implementing more than one wattage type of CFL), additional fields should be included on the inspection form in order to fully record these measure details.

5.3 Program Logic Model

Figure 5-1 presents a logic model for the AOG/OG&E Weatherization Program, divided into stages to represent the phases involved in administering and operating the program.

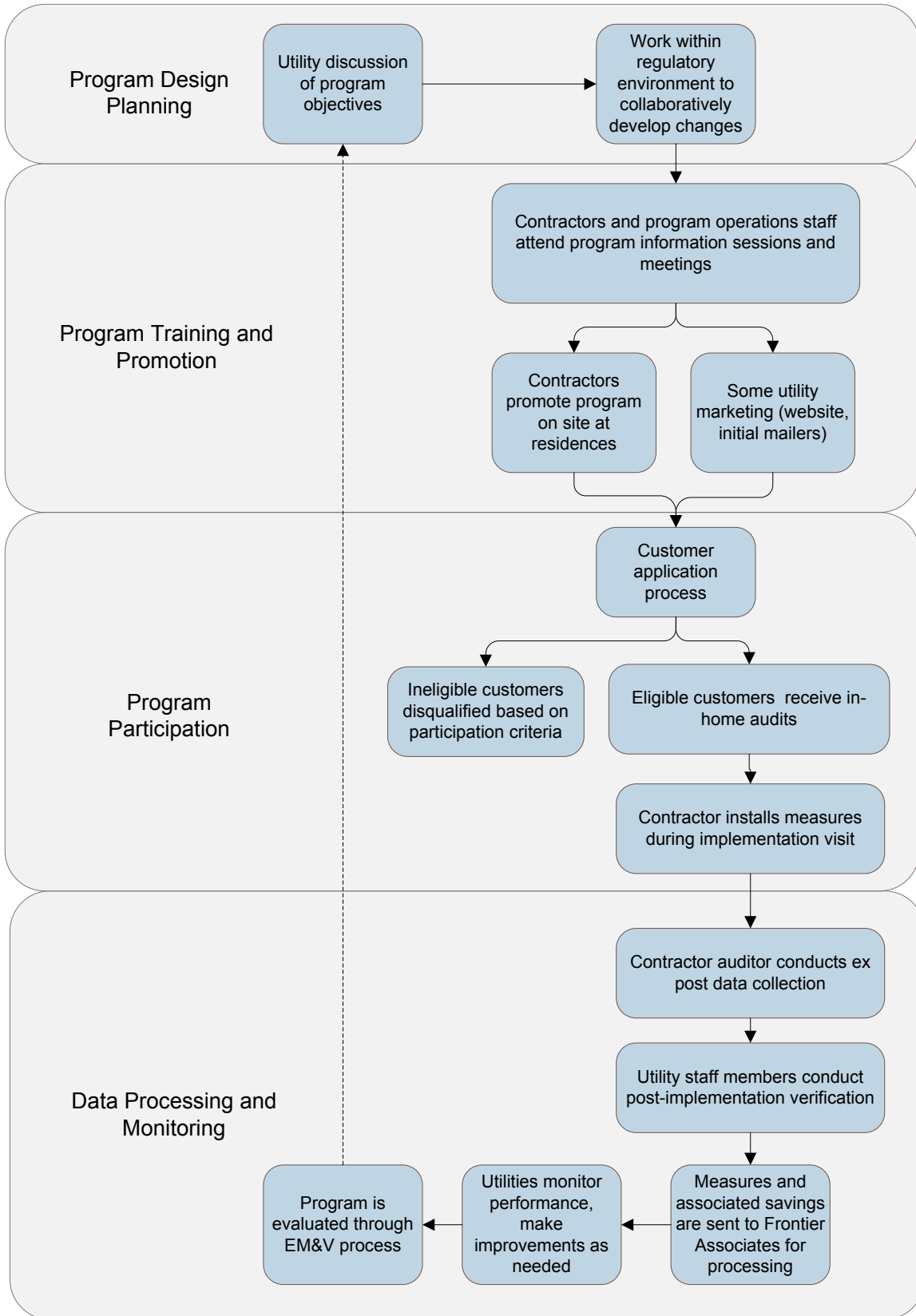


Figure 5-1 AOG/OG&E Weatherization Program Logic Model

5.4 AOG/OG&E Weatherization Program 2012 Participation

In 2012, the AOG/OG&E Weatherization Program serviced a total of 1,786 homes. This represents a substantial increase in participation over the 2011 year, which serviced 731 participant residences. Services provided to residences included in-home energy audits as well as the installation of energy efficiency measures such as attic insulation, air infiltration reduction, and lighting replacement. AOG and OG&E implemented the program through the use of three local contracting firms who performed post-implementation measure data collection for each home. Additionally, utility staff conducted inspection visits in a sample of homes to verify the installation of measures.

The AOG/OG&E Weatherization Program is offered in the service territories of both utilities, which have a significant overlap. Depending on the location of customers and the fuel sources used in their homes, services for each customer are funded by AOG, OG&E, or both AOG and OG&E. Table 5-2 cross-tabulates the number of participating homes by utility. As participants were only required to be customers of one of the two participating utilities, some residences in the program were serviced by utilities other than AOG and OG&E. These utilities may have included municipal utilities, Co-Ops, or non-participating investor owned utilities.

Table 5-2 Participation by Associated Utility

Electric Utility	Gas Utility	
	AOG	Other
OG&E	1205	426
Other	155	-

Table 5-3 displays the number of 2012 measure installations by measure type for each utility, arranged by the most commonly installed measures. Air infiltration was the most common measure type, followed by ceiling insulation and CFLs.

Table 5-3 Total Implementations by Measure

Measure Type	Number of attributable installations	
	AOG	OG&E
Air Infiltration	1,244	1,545
Ceiling Insulation	1,099	1,387
CFL	-	1,489
Water Heater Jacket/Pipe	756	295
Refrigerator	-	158
Total	3,099	4,874

5.5 Tracking Database Review

Frontier Associates develops and maintains a participant tracking database that includes a full list of all participants, the measures that were installed in their homes, and the kWh and Therms savings associated with each measure. The Evaluators received periodic tracking data updates as well as final tracking exports. These tracking files were evaluated for overall organization and content.

According per protocol A of the TRM V2.0, tracking data should be checked for:

- Participating Customer Information;
- Measure Specific Information;
- Vendor Specific Information;
- Program Tracking Information;
- Program Costs;
- Marketing & Outreach Activities; and
- Premise Characteristics;

Table 5-4 below summarizes the goals and activities of the Database Review of the AOG/OG&E Weatherization Program.

Table 5-4 Database Review Goals & Activities

<i>Category</i>	<i>Activity</i>
Participating Customer Information	The dataset should contain unique customer identifiers and full customer contact information.
Measure Specific Information	The tracking data should identify all measures that were installed in each participant home, with associated energy savings.
Vendor Specific Information	The dataset should include the name of the installation contractor associated with each participant.
Program Tracking Information	If possible, the dataset needs to include the dates in which the installations, as well as the initial residential energy audit, were performed.
Program Costs	Not applicable. Cost summaries are recorded and separately reviewed by the utilities.
Marketing & Outreach Activities	In addition to information gathered during the tracking data review and program staff interviews, the Evaluators conducted participant surveys to gather information related to participant interaction with program marketing and outreach.
Premise Characteristics	The dataset should include all measure inputs needed for savings verification, including relevant square footage measurements.

Each of these factors was assessed individually based on the guidelines stated in the TRM V2.0. Overall, the Evaluators conclude the following regarding tracking data completeness:

- Participating customer information was found to be sufficient for the majority of program participants, and included unique identifiers, telephone numbers, complete addresses, account numbers, and full names. Some participants were missing one or more of these fields, although more than 90% of customers had full contact information.
- Nearly all customer records included the name of the installation contractor who performed the implementation as well as the dates associated with the audit, installation work, and invoice date.
- Premise characteristics such as home heating type, cooling type, and attic square footage were present for all participants where appropriate and needed. Additional field notes may be useful for the measure verification process, such as including details regarding any unique home characteristics that may change over time and influence energy usage. This may include the presence of window air conditioner units, in-progress construction work, or whether the home configuration required any atypical methods to be performed during the contractor blower door test.

Section 5.5.1 includes specific findings related to measure-level tracking data.

5.5.1 Energy Savings Calculation Data

The content of tracking data was found to include sufficient information for the majority of the measures. However, the tracking data did not include sufficient information for the following measure:

- Water Heater Measures (Water Heater Jacket & Water Heater Pipe)
 - For water heater jacket, TRM V1.0 presents savings values as a function of jacket thickness, type of water heating, and tank size. The tracking data did not present jacket thickness or tank size.

It should be noted that these measures only accounted for 0.54% of the total gross kWh savings and 1.5% of the total gross Therms savings, and that all measures associated with a high level of energy savings included sufficient tracking information.

The tracking database included summary columns of savings for each participant. However, for many participants, the overall savings value found in this column did not match the sum of the savings from the associated measures performed by the participant.

The tracking database was for the most part well-organized. The recommended changes to the tracking data include providing a complete set of calculation inputs and being consistent when reporting claimed savings for each participant.

5.6 Comprehensiveness Factors

The Arkansas Public Service Commission has in place a set of criteria in order to determine whether a DSM portfolio or program qualifies as “Comprehensive”. These criteria are:

- **Factor 1:** *Whether the programs and/or portfolio provide, either directly or through identification and coordination, the education, **training**, marketing, or outreach needed to address market barriers to the adoption of cost-effective energy efficiency measures;*

The AOG/OG&E Weatherization Program has continued to provide sufficient training, education, and outreach to the customers and contractors in the utilities’ service territories. Installation contractors have gained further familiarity with program data collection and overall operation, and will receive ongoing training as needed. Additionally, the program has gained recognition and momentum in the customer base, resulting in continued program awareness through indirect word of mouth marketing. Widespread program awareness and steady participation rates indicate that the program is functioning as a stable entity in the AOG and OG&E service territories.

- **Factor 2:** *Whether the programs and/or portfolio, have adequate **budgetary**, management, and program delivery resources to plan, design, implement, oversee and evaluate energy efficiency programs;*

The AOG/OG&E Weatherization Program has sufficient budget and staff to meet its goals. Adding a third installation contractor during the 2012 program year has allowed for further flexibility and efficiency in servicing customer homes, and contractors anticipate that they will continue to have the resources to meet participation demands. The AOG and OG&E partnership has continued to allow the program to serve a wide pool of customers in the utilities’ service territories, and utility staff members have effectively coordinated their financial and operational resources. The evaluation findings suggest that the program will have access to sufficient resources during future program years, even if participation rates are to increase over time.

- **Factor 3:** *Whether the programs and/or portfolio, reasonably address all major **end-uses** of electricity or natural gas, or electricity and natural gas, as appropriate;*

The set of program offerings in 2012 address the major end-uses for potential energy savings in the targeted group of customer homes. Air infiltration and attic insulation measures have provided the majority of program savings, and are typically used as primary methods to reducing residential energy loads. The remaining program measures include lighting and water heater insulation, and the program as a whole

focuses on cost effectiveness at the measure and project level. Program staff monitors costs and customer needs and continually consider modifications to program measure offerings and services over time.

- **Factor 4:** *Whether the programs and/or portfolio, to the maximum extent reasonable, comprehensively address the needs of customers at one time, in order to avoid **cream-skimming** and lost opportunities*

The AOG/OG&E Weatherization Program serves as a significant benefit to residential customers whose homes qualify as severely energy inefficient. The program provides services to customers who likely would not otherwise make major efficiency improvements to their homes, and may not have the opportunity to participate in other utility-sponsored energy efficiency programs. The program has successfully targeted this group of customers and has made minor modifications to program criteria in order to expand its services to additional residences with high savings potential. In this regard, the AOG/OG&E Weatherization Program has a specific and unique role in the utilities' energy efficiency portfolios.

- **Factor 5:** *Whether such programs take advantage of opportunities to address the comprehensive needs of **targeted customer sectors** (for example, schools, large retail stores, agricultural users, or restaurants) or to leverage non-utility program resources (for example, state or federal tax incentive, rebate, or lending programs)*

Feedback from program staff, implementation contractors, and participating customers indicates that the AOG/OG&E Weatherization Program is successfully engaging its targeted customer market. Program funding structure, services offered, and eligibility requirements are conducive to providing significant energy saving services to a large portion of high priority homes. Further potential modifications to program eligibility criteria, such as accepting newer or larger homes into the program, would likely further increase the participant pool while maintaining the core objectives of the program.

- **Factor 6:** *Whether the programs and/or portfolio enables the delivery of all achievable, **cost-effective** energy efficiency within a reasonable period of time and maximizes net benefits to customers and to the utility system;*

The program focuses on providing cost-effective gas and electric energy efficiency services to low-efficiency residences. Many participant residences receive utility service from both AOG and OG&E, which increases the direct utility benefit of implementing measures such as air infiltration and insulation. The program has additional indirect benefits for non-participating municipal or co-op utility providers in homes that receive utility services from these organizations. The program is able to efficiently provide services to customer homes and achieve cost-effective energy savings at a high rate.

- **Factor 7:** *Whether the programs and/or portfolio, have evaluation, measurement, and verification "EM&V") procedures **adequate** to support program management*

and improvement, calculation of energy, demand and revenue impacts, and resource planning decisions.

The AOG/OG&E Weatherization Program's internal M&V process was largely adequate and accurate in savings calculations. The quality assurance and verification procedures currently conducted by utility staff appear to be sufficient for monitoring contractor implementation quality and ensuring the accuracy of ex ante installation records. The Evaluators' field data was fairly consistent with reported tracking data values, indicating that overall measure implementation is recorded accurately and consistently. As with the 2011 program year, the participant tracking data required some corrections and modifications to reconcile particular inconsistencies regarding participant counts and savings totals for OG&E customers. Additionally, it may be beneficial to include contractor field notes in the tracking database in order to provide supplementary information regarding measure installation. This would allow for a more in-depth and informed verification process.

6. Conclusions & Recommendations

After reviewing the AOG/OG&E Weatherization Program for 2012, the Evaluators conclude that:

- The AOG/OG&E Weatherization Program has gained recognition and momentum in the customer base, resulting in continued program awareness through indirect word of mouth marketing. Widespread program awareness and steady participation rates indicate that the program is functioning as a stable entity in the AOG and OG&E service territories.
- The AOG and OG&E partnership has continued to allow the program to serve a wide pool of customers in the utilities' service territories, and utility staff members have effectively coordinated their financial and operational resources. The evaluation findings suggest that the program will have access to sufficient resources during future program years, even if participation rates are to increase over time.
- The set of program offerings in 2012 address the major areas for potential energy savings in customer homes. Air infiltration and attic insulation measures have provided the majority of program savings, and are typically used as primary methods to reducing residential energy loads. Program staff monitors costs and customer needs and continually consider modifications to program measure offerings and services over time.
- Feedback from program staff, implementation contractors, and participating customers indicates that the AOG/OG&E Weatherization Program is successfully engaging its targeted customer market.. Additionally, modifications have been made to program criteria in order to expand the program's services to additional residences with high savings potential. Further potential modifications to program eligibility criteria, such as accepting newer or larger homes into the program, would likely further increase the participant pool while maintaining the core objectives of the program.
- The quality assurance and verification procedures currently conducted by AOG and OG&E staff appear to be sufficient for monitoring contractor implementation quality and ensuring the accuracy of ex ante installation records. The Evaluators' field data was fairly consistent with reported tracking data values, indicating that overall measure implementation is recorded accurately and consistently. It may be beneficial to include contractor field notes in the tracking database in order to provide supplementary information regarding measure installation. This would allow for a more in-depth and informed verification process.

During the savings verification process, the Evaluators conducted on-site verification visits to participant homes in order to collect ex post measurements of implemented measures. Although the information collected was valuable in supporting the gross

savings calculations, additional information would further support the verification process. The Evaluators propose performing the following data collection activities during the evaluation process in future program years:

- Evaluator-conducted baseline air infiltration measurements for a small sample of participant homes prior to the implementation work being performed. This would provide the Evaluators with verified baseline values for some homes, which could be incorporated into the ex post verification process and serve as a comparison to contractor baseline values.
- Additional questions added to the Evaluators' field visit questionnaire regarding whether the customer has made any changes to their building envelope, or taken any actions that may potentially alter the leakage rates in their homes. This would assist in identifying homes where the customer has taken specific actions that may cause energy usage to differ from expected levels.

The comprehensiveness objectives for the program were largely met during the 2012 program year. The Evaluators identified few specific, systematic or persistent issues with program operation and design. Consideration of the following recommendations may benefit program performance and efficiency in future years:

- **Continue to standardize participant tracking data within the program database in order to minimize inaccuracies in ex ante reporting or M&V activities.** The gross savings verification chapter of the report identifies specific areas of the tracking data that may benefit from accuracy checks and database programming consistency. Additionally, consider including contractor field notes in the tracking database in order to provide insight into any specific issues that may arise with an individual home during the verification process.
- **Maintain the current limited marketing structure but consider adopting direct marketing methods if needed.** The program has experienced immediate uptake from interested customers, and participation rates may level off as the program matures. To overcome existing barriers in customer participation, ensure that the customer base is aware of program structure and understands that the program does not require customers to make significant financial investments. Potential modifications may include increased contractor-driven program promotion and media events such as in-home demonstrations.
- **Explore the possibility of making modifications to program services over time as new options become available or as customer needs change.** There may be further appropriate services to provide within some customer homes, such as wall insulation or heating system improvements. As the program focuses on cost-effectiveness and providing measures with the most energy benefit, it is likely that the currently implemented measures would remain a priority in the program. Any additional services may be implemented on an individual basis based on budget, residence need, and overall energy reduction.

- **As mentioned by utility staff members, program eligibility requirements may be slightly modified in order to target a more broad range of customers.** This may be a beneficial area of research to pursue in future program years. Based on program objectives, it will be important to ensure that any such changes preserve the program's focus on severely energy inefficient homes that will receive significant benefit from the available measures.

7. Appendix A: Participant Survey Instrument

This section presents the instrument used in conducting telephone surveys with participants of the 2012 AOG-OG&E Weatherization Program.

AOG/OG&E Weatherization Program

Participant Telephone Survey

ID No. _____

Customer Name: _____

Date of interview: _____

Date data entered _____

.....
Hello. May I please speak with [CONTACT NAME]: _____)?

Hello. My name is ____ and I'm calling from Research America on behalf of Oklahoma Gas & Electric and Arkansas Oklahoma Gas [if necessary, refer to "AOG and OG&E", the customer's utility companies] about the weatherization program your household participated in this year. Are you the person who is most familiar with your household's participation in this program?

(IF NOT RIGHT PERSON) May I please speak to the person who would know the most about your household's participation in this program?

REPEAT INTRODUCTION AND CONTINUE

(IF RIGHT PERSON) We are conducting a study to evaluate AOG and OG&E's Weatherization Program. AOG and OG&E will use the results of this evaluation to determine the effectiveness of the program and to make improvements. We would like to include your opinions about the program in our evaluation. The interview will take approximately 10 minutes. May I ask you a few questions? Your responses will remain completely confidential.

Q-1 Our records indicate that you participated in AOG and OG&E's Weatherization Program this year by completing an energy audit and receiving several energy efficient measures installed in your home. Do you recall participating in this program?

- Yes [SKIP TO Q-4]
- No [GO TO Q-2]
- Don't know [GO TO Q-2]

Q-2 Is there anyone else in your household who may be familiar with your household's participation in the program?

- Yes [GO TO Q-3]

- No [THANK RESPONDENT AND TERMINATE INTERVIEW]
- Don't know [THANK RESPONDENT AND TERMINATE INTERVIEW]

Q-3 May I speak with that person?

- Yes [RETURN TO Q-1 AND BEGIN QUESTIONS WITH NEW RESPONDENT]
- No [THANK RESPONDENT AND TERMINATE INTERVIEW]
- Don't know [THANK RESPONDENT AND TERMINATE INTERVIEW]

RESPONDENT BACKGROUND

As a reminder, your responses to this survey will be kept completely confidential. I'll begin with a few questions about your decision to participate in the program.

Q-4 How did you learn of the Weatherization Program sponsored by AOG and OG&E? [SELECT ALL THAT APPLY]

- Information that came in the mail
- Newspaper or magazine article/ad
- Contractor
- Word of mouth from friends, relatives, or others
- TV ad
- Radio ad
- AOG bill message
- OG&E bill message
- AOG website
- OG&E website
- Retailer / in store
- Other (*Specify*) _____
- Don't know [DO NOT READ]

Q-5 What is the main reason you decided to participate in the program?

- To reduce my monthly gas bill
- To reduce my monthly electric bill
- AOG and OG&E paid for some or all of the improvements
- Contractor recommendation
- AOG recommendation or information
- OG&E recommendation or information
- Recommendation from a friend, relative, neighbor
- It is the right thing to do
- Help save the environment
- Save energy
- Other (*Specify*) _____

Q-5A Of the things you mentioned, which was the most important?

- To reduce my monthly gas bill
- To reduce my monthly electric bill
- AOG and OG&E paid for some or all of the improvements
- Contractor recommendation
- AOG recommendation or information
- OG&E recommendation or information
- Recommendation from a friend, relative, neighbor
- It is the right thing to do
- Help save the environment
- Save energy
- Other (*Specify*) _____

MEASURE INSTALLATION

Next, I have some questions about the work that was performed in your home through the Weatherization Program.

Q-6 Since the work was performed, have you removed or replaced any of the equipment or energy efficiency improvements implemented in your home through the program?

- Yes (*Please specify which items have been removed or replaced*):

- No
- Don't know

Q-7 How likely is it that you would have hired a professional contractor to perform a home audit like the Weatherization Program offers IF YOU HAD NOT participated in the Weatherization Program sponsored by AOG and OG&E?

- Definitely would have [ASK Q-7A]
- Probably would have [ASK Q-7A]
- Probably would not have [SKIP TO Q-7C]
- Definitely would not have [SKIP TO Q-8]
- Don't know [ASK Q-7A]

Q-7A Before you participated in the AOG and OG&E Weatherization Program, did you already have plans to have a similar audit performed on your own?

- Yes
- No
- Don't know

Q-7B Prior to the audit, were you aware of your energy efficiency improvement options and potential energy savings from the items offered through the AOG and OG&E Weatherization Program?

- Yes

- No
- Don't know

Q-8 For the work that was performed in your home following the audit, did you have existing plans to have this work performed prior to your participation in the Weatherization Program?

- Yes
- No
- Don't know

Q-9 For the work that was performed in your home following the audit, would you still have made these improvements in your home if you had not participated in the AOG and OG&E Weatherization Program?

- Yes [ASK Q-9A]
- No [SKIP TO Q10]

Q-9A. Which of the following improvements would you have made even if you had not participated in the audit and installation provided by the AOG and OG&E Weatherization Program? [SELECT ALL THAT APPLY]

- Adding attic insulation
 - Weather sealing windows and doors
 - Modifying thermostat settings
 - Upgrading lighting efficiency
 - Adding low flow equipment to faucets and showers
 - Exchanging refrigerator for an Energy Star® model
 - Making thermal improvements to water heater
 - Other (Specify): _____
-

Q-9B Did the program cause you to have the energy efficient work performed earlier than you otherwise would have without the program?"

- Yes [ASK Q-9C]
- No, program did not affect timing of purchase and installation [SKIP TO Q-10]

Q-9C How much sooner?

- A year sooner
- Two years sooner
- Three years sooner
- Four to five years sooner

Q-10 When you are replacing low-cost items such as light bulbs in your home, how likely are you to replace it with energy efficient equipment?

- Very likely
- Somewhat likely
- Somewhat unlikely

- Not at all likely
- Don't know

Q-11 When you are replacing larger items such as appliances in your home, how likely are you to replace it with energy efficient equipment?

- Very likely
- Somewhat likely
- Somewhat unlikely
- Not at all likely
- Don't know

Q-12 Would you have been financially able to have an audit performed and install these energy efficient measures without the Weatherization Program provided by AOG and OG&E?

- Yes
- No
- Don't know

[IF CUSTOMER RECEIVED A REPLACEMENT REFRIGERATOR THROUGH THE PROGRAM, ASK Q-13, ELSE SKIP TO Q-14]:

Q-13 Our records indicate that you received a replacement refrigerator through the AOG and OG&E Weatherization Program. Was your old refrigerator in good, fair, poor, or non-operational condition (*if needed, specify "Did the refrigerator turn on and produce cold air?"*) at the time of this replacement? [REPEAT RESPONSE OPTIONS "good, fair, poor, or non-operational condition" IF NECESSARY]

- Good condition
- Fair condition
- Poor condition
- Non-operational condition
- Don't know

OVERALL ENERGY EFFICIENCY DECISION MAKING

Q- 14 Before you participated in the AOG and OG&E Weatherization Program, had you purchased and used any energy efficient measures in your home?

- Yes (*Please explain*):

_____ [GO TO Q-14A]

- No

Q-15 In the past year, have you installed any energy efficient equipment in your home, besides those installed through the Weatherization Program, that you have not received an incentive for?

- Yes [ASK Q-15A]

- No [SKIP TO Q-16]

Q-15A What type of equipment did you install?

List all indicated: _____

Q-15B What motivated you to install this equipment? [VERBATIM]

Q-15C On a scale of 1-10, where 1 is “Not important at all” and 10 is “Very Important”, how important was information you’ve received from AOG and OGE in your decision to install this equipment? [RECORD NUMBER] # _____

Q-15D Why didn’t you apply for or receive financial assistance or incentives for those items?

- Didn’t know about financial incentives
- Didn’t know whether the measures qualified for financial incentives
- Financial incentive was insufficient
- No financial incentive was offered
- Other (please specify): _____

Q-15E Which, if any, of these energy efficiency improvements were recommended during the Weatherization Program energy audit? [VERBATIM]:

Q- 16 On a scale of 1 to 5, where “5” is very familiar and “1” is very unfamiliar, and a “3” is neutral, how would you rate your past familiarity with the benefits of installing various energy efficiency improvements similar to those offered by the AOG and OG&E Weatherization Program prior to having the audit performed?

- 5: Very familiar
- 4: Somewhat familiar
- 3: Neither familiar nor unfamiliar
- 2: Somewhat unfamiliar
- 1: Very unfamiliar
- 99: Don’t know

Q-16A On a scale of 1 to 5, where “5” is very familiar and “1” is very unfamiliar, and a “3” is neutral, how would you rate your past familiarity with various household energy saving activities such as washing with cold water, reducing your use of light fixtures, and adjusting heating system settings prior to having the audit performed?

- 5: Very familiar

- 4: Somewhat familiar
- 3: Neither familiar nor unfamiliar
- 2: Somewhat unfamiliar
- 1: Very unfamiliar
- 99: Don't know

Q-16B Prior to the audit, did you perform any common household energy saving activities? If so, which activities?

- Yes (*please explain*): _____

- No
- Don't know

Q-17 On a scale of 1 to 5, where "5" is very familiar and "1" is very unfamiliar, how would you rate your current familiarity with energy efficiency and energy efficient options for your home as a result of your participation in the AOG and OG&E Weatherization Program?

- 5: Very familiar
- 4: Somewhat familiar
- 3: Neither familiar nor unfamiliar
- 2: Somewhat unfamiliar
- 1: Very unfamiliar
- 99: Don't know

Q-18 As a result of your experience with the AOG and OG&E Weatherization Program, would you buy energy efficient measures in the future, even if financial incentives were not offered?

- Yes
- No
- Don't know

Q-18A As a result of your experience with the program, do you now take additional action to save energy in your home, such as wash with cold water, reduce your use of light fixtures, and adjust heating system settings?

- Yes (*please explain*): _____

- No
- Don't know

Q-19 As a result of your experience with the AOG and OG&E Weatherization Program, how much more knowledgeable would you say you are about energy efficiency and energy efficient options for your home?

- Much more knowledgeable than before participating
- Somewhat more knowledgeable than before participating
- Slightly more knowledgeable than before participating

- No more knowledgeable than before participating

PROGRAM SATISFACTION

Now I'd like to ask you about your satisfaction with several aspects of this program.

Q-20 On a scale of 1 to 5, where "5" is very satisfied and "1" is very dissatisfied, and a "3" is neutral, how would you rate your satisfaction with the following?

<i>Element of Program Experience</i>	<i>Very Satisfied</i> [5]	<i>Somewhat Satisfied</i> [4]	<i>Neither Satisfied or Dissatisfied</i> [3]	<i>Somewhat Dissatisfied</i> [2]	<i>Very Dissatisfied</i> [1]	<i>Don't Know</i> [99]
Information provided by the contractor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The quality of installation work by the contractor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The performance of the equipment installed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The savings on your monthly gas bill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The effort required for the application process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The wait-time to receive the rebate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The service provided by AOG and OG&E staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Information provided by AOG and OG&E on how to reduce your gas bill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improvement in home comfort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Usefulness of the energy audit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall program experience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q-21 (If any item in Q-20 rated 2 or 1) Why were you dissatisfied with [Program Element]? [VERBATIM]:

Q-22 Are there any changes or improvements you would like to see for the AOG and OG&E Weatherization Program? [VERBATIM]:

DEMOGRAPHICS

Finally, I have a few questions about your household. As a reminder, your responses will remain confidential.

Q-23 When was your home built? [IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF YEAR RANGES UNTIL RESPONDENT INDICATES ONE]

- Verbatim_____
- Before 1970's
- 1970's
- 1980's
- 1990-1994
- 1995-1999
- 2000-2005
- 2006 or newer
- Don't know [DON'T READ]
- Refused

Q-24 What is the approximate square footage of your home? [IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF SIZE RANGES UNTIL RESPONDENT INDICATES ONE]

- Verbatim_____
- Less than 1,000
- 1,001-1,500
- 1,501-2,000
- 2,001-2,500
- Greater than 2,500
- Don't know [DON'T READ]
- Refused

Q-25 How many bedrooms are there in your home?

- Quantity:_____
- Don't know [DON'T READ]
- Refused

Q-26 What type of heating system do you have in your home?

- Natural gas heating
- Electric heating
- Combination of types (*Specify*):_____
- Other (*Specify*):_____
- Don't know [DON'T READ]

Q-27 What type of water heater do you have in your home?

- Natural gas water heater
- Electric water heater
- Other (*Specify*):_____
- Don't know [DON'T READ]

Q-28 How many bathrooms are there in your home?

- Quantity: _____
- Don't know [DON'T READ]
- Refused

Q-29 How many showers are there in your home?

- Quantity: _____
- Don't know [DON'T READ]
- Refused

Q-30 Including yourself, how many people currently live in your home year-round?

- Quantity: _____
- Don't know [DON'T READ]
- Refused

Q-31 I'm going to read off a list of income ranges, please indicate which range your total household income falls. Is the total annual income of your household:

- Less than \$25,000
- \$25,000 - \$35,000
- \$36,000 - \$50,000
- \$51,000 - \$75,000
- \$76,000 - \$100,000
- Greater than \$100,000
- Don't know [DON'T READ]
- Refused

Q-32 What's the highest level of education you've completed? [DON'T READ]

- Did not graduate high school
- High school graduate
- Associates degree, vocational/technical school, or some college
- Four-year college degree
- Graduate or professional degree
- Don't know
- Refused

Q-33 Do you have any other comments that you would like to relay to AOG or OG&E about energy efficiency in residences or about their programs? [VERBATIM]

This completes the survey. Your input is greatly appreciated and will be used to help improve AOG and OG&E's energy efficiency programs in the future. Thank you very much for your time!

8. Appendix B: Non-participant Survey Instrument

This section presents the instrument used in conducting telephone surveys with a sample of OG&E customers who did not participate in the AOG/OG&E Weatherization Program or any other efficiency programs offered by OG&E.

Oklahoma Gas and Electric Non-Participant Survey Questionnaire

ID No. _____
Customer Name: _____
Date of interview: _____
Date data entered _____

.....

Hello. My name is ____ and I'm calling from Research America on behalf of OG&E, your utility provider. We are conducting a study for OG&E regarding their customers' energy use. Would you mind answering a few questions?

Q-1 Do you own or rent your home?

- Own
- Rent [THANK AND TERMINATE]
- Other arrangement [THANK AND TERMINATE]

Q-2 Do you have an electric or gas:

- | | | | | | | |
|--------------------------------|--------------------------|-----|--------------------------|----------|--------------------------|-------|
| a. Heating system | <input type="checkbox"/> | Gas | <input type="checkbox"/> | Electric | <input type="checkbox"/> | DK/NA |
| b. Tank style water heater | <input type="checkbox"/> | Gas | <input type="checkbox"/> | Electric | <input type="checkbox"/> | DK/NA |
| c. Tankless style water heater | <input type="checkbox"/> | Gas | <input type="checkbox"/> | Electric | <input type="checkbox"/> | DK/NA |
| d. Clothes dryer | <input type="checkbox"/> | Gas | <input type="checkbox"/> | Electric | <input type="checkbox"/> | DK/NA |

Q-3 In the last three years, since January 2010, while living in your current residence, have you purchased or replaced any of the following:

- Water heater
- Furnace
- Air conditioner
- Clothes washer

- Clothes dryer
- Dishwasher
- Refrigerator
- Freezer
- Other (Please Specify _____)

Q-4 [Rotate through the items that were checked in Q-3 and ask the following.]

You said that you purchased a new:

- Water heater. Was it Energy Star or high efficiency?
- Air conditioner. Was it Energy Star or high efficiency?
- Clothes washer. Was it Energy Star or high efficiency?
- Clothes dryer. Was it Energy Star or high efficiency?
- Dishwasher. Was it Energy Star or high efficiency?
- Refrigerator. Was it Energy Star or high efficiency?
- Freezer. Was it Energy Star or high efficiency?
- Other (Please Specify _____)

Q-5 Since January of 2010, have you done anything to make your home more efficient? [CHECK ALL INDICATED]

- Added wall insulation
- Added ceiling insulation
- Underfloor insulation
- Added vapor barrier or insulation under new siding
- Caulk windows, doors or around the foundation
- New windows
- New storm windows
- Duct sealing/changed or added new ducts
- Water heater tank wrap
- Water heater pipe wrap
- Programmable thermostat

Q-6 [If any items in Q-3 or Q5 are checked, ask] Of the items you purchased or replaced or the steps you took to make your home more efficient, were any of these completed since June of 2011? [Allow only checked items from Q-3 and Q5]

- Water heater
- Air conditioner
- Clothes washer
- Clothes dryer

- Dishwasher
- Refrigerator
- Freezer
- Added wall insulation
- Added ceiling insulation
- Underfloor insulation
- Added vapor barrier or insulation under new siding
- Caulk windows, doors or around the foundation
- New windows
- New storm windows
- Duct sealing/changed or added new ducts
- Water heater tank wrap
- Water heater pipe wrap
- Programmable thermostat
- Other (Please Specify _____)

Q-7 In the next two years, if you continue to live in your current residence do you think you will be likely or very likely to replace any of the following: [READ LIST]

- Water heater
- Air conditioner
- Clothes washer
- Clothes dryer
- Dishwasher
- Refrigerator
- Freezer
- Other (Please Specify _____)

Q-8 Have you heard about any of the energy efficiency programs offered by the gas and electric utilities? [If they say yes, but don't mention a utility ask if they remember which utility (utilities)]

- Yes, OG&E [ASK Q-8a]
- Yes, CenterPoint [SKIP TO Q-12]
- Yes, [SourceGas, SKIP TO Q-12]
- Yes, Entergy [SKIP TO Q-12]
- Yes, AEP/Southwest Electric Power/SWEPCO [SKIP TO Q-12]
- Yes, AOG [SKIP TO Q-12]
- Yes, Empire Electric [SKIP TO Q-12]
- Other (Specify _____)
- No [SKIP TO Q-12]
- Don't know [SKIP TO Q-12]

Q-8a What OG&E programs have you heard about? [DO NOT READ, CHECK ALL INDICATED]

- Living Wise Program [CHECK IF CUSTOMER MENTIONS STUDENT EDUCATION PROGRAM OR ENERGY KITS FOR STUDENTS]
- Custom Energy Report [CHECK IF CUSTOMER MENTIONS ONLINE ENERGY AUDIT]
- Residential AC Tune-up with Duct Seal [CHECK IF CUSTOMER MENTIONS AIR CONDITIONER TUNE-UP OR REPAIR, OR SPECIFICALLY DUCT SEALING]
- Residential Window AC [CHECK IF CUSTOMER MENTIONS A REBATE FOR PURCHASE OF AN AIR CONDITIONER]
- OG&E Weatherization Program [CHECK IF CUSTOMER MENTIONS A HOME AUDIT, INSULATION, WEATHERIZATION, OR OTHER HOME RENNOVATIONS PROVIDED BY OG&E]
- Other _____

Q-8b How did you hear about OG&E’s energy efficiency programs?
[DO NOT READ. CHECK ALL INDICATED]

- Received information in the mail [ASK Q-8c]
- Read newspaper or magazine article/ad
- Contractor
- Recommendation from friends relatives or others
- TV ad [ASK Q-8c]
- Radio ad [ASK Q-8c]
- OG&E bill message [ASK Q-8c]
- OG&E brochure [ASK Q-8c]
- OG&E web site [ASK Q-8c]
- Retailer / in store
- Other (*Specify*) _____
- Don’t know (*DO NOT READ*)

Q-8c [IF CUSTOMER INDICATED AN OG&E MARKETING MATERIAL IN Q-8b]

On a scale of 1-5, where 1 is “Very dissatisfied” and 5 is “Very satisfied”, how would you rate your satisfaction with the OG&E program information materials on....

<i>Element of Program Experience</i>	<i>Very Satisfied</i>	<i>Somewhat Satisfied</i>	<i>Neutral</i>	<i>Somewhat Dissatisfied</i>	<i>Very Dissatisfied</i>	<i>Don't Know</i>
Why you should participate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What you needed to do to participate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General appeal of the message	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q-9 Have you ever participated in an OG&E energy efficiency program?

- Yes [ASK Q-9a]
- No [SKIP TO Q-12]
- Don't know [SKIP TO Q-12a]

Q-9a What programs by OG&E have you participated in? [DO NOT READ]

- Living Wise Program [CHECK IF CUSTOMER MENTIONS STUDENT EDUCATION PROGRAM OR ENERGY KITS FOR STUDENTS]
- Custom Energy Report [CHECK IF CUSTOMER MENTIONS ONLINE ENERGY AUDIT]
- Residential AC Tune-up with Duct Seal [CHECK IF CUSTOMER MENTIONS AIR CONDITIONER TUNE-UP OR REPAIR, OR SPECIFICALLY DUCT SEALING]
- Residential Window AC [CHECK IF CUSTOMER MENTIONS A REBATE FOR PURCHASE OF AN AIR CONDITIONER]
- OG&E Weatherization Program [CHECK IF CUSTOMER MENTIONS A HOME AUDIT, INSULATION, WEATHERIZATION, OR OTHER HOME RENNOVATIONS PROVIDED BY OG&E]
- Other _____

Q-9b Can you tell me about when you participated in the OG&E programs?

Month _____ Year _____

[ASK ONLY IF THERE ARE ITEMS INDICATED IN Q-6]

Q-10 On a scale of 1-10, how important was information provided by OG&E in influencing your decision to make these energy efficiency improvements in your home?

- # _____
- Don't know

Q-11 [If any item in Q6 checked and Q9 = No] Why didn't you apply for an incentive through OG&E for these improvements? [DON'T READ. CHECK ALL INDICATED]

- Didn't know about available programs
- Equipment didn't qualify for OG&E programs
- Too much paperwork
- Intended to get incentive, but forgot
- Vendor recommended against efficient equipment
- Vendor had low bid without efficient equipment
- Don't know

Q12 [If any Item in Q7 checked and Q9 = No or Don't Know read this]

OG&E offers incentives to purchase more efficient equipment such as air conditioners, provides financial assistance for equipment tune-ups, and offers online and in-home audits to recommend energy efficient improvements in your home. Knowing this, . . .
[Go to 12a]

Q-12a How likely are you to participate in a OG&E energy efficiency program within the next year? Would you say you are....

- Very likely [SKIP TO Q-12d]
- Somewhat likely [SKIP TO Q-12d]
- Neither likely nor unlikely
- Somewhat unlikely [ASK Q-12b and Q-12c]
- Very unlikely [ASK Q-12b and Q-12c]
- Don't know [SKIP TO Q-12d]

Q-12b Why are you unlikely to participate? [DON'T READ, CHECK ALL INDICATED]

- Can't afford high efficiency equipment
- Don't need to replace any equipment
- Not interested in high efficiency equipment
- Not interested in conserving energy
- Incentive levels are too low
- Participation process is too difficult
- Don't know
- Other _____

Q-12c What could OG&E do to make their programs more appealing? [RECORD VERBATIM ANSWER]

Q-12d What types of equipment are you most likely to purchase in participating in an OG&E program? [DON'T READ]

- A high efficiency air conditioning system
- High efficiency lighting/CFLs
- A high efficiency water heater
- Low Flow Showerheads
- Low Flow Faucet Aerators
- ENERGY STAR Appliances
- Insulation
- Duct sealing
- Air sealing
- Water heater tank wrap
- Water heater pipe wrap
- Other _____

Q-13 How old is your air conditioner?

- Verbatim_____
- More than 20 years
- 15-20 years
- 10-15 years
- 5-10 years
- Less than 5 years
- Don't know (*don't read*)
- Refused

Q-14 What type of heating system do you have in place?

[IF Q-2a= "Gas", READ THIS LIST]

- Furnace
- Direct-vent heater
- Hydronic heater

[IF Q-2a = "Electric", READ THIS LIST]

- Heat Pump
- Electric Radiant

- Other (Specify)
- Don't know

Q-15 How old is your heating system?

- Verbatim_____
- More than 20 years
- 15-20 years
- 10-15 years
- 5-10 years
- Less than 5 years
- Don't know (*don't read*)
- Refused

Q-16 How often do you use your air conditioner during the summer months? Would you say it is use....? [READ. CHECK ONE ANSWER INDICATED]

- Daily
- A few days a week
- A few days a month
- Only on extremely hot days
- Other (Specify)
- Don't know

- Q-17 During summer months do you set your thermostat to a certain temperature and leave it there or do you adjust the setting?
- Set it and leave it
Q17a: What temperature do you set your thermostat to?
 - Set at different temperatures when home and when away
Q17b: What temperature do you set your thermostat to when you're home?
Q17c: What temperature do you set your thermostat to when no one is home?
 - Set at a different temperature at night and in the daytime?
Q17d: To what temperature do you set your thermostat when in the daytime?
Q17e: To what temperature do you set your thermostat at night?
- Other (Specify)
- Don't know

- Q-18 Do you have a programmable thermostat? [IF NECESSARY: "A programmable thermostat is one with a digital display that lets you program the temperature setpoint according to a schedule"]
- Yes
 - No
 - Don't know

- Q-19 When was your home built? [IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF YEAR RANGES UNTIL RESPONDENT INDICATES ONE]
- Verbatim _____
 - Before 1970's
 - 1970's
 - 1980's
 - 1990-1994
 - 1995-1999
 - 2000-2005
 - 2006 or newer
 - Don't know (*don't read*)
 - Refused

- Q-20 What is the approximate square footage of your home? [IF RESPONDENT DOES NOT GIVE VERBATIM ANSWER, READ OFF SIZE RANGES UNTIL RESPONDENT INDICATES ONE]
- Verbatim _____
 - Less than 1,000
 - 1,001-1,500
 - 1,501-2,000
 - 2,001-2,500

- Greater than 2,500
- Don't know (*don't read*)
- Refused

Q-21 How many bedrooms are there in your home?

- Quantity: _____
- Don't know (*don't read*)
- Refused

Q-22 How many bathrooms are there in your home?

- Quantity: _____
- Don't know (*don't read*)
- Refused

Q-23 What type of residence is your home? Is it

- A single-family home;
- A duplex to four-plex;
- An apartment or condo; or a
- Mobile or manufactured home
- Don't know (*don't read*)
- Refused

Q-24 Including yourself, how many people currently live in your home year-round?

- Quantity: _____
- Don't know (*don't read*)
- Refused

Q-25 I'm going to read off a list of income ranges, please indicate which range your household falls into. Is the annual income of your household:

- Less than \$25,000
- \$25,000 - \$35,000
- \$36,000 - \$50,000
- \$51,000 - \$75,000
- \$76,000 - \$100,000
- Greater than \$100,000
- Don't know (*don't read*)
- Refused

Q-26 What's the highest level of education you've completed? [DON'T READ]

- Did not graduate high school
- High school graduate
- Associates degree, vocational/technical school, or some college
- Four-year college degree
- Graduate or professional degree

- Don't know
- Refused

Q-27 Do you have any comments you would like to relay to OG&E about their energy efficiency programs or any other topics?

Comments (*if any*): _____

Thank you for your help! OG&E will use your ideas to improve its programs for its customers.

6.0 Appendix D:



REPORT TITLE: EVALUATION OF OG&E ARKANSAS PY 2012 ENERGY EFFICIENCY PROGRAMS

Report Number 1383

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EXECUTIVE SUMMARY

As per regulatory requirements, in 2012 OG&E Arkansas implemented programs as per its approved DSM plan for 2011-2013. EnerNOC Utility Solutions (“EnerNOC”) evaluated six of the programs implemented by OG&E in Arkansas: 1) Student Energy Education, 2) HVAC Tune-Up and Duct Repair, 3) Window Air Conditioning, 4) Commercial Lighting, 5) Commercial and Industrial Standard Offer, and 6) Commercial Tune-Up. This report covers the evaluated savings for PY2012 and actual program costs.

Approach

EnerNOC’s evaluation of the PY 2012 programs included both impact and process. Impact evaluation activities included conducting a study to assess duct system efficiency changes, conducting engineering reviews of program results, assessing compliance with the Technical Reference Manual (TRM 1.0 or TRM 2.0) and Protocol A Program Tracking and Database Development, and applying net-to-gross values. Process evaluation activities included 2 in-depth interviews with program staff, 2 in-depth interviews with participating residential HVAC contractors, telephone surveys with participants and with non-participants.

Results

Table ES-1 shows the reported gross savings and evaluated gross and net savings. Reported demand reductions were 1,161 kW and net evaluated demand reduced was 822 kW. OG&E reported energy savings of 5,738 MWh and net evaluated savings were 3,880 MWh.

Table ES-1 OG&E Arkansas PY 2012 Results by Program

Program	Demand (kW)			Annual Energy (MWh)		
	OG&E Reported	EnerNOC-adjusted	Net Savings	OG&E Reported	EnerNOC-adjusted	Net Savings
Student Energy Education	39	39	36	307	316	292
AC Tune-Up/Duct Repair	119	121	97	260	268	215
Window Unit A/C	3	2	2	3	3	2
Commercial Lighting	641	640	512	3,421	3,407	2,726
C&I Standard Offer	275	192	154	1,490	775	620
Commercial Tune-Up	84	27	22	257	33	26
Totals	1,161	1,021	822	5,738	4,802	3,880

Table ES-2 compares budget to actual costs by program broken out by administration and incentive costs. Overall costs were only 68% of budget primarily because of lower than expected spending on the C&I programs.

Table ES-2 Actual to Budget Costs for PY2012

Program	Budget ¹	Admin Costs ²	Incentives	Total Costs
HVAC Tune Up & Duct Repair	\$131,495	\$84,568	\$62,703	\$147,271
Window Unit A/C	\$11,416	\$3,040	\$1,200	\$4,240
Student Energy Education	\$82,800	\$8,394	\$73,879	\$82,273
Commercial Lighting	\$332,430	\$111,120	\$135,704	\$246,824
Commercial Tune-Up	\$133,815	\$35,448	\$22,392	\$57,840
C/I Standard Offer	\$343,030	\$90,069	\$71,076	\$161,145
Totals	\$1,034,986	\$332,639	\$366,954	\$699,593

Residential Programs

Key Findings

- The Residential HVAC Tune-Up and Window AC programs achieved their goals and generally correctly applied the TRM to calculate savings
- The Student Energy Education program achieved double its savings goals, despite much lower savings from the installation of less efficient faucet aerators. The implementer easily meets its participation quota each year with participation limited only by program funding.
- Word of mouth and direct mail are the most effective methods for marketing the programs.
- Participants are very satisfied with the program.
- There are indications of low free riders and evidence of program spillover—most (87%) of participants who responded to the survey said they took at least one energy efficient action *as a result of their participation*.
- Lack of awareness is a barrier to program participation. The program, however, does not have the funding to reach all interested participants, and turns customers away each year.
- The survey results show little potential for the Window AC program.

Recommendations

Residential HVAC Tune-Up Program

- Develop a naming convention for project files that is consistent with the customer account or project ID number so that individual files can be readily located.
- Repeat the DSE study with an appropriate sample to determine the percentage improvement in DSE in Arkansas.
- Conduct a NTG study to more accurately determine NTG.

Window AC Program

- Develop a naming convention for project files that is consistent with the customer account or project ID number to simplify tracking of program documentation.

¹ Source: Exhibit GJM-8 (Revised 12-15-11)

² Includes Marketing and EM&V Costs.

Student Energy Education

- Include more efficient measure models in kits and review actual kit contents regularly.
- Check in with teachers during the participation period to ensure kit distribution and encourage installation of measures in kits, and ask teachers to note their activities.
- Document savings in OG&E tracking system.
- Reduce program costs that **don't contribute to savings. Eliminate or reuse teachers' kits** which currently account for average 2% of annual kit cost invoice from RAP.
- Have the implementer stop reporting energy savings in its annual report.
- Consider allocating more funds to the program to increase participation and savings.
- Modify the student survey to get information about free riders.

C&I Programs

Key Findings

- The C&I programs did not achieve their savings goals in PY 2012. For Commercial lighting this was because they only had about half the expected participants.
- Standard Offer and Commercial Tune-Up achieved or exceeded participation goals but savings were much lower than expected. Savings were adjusted to be compliant with the TRM and for many HVAC projects new equipment did not meet efficiency standards.
- OG&E and contractors are the main way participants hear about the program. Only a third of non-participants are aware of the programs, however they are interested in all three C&I programs.
- Contractors have little influence on the purchasing decision.
- Participants are very satisfied with the program.
- Over half of participants said they probably would have purchased the same equipment without the rebate. However, many of those would have delayed the purchase without the rebate.
- There is evidence of participant spillover. Most participants who responded to the survey reported taking at least one action as a result of the program. A third said they increased the quantity of equipment installed for the project, and some purchased additional energy efficiency equipment outside of the program as a result of their participation.

Recommendations

- Increase or improve the marketing and advertising of the C&I programs. Few non-participants are aware of the program, and many are interested in participating.
- Conduct research with contractors in the area to find out if they are aware of OG&E programs, if they currently promote high efficiency equipment and identify ways that OG&E could partner with contractors to promote high efficiency equipment to C&I customers.
- Research the target market to find current market share of high efficiency equipment to understand the common characteristics of customers already investing in energy efficiency and what characteristics make up the next tier of customers the program is hoping to reach. The research can also proactively identify specific equipment to promote.

Commercial Lighting Program

- Calculate kW and kWh savings for future projects on TRM 2.0. This should include consistent use of the wattages prescribed in Appendix E of TRM 1.0 for the various lamp types.
- Develop a naming convention for the project files that is consistent with the customer account or project ID number so that individual files can be readily located.
- Make Commercial Lighting Rebate Submission Forms and other project documentation available to program evaluators for all projects.

Standard Offer Program

- Calculate kW and kWh savings for future projects be calculated based on TRM 2.0.
- Ensure that HVAC units installed meet minimum federal standards listed in the TRM.
- Develop a naming convention for the project files that is consistent with the customer account or project ID number so that individual files can be readily located.

Commercial Tune-Up Program

- Calculate kW and kWh savings for future projects based on TRM 2.0.
- Ensure that HVAC units installed as part of the program meet the minimum efficiency levels prescribed in the TRM.
- Clearly label Rebate Submission Forms for the Commercial Tune-Up program so as not to confuse them with Rebate Submission Forms for the Standard Offer Program.

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INTRODUCTION

1.1 Background for OG&E Arkansas DSM Program

In January 2006, the Arkansas Public Service Commission (APSC) began the rulemaking for **developing and implementing energy efficiency programs for Arkansas's four electric utilities.** By May of 2007, these rules were finalized, adopting protocols and procedures for testing the cost-effectiveness of energy efficiency (EE) programs and conducting evaluation, measurement, and verification (EM&V) of claimed savings. In October 2007, OG&E introduced a Quick Start Program in the Arkansas jurisdiction. Two of the Quick Start measures, Weatherization and Education, are collaborative efforts by all Arkansas utilities.

In June 2011, the APSC approved OG&E's portfolio of energy efficiency programs for that program year (2011-2013 Energy Efficiency and Load Management Plan). In Sept 2011, OG&E filed a revised proposal to achieve the energy savings goals required by the Order for the 2012 and 2013 program years, **Oklahoma Gas & Electric's 2011-2013 Arkansas Energy Efficiency Program Analysis and Plan prepared by Frontier Associates, Sept 2011 ("the Plan").**

OG&E Electric Services offers retail electric service in Oklahoma and Arkansas, servicing **approximately 65,000 customers in Arkansas.** OG&E's Arkansas service area encompasses the City of Fort Smith and **several nearby municipalities.** In 2010, OG&E's Arkansas retail customer classes used 2,700,703 MWh which is 10.8% of all OG&E energy.

1.2 Technical Reference Manual and Assumptions

The September 2012 Technical Reference Manual 2.0 updated and replaced all Arkansas deemed savings documents previously filed in Docket No. 07-152-TF.1 This second version of the Deemed Savings, Installation, & Efficiency Standards section of the **Technical Reference Manual ("TRM")** was an update to the first version of the deemed savings section of the TRM. The Deemed Savings Update filed on September 7, 2010, updated deemed savings estimates for certain measures and provided new deemed savings estimates for certain measures not previously proposed in earlier filings. The January 2011 Update further updated certain measures that parties to this docket agreed **were "high impact measures."** **The September 2011 update consolidated deemed savings documents and work papers, but contained no updates to deemed savings calculations or methodologies.** The September 2012 update resulted from efforts by the Arkansas Parties Working Collaboratively ("**PWC**") **to identify outdated deemed savings measures, include new measures, and prioritize the list of measures to identify those requiring additional engineering and/or literature review.**

Deemed savings are derived through the use of proven and accepted engineering calculations and/or engineered energy efficiency models (simulations). These methods use typical building types, equipment characteristics and operating schedules developed for particular applications, without on-site testing or metering. The estimated useful lives (EULs) are included in the deemed savings to facilitate economic evaluations, but have no impact on the deemed savings values. The document relies upon engineering calculations, the results of evaluations conducted in Arkansas, and the best available data from other jurisdictions that have conducted vetted evaluations. The TRM update process is described more fully in Protocol E of the TRM.

Assumptions

- Demand reduction (kW) and energy savings (kWh) are net savings at the customer meter.
- EM&V contractors either determine the net-to-gross (NTG) adjustment factors by measure or program as part of the evaluation, or apply the default 0.80 NTG adjustment factor, with the exception of the Arkansas Weatherization Program. This is in accordance with APSC Order 16 in Docket 08-137-U, pg. 16 and APSC Order 25 in Docket 07-075, pg. 33.

1.3 2012 Programs Goals Compared to Reported

This evaluation covers six of the programs implemented by OG&E in Arkansas—Student Energy Education, HVAC Tune-Up and Duct Repair, Window Air Conditioning, Commercial Lighting, Commercial and Industrial Standard Offer, and Commercial Tune-Up.

In total, the program participation was slightly higher than expected (109%), but savings for both demand and energy fell below projections. The programs achieved 42% of planned demand reductions and 54% of energy savings.

Table 1-1 below compares planned and reported participation, demand reduction, and energy savings for these programs.

Table 1-1 2012 Program Participation and Savings (Planned vs. Reported Savings)

Program	Participation		Demand (kW)		Annual Energy (kWh)	
	Planned	Reported	Planned	Reported	Planned	Reported
Student Energy Education	1,840	1,817	15	39	152,120	306,559
HVAC Tune-Up/Duct Repair	300	464	155	119	229,025	260,371
Window Unit A/C Program	25	30	2	3	2,423	2,904
Commercial Lighting	125	66	1,323	641	5,238,456	3,421,139
C&I Standard Offer	12	22	1,141	275	4,246,188	1,490,137
Commercial Tune-Up	10	11	112	84	759,969	256,823
Totals	2,312	2,410	2,748	1,161	10,628,181	5,737,933

1.4 Organization of this Report

- Chapter 1, Introduction
- Chapter 2, Evaluation Methods
- Chapter 3, Residential Programs Impact Evaluation
- Chapter 4, C&I Programs Impact Evaluation
- Chapter 5, Process Evaluation
- Chapter 6, Findings and Recommendations
- Appendices

EVALUATION METHODS

This section describes the evaluation methods EnerNOC used for the PY 2012 programs including both process and impact evaluation. Impact evaluation activities included conducting a study to assess duct system efficiency changes, conducting engineering reviews of program results, assessing compliance with the TRM and Protocol A, and applying net-to-gross values. Process evaluation activities included 2 in-depth interviews with program staff, 2 in-depth interviews with participating residential HVAC contractors, telephone surveys with participants and with non-participants.

2.1 Impact Evaluation

Conduct a DSE Study.

OG&E provided EnerNOC with a dataset of Residential AC Tune-up participants to the end of September 2012. EnerNOC selected a sample of 21 participants who were not identified as having the measure installed. These customers were offered free duct or plenum sealing with pre- and post-duct blaster testing. Analysis of the results determined that minimal to no savings were found. Subsequently, OG&E learned that the database used to select samples contained many customers who had already had these measures implemented as part of the program. Given the problem with the data, for PY 2012 EnerNOC used the DSE estimate of 13% improvement based on a study done by OG&E Oklahoma and EnerNOC for PY 2011. Climate zones in Oklahoma and Arkansas are very similar and it seemed reasonable to assume similar market characteristics in the two customer bases, including leakiness of homes. For PY 2013, OG&E plans to conduct the Arkansas study in spring 2013 for a sample of customers who have not had ducts or plenum sealing measures implemented.

For the Oklahoma Duct Efficiency Study, EnerNOC worked with a subcontractor to conduct a study for the plenum seal measure. The DSE value in use was estimated by OG&E based on a small 5 house, 8 unit study conducted in 2010. To provide a more robust estimate based on a larger sample, during Sept/October 2011 EnerNOC conducted a study on a sample of 25 homes. The results of the study were later added to those of the OG&E study for a total of 32 units. EnerNOC worked conjointly with OG&E, the subcontractor conducting the tests GWS, and CLEARResult to recruit testing participants during their energy audits and get them signed up for the study sample. While EnerNOC could not select the participants at random from the population, an effort was made to select as representative a sample of participants as possible. EnerNOC created a sample design matrix which allocated 25 participants proportionally to the population across house size and age. The matrix was provided to CLEARResult home energy specialists conducting audits during the months of August and September. CLEARResult then recruited audit participants for the duct study as closely as possible to the sample design.

Table 2-1 shows the planned number of participants in each cell, vs. the actual number of participants in each cell. An effort was also made to distribute sample participants throughout the territory by selecting HES auditors working in different geographical areas.

Table 2-1 Duct Efficiency Sample Design Matrix – Design vs. Recruited

	Total		2011 - 1981		1980 or older	
	Recruited	Design	Recruited	Design	Recruited	Design
Up to 1,499 sqft	7	8	1	4	6	4
1,500 to 2,249 sqft	9	9	4	4	5	5
more than 2,250 sqft	8	8	4	4	4	4
	24	25	9	12	15	13

This design resulted in a sample of participants that reflected the population in both the distribution of the age of homes, and the distribution of house size. The sample was not randomly selected from the population and likely reflects some self-selection bias, in that customers in the study were those willing to participate. The selection bias is likely to be small, however, because in this case there is unlikely to be a strong correlation with savings and likelihood of participation in the study.

The change in efficiency accounting for the air-flow actually entering the house was estimated as:

Change in air flow =

$$100 * ((\text{Pre-seal CFM leakage} - \text{Post-seal CFM leakage}) / \text{Total System CFM}) - \text{Pre-seal CFM leakage}$$

Where

- Pre-seal CFM leakage is the leakage from the system measured prior to the plenum seal.
- The post-seal CFM leakage is the leakage from the system measured after the plenum seal.
- The total system CFM represents the total capacity of the system.

EnerNOC applied the formula to the 32 units. To calculate improvement in DSE per ton, we post-stratified the sample by tonnage. Then, to estimate DSE improvement per ton for each unit, we **first divided pre and post leakage CFM values by the unit's tonnage, then calculated the weighted average of the pre-seal CFM leakage, the post-seal CFM leakage, and total pre-seal CFM leakage.** Finally we used the ratio to calculate weighted average % improvement in (CFM/ton) - *the DSE factor*. The final weighted average DSE was 13.2% per ton as shown in Table 2-2.

Table 2-2 Weighted Average DSE for the Sample

Total system capacity pre-seal (CFM/ton)	Average pre-seal leakage (CFM/ton)	Average post-seal leakage (CFM/ton)	Weighted Average DSE/ton
292	108.16	69.6	13.21%

Engineering Review

The following tasks were completed for engineering reviews.

- Each evaluation included a basic verification to ensure the program tracking data included participant level records, whereby the sum of the participant savings is equal to the total claimed savings.
- We verified that the Technical Reference Manual (TRM) values are being applied. The PY2012 savings should be based on the deemed savings values as reported in the Arkansas TRM (Volume 2, Version 2) or TRM Version 1. EnerNOC reviewed the databases and calculations and identified instances where the TRM values were not applied properly.
- For programs with sufficient participation (Residential HVAC Tune-Up) we selected a sample of projects to review. For Commercial Lighting we could only review project which had

supporting documentation available. For the other programs (SOP, CTU, Window AC) we made an attempt to review all of the project results. For Student Energy Education we reviewed the number of kits provided.

Compliance with Protocol A

Review current database tracking methodology with the recommended formats in the Protocol A: Program Tracking and Database Development: The evaluation describes the current status of the program tracking databases for all programs, and provides details about any discrepancies between the program tracking fields compared to the requirements in Protocol A (see Appendix A). Where such discrepancies exist, we include an explanation and recommendation on how best to conform with the EM&V protocols.

Apply Net to Gross (NTG) value.

As part of Commission Order No. 1, the stipulated net to gross for all programs in PY2012 was 80 percent. EnerNOC used this value for most of the evaluated programs as there were not enough participants to be able to get a robust estimate of free riders or spillover through customer surveys. For Student Energy Education, we conducted a scan for what other jurisdictions are using for similar programs.

2.2 Process Evaluation

This section describes the process evaluation activities EnerNOC completed for the program.

Program Staff Interviews

EnerNOC interviewed two program staff—the program manager who is responsible for the Residential Windows and AC Tune Up programs as well as the three C&I programs (SOP, Commercial Lighting, and Commercial Tune-up) and the program manager who is responsible for the Student Energy Education program in both Arkansas and Oklahoma. Appendices B and C show the interview guides.

Participant Surveys

EnerNOC designed survey instruments for each of the residential and C&I sectors as shown in Appendices D and E. OG&E provided lists of customers for each sector who had participated between Jan and September 2012. From these lists we developed sample plans as shown in Table 2-3 below.

Table 2-3 Sample Plan for Participant Surveys

Sector	Program	Population	Quota	Total
Residential	Windows	27	5	52
	Tune-ups	263	47	
C&I	Lighting	31	10	18
	Tune-ups	7	3	
	SOP	11	5	

EnerNOC hired Ward Research to conduct the telephone surveys which they completed in October and November, 2012. The sample disposition for the C&I participant survey is shown in Table 2-4 and the sample disposition for the Residential survey is shown in Table 2-5.

Table 2-4 Survey Sample Disposition for Commercial & Industrial Participants

CALL DISPOSITION	OGE Arkansas Commercial Participant	
	Count	Percent
Total Sample	46	100.0%
Completes	18	39.1%
Refusal/Terminated	7	15.2%
No Answer/Answering Machine	10	21.7%
Disconnected Phone	4	8.7%
Callback Scheduled	7	15.2%

Table 2-5 Survey Sample Disposition for Residential Participants

CALL DISPOSITION	OGE Arkansas Residential Participant	
	Count	Percent
Total Sample	290	100.0%
Completes	52	17.9%
Refusal/Terminated	37	12.8%
Business/Government Phone	2	0.7%
No Answer/Answering Machine	119	41.0%
Disconnected Phone	40	13.8%
Language Barrier	4	1.4%
Did not Participate in Program	17	5.9%
Record Over Quota	5	1.7%
Callback Scheduled	14	4.8%

Non-Participant Surveys

In January & February 2013 EnerNOC hired Ward Research to conduct telephone surveys with at least 20 customers in each sector (C&I and residential). See Appendix F for survey instruments.

C&I Customers

OG&E provided a list of 5,997 customers from which EnerNOC selected a random sample of 300 names to forward to the survey house. The survey house completed 22 interviews with commercial and industrial customers, exhausting most of the sample as shown in Table 2-6.

Table 2-6 Survey Sample Disposition for C&I Non-Participants

CALL DISPOSITION	COMMERCIAL NON-PARTICIPANT	
	Count	Percent
Sample Pulled	300	100.0%
Completes	22	7.3%
Refusal/Terminated*	47	15.7%
Unable to Reach ^[1]	46	15.3%
Phone Number Issue ^[2]	22	7.3%
Callback Scheduled	32	10.7%
Duplicate Companies	114	38.0%
Sample Not Used	17	5.7%

Residential Customers

OG&E provided a list of customers (about 48,000). EnerNOC cleaned these data (removing those with no phone numbers, duplicate phone numbers, and non-residential customers and selected a random sample of 200 customers. The survey house completed 23 interviews with residential customers, again exhausting most of the sample, as shown in Table 2-7.

Table 2-7 Survey Sample Disposition for Residential Non-Participants

CALL DISPOSITION	RESIDENTIAL NON-PARTICIPANT	
	Count	Percent
Sample Pulled	200	100.0%
Completes	23	11.5%
Refusal/Terminated*	14	7.0%
Unable to Reach ^[1]	97	48.5%
Language Barrier	6	3.0%
Phone Number Issue ^[2]	40	20.0%
Callback Scheduled	12	6.0%
Sample Not Used	8	4.0%

*Refusal/Terminated includes initial refusals and non-qualifiers.

^[1] Unable to Reach includes no answer, answering machine, busy phone, max. number of attempts

^[2] Phone Number Issue includes duplicate phone numbers, wrong number, disconnected phone, business/govt phone, computer tone.

Trade Ally Interviews

OG&E provided a list of seven HVAC contractors who participated in the Residential Tune-Up program in PY 2012. EnerNOC developed an interview guide (see Appendix A) and contacted and completed interviews with two of these contractors.

RESIDENTIAL PROGRAMS IMPACT EVALUATION

This section describes the findings from the evaluation of the impacts of the three residential programs, the HVAC Tune-Up and Duct Repair Program, the Window AC Program, and the Student Energy Education Program (SEE). The SEE program is delivered and tracked in a different way than are the other two programs.

3.1 Residential HVAC Tune-Up

The program, launched July 2011, is targeted toward single family residential customers with central HVAC systems, and works towards improving the efficiency of these units. It contains two major components: (1) HVAC inspection and tune-up and (2) Duct repair. For both components, the customer must contract for air conditioning tune-up and inspection services from an OG&E approved local, certified, and licensed HVAC contractor. At the completion of each project, the results will be documented through the use of an OG&E Post-Inspection Survey Form completed by the licensed contractor. This program is based on an existing program offered in Oklahoma, called the Home Energy Efficiency Program or HEEP.

HVAC Inspection and Tune-Up

In completing the first component, a technician certified in the use of an approved diagnostic system will **analyze the air conditioner or heat pump's refrigerant charge, using superheat, subcooling, or another approach per the equipment manufacturer's recommendation.** The following pre- and post-service measurements shall be recorded and reported to the utility:

- Condenser air entering temperature
- Return plenum dry bulb and wet bulb temperatures
- Supply plenum dry bulb temperature
- Refrigerant suction line and liquid line temperatures
- Refrigerant suction and discharge pressures

These tune-ups will be done using utility-approved diagnostic equipment or protocols, such as: **Honeywell Service Assistant™, Proctor Engineering CheckMe!, Enalasis™, Verified RCA™ or other** approved diagnostic system. Airflow may either be measured directly or estimated using the temperature split method. OG&E will pay the \$75 incentive directly to the contractor to off-set inspection and tune-up costs. If any repair is needed to the HVAC equipment whose cost exceeds \$75, the customer will be responsible for payment of any such repairs.

Duct Repair

A second aspect of the program involves assistance in sealing or repairing HVAC duct work. The customer must contract duct inspection services for a certified technician to identify loose duct connections, collapsed ducts, or uninsulated ducts. If such faulty ducts are found, OG&E will pay up to \$300 directly to the contractor to offset the cost of duct repair.

Summary of Program Operations

This section includes a summary of program participation, demand and energy savings. Table 3-1 below shows the total participation and claimed savings in the tracking database for PY 2012.

Table 3-1 HVAC PY 2012 Tune Up Program: Participation and Claimed Savings

PY2012 Results	Planned	Reported
Participation (projects)	300	464
Demand savings (kW)	155	119
Annual Energy savings (kWh)	229,025	260,371

Verify Claimed Savings Supported by Program Tracking Data

OG&E provided a spreadsheet report summarizing all projects and impacts entered into the database for 2012, along with copies of the individual project reports provided by the contractors. OG&E used the Arkansas TRM 1.0 manual to develop savings for the Residential HVAC Tune-Up program. To verify that the impacts reported in the database were correct, EnerNOC developed kW and kWh impacts for all projects based on the measure and equipment descriptions listed in the database along with the deemed savings methodologies presented in TRM 1.0. We also looked at project reports for 68 of the 464 projects to verify that the reported AC tonnages, rebates, and kW and kWh savings in the database were consistent with the project reports. During our engineering review, we found a few errors and discrepancies:

- The database was missing the AC tonnage for one customer who apparently implemented the HVAC tune-up measure, resulting in zero reported and evaluated savings (the deemed savings cannot be determined without the AC tonnage)
- Two reported HVAC tune-up savings values were inconsistent with the deemed savings methodology (reported kWh impacts were higher than evaluated savings)
- The database was missing savings values for two HVAC tune-up projects that were reported to be implemented
- The database was missing savings values for five duct repair projects that were reported to be implemented
- Spot checking of the individual project reports uncovered two projects with reported savings that were inconsistent with project documentation

Protocol A: Program Tracking and Database Development

EnerNOC compared the program database to recommended data fields in the protocol with results shown in Table 3-2 below.

Table 3-2 Comparison of Tune Up and Duct Repair Database to Protocol A

Recommended Data Fields	Review Results
<p>Participating Customer Information</p> <ul style="list-style-type: none"> • Unique customer identifier, such as account number • Customer contact information – name, mailing address, telephone number • Date/s of major customer milestone such as rebate application date, approval date, rebate processing date, etc. 	<p>Information provided in database</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>
<p>Measure Specific Information</p> <ul style="list-style-type: none"> • Measure Group (Equipment Type) • Equipment Fuel/Energy Source • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable • Equipment Useful Life • Measure Name - Text Description • Measure Code- Numerical Code • Serial Number (where applicable) • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	<p>Information provided in database</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>n/a</p> <p>Yes</p> <p>n/a</p> <p>n/a</p> <p>Yes</p> <p>No</p> <p>Model & Model #</p> <p>n/a</p> <p>n/a</p>
<p>Measure Codes: All data should be captured in numeric format to facilitate data tracking and analysis. Therefore, a data legend should be identified for each measure type and contractor type. This data legend should be clearly identified in the program database’s supporting materials.</p>	<p>Not done.</p>
<p>Vendor Specific Information</p> <ul style="list-style-type: none"> • Name and Contact Information for Contractor • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	<p>Information provided in database</p> <p>Name of contractor, no contact information</p> <p>No – assumed all are HVAC Contractors</p> <p>Yes</p> <p>n/a</p> <p>n/a</p>
<p>Program Tracking Information</p> <ul style="list-style-type: none"> • Date of the initial program contact/rebate information • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status (i.e., number of applications approved, pending or denied) • Reason and Reason code for application denial 	<p>Information provided in database</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>n/a</p> <p>No</p>

Use of Technical Reference Manual (TRM) Values

TRM 1.0 provides two deemed savings for the Residential HVAC Tune-Up program—one for the air conditioner tune up and one for duct repair.

Tune Up Deemed Savings

Table 3-3 shows the HVAC Tune Up deemed savings values from the TRM.

Table 3-3 TRM Deemed Savings Values for HVAC Tune-Up

Weather Zone	Annual kWh Savings/Ton	kW Savings/Ton
9	92	0.06
8	112	0.06
7	124	0.06
6	149	0.06

OG&E Arkansas service territory is in Zone 8 Fort Smith. Table 3-4 lists the deemed kWh and kW savings by tonnage of the AC unit.

Table 3-4 TRM Deemed Savings Values for Zone 8 by AC Unit Tonnage

Tonnage	Annual kWh Savings	kW Savings
<=2	224	0.12
2.5	280	0.15
3	336	0.18
3.5	392	0.21
4	448	0.24
5	560	0.30

For the vast majority of projects, OG&E properly applied these deemed savings values in their database.

Duct Repair Savings

TRM 1.0 provides a drop down menu to determine kW and kWh savings for the duct repair measure. The menu allows the user to select the zone, type of housing (all single family in this case), foundation, type of heating, location of air handler, and DSE value.

In 2012, EnerNOC assisted OG&E in conducting a duct blaster study for a sample of residential participants in Arkansas. The intent of the study was to develop empirical DSE values for representative participants and HVAC system capacities. A similar study was conducted in 2011 **for a sample of OG&E’s Oklahoma residential participants. The DSE study in Arkansas resulted in** much smaller than anticipated DSE values, which indicated a problem with the study. EnerNOC and OG&E investigated the anomalous results and determined that they are most likely due to the sample being drawn from a population of participants who had already performed duct repairs. In an effort to use the best available DSE data to calculate impacts, OG&E and EnerNOC agreed to use the DSE results from the comprehensive study conducted in Oklahoma, which yielded an average DSE value of 13%, until another Arkansas DSE study can be carried out.

EnerNOC reviewed OG&E’s assumptions and kW and kWh impact estimates for the duct repair measure and determined that OG&E correctly applied the deemed methodology in TRM 1.0 for the vast majority of projects.

2012 Results

Table 3-5 shows that 464 projects were completed in 2012. Of these projects, 460 included HVAC tune-up, 104 included duct repair for homes with gas heating, and 23 included duct repair for homes with electric heating. There were a total of 410 unique participants, and 21 of the participants were part of the DSE study.

Table 3-5 Summary of HVAC Tune-Up and Duct Repair Projects

Measure	Count
HVAC Tune-Up	460
Duct Repair (Gas Heating)	104
Duct Repair (Electric Heating)	23
Total Projects	464

Table 3-6 below shows the reported savings, the evaluated savings, the realization rate for the gross impact estimates, and the net savings, adjusted for a free rider rate of 20%. The results are shown separately for HVAC Tune Up and Duct Repair, which is called Duct Efficiency in TRM 1.0. For the program as a whole, EnerNOC found realization rates of 101% for the demand savings and 103% for the energy savings.

Table 3-6 2012 Results for HVAC Tune-Up and Duct Repair

Measure	Savings	Gross Impacts			Net Impact
		Reported	Evaluated	Realization Rate	
HVAC Tune Up	Demand Savings (kW)	84.78	85.20	100%	68.16
	Annual Energy (kWh)	158,400	159,000	100%	127,232
Duct Repair	Demand Savings (kW)	34.57	35.84	104%	28.67
	Annual Energy (kWh)	102,100	109,300	107%	87,400
Totals	Demand Savings (kW)	119.4	121.0	101%	96.83
	Annual Energy (kWh)	260,500	268,300	103%	214,632

Values have been rounded to 4 significant figures.

As shown in Table 3-7, ten contractors participated in the program. The projects were split among the ten contractors, with Total Home Efficiency conducting the most projects (66) and BJ Heating Air conducting the least (24).

Table 3-7 Participation and Gross Reported Savings by Contractor

Contractor	Projects	Demand (kW)	Energy (kWh)
Air Pro	46	7.86	14,672
AIRCO Service	30	5.66	10,472
Atchley Air	61	14.27	29,329
BJ Heating Air	24	5.86	12,533
Blaylock Heating Air	55	11.42	21,436
DK Construction	35	11.35	24,524
Hawkins Pryor Heat & Air	43	9.65	19,479
J&K Heat & Air	47	9.00	16,800
Total Home Efficiency	66	26.01	74,021
Williams Energy Efficiency	55	17.79	36,209

3.2 Residential Window AC

The purpose of the Window Unit AC Program, launched July 2011, is to provide OG&E single family residential customers without central HVAC systems incentives for purchasing and installing high-efficiency air conditioners. The program is designed to increase energy efficiency of window unit sales, while is reducing energy consumption, lowering energy costs, and increasing the comfort of residential customers that cool part or all of their home with window units. **Measure life characteristics suggest that roughly 20 percent of OG&E’s residential cooling systems date to 1997 or earlier, suggesting there is a strong annual market for air conditioning systems, assuming an 11 year mean life at time of replacement.**³ ENERGY STAR (ES) qualified window air conditioning units would be eligible for rebates under this program.

To qualify for this program, the energy efficiency ratio (EER) must exceed corresponding National Appliance Energy Conservation Act (NAECA) baseline standards by 10 percent or more. After replacing an existing window air conditioner with an ES window air conditioner by a certified third-party contractor, the customer receives a \$40 rebate. Minimum cooling capacity is 5,000 Btu/hour; maximum is 25,000 Btu/hour. The baseline is assumed to be a new air conditioning unit with an EER rating meeting current NAECA standard, which vary from 8.5 to 9.8 depending on the configuration of the louvers and the capacity of unit.

OG&E pays a \$40 rebate for ES **Window Air Conditioners to the customer upon receipt of OG&E’s ES appliance form and invoice of the purchase.** The invoice must be dated within one year of the completed energy audit. No incentives are available for new construction or to pay for fuel switching of heating fuels.

Summary of Program Operations

Table 3-8 below shows the total participation and claimed demand and energy savings in the tracking database for PY 2012. In PY 2012, unlike the previous year, the stores carried the actual units that qualified and the program exceeded its goals.

³ 30th Annual Portrait of the U.S. Appliance Industry, Appliance Magazine, 2006

Table 3-8 PY 2012 Residential Window AC: Participation and Claimed Savings

PY2012 Results	Planned	Reported
Participation	25	30
Demand savings (kW)	2	2.56
Annual Energy savings (kWh)	2,423	2,904

Verify Claimed Savings Supported by Program Tracking Data

OG&E provided a spreadsheet report summarizing all projects entered into the database for 2012 along with copies of backup documentation. The backup documentation included information on the AC unit capacity and efficiency, the receipt for the new AC unit, and the individual check request forms showing the rebate amount. The energy and demand savings in the initial spreadsheet report provided were not consistent with TRM 2.0. However, OG&E corrected the database to comply with TRM 2.0 in the final version provided for 2012. Most of the information in the spreadsheet report matched the customer data files, but we found 3 exceptions:

- There was a typo in the capacity entered for one customer
- One customer account number was entered into the database, but should not have been because the customer was not a participant in the program
- Another customer account number was missing from the database

We informed OG&E of the discrepancies and they told us they have since corrected the errors.

Protocol A: Program Tracking and Database Development

EnerNOC compared the program database to recommended data fields in the protocol with results shown in Table 3-9.

Table 3-9 Comparison of Window AC Database to Protocol A

Recommended Data Fields	Review Results
<p>Participating Customer Information</p> <ul style="list-style-type: none"> • Unique customer identifier, such as account number • Customer contact information – name, mailing address, telephone number • Date/s of major customer milestone such as rebate application date, approval date, rebate processing date, etc. 	<p>Information provided in database</p> <p>Yes</p> <p>Yes</p> <p>Date Completed</p>
<p>Measure Specific Information</p> <ul style="list-style-type: none"> • Measure Group (Equipment Type) • Equipment Fuel/Energy Source • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable • Equipment Useful Life • Measure Name - Text Description • Measure Code- Numerical Code • Serial Number (where applicable) • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	<p>Information provided in database</p> <p>n/a</p> <p>n/a</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>n/a</p> <p>n/a</p> <p>Assumed to be Window AC</p> <p>No</p> <p>Yes</p> <p>n/a</p> <p>n/a</p>

Recommended Data Fields	Review Results
<p>Measure Codes: All data should be captured in numeric format to facilitate data tracking and analysis. Therefore, a data legend should be identified for each measure type and contractor type. This data legend should be clearly identified in the program database’s supporting materials.</p>	<p>Not included.</p>
<p>Vendor Specific Information</p> <ul style="list-style-type: none"> • Name and Contact Information for Contractor • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	<p>Information provided in database.⁴</p> <p>n/a n/a n/a yes yes</p>
<p>Program Tracking Information</p> <ul style="list-style-type: none"> • Date of the initial program contact/rebate information • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status (i.e., number of applications approved, pending or denied) • Reason and Reason code for application denial 	<p>Information provided in database.</p> <p>No Date Completed Yes n/a No n/a</p>

Use of Technical Reference Manual (TRM) Values

The deemed savings were derived from the TRM 2.0 shown below in Table 3-10 using Zone 8 Fort Smith. **OG&E’s initial savings did not follow TRM 2.0, but OG&E corrected the database before sending EnerNOC the final spreadsheet report summarizing 2012 projects in the database.**

Table 3-10 Deemed Energy Savings for Window Air Conditioners

Size (Btu/Hr)	Federal Standard EER	Energy Star EER	kW Savings All Zones	kWh Savings Zone 9	kWh Savings Zone 8	kWh Savings Zone 7	kWh Savings Zone 6
Less than 6,000	9.7	10.7	0.046	41	54	54	68
6,000 – 7,999	9.7	10.7	0.049	44	58	58	73
8,000 -13,999	9.8	10.8	0.095	83	111	111	139
14,000 – 19,999	9.7	10.7	0.127	112	150	150	187
20,000 and above	8.5	9.5	0.218	192	257	257	321

2012 Results

There were 30 window AC projects completed in 2012. Table 3-11 below shows the reported savings, the evaluated savings, the realization rate for the gross impact estimates, and the net savings, adjusted for a free rider rate of 20%. The primary reason for the realization rates of 90% for kW savings and 93% for kWh savings was the fact that one customer had incorrect reported values for kW and kWh savings. The evaluated kW and kWh savings were calculated based on the verified windows AC unit capacity.

⁴ The customer did not use a contractor for installation but did provide a receipt for the equipment.

Table 3-11 2012 Results for Residential Window AC Program

Savings	Gross Impacts			Net Impact
	Reported	Evaluated	Realization Rate	
Demand Savings (kW)	2.56	2.30	90%	1.84
Annual Energy (kWh)	2,904	2,701	93%	2,161

3.3 Student Energy Education

The purpose of the Student Energy Education (SEE) program is to shape household behaviors about resource use and encourage reduced energy use through a combination of information about resource efficiency and access to efficient products. The program has been in operation since before this 2011-2013 program cycle. Under the program, 6th grade students in participating schools are each provided with a take-home kit containing energy and water efficiency devices and are exposed to information about energy efficiency, both in the classroom and through materials in the kit.

SEE is operated as a turn-key program. Under contract to OG&E, Resource Action Programs (RAP) implements its LivingWise[®] program by enrolling schools and furnishing the materials and training to teachers who then conduct the in-classroom lessons and provide the students with take-home kits that contain several energy and water savings devices, along with additional information about how to install the devices and save resources. The OG&E program manager and the RAP website confirm that the LivingWise kits include: a low-flow showerhead, a CFL, a kitchen faucet aerator, an LED nightlight, and other items designed to help families check for inefficiencies in their homes. Both the kits and the RAP website contain explicit instructions on how to install each of the items.

Figure 3-1 LivingWise Kit



The Plan shows a participation goal of participants in PY 2012. A participant is defined as a student. Under the program, each participant is issued a kit with the above noted items. The savings the program expects to realize and that OG&E is claiming, derive from the installation of three of the items in the kit: the low-flow showerhead, the CFL, the kitchen faucet aerator.

Table 3-12 shows the participation and savings that OG&E anticipates the program will achieve annually during this program cycle.

Table 3-12 Student Education Energy Participation and Savings Projections

Program Year	Annual Participants	Annual Savings (kW)	Annual Savings (kWh)
2011	1,240 students	10.3	102,516
2012	1,840 students	15.2	152,120
2013	1,840 students	15.2	152,120

Source: Oklahoma Gas & Electric’s 2011-2013 Arkansas Energy Efficiency Program Analysis and Plan, Table 7, p. 16.

Summary of Program Operations

As noted, the SEE is operated by the contracted implementer, RAP, as a turnkey program, under the brand name LivingWise®. To meet the program objectives and savings goals, OG&E provides RAP with a list of potential schools who have indicated a willingness to participate. RAP has the following responsibilities:

Conduct outreach and enroll schools

The OG&E program manager said that RAP researches the number of eligible students/schools in the area and allows teachers to enroll in many ways, i.e. via telephone, email, and website. RAP also mails letters to the schools and even call the schools each year. Teachers can also contact RAP or OG&E to request inclusion of their classes in the program. In interviews with both the OG&E program manager and a RAP manager, we learned that RAP had no trouble enrolling teachers into the program to meet the goal for number of kits distributed. That number of kits distributed is strictly capped by the program budget. Both indicated that, once the quota is reached each year, RAP stops recruitment. Part of what makes it easy for RAP to meet the participation goal is that they return to the same schools and teachers each year. According to the RAP annual report, teachers are pleased with the program⁵, and are interested in participating again. While not confirmed, the full enrollment readily achieved each year suggests it is possible that some interested teachers are turned away. It does appear that teacher interest in the program is high and the program budget is the limitation to program participation.

One note about the participation **limits. OG&E’s participation goal for PY 2012 was 1840** participants. As Table 3-13 shows RAP delivered and billed for a total of 1853 kits. Of these, only 1817 were for distribution to students. This means that 2% of kits paid for by the program were very likely not installed. In reviewing records from PY 2011, we found that about 30% of the teachers participated in both years and received kits both years. The cost of each kit to OG&E is \$40. While the total cost of the teacher kits is not especially large, it is unlikely that they result in any savings. Eliminating delivery of kits to teachers or having them reuse ones from previous year would allow an additional class to participate, based on average class size among the PY 2012 participants.

⁵It is not clear how many teachers provided a program evaluation, but 100% of those who did said they would conduct the program again, given the chance. Reported in *OG&E Arkansas LivingWise Program Summary Report 2012*, prepared by Resource Action Programs, January 2013.

Table 3-13 Distribution of Kits in PY 2012

Number of Kits Distributed	Spring 2012	Fall 2012	Total
RAP delivered to classrooms	1379	474	1853
For teachers	31	5	36
For students	1348	469	1817

Develop and assemble all materials and deliver them to the participating classrooms

As indicated in the program description above, RAP has created a set of instructional materials and measures for students to install at home. They also provide an educational curriculum for the teachers to use. In a quick review of the student materials, we found that the installation instructions seem complete and easy to follow. The kits come with specialty tools to install and measure the low-flow showerheads; the faucet aerator and CFL require common or no tools to install.

The information RAP has provided to OG&E in equipment spec sheets and in savings estimates in the annual report does not always match what is in the kits. Inspection of the faucet aerators in both a PY 2011 and a PY 2012 kit revealed that the labeled efficiency is 2.0 gpm, rather than the **1.5 gpm used in RAP's annual report and shown in the spec sheets. The TRM requires that the labeled efficiency be used in calculation of savings, unless participant site data are available.** For low-flow showerhead, the participants do conduct before and after tests that provide field measurement, so labeling is less important. The CFLs were labeled as reported.

Provide support to participating teachers throughout the program

The RAP manager told us that the company is available to answer any questions from the participating teachers. Teachers have a phone number to contact RAP. Teachers are encouraged to use the curriculum, distribute the kits to students, and then have them return a survey that indicates what measures they installed at home. It does not appear that RAP initiates contact with the teachers after delivery of the kits. RAP apparently does not confirm whether the kits are distributed, the curriculum is taught, or the students are encouraged to install the measures. Based on the results in the student surveys returned and comments from teachers and families **included in RAP's annual report, it is evident that a very** high percentage of the teachers did do those things.

Request return of audit forms and evaluations of the program from teachers

As part of enrollment, RAP asks teachers to have students complete a survey about their installation of the measures and to complete a survey of their own satisfaction with the program. As inducement, teachers whose students do return surveys are offered a nominal gift card for purchase of educational materials or supplies for their classrooms. In PY 2012, 1010 of the 1817 students who were provided kits returned completed surveys, a response rate of 56%.

Provide OG&E with an annual report of results, in time for inclusion in OG&E report to the APSC

As part of enrollment, RAP asks teachers to have students complete surveys about their installation of the measures and to complete a survey of their own satisfaction with the program. As inducement, teachers whose students do return surveys are offered a nominal gift card for purchase of educational materials or supplies for their classrooms. In PY 2012, 1010 of the 1817 students who were provided kits returned completed surveys, a response rate of 56%.

Review of Program Tracking and Database

OG&E maintains a tracking system that shows the number of participants in the program each year and recorded savings. With the exception of the expected electric savings, all the data are provided by RAP and transferred into the Saratoga tracking system by OG&E. According to the OG&E program manager, RAP sends weekly electronic reports that show of the number of students enrolled and the number of kits shipped to schools. OG&E enters its own estimate of per-participant savings, using the results from the most recent estimate of per-participant realized savings.

OG&E provided EnerNOC with data extracted from its tracking of the LivingWise program activities within the Sara tracking system and also data provided by the implementer. The data are quite easy to understand. The database clearly identifies the number of LivingWise kits that were shipped, the number of students in the classes, the per-kit savings assigned, and the kit costs charged to the program.

The tracking system conforms reasonably well to the tracking system protocol developed for use in Arkansas. Here is a summary of how well it meets the components of the protocol. Table 3-14 shows the Protocol A review.

Participating Customer Information. The tracking system contains contact information for the teachers who conduct the program with the participating students.

Measure Specific Information. All kits contain the same measures. The tracking system **does not identify which measures were actually installed by the participating students'** families. But self-reported information about measure installation from families who return a post-program survey does contain this.

Program Tracking Information. The tracking system includes information on the dates the kits were shipped and data entry was made, and the cost of the kits to the program. The kits are free to student participants, so rebate information is not applicable.

Marketing and Outreach Activities. RAP conducts a well-established pattern of outreach activities. It is not known whether OG&E keeps records of how many outreach letters the staff sends each year or to whom. RAP handles all other marketing.

Figure 3-2 View of OG&E Program Tracking System

The screenshot displays the 'DSM - Demand Side Management' interface. It includes a top navigation bar, a toolbar, and a main content area with several sections:

- Account Info:** Fields for Name (LIVINGWISE PROGRAM - AR), Svc. Add, Premise City, Premise State (AR), Premise Zip, Apt #, Phone, Fax, Web Site, and County.
- Installation Info:** Fields for Installation # (11042917440E77), Contract Acct # (11042917440E), Bus. Part. #, SPS # (11042917440E77), DSM Active (DSM Y/N), Acct Dist ID (R), and Parent ID.
- Account Info (Main):** Fields for Annual Dollars, Annual kWh, Maximum kWh Billed, Customer Set Date, Rate Category (AR151-5), Prizm Code?, NAICS 6D, SIC Code, LivingWise?, CER, Weatherized, and PreWeather Qualified.
- Table:** A table with columns: School District, School Name, Total # Kits, Total Cost, and Date Kits Shipped. The table lists 14 rows of data for various schools.

School District	School Name	Total # Kits	Total Cost	Date Kits Shipped
Ozark School District	Ozark Middle School	50	2,000.00	11/19/2012
Ozark School District	Ozark Middle School	18	720.00	11/9/2012
Ozark School District	Ozark Middle School	117	4,680.00	11/9/2012
Ozark School District	Ozark Middle School	7	280.00	11/9/2012
Alma School District	Alma Middle School	141	5,640.00	11/9/2012
Alma School District	Alma Middle School	141	5,640.00	11/9/2012
Fort Smith Public School Distr	Sutton Elementary School	57	2,280.00	4/2/2012
Fort Smith Public School Distr	Eugar Lane Elementary Scho	29	1,160.00	3/20/2012
County Line School District	County Line Elementary Scho	19	760.00	3/14/2012
County Line School District	County Line Elementary Scho	19	760.00	3/14/2012
Fort Smith Public School Distr	Eugar Lane Elementary Scho	29	1,160.00	3/1/2012
Fort Smith Public School Distr	Elmer H. Cook Elementary Sc	29	1,160.00	2/22/2012
Fort Smith Public School Distr	Elmer H. Cook Elementary Sc	28	1,120.00	2/22/2012
Fort Smith Public School Distr	Elmer H. Cook Elementary Sc	27	1,080.00	2/22/2012

Table 3-14 Comparison of Student Energy Education Database to Protocol A

Recommended Data Fields	Review Results
<p>Participating Customer Information</p> <ul style="list-style-type: none"> • Unique customer identifier, such as account number • Customer contact information – name, mailing address, telephone number • Date/s of major customer milestone such as rebate application date, approval date, rebate processing date, etc. 	<p>Information provided</p> <p>Not for individual participants; teachers only</p> <p>Yes; date kits shipped</p>
<p>Measure Specific Information</p> <ul style="list-style-type: none"> • Measure Group (Equipment Type) • Equipment Fuel/Energy Source • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable • Equipment Useful Life • Measure Name - Text Description • Measure Code- Numerical Code • Serial Number (where applicable) • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	<p>Information provided</p> <p>n/a; all kits the same and info provided by implementer on spec sheets</p> <p> </p> <p> </p> <p> </p> <p>Yes</p> <p>Provided @ no cost to participants</p> <p>Yes</p> <p>n/a; all kits the same</p> <p>n/a; all kits the same</p> <p>n/a</p> <p>n/a</p> <p>Yes; participant surveys from implementer</p>
<p>Measure Codes: All data should be captured in numeric format to facilitate data tracking and analysis. Therefore, a data legend should be identified for each measure type and contractor type. This data legend should be clearly identified in the program database’s supporting materials.</p>	<p>Individual measures not identified; all kits provided to participants are supposed to be the same</p>
<p>Vendor Specific Information</p> <ul style="list-style-type: none"> • Name and Contact Information for Contractor • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	<p>Information provided</p> <p>n/a—measures self installed</p>
<p>Program Tracking Information</p> <ul style="list-style-type: none"> • Date of the initial program contact/rebate information • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status (i.e., number of applications approved, pending or denied) • Reason and Reason code for application denial 	<p>Information provided</p> <p>Yes</p> <p>n/a; provided @ no cost to participants</p> <p>n/a</p> <p>n/a</p> <p>n/a</p> <p>n/a</p>
<p>Marketing and Outreach Activities</p> <ul style="list-style-type: none"> • Advertising and marketing spending levels • Media schedules • Summary of number of community events/outreach activities • Other media activities - estimated impressions via mailings, television/radio, print ads 	<p>Information from interview.</p> <p>None identified</p> <p>n/a</p> <p>Outreach letters to teachers; number unknown</p>

Use of Technical Reference Manual (TRM) Values

The TRM 2.0 provides algorithms for the estimation of savings for all three of the claimed savings measures in the program. It also provides default values for all of the inputs in the algorithms. The IEM has advised the use of default values in cases where there is no or no reliable data from participant sites.

EnerNOC was able to replicate the example results in the TRM for the faucet aerator, low-flow showerhead, and CFL measures, ensuring that we could properly apply them. We then used the **algorithms to estimate the savings in OG&E’s Arkansas service territory**, using default input values for OG&E’s service territory in Arkansas and program-specific data from participants. The algorithms and resulting estimates in Table 3-15 represent savings per measure installed. That is, they do not adjust for the installation rate of each measure or the relative share of participants’ homes with electric versus natural gas water heating.

We show how the algorithms were applied in the results for each measure in the following subsection. Where possible, we used information from the 1,010 participant survey responses as inputs in the calculations. Notably, these PY 2012 participant responses include:

- Number of household members, showers per day, showerheads per home (showerhead)
- Pre-and post-installation measurement of showerhead flow rate in gallons per minute
- Wattage of the lamp replaced by the CFL in the kit
- Share of homes with air-conditioning (for CFL)

Table 3-15 TRM-Calculated Savings per Installed Measure

Measure	Annual kWh	kW	Annual Therms
Faucet Aerator	14.77	0.0019	0.68
Low-Flow Showerhead	404.05	0.0513	18.71
13-watt CFL	45.01	0.0047	--

To estimate the savings realized per participant, we also followed guidelines from the IEM regarding the use of as much reliable program-specific data as possible to inform the impact estimates. We used the following data from the participant surveys to estimate the per-participant and total program savings by measure reported below:

- Installation rate of the measure (for aerator, showerhead, and CFL)
- Share of electric versus natural gas water heating (for aerator and showerhead)

Program Year 2012 Results

Documentation for 2012 from OG&E shows that the implementer sent 1853 kits to serve 1,817 students in 18 Arkansas schools. Using data provided by OG&E and the implementer, the TRM-based per-unit measure energy savings estimates, and information from the participant surveys, we estimated total program savings for each of the measures in the PY 2012 program. These are summarized in Table 3-16.

While OG&E does not provide natural gas to customers in Arkansas and has no goals for natural gas savings, 43% of the participants said they have gas water heat and realized significant natural gas savings from installation of the aerator and showerhead measures. In Btu equivalents, the natural gas savings for those measures are as high as the electric savings. We include those savings here as well.

The measures vary considerably in their contribution to the total savings. Low-flow showerheads contribute the greatest savings by far and faucet aerators the least, despite their being installed by about the same percent of homes. This is because of the low per-unit installed savings of the aerators supplied in the kits. Combining the savings from all measures for all participants, the average savings per participant is 173.9 annual kWh, .02 kW, and 4.8 annual therms.

Table 3-16 SEE Realized Program Savings by Measure and Participant

	Annual kWh	kW	Annual Therms
Aerator	9,007	1	315
Showerhead	241,041	31	8,420
CFL	66,000	7	--
Total	316,048	39	8,735
Per Participant	173.9	0.02	4.8

Faucet Aerators

The per-unit installed savings for faucet aerators were calculated using the following TRM algorithm:

$$\text{Deemed kWh or Therm} = (\rho \times C(p) \times V \times (T_{\text{set}} - T_{\text{supp}}) \times 1/EF)/CF$$

where:

ρ = Water density, 8.33 lbs./gal. (TRM default)

$C(p)$ = Specific heat of water, 1 BTU/lb. °F (TRM default)

V = Gallons of hot water saved per year per faucet = $533 \times (2.2 - \text{gpm})$ where gpm is the flow rate of the new aerator (gpm from measure as labeled, other values TRM default)

T_{set} = Water heater set point (TRM default)

T_{supp} = Average supply water temperature (TRM Water Main Temperature for Ft. Smith)

EF = Energy factor of water heater, excluding standby losses (TRM default)

CF = 3,412 BTU/kWh for electric water heating or 100,000 BTU/Therm for gas water heating

Table 3-17 Faucet Aerator Realized Savings

Realized Gross Savings	Per Unit Installed	Per Participant	Participant Total
Annual kWh	14.77	4.96	9,007
kW	0.0019	0.0006	1.14
Annual Therms	0.68	0.17	315

The TRM technically does not cover the calculation of savings claims for aerators with flow rate higher than 1.5 gpm. However, OG&E purchased kits that were supposed to each contain an aerator rated at 1.5 gpm. As part of the program contract with RAP, the kits were shipped directly by the implementer to the classrooms, not by OG&E representatives. It was only during this evaluation that OG&E became aware that the aerators were not rated as expected but instead were rated at 2.0 gpm. We calculated the savings using the TRM algorithm with a 2.0 gpm efficiency level for the new aerator.

- Each kit contained one faucet aerator.
- The per-participant savings reflect adjustments to the per-unit installed savings we made based on program-specific information from the PY 2012 participants. These include:
 - Aerator installation or in-service rate (ISR) = 59%
 - Water heat fuel shares = 57% electric and 43% natural gas
- Savings are low because the net gain in efficiency from the aerators in the kits is 0.2 gpm.
 - The TRM allows for a baseline = 2.2 gpm, not 2.5 as OG&E originally expected.
 - The measure efficiency, verified through inspection of an actual aerator from a kit, is not 1.5 gpm claimed by RAP, but 2.0 gpm.
- RAP used a completely different set of assumptions, including efficiency = 1.5 gpm and inputs to calculate savings in its annual report. We ignored these and used the TRM algorithms instead.
- If the measure had had an efficiency level of 1.5 gpm, savings would be 3.5 times as much the Realized Gross Savings.

Low-Flow Showerheads

The per-unit installed savings for low-flow showerheads were calculated using the following TRM algorithm:

$$\text{Deemed kWh or Therm} = (\rho \times C(p) \times V \times (T_{\text{set}} - T_{\text{supp}}) \times 1/EF)/CF$$

where:

ρ = Water density, 8.33 lbs./gal. (TRM default)

$C(p)$ = Specific heat of water, 1 BTU/lb. °F (TRM default)

V = Gallons of hot water saved per year per faucet
 = (Gal(pre) – Gal(post)) x % shower water that is heated
 and

$$\text{Gal}(x) = (\text{gpm}(x) \times \text{minutes/shower}) \times (\text{shower/person-day} \times \text{persons/household}) / \text{showerheads in home} \times \text{days per year}$$

(gpm(pre) and gpm(post), household size, showerheads per home from surveys; other inputs TRM default)

T_{set} = Water heater set point (TRM default)

T_{supp} = Average supply water temperature (TRM Water Main Temperature for Ft. Smith)

EF = Energy factor of water heater, excluding standby losses (TRM default)

CF = 3,412 BTU/kWh for electric water heating or 100,000 BTU/Therm for gas water heating

Table 3-18 Low-Flow Showerhead Realized Savings

Realized Gross Savings	Per Unit Installed	Per Participant	Participant Total
Annual kWh	404.05	132.66	241,041
kW	0.0513	0.0168	30.61
Annual Therms	18.71	4.63	8,420

- Each kit provided one low-flow showerhead.
- The per-participant savings reflect adjustments to the per-unit installed savings we made based on program-specific information from the PY 2012 participants. These include:

- Low-flow showerhead installation or in-service rate (ISR) = 58%
- Water heat fuel shares = 57% electric and 43% natural gas
- The per-unit installed estimates make full use of pre- and post- measurements made by participants and reported in survey, as recommended in the TRM, since the program had high survey response rate (56%) and reasonable responses.
- Savings from the low-flow showerhead provide most of the program’s savings. It may be possible that even higher per-unit savings could be achieved by having a more efficient model included in the kit. While the retail cost of low-flow showerheads can vary quite a lot, gpm efficiency rating does not appear to be a factor in the price differential.⁶
- These results fully comply with TRM 2.0 algorithms and IEM guidelines.

Compact Fluorescent Lamps

The per-unit installed savings for CFLs were calculated using the following TRM algorithm:

Deemed kWh = (base Wattage - CFL Wattage)*Annual Operating Hours*IEF

Deemed kW = (base Wattage - CFL Wattage)*Coincidence Factor*IEF

where:

base Wattage = wattage of lamp replaced by the CFL from the kit (participant survey average)

CFL Wattage = 13 watts (verified by visual inspection of measures in the kit)

Annual Operating Hours = TRM value for indoor applications

Coincidence Factor = Peak demand coincidence factor (TRM default for indoor applications)

IEF = Interactive effects factor to account for the decrease in cooling load associated with the replacement of incandescent lamps in homes with air-conditioning (TRM default applied to % of homes with AC as reported in the participant survey)

Table 3-19 CFL Realized Savings

Realized Gross Savings	Per Unit Installed	Per Participant	Participant Total
Annual kWh	45.01	36.32	66,000
Peak kW	0.0047	0.0038	6.88

- Each kit provided one 13-watt CFL.
- The per-participant savings reflect adjustment to the per-unit installed savings we made based on the participant-reported CFL installation or in-service rate (ISR) = 81%
- Fully complies with TRM 2.0, including
 - Calculation of different impacts in homes with and without AC (weighted average is reported in table above; share of homes with AC reported by participants)
 - Assessment of baseline, based on survey info about lamp replaced and assumption that it was in an indoor fixture and working or would have been replaced with the same
 - TRM annual operating hours (AOH) = 803.6, rather than Frontier estimate = 1025 hours that RAP used in annual report

⁶ Based on internet research of retail showerhead prices, February 2013.

Net Savings

The program asks students and their families to install the measures in the kit. In assessing whether they would likely have purchased and installed the same measures in the absence of the program, we took three considerations into account: findings of net impacts in other evaluations of similar programs, net-to-gross (NTG) ratio guidelines provided by the Arkansas IEM based on APSC rulings, and practical likelihood of installing the measures independent of the program.

We conducted a review of other evaluations of the LivingWise program implemented in other jurisdictions. Not all of the evaluations estimated energy savings and even fewer addressed net savings. We did find two studies for programs operated in Texas, however, that did. One was for a program operated for Oncor⁷, the other for El Paso Electric⁸. In the El Paso program report, the evaluators made the argument that the measures in the LivingWise kits would not have been installed by the families if not for the program, applying a NTG of 1.0 to all measures.

Compact Fluorescents. CFLs are readily available in stores from groceries to do-it-yourself and hardware stores. And they are widely enough installed that the IEM advises use of the APSC-approved NTG factor of .63 for these CFLs, the same as CFLs installed in any other residential program and rather than the .80 used for nearly all other measures in programs across the state⁹. This is supported by the study of the 2011 Oncor program in which the evaluators used a previously estimated NTG ratio of .60.¹⁰ We agree that since CFLs are commonly known, readily available, and are as easy to install as any other lamp, it is most reasonable to abide the IEM guideline and apply the NTG ratio of .63.

Faucet Aerators and Low-Flow Showerheads. Unlike CFLs, these two measures require a certain amount of instruction and involve the use of special tools to install. They are not often put on end displays in stores and, therefore, may not be nearly as familiar to residents as CFLs. Both the Oncor and El Paso program evaluations used a NTG of 1.0 for these measures. Based our review of the very detailed instructions and tools provided in each kit, the arguments made in the other evaluations, and personal experience with these measures, we agree with the assessment that whatever kit aerators and showerheads were installed were due to the program. We apply a NTG ratio of 1.0.

Table 3-20 shows the effects of applying these NTG ratios to the Realized Gross Savings estimates for each measure. The overall program net-to-gross ratio is 0.92.

Table 3-20 Student Education Energy Net Program Savings by Measure

	NTG Ratio	Annual kWh	kW
Faucet Aerator	1.0	9,007	1.14
Low-Flow Showerhead	1.0	241,041	30.61
13-watt CFL	0.63	41,580	4.33
Total		291,628	36.09

While budget constraints did not allow us make field estimates of the NTG for this PY 2012 program in Arkansas, steps can be taken to provide the necessary data to do it in future. We suggest two possible ones:

⁷ "Oncor's LivingWise Program: Measurement & Verification Report," Frontier Associates and Resource Action Programs, February 2012.

⁸ "Residential Living Wise Program El Paso Electric Company Program Year 2009: Measurement & Verification Report," ADM Associates, June 2010.

⁹ Arkansas Public Service Commission Docket No. IO-100-R , Order No. 15, filed Mar 7, 2012, page 3.

¹⁰ Evaluation of 2008 Texas "Make Your Mark" Statewide CFL Program Report, Frontier Associates, June 2009.

- Less expensive—As part of the program activities, students already fill out a survey to gauge their understanding of energy before they are exposed to the program curriculum. If the survey were modified to ask about CFLs, low-flow showerheads, and aerators students already have at home, OG&E could estimate a net-to-gross rate based on participants in this program.
- More expensive—Working with the schools, an evaluator could conduct independent follow-up surveys with the participants. Teachers and students’ families could be offered incentives to take a phone or on-line survey later on in the school year. These would include questions about CFLs, low-flow showerheads, and aerators in the home prior to the program, as noted above. These surveys could also include questions designed to assess the persistence of savings from the measures that were installed from the kit.

The final estimated impacts from the PY 2012 Student Energy Education Program are shown in Table 3-21.

Table 3-21 PY 2012 Student Education Energy Program Goals and Savings

	Goal	Reported (Gross)	Realized (Gross)	Realization Rate	Net Savings
Participants	1840	1817	1817 1853 kits		
Annual kWh	152,120	306,559	316,048	1.03	291,628
kW	15	39	39	1.00	36

C&I PROGRAMS IMPACT EVALUATION

This section provides the findings from the impact evaluation of the C&I programs which are Commercial Lighting, Commercial Tune-Up and Standard Offer for both commercial and industrial customers.

4.1 Commercial Lighting

The PY 2012 Commercial Lighting Program provides financial incentives to improve the efficiency of lighting systems in new and existing C&I buildings. The program has five parts:

1. Customers that replace less efficient T12 fluorescent lamps with high-performance T5 or T8 lamps receive a rebate of \$4 per fixture for 1- and 2-lamp fixtures and \$8 per fixture for 3- and 4-lamp fixtures.
2. Customers replacing less efficient high intensity discharge (HID) lighting with high-performance T5 or T8 fluorescent lamps in high- or low-bay applications receive a rebate of \$52 per fixture when replacing 400W HID fixtures and \$102 per fixture when replacing 750W or larger HID fixtures.
3. Customer that replace incandescent lighting with hardwired CFLs receive \$8 per fixture for 26W or less CFLs and \$11 per fixture for CFLs greater than 26W.
4. Customers replacing incandescent exit lighting with LED exit signs receive a rebate of \$5 per fixture.
5. Customers that install lighting retrofits and controls other than those listed above will receive a rebate \$160 per kW of reduced peak demand.

The incentives are based on the kW and kWh savings calculated from a lighting survey that takes into account the type and quantity of lighting fixtures replaced, the new fixtures installed, the building type, and any control technologies in place.

Summary of Program Operations

This section includes a summary of program participation, demand and energy savings. Table 4-1 shows planned and reported participation and savings.

Table 4-1 Commercial Lighting Program: Participation and Claimed Savings

PY2012 Results	Planned	Reported
Participation (projects)	125	66
Demand savings (kW)	1,323	641
Annual Energy savings (kWh)	5,238,456	3,421,139

Verify Claimed Savings Supported by Program Tracking Data

OG&E provided a spreadsheet report summarizing all projects entered into the database for 2012, along with the Commercial Lighting Rebate Submission Forms submitted for individual projects and incentive documentation. The Commercial Lighting Rebate Submission Forms contain calculation worksheets for estimating demand and energy savings. EnerNOC received calculation worksheets for 39 of the 54 unique participants and 66 projects reported in the tracking spreadsheet. All of those calculation worksheets were checked with the reported values in the database tracking spreadsheet, and they closely matched each other. Only one project had a discrepancy between the values in the project calculation worksheet and the database.

Protocol A: Program Tracking and Database Development

EnerNOC compared the Commercial Lighting program database to recommended data fields in the protocol with results shown in Table 4-2 below

Table 4-2 Comparison of Commercial Lighting Program Database to Protocol A

Recommended Data Fields	Review Results
Participating Customer Information <ul style="list-style-type: none"> • Unique customer identifier • Customer contact information • Date/s of major customer milestone 	Information provided in database Yes No Some
Measure Specific Information <ul style="list-style-type: none"> • Measure Group (Equipment Type) • Equipment Fuel/Energy Source • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable • Equipment Useful Life • Measure Name - Text Description • Measure Code- Numerical Code • Serial Number (where applicable) • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	Information provided in database Yes N/A N/A Yes No Yes N/A No Yes N/A N/A N/A N/A
Vendor Specific Information <ul style="list-style-type: none"> • Name and Contact Information for Contractor • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	Information provided in database No N/A Unclear N/A N/A
Program Tracking Information <ul style="list-style-type: none"> • Date of the initial program contact/rebate information • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status • Reason and Reason code for application denial 	Information provided in database Yes Yes Yes No No N/A

Use of Technical Reference Manual (TRM) Values

OG&E used calculation worksheets based on Arkansas TRM 1.0 to develop savings for the Commercial Lighting program. The Arkansas TRM does not specify impacts for commercial lighting measures but provides calculations to determine the savings based on values in a standard wattage table in Appendix E of the manual. We reviewed calculation worksheets in all of the Commercial Lighting Rebate Submission Forms provided by OG&E for PY 2012. Based on our review, we concluded that calculations for lighting projects are reasonable. However, we did find some minor discrepancies between the lighting wattages input into the calculation worksheets and the wattages listed in Appendix E of TRM 1.0.

OG&E also provided EnerNOC with a draft of an updated worksheet that is TRM 2.0 compliant for our input and review. OG&E is writing new website software for online customer enrollment and calculation of kW, kWh, and Rebates based on TRM 2. The website will also allow for document uploads of invoices and pictures. The new website should be ready by end of March 2013.

2012 Results

Sixty-six projects were completed during 2012 for 54 unique customer accounts. Table 4-3 summarizes the impacts of the program, including net savings by adjusting for a free rider rate of 20%. The kW and kWh realization rates were calculated as the total verified value divided by the total reported value for the 39 customers for whom we received calculation spreadsheets. The realization rates were then applied to the population of participants.

Table 4-3 **2012 Results for Commercial Lighting Program**

Savings	Gross Impacts			Net Impact
	Reported	Evaluated	Realization Rate	
Demand Savings (kW)	641	640	99.8%	512
Annual Energy (kWh)	3,421,139	3,407,454	99.6%	2,725,963

Values have been rounded to 4 significant figures.

4.2 Standard Offer

The Commercial & Industrial Standard Offer Program (SOP) offers financial incentives of \$250/kW for the installation of a wide range of measures that reduce customer energy costs, reduce peak demand, and/or save energy in non-residential facilities such as public authority buildings, schools, hospitals, and other industrial customers. Large individual customers, energy service companies (ESCOs), and qualified contractors are all eligible to participate in the SOP. The SOP provides incentives for many energy efficiency measures that are not covered under other OG&E programs.

We reviewed the savings for 20 of the 22 projects implemented in PY 2012. These projects involved 14 unique customer accounts who participated in the SOP during PY 2012, installing a total of eight HVAC units and upgrading 29 motors.

Summary of Program Operations

Table 4-4 below shows the total participation and claimed demand and energy savings in the tracking database for PY 2012.

Table 4-4 PY 2012 Standard Offer Program: Participation and Claimed Savings

PY2012 Results	Planned	Reported
Participation	7	22
Demand savings (kW)	739	275
Annual Energy savings (kWh)	4,246,188	1,490,137

Verify Claimed Savings Supported by Program Tracking Data

OG&E provided a spreadsheet report summarizing all projects entered into the database for 2012, along with the Commercial-Industrial Standard Offer Rebate Submission Forms submitted for individual projects and incentive documentation. The Standard Offer Rebate Submission Forms contain calculation worksheets for estimating demand and energy savings for SOP projects.

EnerNOC reviewed the calculation worksheets and project documentation to check for consistency with the savings values reported in the tracking database. There were subtle differences in the savings values for four projects and some minor differences for several projects due to rounding. In addition, EnerNOC found three significant errors in reported values:

- The kW and kWh savings calculations approach OG&E uses to estimate savings for motors does not comply with TRM 1.0 or TRM 2.0. The calculations are missing a load factor.
- The kWh savings calculation approach OG&E uses for HVAC measures does not comply with TRM 1.0 or TRM 2.0. The calculation uses operating hours instead of equivalent full load hours. Equivalent full load hours are significantly fewer than operating hours for HVAC equipment.
- For two customers, the new HVAC units do not meet minimum efficiency requirements.

Protocol A: Program Tracking and Database Development

EnerNOC compared the SOP program database to recommended data fields in the protocol with results shown in Table 4-5.

Table 4-5 Comparison of SOP Database to Protocol A

Recommended Data Fields	Review Results
Participating Customer Information <ul style="list-style-type: none"> • Unique customer identifier • Customer contact information • Date/s of major customer milestone 	Information provided in database Yes No Yes
Measure Specific Information <ul style="list-style-type: none"> • Measure Group (Equipment Type) • Equipment Fuel/Energy Source • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable • Equipment Useful Life • Measure Name - Text Description <ul style="list-style-type: none"> • Measure Code- Numerical Code • Serial Number (where applicable) 	Information provided in database Yes N/A No No No Yes N/A No Yes (minimal) No No

<ul style="list-style-type: none"> • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	N/A N/A
Vendor Specific Information <ul style="list-style-type: none"> • Name and Contact Information for Contractor • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	Information provided in database No No No N/A No
Program Tracking Information <ul style="list-style-type: none"> • Date of the initial program contact/rebate information • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status • Reason and Reason code for application denial 	Information provided in database Yes Yes Yes No No N/A

Use of Technical Reference Manual (TRM) Values

There were two categories of equipment retrofits performed as part of the SOP: motors and HVAC units.

TRM 1.0 and 2.0 provide equations to be used for determining the kW and kWh savings from installing more efficient motors:

$$kW_{Savings} = Rated\ Horse\ Power \times Conversion\ Factor \times LF \times (1/\eta_{baseline} - 1/\eta_{post})$$

$$kWh_{Savings} = kW_{Savings} \times Hrs$$

Where:

Rated Horse Power = Nameplate horsepower data of the motor

Conversion Factor = 0.746 kW/hp

LF = Estimated load factor for the motor

$\eta_{baseline}$ = Efficiency of the baseline motor

η_{post} = Efficiency of the newly installed motor

Hrs = Estimated annual operational hours for the motor

For kW savings, **OG&E's** calculation worksheet does not follow the TRM formula, and the alternate calculation it does use is missing a load factor. For kWh savings, the OG&E worksheet calculates kWh savings as the product of the kW savings and the annual hours of motor use, as specified in the TRM; however, since the kW values are missing the load factor, the kWh values are also incorrect.

EnerNOC also reviewed OG&E's calculation worksheet for HVAC measures and found that kW savings estimates are consistent with TRM 1.0, but not with TRM 2.0. The difference between the two TRM methodologies is that savings approach in TRM 2.0 employs a coincidence factor (CF) for kW savings, while TRM 1.0 does not.

EnerNOC also found that the kWh savings approach for HVAC measures in the worksheets differs from the approaches in TRM 1.0 and 2.0. Specifically, in OG&E's calculation worksheets, the kWh savings for HVAC units are calculated by multiplying the kW savings by annual operating hours. In TRM 1.0 and 2.0, the kWh savings are determined by using effective full load hours for cooling (EFLH_c).

For example, the TRM 2.0 equations for estimating kW and kWh savings for unitary AC units are as follows:

$$kW_{Savings} = CAP \times (1kW/1000W) \times (1/\eta_{pre} - 1/\eta_{post}) \times CF$$

$$kWh_{Savings} = CAP \times (1kW/1000W) \times (1/\eta_{pre} - 1/\eta_{post}) \times EFLH_c$$

Where:

CAP = Rated equipment cooling capacity of the new unit, BTU/hr

η_{pre} = Energy efficiency rating (EER or SEER) of the existing cooling equipment, BTU/hr-W

η_{post} = Energy efficiency rating (EER or SEER) of the installed cooling equipment, BTU/hr-W

CF = Coincidence factor

EFLH_c = Equivalent full load hours for cooling

TRM 1.0 and 2.0 also provide minimum efficiency levels for new HVAC equipment. Two of **OG&E's HVAC projects did not meet the minimum requirements.**

2012 Results

Table 4-6 summarizes the impacts of the program for the 20 projects reviewed, including net savings by adjusting for a free rider rate of 20%. The low kW and kWh realization rates for motor measures are due primarily to our addition of a 75% load factor to the reported savings estimates per TRM 1.0 and 2.0. The low kW and kWh realization rates for HVAC units are due to two main reasons, which were noted previously:

- The efficiency of the new HVAC units for two of the projects did not meet the minimum efficiency requirements listed in TRM 1.0 or 2.0. As a result, we zeroed the kW and kWh savings for those two projects.
- The kWh savings for all of the HVAC projects were calculated with total operating hours for the systems instead of equivalent full load hours as required by the TRM. We adjusted the kWh savings in our evaluated values to comply with the TRM.

Table 4-6 2012 Results for Standard Offer Program

Measure	Savings	Gross Impacts (20 Projects)			Gross Impacts (All Projects)		Net Impact
		Reported	Evaluated	Realization Rate	Reported	Evaluated	
Motors	Demand (kW)	116.5	87.86	75%			
	Annual Energy (kWh)	923,400	649,800	70%			
HVAC Units	Demand (kW)	150.2	99.91	67%			
	Annual Energy (kWh)	516,000	102,300	20%			
Totals	Demand (kW)	266.7	187.8	70%	275	192	154
	Annual Energy (kWh)	1,439,000	752,100	52%	1,490,137	774,871	619,897

Values have been rounded to 4 significant figures.

4.3 Commercial Tune-Up Program

The Commercial Tune-Up Program offers financial incentives of \$250/kW for the implementation of improvements to commercial air conditioning, food service, refrigeration, and/or ventilation systems that result in efficiency improvements. The target markets are food sales (groceries, butcher shops), food service (restaurants), and industrial facilities where food is processed, packed, transshipped, etc.

The list of applicable measures for the Commercial Tune-Up Program consists of mostly individual pieces of equipment, such as evaporator fan ECM motors, floating head pressure controls, defrost controls, etc. For industrial facilities, there is a set of additional measures that include variable frequency drives, compressor plant upgrades, heat recovery and programmable logic controllers.

Summary of Program Operations

Table 4-7 below shows the total participation and claimed demand and energy savings in the tracking database for PY 2012.

Table 4-7 PY 2012 Commercial Tune-Up Program: Participation and Claimed Savings

PY2012 Results	Planned	Reported
Participation	10	11
Demand savings (kW)	112	83.93
Annual Energy savings (kWh)	759,969	256,823

Verify Claimed Savings Supported by Program Tracking Data

OG&E provided a spreadsheet report summarizing all projects entered into the database for 2012, along with the Rebate Submission Forms submitted for each individual project and additional project documentation such as invoices and equipment photographs for some of the projects. The Rebate Submission Forms used in the Commercial Tune-Up program contain calculation worksheets for estimating demand and energy savings that are identical to the forms used for the Standard Offer Program. All projects for the Commercial Tune-Up program appear to be new HVAC units.

EnerNOC reviewed the calculation worksheets and project documentation to check for consistency with the savings values reported in the tracking database. For the most part, we found that the information in the worksheets matched the tracking database for each project. However, we found three significant errors in the reported kWh values:

- The kWh savings calculation approach OG&E uses for HVAC measures does not comply with TRM 1.0 or TRM 2.0. The calculation uses operating hours instead of equivalent full load hours.
- For five of the customers, the new HVAC units do not meet minimum efficiency requirements.

Protocol A: Program Tracking and Database Development

EnerNOC compared the Commercial Tune-Up Program database to recommended data fields in the protocol with results shown in Table 4-8.

Table 4-8 Comparison of Commercial Tune-Up Program Database to Protocol A

Recommended Data Fields	Review Results
Participating Customer Information <ul style="list-style-type: none"> • Unique customer identifier • Customer contact information • Date/s of major customer milestone 	Information provided in database Yes No Yes
Measure Specific Information <ul style="list-style-type: none"> • Measure Group (Equipment Type) • Equipment Fuel/Energy Source • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable • Equipment Useful Life • Measure Name - Text Description • Measure Code- Numerical Code • Serial Number (where applicable) • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	Information provided in database Yes N/A No No No Yes N/A No No No N/A N/A
Vendor Specific Information <ul style="list-style-type: none"> • Name and Contact Information for Contractor • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	Information provided in database No No Unclear N/A No
Program Tracking Information <ul style="list-style-type: none"> • Date of the initial program contact/rebate information • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status • Reason and Reason code for application denial 	Information provided in database Unclear Yes Yes No No N/A

Use of Technical Reference Manual (TRM) Values

The projects for the PY2012 Commercial Tune-Up Program were all related to HVAC system upgrades. EnerNOC reviewed OG&E’s calculation worksheet for HVAC measures and found that kW savings estimates are consistent with TRM 1.0, but not with TRM 2.0. The difference between the two TRM methodologies is that savings approach in TRM 2.0 employs a coincidence factor (CF) for kW savings, while TRM 1.0 does not.

EnerNOC also found that the kWh savings approach for HVAC measures in the worksheets differs from the approaches in TRM 1.0 and 2.0. Specifically, in OG&E’s calculation worksheets, the kWh savings for HVAC units are calculated by multiplying the kW savings by annual operating hours. In TRM 1.0 and 2.0, the kWh savings are determined by using effective full load hours for cooling (EFLH_c).

For example, the TRM 2.0 equations for estimating kW and kWh savings for unitary AC units are as follows:

$$kW_{Savings} = CAP \times (1kW/1000W) \times (1/\eta_{pre} - 1/\eta_{post}) \times CF$$

$$kWh_{Savings} = CAP \times (1kW/1000W) \times (1/\eta_{pre} - 1/\eta_{post}) \times EFLH_c$$

Where:

CAP = Rated equipment cooling capacity of the new unit, BTU/hr

η_{pre} = Energy efficiency rating (EER or SEER) of the existing cooling equipment, BTU/hr-W

η_{post} = Energy efficiency rating (EER or SEER) of the installed cooling equipment, BTU/hr-W

CF = Coincidence factor

$EFLH_c$ = Equivalent full load hours for cooling

These are the same findings as described above for the Standard Offer Program.

2012 Results

Table 4-9 details the reported, evaluated, and net impacts, as well as the realization rates for the Commercial Tune-Up Program. The net impact is adjusted for a free rider rate of 20%.

Table 4-9 2012 Results for Commercial Tune-Up Program

Savings	Gross Impacts			Net Impact
	Reported	Evaluated	Realization Rate	
Demand Savings (kW)	83.93	27.19	32%	21.75
Annual Energy (kWh)	256,800	32,574	13%	26,059

Values have been rounded to 4 significant figures.

According to the database summary spreadsheet provided to us, 11 customers participated in the Commercial Tune-Up Program during PY 2012. Of these participants, 5 installed equipment that did not meet minimum efficiency requirements according to TRM 1.0 and 2.0. We excluded savings for those customers in our evaluated impacts. Our evaluated kWh savings reflect use of equivalent full load hours per TRM 1.0 and 2.0.

PROCESS EVALUATION

This section describes the findings from process evaluation activities, including interviews with program staff, surveys of participants and non-participants, and in-depth interviews with trade allies.

5.1 Staff Interviews

The program manager—for all programs evaluated except for Student Energy Education—says that the program is operated the same as it was last year, with one exception, he now has a full-time staff member to help implement the programs. The following bullets describe key findings from the PY 2011 report and the current program.

- *Program Operations.* The program manager uses a very hands-on, almost grass roots approach, spending most of his time with commercial customers. He has a lot of interaction with participants and contractors, emailing and phoning participants to sign up and hand delivering checks to contractors. OG&E uses iAvenue to track the data with the new staff now putting data from the program sheets and contractor rebate forms into the database. He believes they are capturing everything they were supposed to be capturing.
- *Quality Assurance and Quality Control.* OG&E is required to audit 10% of all work completed. The program manager is present at all these audits as an observer however no reports or results are provided.
- *Residential HVAC Contractors.* The program manager uses pre-approved contractors and the process is also very hands-on. He recruits contractors via email to industry contacts and fliers in HVAC supply warehouses. There are currently seven contractors participating in the program and the program manager meets with contractors on a weekly basis and has a group of 25 – 30 contractors that meet once a month. OG&E provided additional contractor training in spring 2012. **The contractors are selling customers a “box” and few understand efficiency. It’s a competitive business and they are just trying to be the low bid.** There is a huge need for **education about efficiency and it’s a slow process.** Another barrier to contractor participation is the need to complete required paperwork. According to the program manager for one contractor *“we had to go to his office and wait for him to fill it out.”* **Next year, OG&E plans to work with fewer contractors and have them do more.**
- *Marketing and Outreach.* The program manager has been able to continue the grass roots hands-on approach to marketing. He believes it is effective and sustainable now that he has the additional staff. OG&E has also done direct mail and bill inserts, sent targeted letters to customers who are likely to be interested, and the program manager gives civic presentations. The marketing dept has been involved as well; they are open to any new ideas he has and has been very supportive.
- *Customer Satisfaction.* According to the program manager residential customers love the **programs.** **He had one lady in tears because they literally couldn’t afford the residential tune up.** It was hot and they were suffering. They were so grateful for the program.
- *C&I Programs.* Commercial lighting has been a successful market. Lighting is the low hanging fruit with low cost and quick pay back. OG&E has educated mainly electrical contractors about the benefits of EE with a limited amount of marketing and one-on-one training with customers for the C&I programs. The program manager has mixed feelings

about SOP. *“It’s one of those where you plant lots of seeds and hope some of them germinate.”* A typical SOP project takes a long time to get started; it takes a long time to figure out the size of the rebate and since the overall cost of the job is typically high it takes a long time to get approval. The CTU program is not achieving savings goals as customers are not implementing equipment that meets the TRM efficiency standards. Customers try to do the least efficiency they can for the dollar.

- *Free Riders.* The program believes that the majority of people **he’s** dealing with now would not do implement measures without the program incentives. “Customers are always looking to repair rather than replace or hold off on spending the money. In this hurting economy, people will put stuff off as long as they have to.

5.2 Residential Programs Process Evaluation

5.2.1 Residential Participant Surveys

As shown in Table 5-1 the survey house completed 52 surveys of residential participants, all with tune-up participants. Results from the 52 participant surveys were analyzed to determine how customers became aware of the program, reasons for purchasing high efficiency, knowledge of energy efficiency, customer satisfaction and program effectiveness

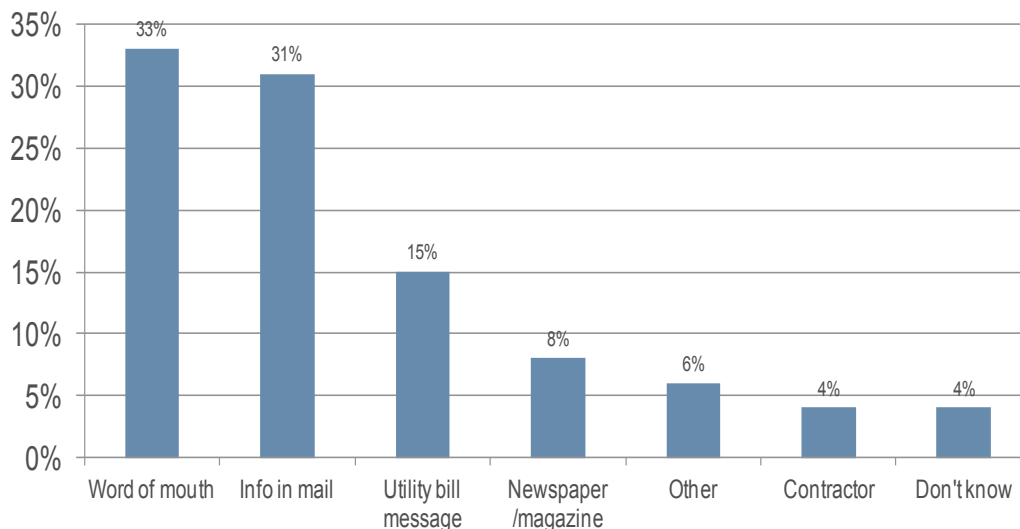
Table 5-1 # of Completed Surveys for Residential Participants

Program	Quota	Have
Windows	5	--
Tune-ups	47	52
TOTAL	52	52

Awareness

Word of mouth and direct mail are key to raising awareness about the HVAC tune up program. A third of participants found out about the program through word of mouth (Figure 5-1). An additional 31% of participants found out about the program from information received in the mail.

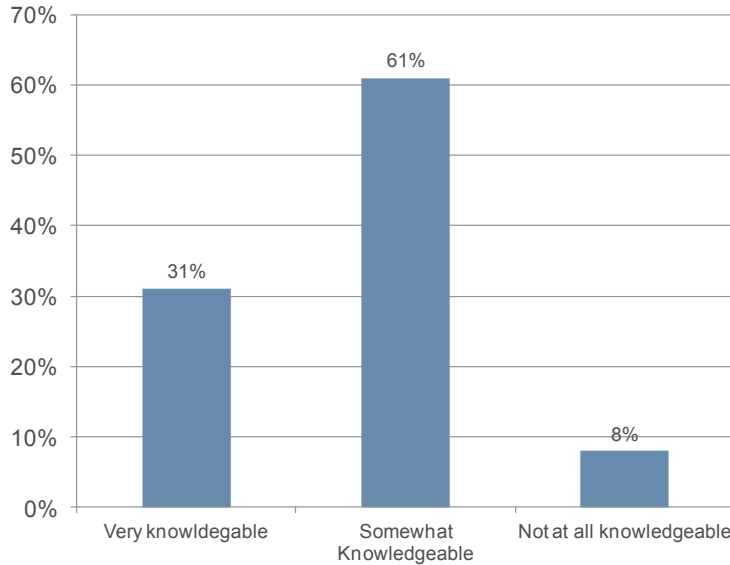
Figure 5-1 How Participants Heard about the HVAC Tune Up Program (n=52)



Knowledge of Energy Efficiency

Most HVAC tune up participants (62%) had installed energy efficient equipment prior to their participation in the program. Most say they are very or somewhat knowledgeable about the energy efficiency of available equipment (Figure 5-2).

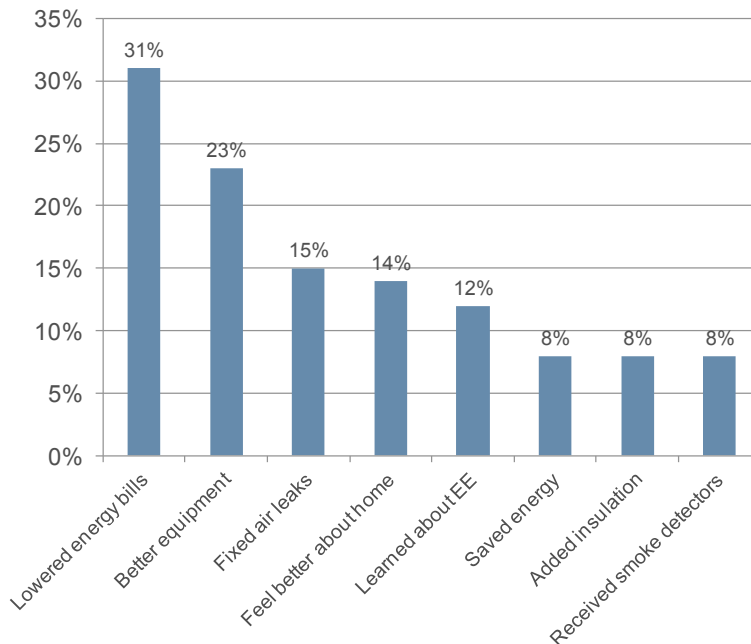
Figure 5-2 Knowledge of Energy Efficiency of Available Equipment (n=52)



Customer Satisfaction

Satisfaction with the HVAC tune up program is very high. Almost all participants say they are somewhat (12%) or very (85%) satisfied with the program. They also said it was somewhat or very easy to understand the program requirements. A little less than a third of participants said that the main benefit of the program was lowered energy bills (Figure 5-3).

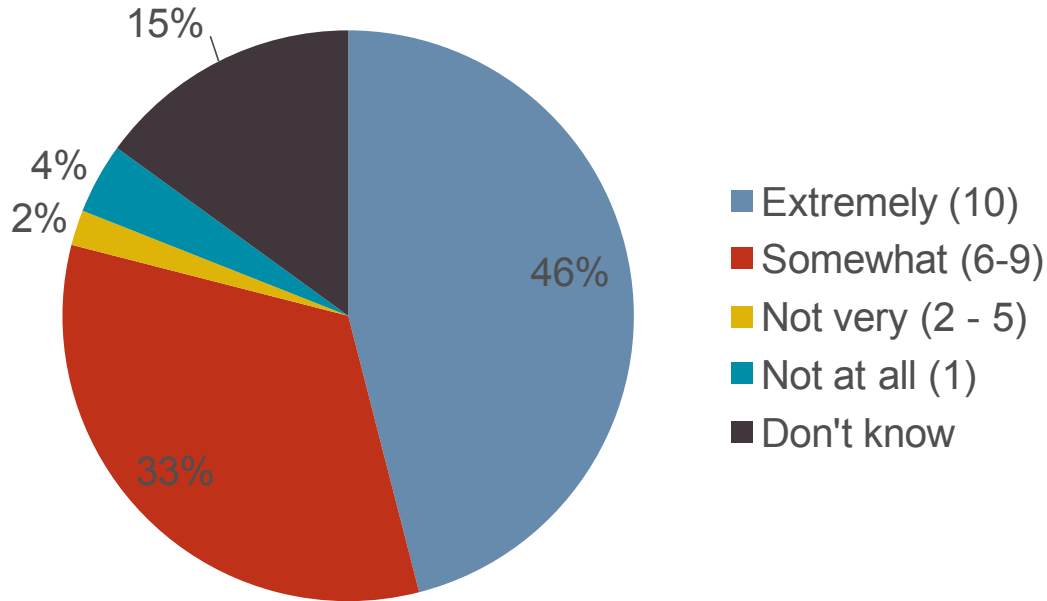
Figure 5-3 Program Benefits (n=52)



Program Effectiveness

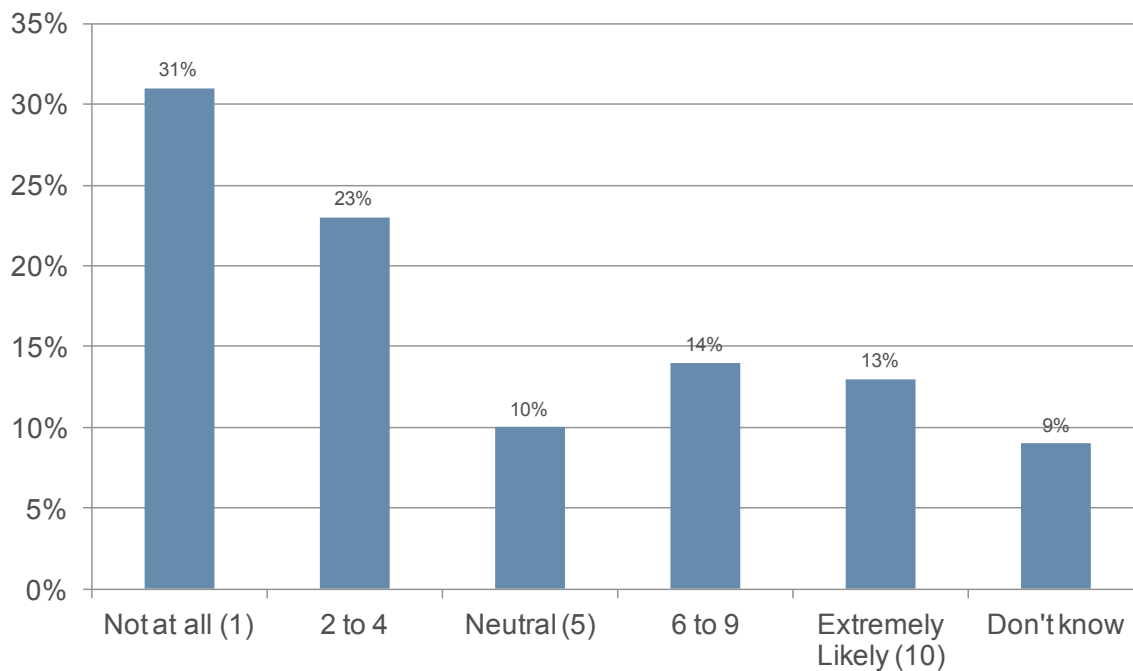
The rebate was influential in the participants' purchasing decision. Using a 10-point scale, 46% of participants gave the influence of the rebate a 10, 33% rated it a 6-9, 2% rated it a 2-5, and 4% gave the influence of the rebate a 1. (Figure 5-4).

Figure 5-4 Influence of Rebate on Decision to Purchase High Efficiency Lighting (n=18)



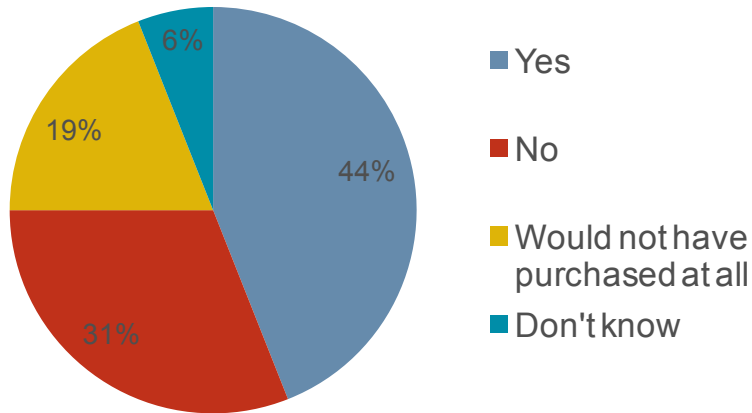
A quarter of participants said they probably would have had an HVAC tune up without the rebate (giving a rating of 6 or higher on a 10-point scale)

Figure 5-5 Likelihood of Purchase if Rebate Not Available (n=52)



The rebate did affect the timing of the purchase for many participants. Forty-four percent of participants said they would have delayed the tune up if the rebate was not available (Figure 5-6).

Figure 5-6 *Would have delayed tune up if rebate not available (n=52)*

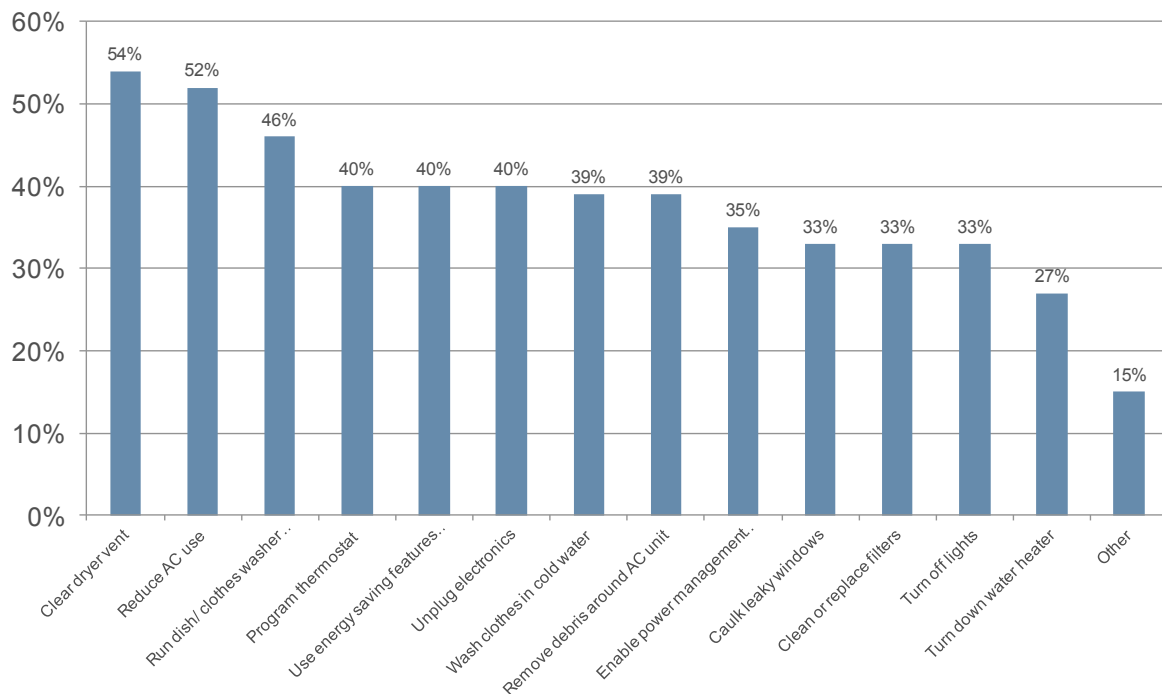


There is also evidence of some participant spillover. Eight percent said they purchased additional energy efficiency equipment outside of the program as a result of their participation. Sixty percent of participants said they plan to purchase energy efficient equipment in the future.

Program Influence on Energy Efficiency Behavior

One of the goals of the programs is to influence customers' energy efficiency behavior. When asked if they took specific actions as a result of their participation in the program, eighty-seven percent of participants reported that they took at least one action. The most popular actions taken by customers are cleaning dryer vent, reducing air conditioning use, and running the dishwasher and clothes washers only when full (Figure 5-7).

Figure 5-7 *Energy Efficiency Actions Taken as a Result of Program Participation (n=52)*



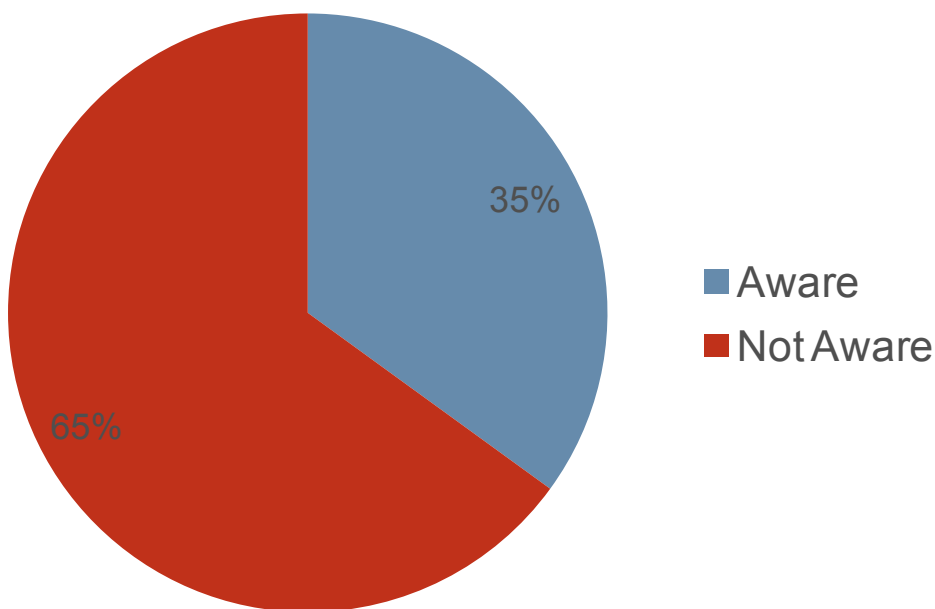
5.2.2 Residential Non-Participant Survey

Results from the 23 non-participant surveys were analyzed to determine program awareness, energy efficiency behavior and to gauge the potential for program participation.

Program Awareness

A little over a third of non-participants are aware that OG&E offers energy efficiency programs (Figure 5-8). Only one of the customers aware of the programs, however, could name a specific program. That customer was aware of the HVAC Tune-up program and had heard about the program from bill stuffers and the OG&E website. Two customers who said they were aware of programs mentioned "lights and gas" and "help with insulation" when asked to name the OG&E programs.

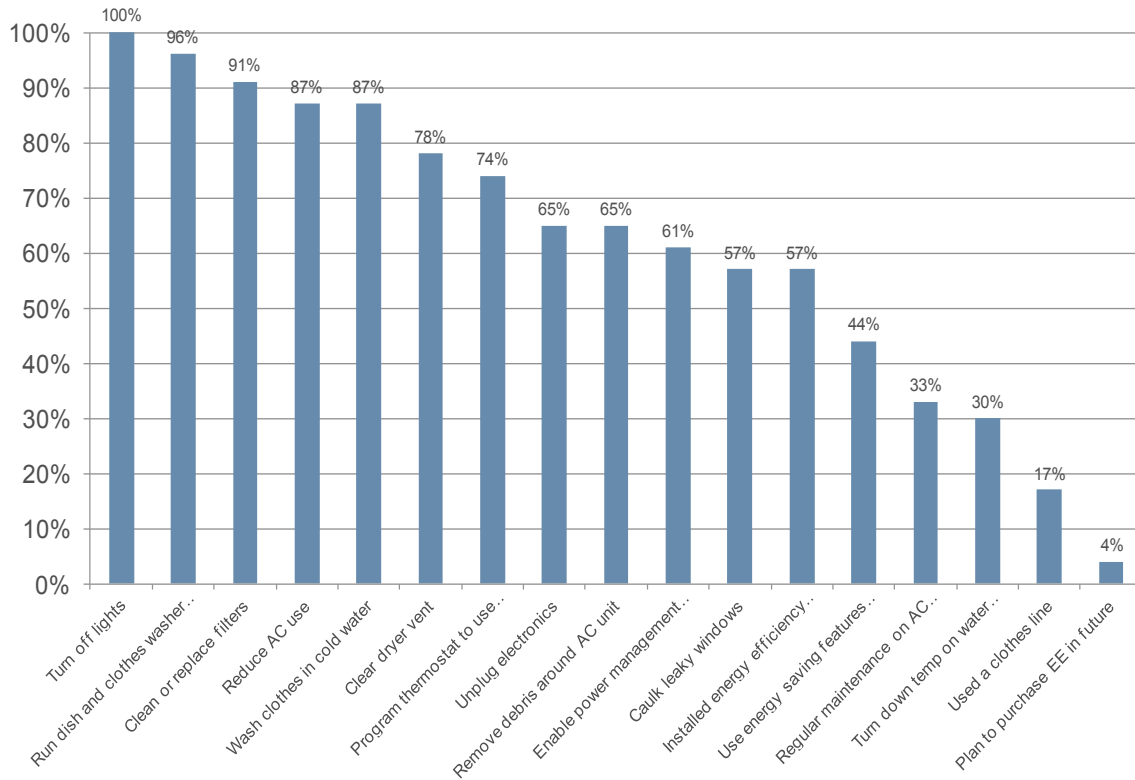
Figure 5-8 Awareness of OG&E Energy Efficiency Programs (n=23)



Energy Efficiency Behavior

Overall, non-participants report that they regularly take several energy efficiency actions (Figure 5-9).

Figure 5-9 Energy Efficiency Actions Taken (n=23)

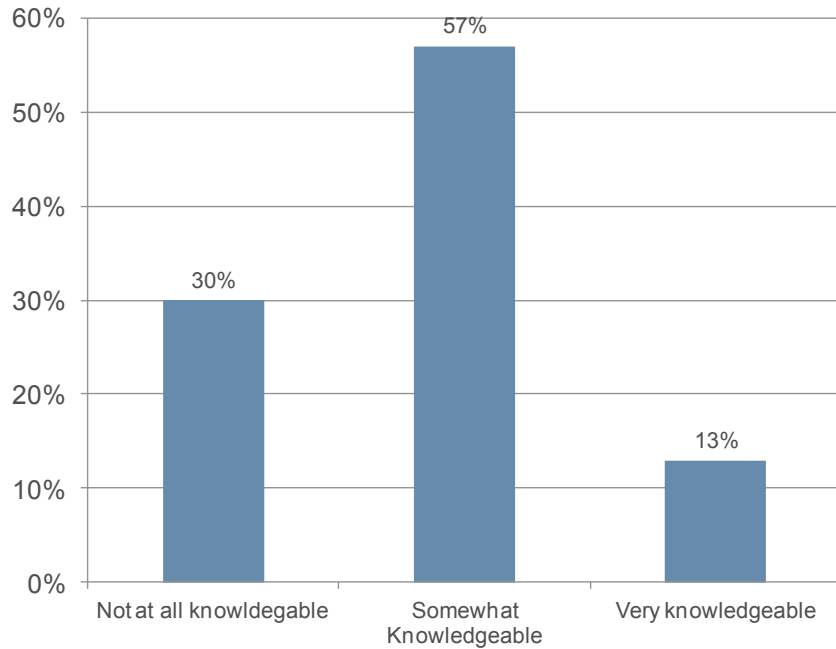


Turning off lights, running the dishwasher and clothes washer only when full, and cleaning or replacing AC filters are the most popular actions taken by almost all of the non-participants. Few non-participants use a clothes line instead of the dryer or plan to purchase energy efficient equipment in the future.

Potential for Program Participation

The results show a need for more education regarding energy efficiency options in the market place. The majority of non-participants are only somewhat knowledgeable about the energy efficiency of available equipment (Figure 5-10). Almost a third of customers say they are not at all knowledgeable and only 13% say they are very knowledgeable about the efficiency of available equipment.

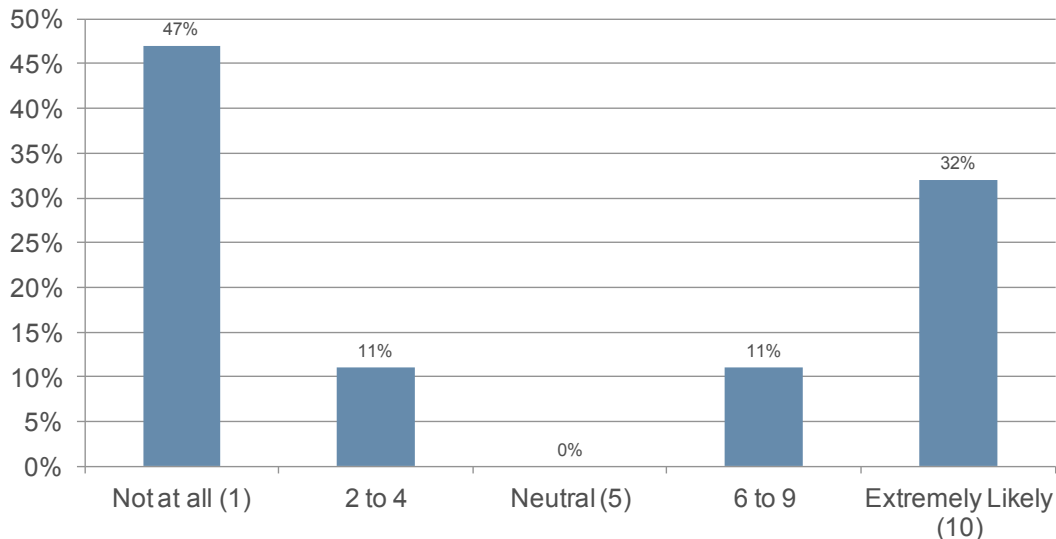
Figure 5-10 Knowledge of Energy Efficiency of Available Equipment (n=23)



The survey results show little potential for the Window AC program. Five non-participants (22%) say they currently have a window AC unit. All of these customers report that the window AC unit is Energy Star qualified. Only 1 non-participant (4%) is planning to purchase a window AC unit and that customer says he/she is likely to purchase an Energy Star model.

There is, however, an apparent need for the HVAC tune up program. Eighty-six percent of non-participants have central AC units and almost a third of these customers say they are extremely likely to participate in the HVAC tune-up program (Figure 5-11). Lack of awareness appears to be the **main reason these customers have not already participated. It's important to note that a sizeable group (47%) says they are not at all likely to participate.** Reasons for not participating include that the customers are renters, they already have maintenance of their HVAC unit taken care of, or they don't see the need for the tune-up.

Figure 5-11 Likelihood of Participating in the HVAC Tune-Up Program (n=19)



5.2.3 HVAC Contractor Interviews

In-depth interviews were conducted with two participating HVAC contractors. The topics discussed included communication and coordination with OG&E, quality assurance and quality control procedures, and program effectiveness.

Communication and Coordination with OG&E

Both contractors found out about the program from OG&E; one was contacted directly by the OG&E program manager, while the other attended an OG&E contractor meeting. Overall the contractors feel good about their relationship with OG&E and say that OG&E provides them with regular feedback. OG&E does all the marketing for the program, although both contractors do mention the program to their non-participating customers. There is some concern among the contractors about OG&E marketing the program too extensively and then having the program run out of money. It is difficult for contractors to have to turn down willing program participants.

"The problem was once OGE ran out of money, OGE kept sending out notices."

"OG&E ran out of the tune ups money quickly."

"Receiving residential calls about the programs and having to turn them down because money had already run out was terrible."

One contractor expressed an interest in getting hard copies of documents because emails can get lost. One contractor also felt that there should be consistency between the Arkansas and Oklahoma programs. It was difficult for him to have to turn down Oklahoma customers.

Quality Assurance and Quality Control

According to the contractors there are no formal QA/QC procedures for contractors in the program. OG&E does encourage them to take pre and post photos and inspects a sample of their projects. The contractors did not have any complaints or concerns about the forms they had to complete.

Program Effectiveness

One contractor was very satisfied with the program rating it a 4 on a 5 point satisfaction scale. The other contractor was less enthusiastic rating it a 3. The more satisfied contractor felt that the program introduced him to new customers. The other contractor said that the program gives them a little bit of publicity but is not a big money maker for them.

"A lot of maintenance contractors are a part of this program already, so I'm forced in that regard to participate because I don't want to lose customers to other contractors."

Both contractors said that the customers are very satisfied with the program. The only negative about the program for customers is the program running out of money.

"It's free and it saves them money."

"The customer s like how they are saving energy and it is not costing them anything."

One contractor feels that customers would do the tune ups without the program, although the **other contractor doesn't think as many customers would have tune ups.** Duct work would be less likely to get done in the absence of the program.

Duct working is a more difficult process to go through and contractors struggle more with the implementation of these projects. One contractor thinks OG&E should consider providing larger incentives for duct work. The other contractor feels that OG&E should do more to promote duct sealing in the Fall and Winter months, when her company tends to check for duct sealing measures. Contractors do make recommendations for measures outside of the program, and these recommendations are often implemented.

One contractor feels that OG&E does not reward companies who complete the work quickly, and this penalizes larger contractors.

"OG&E gave equal amount of projects to each contractor. However, the larger contractors completed projects more quickly. After my company used up our projects, the rest of my customers were upset because they could not participate with me. My only option was to pay for it myself or refer my customer to another contractor. All contractors should get cut off at the same time. This program penalizes larger contractors."

5.3 Commercial & Industrial Programs Process Evaluation

5.3.1 C&I Participant Survey

The survey house completed 18 surveys with C&I participants with distribution by program shown in Table 5-2 below. Results from the 18 participant surveys were analyzed to determine how customers became aware of the program, reasons for purchasing high efficiency, the role of the contractor, customer satisfaction and program effectiveness.

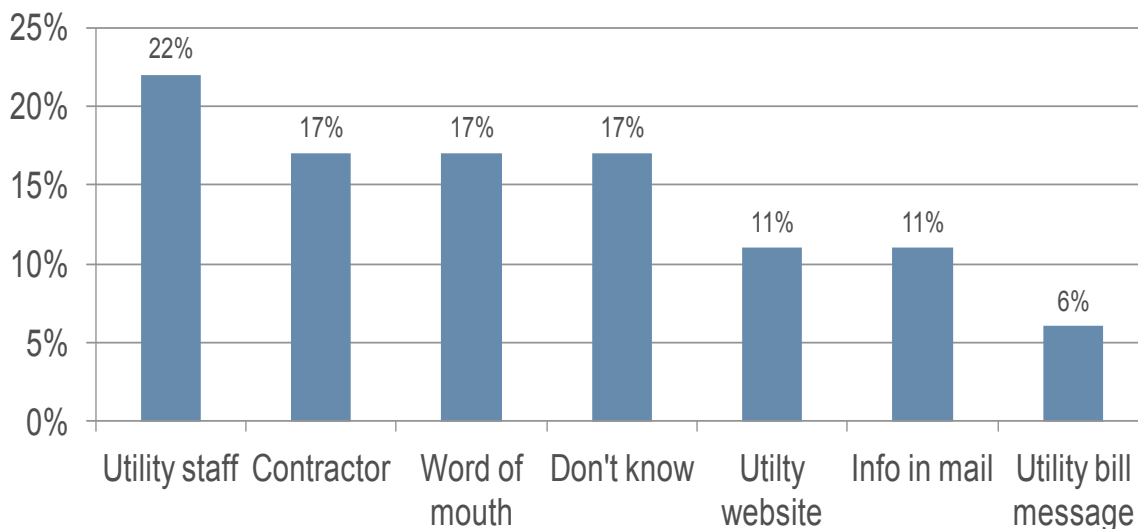
Table 5-2 Responses to C&I Participant Surveys by Program

Program	Quota	# Completes
Lighting	10	14
Tune-up	3	3
Standard Offer	5	1
TOTAL	18	18

Awareness

OG&E is key to raising awareness about the commercial programs. Thirty-nine percent of participants found out about the program through utility staff, the utility website or utility bill inserts (Figure 5-12). Contractors and word of mouth are also ways that customers found out about the program.

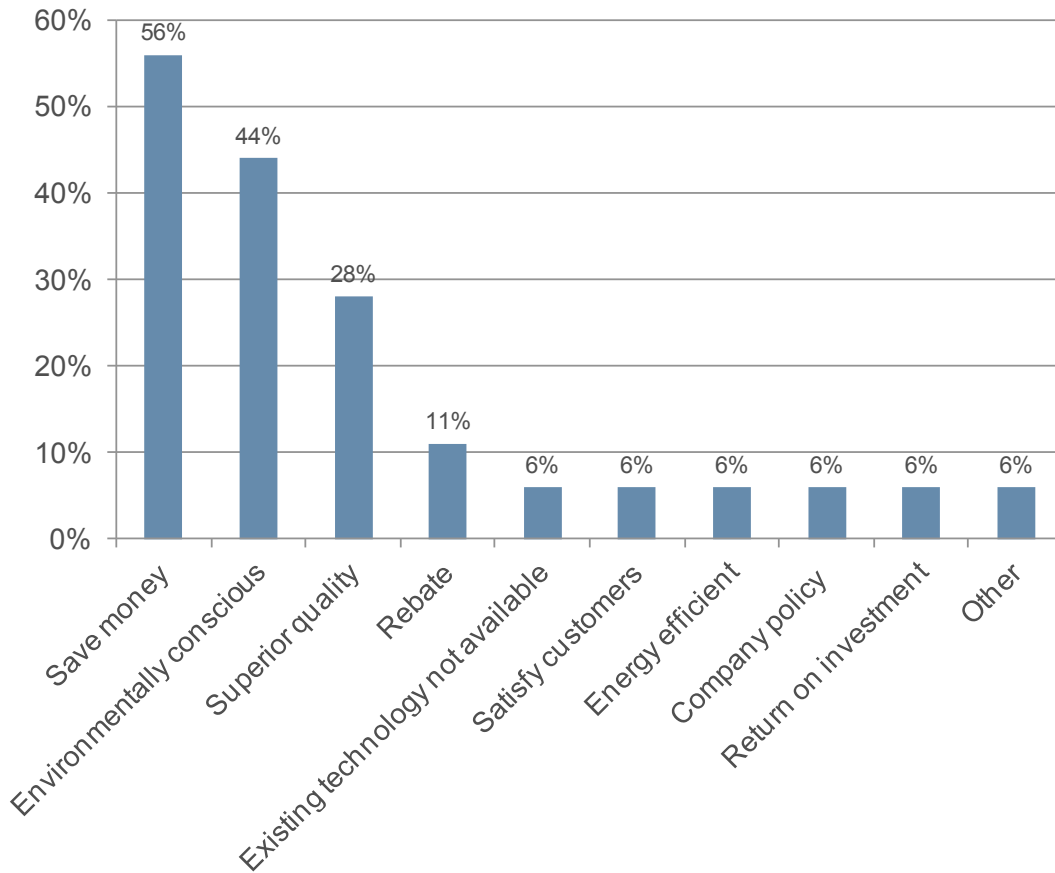
Figure 5-12 How Participants Heard about the Commercial Programs (n=18)



Decision Making

Most commercial participants are new to high efficiency equipment and are motivated by lowering their bills. Before participating in the program, only a third of participants had installed high efficiency equipment. Fifty-six percent said they purchased high efficiency in order to save money, and 44% said they were concerned about the environment (Figure 5-13).

Figure 5-13 Reasons for Purchasing High Efficiency (n=18)

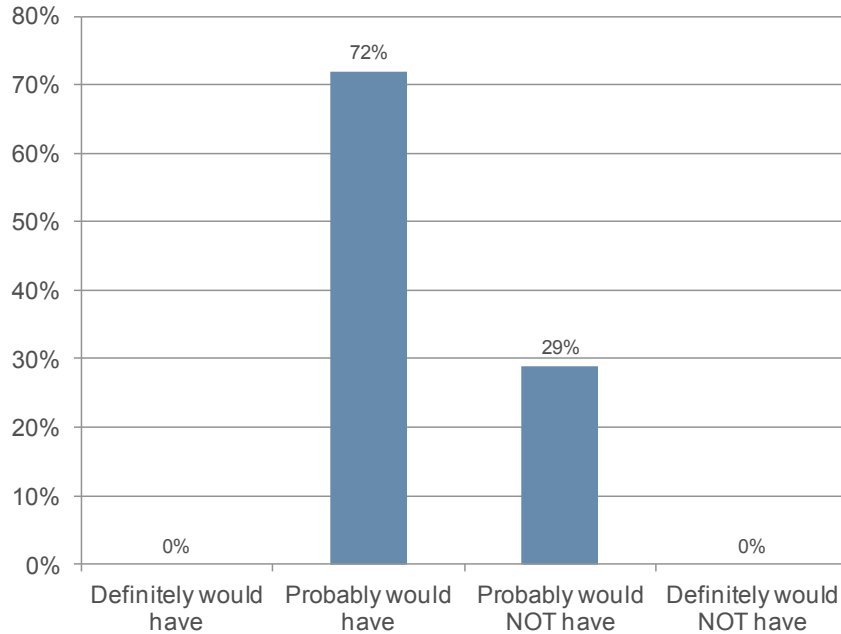


*Respondents could select more than one response.

Role of the Contractor

Less than half of participants (44%) had contractors assist them with their projects, but in all of those projects the contractors selected or recommended the specific equipment. For 72% of the assisted projects, the participants probably would have purchased the same equipment without the contractor recommendation (Figure 5-14).

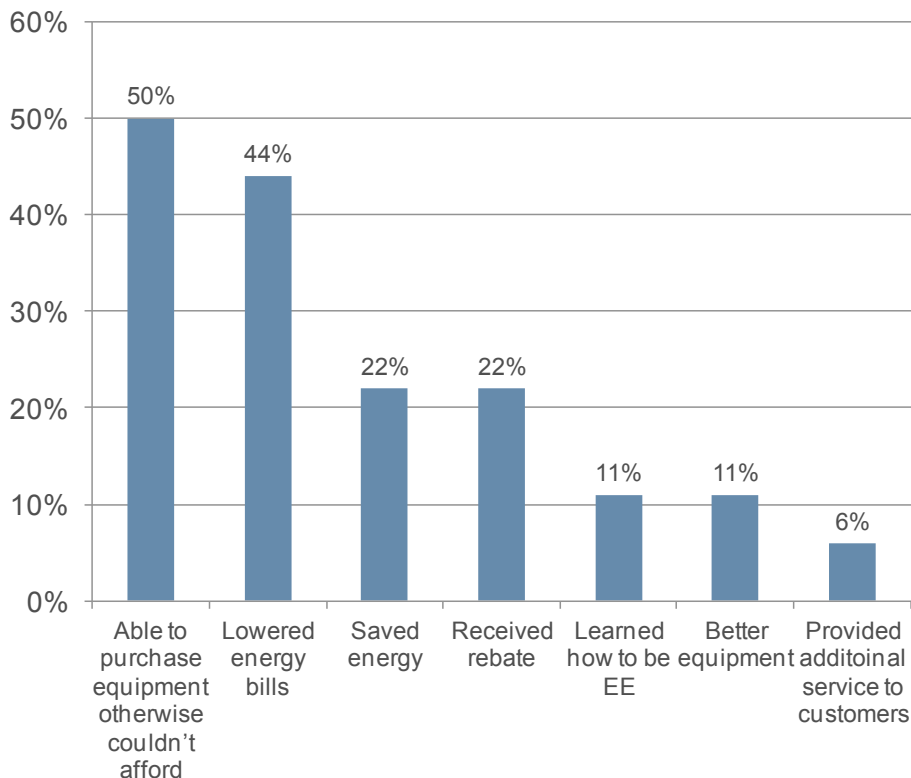
Figure 5-14 Would Have Installed Same Equipment without Contractor (n=8)



Customer Satisfaction

Satisfaction with the commercial programs is very high. All participants say they are very satisfied with the program. They also said it was somewhat or very easy to understand the program requirements. Half of the participants said that because of the program they were able to purchase equipment they otherwise could not have afforded (Figure 5-15).

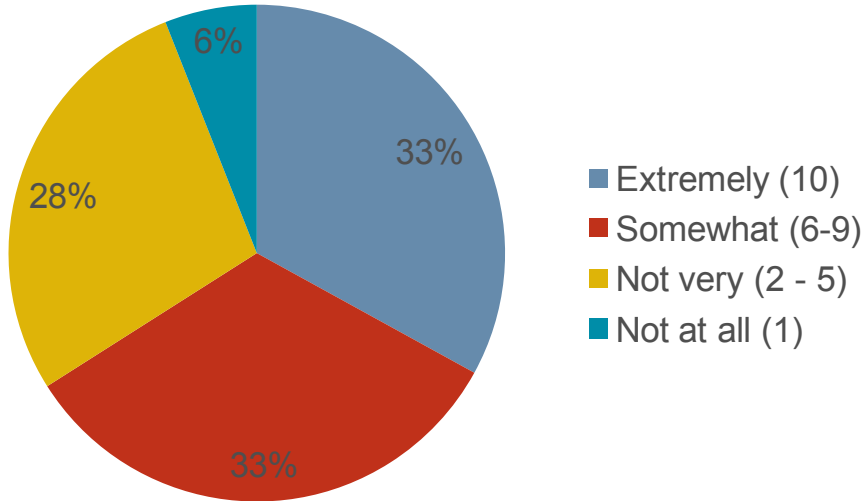
Figure 5-15 Program Benefits (n=18)



Program Effectiveness

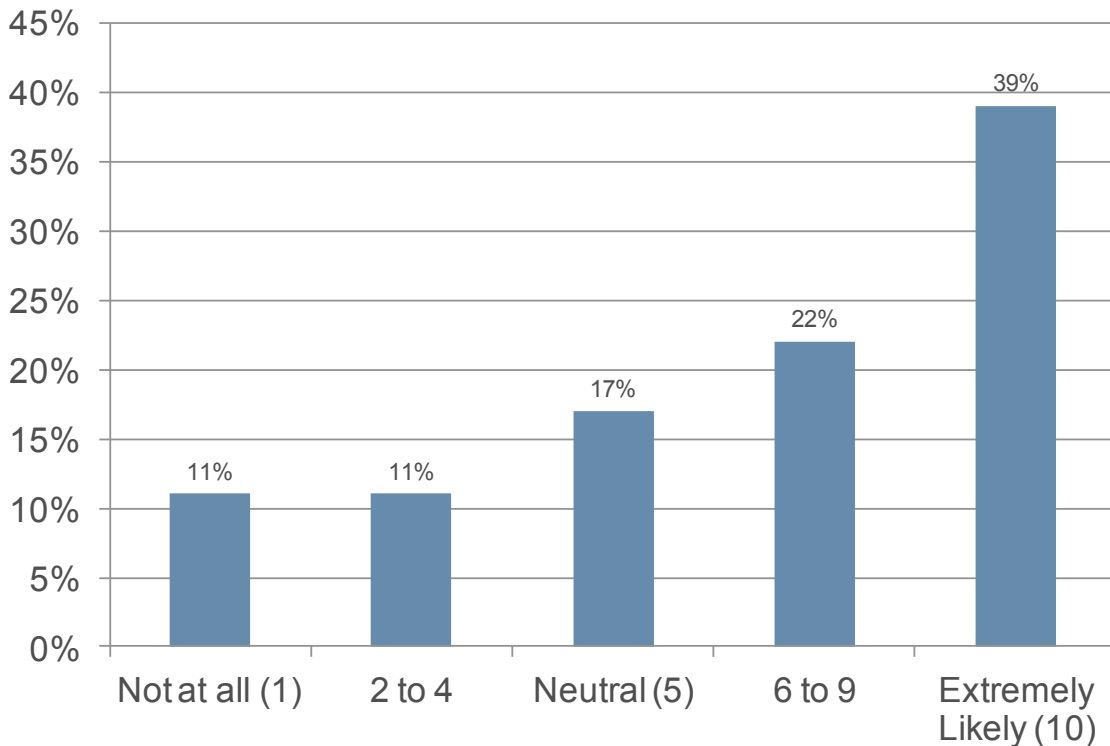
The rebate was influential in the participants’ purchasing decision. Using a 10-point scale, 33% of participants gave the influence of the rebate a 10, 33% rated it a 6-9, 28% rated it a 2-5 and 6% gave the influence of the rebate a 1. (Figure 5-16).

Figure 5-16 Influence of Rebate on Decision to Purchase High Efficiency Lighting (n=18)



More than half of participants said they probably would have purchased the same equipment without the rebate (giving a rating of 6 or higher on a 10-point scale); more than third said they were extremely likely to make the same purchase without the rebate. (Figure 5-17).

Figure 5-17 Likelihood of Purchase if Rebate Not Available (n=18)



The rebate did affect the timing of the purchase. Half of participants said they would have delayed the project if the rebate was not available.

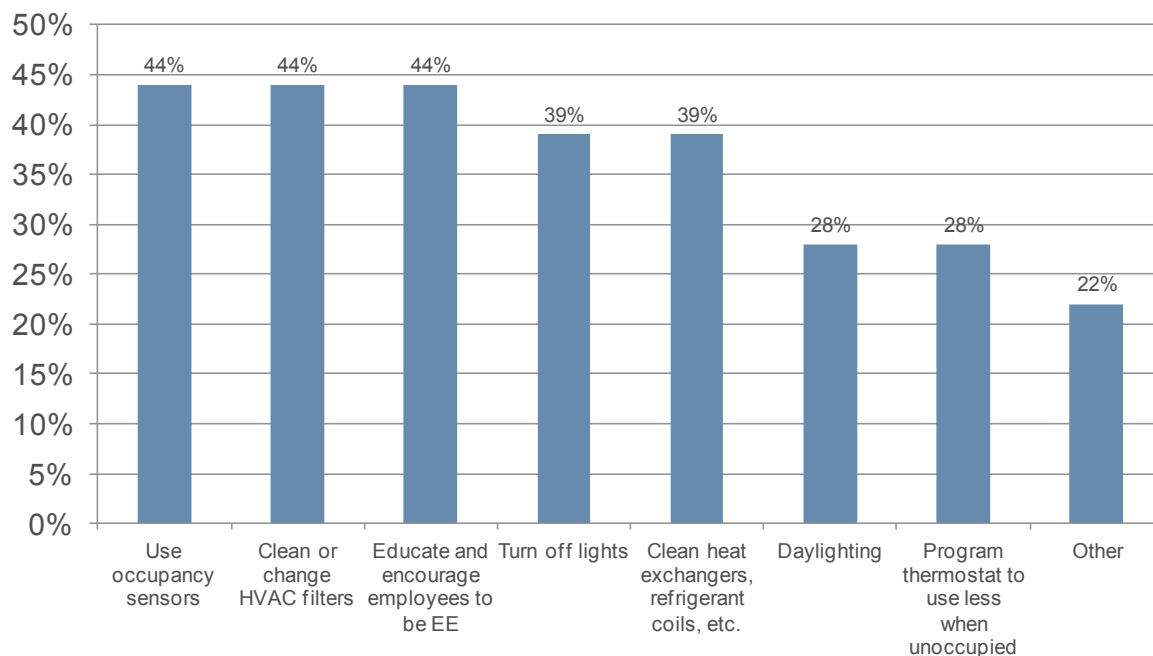
There is also evidence of participant spillover. A third of participants said they increased the quantity of equipment installed for the project because the program was available, and eleven percent said they purchased additional energy efficiency equipment outside of the program as a result of their participation.

Program Influence on Energy Efficiency Behavior

One of the goals of the programs is to increase customers' knowledge of energy efficiency and influence their behavior. Almost all participants report that they are somewhat (66%) or very (33%) knowledgeable about the energy efficiency of available equipment. Eighty-three percent of participants say they plan to purchase energy efficiency equipment in the future.

The program is influencing energy efficiency behavior, when asked if they took specific actions as a result of their participation in the program, eighty-three percent of participants reported that they took at least one action. The most popular actions taken by customers are using occupancy sensors, regularly cleaning or changing HVAC filters, and educating and encouraging employees to be more energy efficient (Figure 5-18).

Figure 5-18 Energy Efficiency Actions Taken as a Result of Program Participation (n=18)



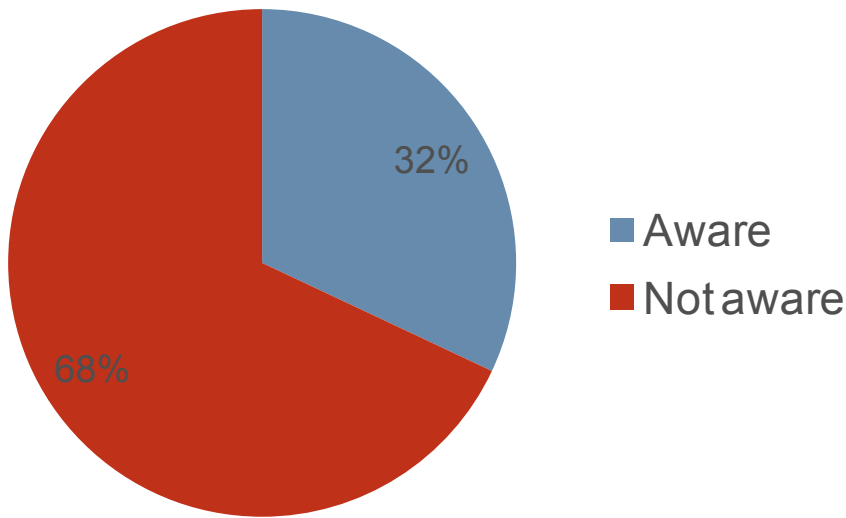
5.3.2 C&I Non-Participant Surveys

Results from the 22 non-participant surveys were analyzed to determine program awareness, energy efficiency behavior and to gauge the potential for program participation.

Program Awareness

About a third of non-participants are aware that OG&E offers energy efficiency programs for commercial customers (Figure 5-19). Only one of these customers was able to name a specific program – the Standard Offer program. One other customer said that OG&E offered rebates for electric hot water heaters.

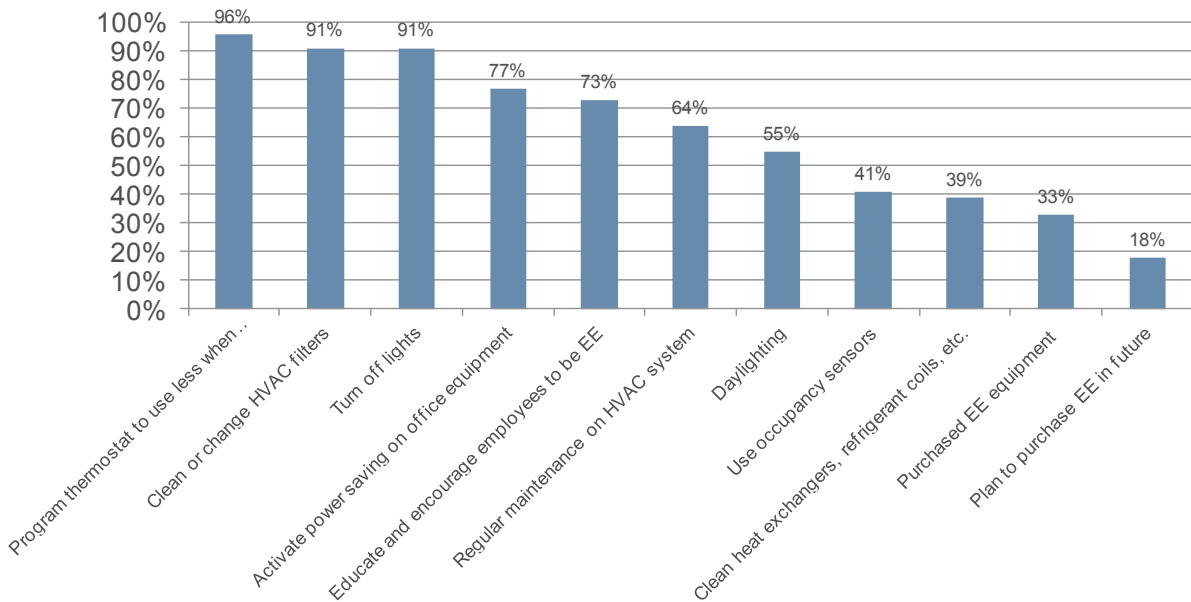
Figure 5-19 Awareness of OG&E Programs (n=22)



Energy Efficiency Behavior

Non-participants say they take a variety of actions to reduce their energy use (Figure 5-20). Programming their thermostat, cleaning or changing HVAC filters and turning off lights are the most popular actions taken by almost all of the non-participants.

Figure 5-20 Energy Efficiency Actions Taken (n=22)



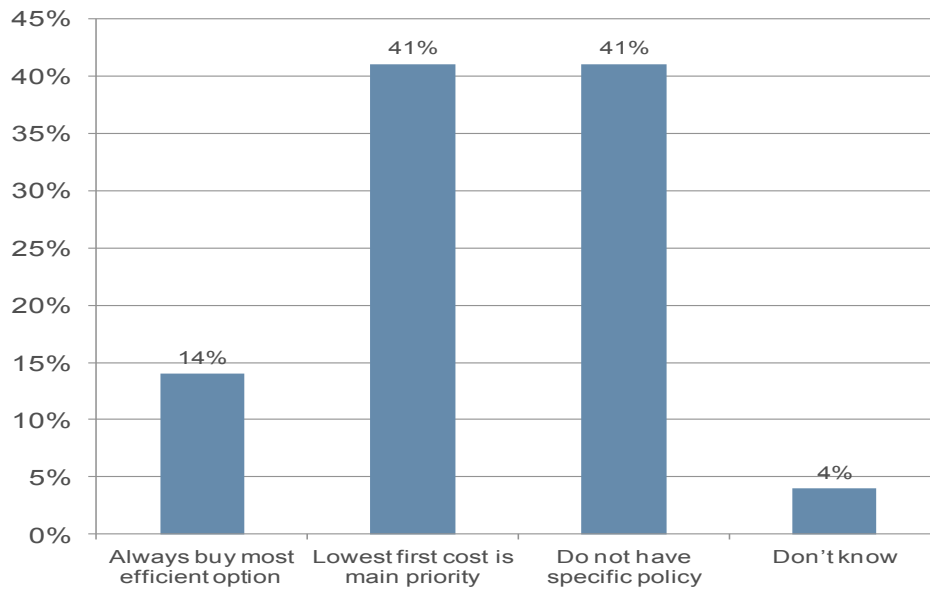
Only 18% percent of non-participants plan to purchase energy efficiency equipment in the future.

Potential for Program Participation

Controlling energy costs is important to non-participating customers when compared to controlling other overhead expenses. Sixty-four percent say that controlling energy costs is very important, 32% say it is somewhat important, and only 4% say controlling energy costs is not at all important.

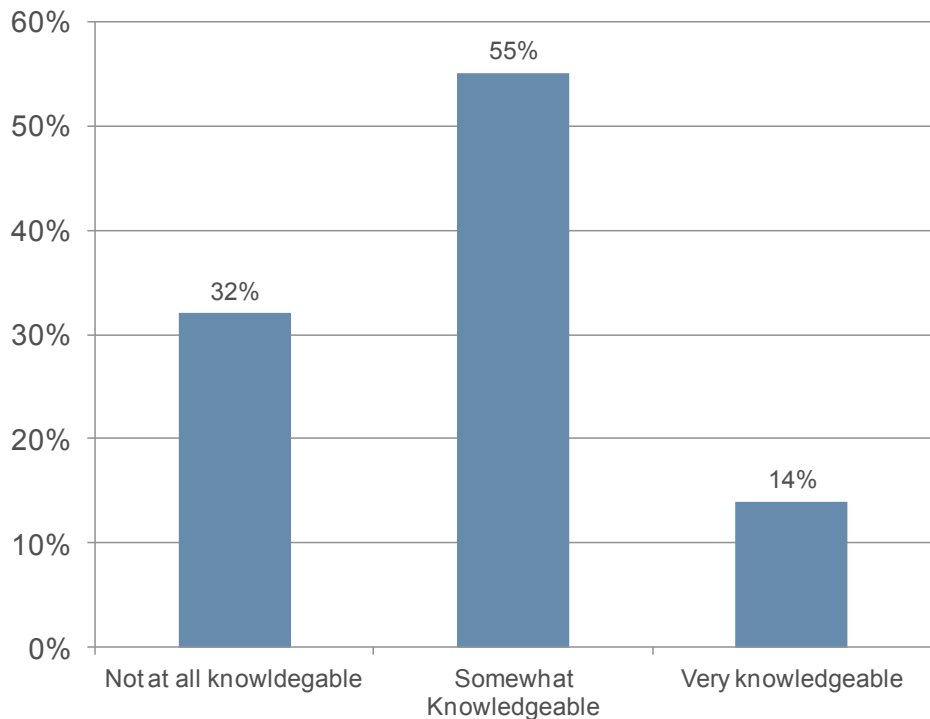
Lowest first cost is a main priority for a large group of non-participants (40%), while only 14% say it is their company’s policy to always buy the most efficient option (Figure 5-21).

Figure 5-21 Company policy for purchasing new equipment (n=22)



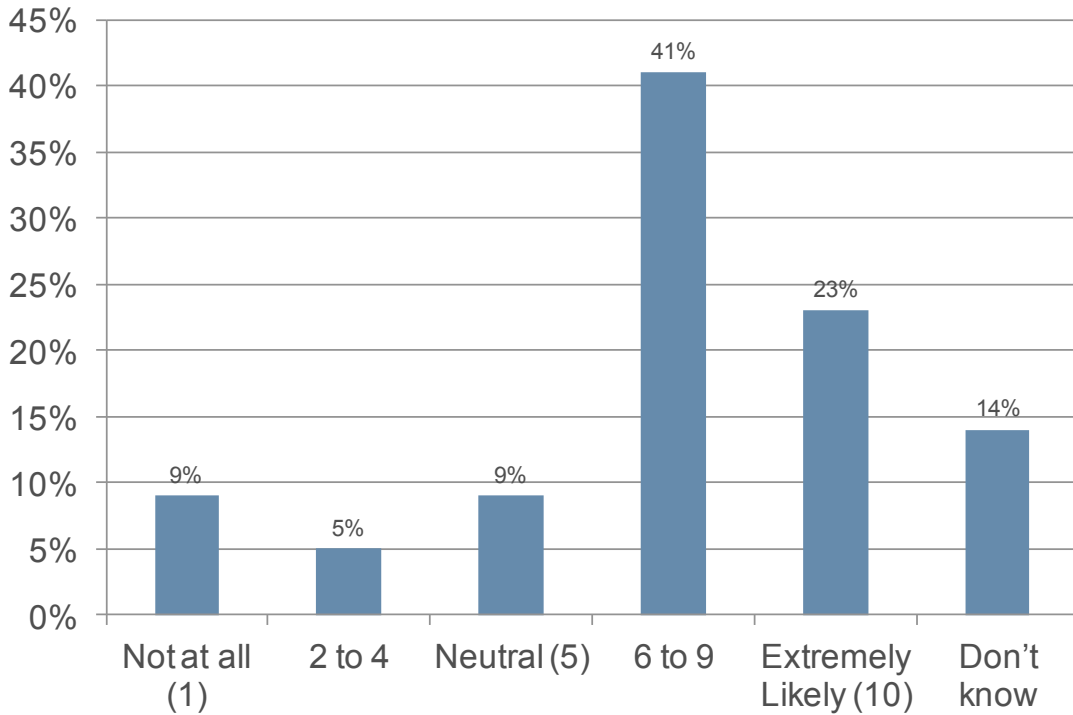
The results show a need for more education regarding energy efficiency options in the market place. The majority of non-participants are only somewhat knowledgeable about the energy efficiency of available equipment (Figure 5-22). Almost a third of these customers say they are not at all knowledgeable and only 14% say they are very knowledgeable about the efficiency of available equipment.

Figure 5-22 Knowledge of Energy Efficiency of Available Equipment (n=22)



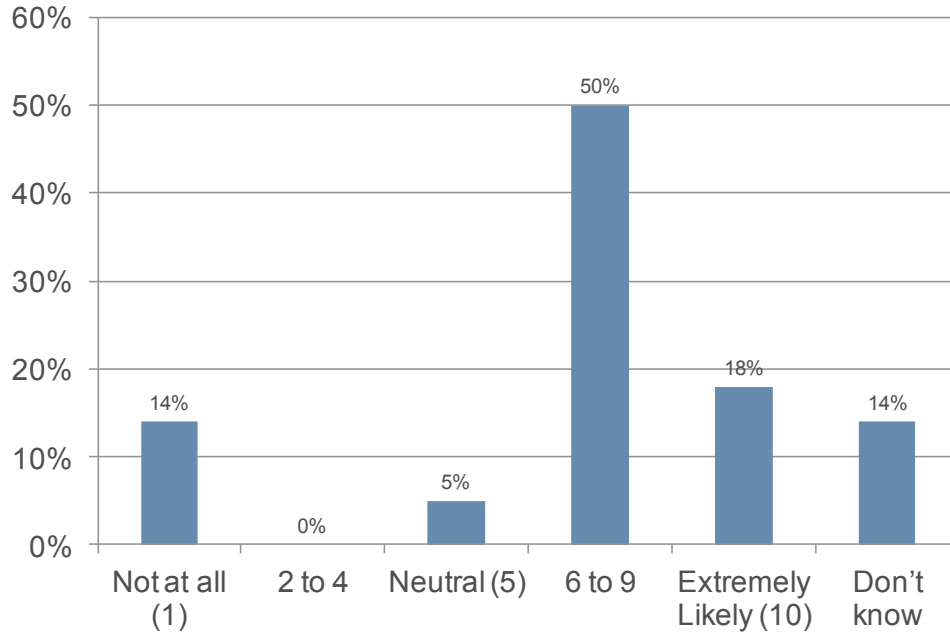
The survey results indicate that there is interest in the Commercial Lighting program, although more marketing and education is probably necessary to influence customers to participate. Twenty-three percent say they are extremely likely to participate in the Commercial Lighting program while only 9% say they are not all likely. A sizeable group (14%) do not know their likelihood of participating (Figure 5-23).

Figure 5-23 Likelihood of Participating in Commercial Lighting Program (n=22)



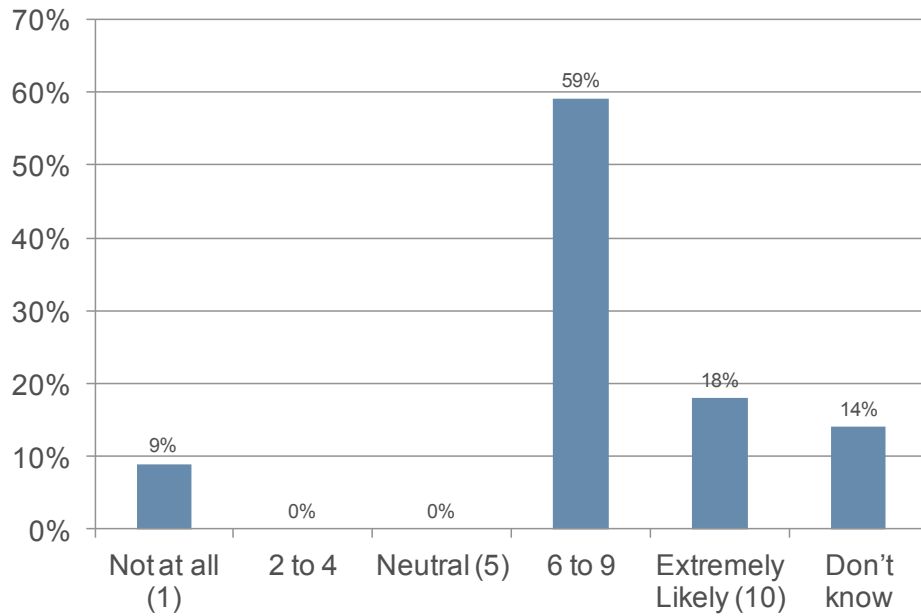
There is slightly less interest in participating in the Standard Offer program (Figure 5-24). But once again several customers were unable to answer the question, and a sizeable group rated their likelihood of participation as somewhat likely (giving a rating of 6 – 9 on a 10-point scale). This indicates that more marketing and education is needed for the program to reach its full potential.

Figure 5-24 Likelihood of Participating in the Standard Offer Program (n=22)



There is a similar level of interest in the HVAC Tune-Up program (Figure 5-25).

Figure 5-25 Likelihood of Participating in the HVAC Tune Up Program (n=22)



FINDINGS AND RECOMMENDATIONS

6.1 PY 2012 Program Impacts

This section presents the program impacts for each program for PY 2012. As shown in Table 6-1 OG&E reported 1,161 kW of demand reduced and 5,738 MWh in annual energy savings from the six programs evaluated. Overall, the EnerNOC-adjusted savings were 88% for demand and 84% for energy. Net savings were calculated by using the default of 20% free riders for all programs but Student Energy Education. OG&E achieved 822 kW of net savings for demand and 3,880 MWh of annual energy savings.

Table 6-1 PY 2012 Results by Program (Reported, Adjusted, Net Savings)

Program	Demand (kW)			Annual Energy (kWh)		
	OG&E Reported	EnerNOC-adjusted	Net Savings	OG&E Reported	EnerNOC-adjusted	Net Savings
Student Energy Education	39	39	36	306,559	316,048	291,628
AC Tune-Up/Duct Repair	119	121	97	260,500	268,300	214,632
Window Unit A/C	3	2	2	2,904	2,701	2,161
Commercial Lighting	641	640	512	3,421,139	3,407,454	2,725,963
C&I Standard Offer	275	192	154	1,490,137	774,871	619,897
Commercial Tune-Up	84	27	22	256,823	32,574	26,059
Totals	1,161	1,021	822	5,738,062	4,801,918	3,880,340

Costs

Table 6-2 shows the budgeted compared to actual costs by program. Administration costs include Marketing and EM&V costs. Overall costs were only 68% of budget primarily because of lower than expected spending on the C&I programs.

Table 6-2 Budgeted and Actual Costs by Program for PY2011

Program	Budget ¹¹	Admin Costs ¹²	Incentives	Total Costs
HVAC Tune Up & Duct Repair	\$131,495	\$84,568	\$62,703	\$147,271
Window Unit A/C	\$11,416	\$3,040	\$1,200	\$4,240
Student Energy Education	\$82,800	\$8,394	\$73,879	\$82,273
Commercial Lighting	\$332,430	\$111,120	\$135,704	\$246,824
Commercial Tune-Up	\$133,815	\$35,448	\$22,392	\$57,840
C/I Standard Offer	\$343,030	\$90,069	\$71,076	\$161,145
Totals	\$1,034,986	\$332,639	\$366,954	\$699,593

¹¹ Source: Exhibit GJM-8 (Revised 12-15-11)

¹² Includes Marketing and EM&V Costs.

6.2 Key Findings

Residential Programs

- The Residential HVAC Tune-Up and Window AC programs achieved their goals and generally correctly applied the TRM to calculate savings
- The Student Energy Education program achieved double its savings goals, despite much lower savings from the installation of less efficient faucet aerators. The implementer easily meets its participation quota each year with participation limited only by program funding.
- Word of mouth and direct mail are the most effective methods for marketing the programs.
- Participants are very satisfied with the program.
- There are indications of low free riders and evidence of program spillover—most (87%) of participants who responded to the survey said they took at least one energy efficient action *as a result of their participation*.
- Lack of awareness is a barrier to program participation. The program, however, does not have the funding to reach all interested participants, and turns customers away each year.
- The survey results show little potential for the Window AC program.

Commercial & Industrial Programs

- The C&I programs did not achieve their savings goals in PY 2012. For Commercial lighting this was because they only about half the expected participants.
- Standard Offer and Commercial Tune-Up achieved or exceeded participation goals but savings were much lower than expected. Savings were adjusted to be compliant with the TRM and for many HVAC projects new equipment did not meet efficiency standards.
- OG&E and contractors are the main way participants hear about the program. Only a third of non-participants are aware of the programs, however they are interested in all three C&I programs.
- Contractors have little influence on the purchasing decision.
- Participants are very satisfied with the program.
- Over half of participants said they probably would have purchased the same equipment without the rebate. However, many of those would have delayed the purchase without the rebate.
- There is evidence of participant spillover. Most participants who responded to the survey reported taking at least one action as a result of the program. A third said they increased the quantity of equipment installed for the project, and some purchased additional energy efficiency equipment outside of the program as a result of their participation.

6.3 Recommendations for Residential Programs

This section outlines EnerNOC recommendations for improvements to each program in term of tracking and assessing impact.

6.2.1 Residential HVAC Tune-Up Program

The individual projects files were provided to EnerNOC in PDF format. Many of the PDF files had non-descriptive filenames and contained documents for multiple projects. Therefore, it was very difficult to locate a project file for an individual participant without searching through a large number of files. We recommend that OG&E develop a naming convention for the project files that is consistent with the customer account or project ID number so that individual files can be readily located.

We recommend and OG&E agrees that the DSE study be repeated with an appropriate sample to determine the percentage improvement in DSE in Arkansas.

6.2.2 Window AC Program

The individual project files for the Window AC program were labeled with the customer name, which made locating files fairly straightforward. Nevertheless, EnerNOC recommends that OG&E develop a naming convention for the project files that is consistent with the customer account or project ID number to simplify tracking of program documentation.

6.2.3 Student Energy Education

Include more efficient measure models in kits and review the actual kit contents regularly.

- Faucet aerators included were only rated 2.0 gpm, not 1.5 gpm per RAP specification sheet and annual report to OG&E.
- OG&E should ensure the correct measures are included in the kits by having a kit sent to the program manager before the spring and fall campaigns.
- OG&E might also consider requesting inclusion of even more efficient low-flow showerheads (than 1.5 gpm) to achieve higher savings.

Check in with teachers during the participation period to ensure kit distribution and encourage installation of measures in kits, and ask teachers to note their activities.

- We learned that no one tracks teacher activities or asks them to report on whether they actually taught the curriculum, distributed the kits, or encouraged their use at home. At the end of the participation period, teachers are asked to rate their experience with the program, but are not asked what steps they took.
- At the same time, having survey responses from more than half the students suggests that the teachers are taking some or all of these steps.
- The program could perhaps achieve even higher measure installation rates if every teacher is pro-active. Adding a checklist to the instructions list and the teacher evaluation questionnaire could help assess and encourage teacher activity.

Document savings in OG&E tracking system.

- OG&E includes average per-participant kWh and kW savings estimates in the Sara tracking system. These values are updated as better estimates become available. But, currently, there is no documentation of source for values noted in the system.

Reduce program costs that don't contribute to savings.

- **Eliminate or reuse teachers' kits which currently account** for average 2% of annual kit cost invoice from RAP.
- The implementer reports energy savings in the annual report but the methods and assumptions do not agree with TRM 2.0. At the same time, OG&E includes its own estimates of accrued savings in its tracking **systems. So the implementer's reporting of savings is superfluous.**

If more funds could be allocated to the SEE program, the program can multiply savings.

- The implementer easily meets its participation quota each year.
- Participation is limited by program funding.

Modify the survey to get information about free riders.

- As part of the program activities, students already fill out a survey to gauge their understanding of energy before they are exposed to the program curriculum. If the survey were modified to ask about CFLs, low-flow showerheads, and aerators students already have at home, OG&E could estimate a net-to-gross rate based on participants in this program. Alternatively, a separate follow-up survey could be fielded to do this, but would likely be more expensive to implement.

6.4 Recommendations for C&I Programs

6.3.1 Commercial Lighting Program

EnerNOC recommends that kW and kWh savings for future projects be calculated based on TRM 2.0. This should include consistent use of the wattages prescribed in Appendix E of TRM 1.0 for the various lamp types.

We also recommend that OG&E develop a naming convention for the project files that is consistent with the customer account or project ID number so that individual files can be readily located. In addition, Commercial Lighting Rebate Submission Forms and other project documentation should be made available to program evaluators for all projects. We only received Commercial Lighting Rebate Submission Forms for about two-thirds of the projects and participants in PY 2012.

6.3.2 Standard Offer Program

EnerNOC recommends that kW and kWh savings for future projects be calculated based on TRM 2.0. This should include the following:

- Use of a load factor (LF) in calculating kW and kWh impacts for motor measures
- Use of a coincidence factor (CF) for calculating HVAC kW savings
- Use of equivalent full load hours (EFLHs) for calculating HVAC kWh savings

In addition, OG&E should ensure that HVAC units installed as part of the program meet the minimum federal standards listed in TRM 1.0 and 2.0.

We also recommend that OG&E develop a naming convention for the project files that is consistent with the customer account or project ID number so that individual files can be readily located.

6.3.3 Commercial Tune-Up Program

EnerNOC recommends that kW and kWh savings for future projects in the Commercial Tune-Up Program be calculated based on TRM 2.0. In addition, OG&E should ensure that HVAC units installed as part of the program meet the minimum efficiency levels prescribed in the TRM. We

also recommend that Rebate Submission Forms for the Commercial Tune-Up program be clearly labeled so as not to confuse them with Rebate Submission Forms for the Standard Offer Program.

6.4 Process Evaluation Findings and Recommendations

6.4.1 Residential Customers

This section highlights the main findings from the residential participant and non-participant surveys and the participating contractor interviews. Recommendations are suggested based on these findings.

Main Findings

- Word of mouth and direct mail are the most effective methods for marketing the programs.
- Participants are very satisfied with the program.
- The program HVAC tune up program is effective. Seventy-five percent of customers said they probably would not have had the HVAC tune up without the program. Forty-four percent of participants would have delayed getting the tune up done without the program. Contractors say that not as many tune ups would get done in the absence of the program.
- There is evidence of program spillover – 8% of participants said they purchased additional energy efficient equipment as a result of their program participation. Sixty percent plan to purchase energy efficient equipment in the future. Only 4% of non-participants plan to purchase efficient equipment in the future.
- Even though most non-participants are already taking energy efficiency actions, the program is affecting customer behavior. The vast majority (87%) of participants said they took at least one energy efficient action *as a result of their participation*. These are additional actions they would not have taken without the program.
- More than half of non-participants say they have purchased high efficiency equipment. The equipment they purchased is mainly CFLs, while almost a quarter of customers purchased high efficiency central AC and water heaters.
- Lack of awareness is a barrier to program participation. Most non-participants are not aware of the program and a third who have central AC say they are extremely likely to participate in the HVAC tune up program. The program, however, does not have the funding to reach all interested participants, and turns customers away each year.
- The survey results show little potential for the Window AC program. The non-participants surveyed who have a window AC already have Energy Star models. The non-participants surveyed who plan to buy a window air conditioner say they will purchase an Energy Star model.

Recommendations

- Consider adding to the success of word of mouth advertising by leaving signs advertising the programs **in participants' yards**. Few non-participants are aware of the program, and many are interested in participating.
- Limit direct marketing and make sure adequate funds are available before sending out marketing materials.
- Consider revamping the window AC program. Change it to an upstream program that involves equipment buy-downs to change the stock of equipment sold in the service territory. Or target the program to lower income households who are less likely to have central air conditioning.

6.4.2 C&I Customers

This section highlights the main findings from the commercial and industrial participant and non-participant surveys and makes recommendations based on these findings.

Main Findings

- OG&E and contractors are the main way participants hear about the program. Only a third of non-participants are aware of the programs, and most of those are unable to name specific programs.
- Contractors have little influence on the purchasing decision. Less than half of participants used a contractor to assist them with their project, and most of those customers would have **purchased the same equipment without the contractor's input.**
- Participants are very satisfied with the program.
- More than half of participants said they probably would have purchased the same equipment without the rebate. However, the rebate did affect the timing of the purchase. Half of participants said they would have delayed the purchase without the rebate.
- There is evidence of participant spillover. A third of participants said they increased the quantity of equipment installed for the project because the program was available, and eleven percent said they purchased additional energy efficiency equipment outside of the program as a result of their participation.
- Although almost all non-participants report taking energy efficient actions, the program is influencing energy efficiency behavior. When asked if they took specific actions as a result of their participation in the program, most participants reported taking at least one action. These actions would not have been taken in the absence of the program.
- There is an established interest in all three C&I programs. Eighteen – 23% of non-participants say they are extremely likely to participate in the programs, and 41 -59% rate their likelihood of participating a 6 -9 on a 10 point scale.

Recommendations

- Increase or improve the marketing and advertising of the C&I programs. Few non-participants are aware of the program, and many are interested in participating.
- Conduct research with contractors in the area to find out if they are aware of OG&E programs, if they currently promote high efficiency equipment and identify ways that OG&E could partner with contractors to promote high efficiency equipment to C&I customers.
- Research the target market to find out the current market share of high efficiency equipment in the market. This will help OG&E understand the common characteristics of customers already investing in energy efficiency and what characteristics make up the next tier of customers the program is hoping to reach. The research can also proactively identify specific equipment to promote.

6.5 Comprehensive Factors

This chapter describes EnerNOC's assessment of how effectively six of OG&E Arkansas programs (Student Energy Education, HVAC Tune-Up & Duct Repair, Window Unit A/C, Commercial Lighting, Commercial Tune-Up, and Standard Offer) have addressed the following comprehensive factors:

Factor 1: Whether the programs and/or portfolio provide, either directly or through identification and coordination, the education, training, marketing, or outreach needed to address market barriers to the adoption of cost-effective energy efficiency measures;

- In PY 2012, OG&E increased staff resources to improve the management and delivery of programs. These resources were an EM&V coordinator who is responsible to oversee EM&V

activities in both Oklahoma and Arkansas and a support staff resource for the program manager. The EM&V coordinator provides a valuable role in liaising between EM&V parties such as the evaluator, the Arkansas program staff, and the PWC. He is also addressing procedures including tracking systems and training of subcontractors.

- OG&E has increased training for contractors in PY 2012 and the EM&V coordinator will also be responsible for contractor and other trade ally training. And the residential programs are meeting targets. However, OG&E needs to improve education, marketing, and outreach to address market barriers and meet its targets for the C&I sector. In PY 2012 savings were only about half of the goals and non-participants were not aware of the program although interested in participating. The sales manager is implementing programs with hands on approach and one support staff – however he also has a lot of other duties which take up his time.

Factor 2: Whether the programs and/or portfolio, have adequate budgetary, management, and program delivery resources to plan, design, implement, oversee and evaluate energy efficiency programs;

- In general, the programs have adequate resources; however, adding administrative staff would allow the sales manager to focus on marketing and outreach. The support staff resource has taken on sales and administrative duties such as data entry and quality control, but the workload is still high for just two staff. Adding an additional administration resource to provide services such as data entry, quality control, documentation of procedures and databases, and other services, would free up more time for the sales staff to focus on marketing and outreach to increase program participation.

Factor 3: Whether the programs and/or portfolio, reasonably address all major end-uses of electricity or natural gas, or electricity and natural gas, as appropriate;

- The programs reasonably address all the major end uses for the commercial and industrial sectors as shown in the table below.

OG&E Program	Commercial End Uses	Industrial End Uses
Standard Offer	HVAC, Cooking, Refrigeration, Water Heating, Motors, Air Compressors, Process	Refrigeration, Motors, Air Compressors, Pumps, Process
Commercial Tune-Up	HVAC, Cooking, Refrigeration, Water Heating, Motors, Air Compressors, Process	Refrigeration, Motors, Air Compressors, Pumps, Process
Commercial Lighting	Lighting	Lighting

- It is more difficult to affirm that the major end uses in the residential sector are reasonably addressed by the residential programs without a recent market and/or potential study to draw on. We expect that the move to statewide programs will address this in time for the new cycle of program designs. The programs do address the major end residential uses—HVAC (HVAC Tune-Up & Duct Repair), lighting and water heating (Student Energy Education), and appliances (Window AC, Weatherization).

Factor 4: Whether the programs and/or portfolio, to the maximum extent reasonable, comprehensively address the needs of customers at one time, in order to avoid cream-skimming and lost opportunities

- The programs do address the needs of customers one at a time, for example, the C&I programs, Lighting, SOP and Commercial Tune-Up programs are specifically designed to address customers’ unique needs. And the sales manager is committed to a hands-on grass roots marketing approach. In the residential sector, OG&E offers programs that ensure all of its customers are able to participate, e.g. customers without central AC to be tuned are eligible for the Window AC program.

Factor 5: Whether such programs take advantage of opportunities to address the comprehensive needs of targeted customer sectors (for example, schools, large retail stores, agricultural users, or restaurants) or to leverage non-utility program resources (for example, state or federal tax incentive, rebate, or lending programs).

- Both the Standard Offer and Commercial Tune-Up programs target schools, retail stores and restaurants and Standard Offer Program is designed to work with ESCOs, many of whom target specific customer sectors. OG&E is also planning new programs such as a walk-through audit for small businesses to improve the effectiveness of targeting customer segments. In addition, OG&E will leverage any non-utility resources where possible.

Factor 6: Whether the programs and/or portfolio enables the delivery of all achievable, cost-effective energy efficiency within a reasonable period of time and maximizes net benefits to customers and to the utility system;

- EnerNOC is not responsible for cost-effectiveness analysis.

Factor 7: Whether the programs and/or portfolio, have evaluation, measurement, and verification ("EM&V") procedures adequate to support program management and improvement, calculation of energy, demand and revenue impacts, and resource planning decisions.

- EnerNOC believes that OG&E programs do have adequate EM&V procedures, especially now that the EM&V coordinator is on board. We are working together to improve the tracking procedures, calculation of savings, and improve the quality of results.

APPENDIX | A

APPENDIX A: PROTOCOL A: PROGRAM TRACKING AND DATABASE DEVELOPMENT

Protocol Scope: This protocol provides guidance developing an effective DSM program tracking, evaluation and project database. It lists the key data elements that must be tracked, the key measure characteristics, key customer demographics and other data fields.

Customer Classes: All except self-directing customers.

Where energy savings are determined on the basis of deemed savings, all tracking systems shall capture all variables required in the deemed savings documents to determine the energy savings.

Please refer to the most recent version of the Deemed Savings estimates developed for the Arkansas Technical Resource Manual (TRM) as specified in the Deemed Savings Docket 07-152-N. This also includes the type of information described in Protocol A.

Table A-1 Recommended Data Fields and Description of Mandatory Data Fields

Recommended Data Fields	Description
<p>Participating Customer Information</p> <ul style="list-style-type: none"> • Unique customer identifier, such as account number • Customer contact information – name, mailing address, telephone number • Date/s of major customer milestone such as rebate application date, approval date, rebate processing date, etc. 	Information to readily identify customers for follow-up contact
<p>Measure Specific Information</p> <ul style="list-style-type: none"> • Measure Group (Equipment Type) <ul style="list-style-type: none"> • Equipment Fuel/Energy Source <ul style="list-style-type: none"> • Equipment size • Equipment quantity • Efficiency level • Estimated savings • Estimated incremental measure cost, if applicable <ul style="list-style-type: none"> • Equipment Useful Life • Measure Name - Text Description • * Measure Code- Numerical Code • Serial Number (where applicable) • Reported age of equipment replaced (if available) • Reported measure type of equipment replaced (if available) 	<p>Information which documents the details of the equipment installed and equipment replaced under the program</p> <p>*Measure Codes: All data should be captured in numeric format to facilitate data tracking and analysis. Therefore, a data legend should be identified for each measure type and contractor type. This data legend should be clearly identified in the program database's supporting materials.</p>
<p>Vendor Specific Information</p> <ul style="list-style-type: none"> • Name and Contact Information for Contractor <ul style="list-style-type: none"> • Contractor Type • Date of Installation • Cost of the installed equipment (if available) • Efficiency level of the installed equipment 	To be collected when the measure is installed by a third-party vendor. This information can be determined from the supporting documentation provided to qualify for the program incentive.
<p>Program Tracking Information</p> <ul style="list-style-type: none"> • Date of the initial program contact/rebate information 	Information to determine program cost effectiveness and timing for rebate

<ul style="list-style-type: none"> • Date of rebate/incentive paid • Incentive amount paid to date • Incentive amounts remaining • Application Status (i.e., number of applications approved, pending or denied) • Reason and Reason code for application denial 	<p>applications and processing</p>
<p style="text-align: center;">Program Costs</p> <ul style="list-style-type: none"> • Overall program budgets • Program costs to date <ul style="list-style-type: none"> • Incentive Costs • Administrative Costs • Marketing/Outreach Costs <ul style="list-style-type: none"> • Evaluation Costs 	<p>This information related directly to program expenses. This information may be tracked in a separate worksheet from measure costs; however the totals should be reported out annually.</p>
<p style="text-align: center;">Marketing and Outreach Activities</p> <ul style="list-style-type: none"> • Advertising and marketing spending levels <ul style="list-style-type: none"> • Media schedules • Summary of number of community events/outreach activities • Other media activities - estimated impressions via mailings, television/radio, print ads 	<p>The program implementers should provide separate documentation regarding the type, number, and estimated impressions made for each marketing or outreach activity.</p>

Table 4: Example of Data Legend for Database Tracking and Evaluation Purposes

Example Measure Category	Example Measure Code
Air Source Heat Pump	1
Room Air Conditioner	2
Central Air Conditioner	3
Natural Gas Furnace	4
Storage Water Heater (Gas)	5
Tankless Water Heater (Gas)	6
Storage Water Heater (Electric)	7
Heat Pump Water Heater	8
Attic Insulation	9
Wall Insulation	10

Similarly, contractor should also be identified by a category to facilitate analysis and tracking. The program database and tracking system should also be linked to the utilities or energy provider's current Customer Information System so that it can be updated regularly to verify eligibility.

Table 5: Example of Contractor Codes

Example Contractor Type	Example Contractor Code
Architect	11
Engineer	22
Plumber	33
HVAC	44
Insulation Installer	55
Home Builder (Production)	66
Home Builder (Custom)	67
Specialty	90

Additional "Best Practices" regarding database tracking and development also suggest capturing the following types of information during data collection to facilitate RM&V:

Table 6: Suggested Data Collection Fields

Suggested Data Collection Fields	Description
Premise Characteristics <ul style="list-style-type: none"> • Housing Type • Number of Occupants • Estimated/Actual Square Footage 	This information includes descriptions of the housing type and questions asked of participants during the assessment installation.
Measure Characteristics <ul style="list-style-type: none"> • Efficiency level of equipment removed (retrofit only) • Model level for equipment removed (retrofit only) 	This information is commonly captured by the contractor or recorded from the invoice and could be tracked in the program database .

APPENDIX | B

APPENDIX B: INTERVIEW GUIDES FOR PROGRAM MANAGER

Name _____

Date _____

Phone _____

Email _____

Interviewer(s) _____

Introduction

Thank you for talking with us today about some of OG&E's Arkansas Energy Efficiency Programs. The goal of this discussion is to talk more fully about the way the programs were designed and implemented. All comments will remain confidential.

We will discuss the residential programs (HVAC tune up and window A/C) and non-residential programs (commercial lighting, commercial tune up, and standard offer).

The areas we will be discussing are:

- Whether program goals are being accomplished.
- Quality of program components.
- How well program activities are being implemented.
- Whether the target audience is being reached.
- How external factors are influencing program delivery.

Program Design and Development

1. Have there been any changes or updates to the design of the programs in the last year?

Next, I'd like to discuss your views on how the programs are being implemented in 2012.

Program Implementation – Residential

1. Overall, how effective do you feel the HVAC tune up program is in terms of the following:
 - a. Reaching the target market
 - b. Overcoming barriers to participation
 - c. Educating the target market
 - d. Achieving savings goals

2. What appear to be the most successful program components for HVAC tune up so far?
 - a. Use of contractors
 - b. AC-tunes and Duct work
 - c. Customer education
 - d. Contractor Rebates

3. For the Window AC rebate program, what did you change or improve in order to reach your participation goals?

Program Implementation – Non-residential

1. Overall, how effective do you feel the non- residential programs are in terms of the following:
 - a. Reaching the target market
 - b. Overcoming barriers to participation
 - c. Educating the target market
 - d. Achieving its savings goals
 - e. Coordinating with other agencies

2. What appear to be the most successful program components so far?
 - a. Use of contractors
 - b. On-site audits
 - c. Customer education
 - d. Customer follow up, including visits

Program Tracking

1. How do you feel about the current program tracking system?
 - a. Have you made changes to include the additional information identified in the 2011 evaluation?
 - b. Is there anything else that you would you improve/change?

Next, I'd like to discuss your role in helping to deliver the programs in 2012.

Program Administration

1. Have you been able to maintain a high level of contact with contractors?
 - a. Is there anything that could be improved?
 - b. What type of feedback have you received from implementers and/or contractors?

2. Do you feel that the contractors are performing well on each of the programs?

Now let's move to program delivery.

6.4.1.1.1 Program Delivery

1. Are there any specific aspects of a particular program(s) that are working very well? Any not working well? Program details.
2. What challenges have occurred during PY 2012? How were they overcome?
3. Are the programs efficient and well managed? Why or why not? How are problems resolved?
4. What could be done to improve the program?

Let's move to discussion of how the market is made aware of the programs.

6.4.1.1.2 Marketing and Outreach

1. Have you been able to continue the grass roots hands-on approach to marketing? Does it continue to be effective? Given your level of staffing is this type of marketing sustainable?
2. What other marketing has been done?
3. What type of feedback have you received from customers about the programs?
 - a. What did they like?
 - b. What did they not like?

Lastly, let's discuss program effectiveness.

6.4.1.1.3 Program Effectiveness

1. What is your impression regarding likely program free ridership? Meaning do you think customers would pay for the measures on their own, outside of the program. Why do you say that?
2. **Do you think the programs are changing customers' energy efficiency attitudes and actions?** What specifically has changed?
3. We plan to survey participants as part of the PY2012 evaluation. Are there specific research objectives that you would like the survey to address? What do you hope to learn from the survey?

These are all my questions. Do you have anything else you'd like to add?

Thank you again for taking the time to discuss these programs.

APPENDIX | C

APPENDIX C: INTERVIEW GUIDES FOR STUDENT ENERGY EDUCATION PROGRAM MANAGER

Purpose of the Interview

- a) Make sure we understand how the program is/was run in PY 2012
- b) Help us use the correct input values for the savings calculations outlined in TRM 2.0

About the Recruitment

I understand that Resource Action Programs (RAP) implements this program for PG&E in Arkansas using its LivingWise program and that RAP is responsible for recruitment, deployment, follow-up on student actions, and reporting of results to OG&E. Is this correct?

What exactly is the target market for the kits?

How was it determined which schools and which classrooms would receive the kits?

Was this any different from the criteria used in 2011?

How was the individual teacher recruitment done? (by the school? directly between teacher and RAP?)

Did RAP go back to same teachers first and then fill to quota with new ones?

Were the goals and/or challenges different between Spring 2012 and Fall 2012?

How difficult was it to meet the enrollment goals?

(if easy) Did you have to turn any teachers/schools away?

(if hard) What extra outreach did RAP do to encourage a sufficient number of teachers to enroll?

About the Measures

What was in each kit delivered to classrooms?

Faucet Aerator

- What is the rating of the aerator in the kit (1.5 gpm or 1.0 gpm)? Is it clearly labeled that way?

Low-Flow Showerhead

- What is the rating of the showerhead in the kit (2.0 gpm, 1.5 gpm, or something else)? Is it clearly labeled that way?

CFL

- What is the wattage of the CFL in the kit?
- Is the CFL EnergyStar rated and labeled?
- Are the CFLs suitable for outdoor as well as indoor use?
Is that information included in the instructions that students receive?

- What guidance are students given in the instructions regarding where to install the CFL to insure that goes into a fixture that is used in an average of at least 2 hrs per day?

About Program Tracking

Does OG&E have access to the tracking system or only RAP?

Can you make changes to it or only see it?

Please provide a screen shot of the current tracking system used in 2012.

About the Savings Estimates

Exactly what measures in the kit is OG&E including in the annual savings report, all measures or the ones noted in the OG&E Plan?

How is OG&E estimating and reporting savings for the program?

- Who does the calculation of savings that OG&E will include in the annual report, OG&E or RAP?
- Are you using the Arkansas TRM 2.0 to estimate the savings?
- Did anyone provide TRM v 2.0 to RAP to use in estimating savings?

APPENDIX | D

APPENDIX D: INTERVIEW GUIDE FOR HVAC CONTRACTORS PARTICIPATING IN THE RESIDENTIAL TUNE-UP PROGRAM

Name _____

Company _____

Location (OK, AR) _____

Interviewer _____

Interview Date _____

Phone _____

Email _____

Respondent Background

Thank you for taking my call.

- *We understand your company participated in OG&E's program for residential air-conditioning tune-ups and duct sealing/repair. Are you the best person to speak to about this program?*
- *If not, ask for contact information.*
- *If yes, ask if this is a good time or should reschedule – say how long it will take.*

Thank you for talking with me today about OG&E's air-conditioning tune-up and duct repair program for residential customers. The goal of this discussion is to talk more fully about how and the program is being implemented and how OG&E might improve participation and satisfaction of both customers and contractors. All comments will remain confidential.

The areas I will be discussing are:

- Communication and coordination with OG&E and CLEAResult < OK ONLY >.
- Quality Assurance/Quality Control procedures.
- Program effectiveness including both your satisfaction with the program and your impression of customer satisfaction.

First, I'd like to get a little better understanding of your roles and responsibilities regarding the OG&E program.

1. What is your current title?
2. Please describe the services your organization provides for OG&E's residential tune-up program.
3. Could you describe your duties and responsibilities for OG&E's program?

4. How did you (or your company) first hear about the program? (OG&E, customer, colleague, etc.)
5. How long have you been involved with program?

Next, I'd like to discuss your views on how the program is being implemented in 2012

Communication and Coordination

6. Are you familiar with the process used to reach program participants?
7. **<OK ONLY>** Are program participants always referred to you by CLEARResult?
8. In your opinion, how well does this process work?
9. Can you suggest any improvements to increase participation?
10. Do you ever mention the program to your regular (non-participant) customers? Why or why not?
11. Does your company do any marketing for the program? Can you please provide any marketing materials that are used?

OK ONLY

12. What is your relationship with OG&E and CLEARResult staff? Is there someone that you usually work with?
13. What works best in the relationship? Probe for details?
14. What could be improved?
15. What type of feedback have you received from OG&E or CLEARResult?

AR ONLY

16. What is your relationship with OG&E? Is there someone you usually work with?
17. What works best in the relationship? Probe for details?
18. What could be improved?
19. What type of feedback have you received from OG&E?

Data Collection and Quality Control

Now I would like to discuss data collection and quality control procedures used by your company.

20. Are the data collection forms clear and easy to complete?
21. Do you have any additional comments about the data collection process?
22. Are there any specific QC procedures for the program?
23. If so, please describe. If not, why not?
24. If procedures include inspections probe for details, for example what percentage of projects are inspected?

Program Effectiveness

Let's move on to whether the program is effective in the marketplace.

25. What are the benefits to your company for participating in the program? Do you think the program helps your business?
 - a. Increased sales
 - b. New line of work
 - c. Other?
26. What is your overall satisfaction with the program as a contractor?
27. Do you feel there are any barriers to contractor participation in the program? (i.e. lengthy approval, training, etc.)
28. Are customers satisfied with the program?
 - a. Overall, what do the customers seem to like best?
 - b. What do they have problems with or dislike about the program?
 - i. Did you relay these concerns to OG&E? OK ONLY to CLEAResult staff?
 - c. What suggestions do you have to improve the program?
29. In your opinion do you think customers would be doing A/C tune ups and duct repairs without the program?
30. **Do you have anything else you'd like to add?**

Thank you again for taking the time to discuss this program.

APPENDIX | E

APPENDIX E: SURVEY GUIDE FOR RESIDENTIAL NON-PARTICIPANTS

Introduction

Hello, my name is _____, and I'm calling on behalf of Oklahoma Gas & Electric. May I please speak with [Customer Name]?

[When correct person is on the phone]

I am calling to learn about your experience as a **OG&E's** customer and how OG&E could help customers manage their energy use. This survey should take about 10 minutes of your time. Is this a good time for us to talk?

[IF NOT, SET UP CALL BACK APPOINTMENT]

(Sales concern: I am not selling anything; we would simply like to learn about your experience as an OG&E customer and your awareness of the programs they offer. Your responses will be kept confidential. If you would like to talk with someone from OG&E about this study, feel free to call: Mr. Robin Arnold at 479-649-2838)

Program Awareness

First I would like to ask questions about some programs OG&E offers to customers like you.

1. Are you aware that OG&E offers programs that provide rebates and services to help customers save energy?

Yes

No

[IF Q1 = NO SKIP TO Q7]

2. [IF Q1 = Yes] What programs are you aware of? [DO NOT READ LIST; CHECK ALL THAT APPLY]

Residential HVAC tune up

Residential Window Air Conditioner rebate

Other (specify)

3. [IF Q1 = YES] Have you participated in any of the OG&E programs?

Yes—THANK AND TERMINATE

No

4. [IF Q2 = HVAC TUNE UP] How did you first hear about the HVAC Tune Up Program?

- Utility staff
- Utility web site
- Received information in mail
- In-store flyer
- Read newspaper or magazine article
- Told by contractor
- Word of mouth
- Utility bill message
- Other (Specify)
- Don't know**

5. [IF Q2 = WINDOW AC] How did you first hear about the Window Air Conditioner Rebate Program?

- Utility staff
- Utility web site
- Received information in mail
- In-store flyer
- Read newspaper or magazine article
- Told by contractor
- Word of mouth
- Utility bill message
- Other (Specify)
- Don't know**

Energy Efficiency Behavior

Now I would like to ask you about your home's energy equipment and use.

6. Have you installed any energy efficient equipment (furnace, light bulbs, clothes dryer) in your home in the last 2 years?

- Yes
- No

7. [IF Q6 = YES] What type of equipment did you install? [DO NOT READ]

- High efficiency/Energy Star furnace
- High efficiency/Energy Star Central AC
- High efficiency/Energy Star Window AC
- Heat pump
- CFLs or other high efficiency lighting
- High Efficiency/Energy Star dishwasher
- High Efficiency/Energy Star refrigerator
- High Efficiency/Energy Star clothes washer
- High Efficiency/Energy Star clothes dryer
- High Efficiency/Energy Star TV
- High Efficiency/Energy Star computer equipment
- Other (specify)

8. Have you had any regular maintenance (e.g. annually) performed on your air conditioning system, often referred to as a tune up?

- Yes
- No

9. Do you plan to buy energy efficient equipment in the future in the next 12 months?
Yes
No

10. [IF Q9 = YES] What type of efficient equipment do you plan to buy?

High efficiency/Energy Star furnace
High efficiency/Energy Star Window AC
High efficiency/Energy Star AC
Heat pump
CFLs or other high efficiency lighting
High Efficiency/Energy Star dishwasher
High Efficiency/Energy Star refrigerator
High Efficiency/Energy Star clothes washer
High Efficiency/Energy Star clothes dryer
High Efficiency/Energy Star TV
High Efficiency/Energy Star computer equipment
Other (specify)

11. I am going to read you a list of actions you might take to save energy in your home. Please let me know if you have taken any of the following actions in the last 12 months. (Read list, select one response for each)

In the last 12 months have you . . .

Regularly turned off unnecessary lighting	YES	NO	NA
Replaced or regularly maintained furnace, air-conditioner, and heat-pump filter	YES	NO	NA
Cleaned around your outside air conditioning unit including ensuring it is clear of debris	YES	NO	NA
Programmed your thermostat to use less energy during times when you are not at home or at night (raising the temperature in the summer, lowering the temperature in the winter)	YES	NO	NA
Turned down the temperature on your water heater	YES	NO	NA
Started using energy-saving settings on refrigerators, dishwashers, washing machines, and clothes dryers.	YES	NO	NA
Cauked leaky windows and other leaky areas.	YES	NO	NA
Unplugged electronics, battery chargers and other equipment when not in use	YES	NO	NA
Reduced air conditioning use by using fans, keeping windows and doors shut and closing shades during the day.	YES	NO	NA
Enabled "power management" on all computers and turn them off at night	YES	NO	NA
Washed clothes in cold water	YES	NO	NA
Used a clothesline rather than the electric dryer			
Run your dishwasher and clothes washer only when fully loaded	YES	NO	NA
Made sure your dryer's outside vent is clear and cleaned the lint filter after every load.	YES	NO	NA

12. Are there any other energy saving actions or behaviors that you have adopted in the last 12 months?

Yes (Specify _____)
No

Program Participation

13. When you are in the market for new equipment, how knowledgeable would you say you are about the energy efficiency of available equipment? Would you say you are very knowledgeable, somewhat knowledgeable or not at all knowledgeable about the energy efficiency of equipment available for purchase?

Very Knowledgeable
Somewhat Knowledgeable
Not at all Knowledgeable

14. [IF Q7 NE Window AC] Do you currently have any window air conditioners in your home?

Yes
No

15. [IF Q14 = YES] Is the window air conditioner ENERGY STAR® qualified?

Yes
No
Don't know

16. [IF Q10 NE Window AC OR Q15 = NO] Do you plan to purchase a new window air conditioner in the next 12 months?

Yes
No
Don't know

17. [IF Q16 = YES] Will the new window unit you plan to purchase be ENERGY STAR® qualified?

Yes
No
Don't know

18. Do you have central air conditioning in your home?

Yes
No

19. [IF Q18 = YES] OG&E is currently offering customers a FREE air conditioner tune-up. Along with the free tune-up (valued at \$75), you will also receive a duct system inspection and, if needed, duct repairs. On a scale of 1 to 10, with 1 meaning not at all likely and 10 meaning extremely likely how likely are you to take advantage of this OGE program?

- 1 Not at all likely
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 Extremely likely

20. [IF Q19 = 5 OR LESS] Why do you say that?

21. Do you have any suggestions for ways OG&E could help you use energy more wisely and save money on your monthly bill?

That's all the questions that I have for you today. Thank you for your time. Have a great day.

APPENDIX | F

APPENDIX F: SURVEY GUIDE FOR COMMERCIAL & INDUSTRIAL NON-PARTICIPANTS

Introduction

Hello, my name is _____, and I'm calling on behalf of Oklahoma Gas & Electric. May I please speak with [Customer Name]?

[When correct person is on the phone]

I am calling to learn about your experience as a **OG&E's** customer and how OG&E could help customers manage their energy use. This survey should take about 10 minutes of your time. Is this a good time for us to talk?

[IF NOT, SET UP CALL BACK APPOINTMENT]

(Sales concern: I am not selling anything; we would simply like to learn about your experience as an OG&E customer and your awareness of the programs they offer. Your responses will be kept confidential. If you would like to talk with someone from OG&E about this study, feel free to call: Mr. Robin Arnold at 479-649-2838)

Business Information

First I would like to ask some background questions about your business.

1. What type of business is this? [DO NOT READ]

- Office (finance, insurance, real estate, law, etc.)
- Retail (department stores, services, boutiques, etc.)
- Grocery (supermarkets, convenience store, market, etc.)
- Restaurant (sit-down, fast food, coffee shop, etc.)
- Warehouse
- School (day care, pre-school, elementary, secondary)
- College, university or trade school
- Health care (health practitioner office, hospital, urgent care center, etc.)
- Nursing home / assisted living facility / residential treatment facility
- Lodging facility (hotel, motel, bed and breakfast, etc.)
- Not-for profit housing facility (shelter, prison, jail, etc.)
- Entertainment / recreation facility (movie theater, bowling alley, health club/gym, library, museum, etc.)
- Public assembly facility (convention / conference center, etc.)
- Worship (church, temple, etc.)
- Multi-use or shopping mall (i.e., mixed use of space for offices, restaurants, stores, service, apartments, etc.)
- Manufacturing, production, or processing facility (including for-profit businesses and governmental facilities)
- Other (specify)

2. Approximately how many employees work at this location? [DO NOT READ]

- Less than 5 employees
- 5 – 9
- 10 – 19
- 20 – 49
- 50 – 99
- 100 – 199
- 200 – 299
- 300 – 399
- 400 – 499
- 500 – 999
- 1,000 – 2,499
- 2,500 – 4,999
- 5,000 – 9,999
- 10,000 – 24,999
- 25,000 or more employees

3. How many years have you been in business at this location? [DO NOT READ]

- Less than 1 year
- 1 – 2 years
- 3 – 5 years
- 5 -7 years
- 8- 10 years
- More than 10 years

4. How important is controlling energy costs at your facility when you compare it to other overhead expenses? Would you say controlling energy costs is . . . [READ LIST: SELECT ONE]

- Very important
- Somewhat important
- Not at all important

5. Which of the following best describes your company policies for purchasing new equipment? [READ LIST; SELECT ONE]

- We always buy the most efficient option for new equipment
- Lowest first cost is our main priority
- We do not have specific policies
- Other (specify)

Program Awareness

First I would like to ask questions about some programs OG&E offers to business customers.

6. Are you aware that OG&E offers programs that provide rebates and services to help business customers save energy?

- Yes
- No

[IF Q6 = NO SKIP TO Q12]

7. [IF Q6 = Yes] What programs are you aware of? [DO NOT READ LIST; CHECK ALL THAT APPLY]

7a. Commercial lighting

Yes

No

7b. Commercial tune-up

Yes

No

7c. Standard Offer program

Yes

No

7d. Other (specify)

8. [IF Q6 = YES] Have you participated in any of the OG&E programs for business customers?

Yes—VERIFY IT WAS A BUSINESS PROGRAM THEN THANK AND TERMINATE

No

Don't know

9. [IF Q7a = Yes] How did you first hear about the Commercial Lighting Program?

Utility staff

Utility web site

Received information in mail

In-store flyer

Read newspaper or magazine article

Told by contractor

Word of mouth

Utility bill message

Other (Specify)

Don't know

10. [IF Q7b = yes] How did you first hear about the Commercial Tune-Up Program?

Utility staff

Utility web site

Received information in mail

In-store flyer

Read newspaper or magazine article

Told by contractor

Word of mouth

Utility bill message

Other (Specify)

Don't know

11. [IF Q7c = Yes] How did you first hear about the Standard Offer Program?

Utility staff

Utility web site

Received information in mail

In-store flyer

Read newspaper or magazine article

Told by contractor

- Word of mouth
- Utility bill message
- Other (Specify)
- Don't know**

Energy Efficiency Behavior

Now I would like to ask you about your **business's** energy equipment and use.

12. Have you installed any energy efficient equipment (HVAC, lighting, computers, process equipment) in your building or facility in the last 2 years?
 - Yes
 - No

13. [IF Q12 = YES] What type of equipment did you install? [DO NOT READ]
 - High Efficiency/Energy Star HVAC
 - Geothermal Heat Pumps
 - High Efficiency Lighting
 - High Efficiency/Energy Star Office Equipment
 - High Efficiency/Energy Star Refrigeration
 - High Efficiency/Energy Star Laundry
 - High Efficiency Motors
 - Efficient Cooling Equipment such as Chillers or Rooftop Units
 - VSDs
 - Other (specify)

14. Have you had any regular maintenance (e.g. annually) performed on your HVAC system, often referred to as a tune up?
 - Yes
 - No

15. Do you plan to buy energy efficient equipment in the next 12 months?
 - Yes
 - No

16. [IF Q15 = YES] What type of efficient equipment do you plan to buy?
 - High Efficiency/Energy Star HVAC
 - Geothermal Heat Pumps
 - High Efficiency Lighting
 - High Efficiency/Energy Star Office Equipment
 - High Efficiency/Energy Star Refrigeration
 - High Efficiency/Energy Star Laundry
 - High Efficiency Motors
 - Efficient Cooling Equipment such as Chillers or Rooftop Units
 - VSDs
 - Other (specify)

17. I am going to read you a list of actions you might take to save energy in your home. Please let me know if you have taken any of the following actions in the last 12 months. (Read list, select one response for each)

In the last 12 months have you . . .

Turned off lights when not needed	YES	NO	NA
Used lighting occupancy sensors or other lighting controls	YES	NO	NA
Taken advantage of natural daylighting and dim or turn off electric lights	YES	NO	NA
Changed or cleaned HVAC filters regularly	YES	NO	NA
Cleaned all heat exchanger surfaces, water and refrigerant coils, condensers and evaporators	YES	NO	NA
Programmed your thermostat to use less energy when the building is not occupied (raising the temperature in the summer, lowering the temperature in the winter)	YES	NO	NA
Turned off office equipment during non-business hours	YES	NO	NA
Ensured that the built in power saving system on office equipment is active	YES	NO	NA
Educated and encouraged employees to be energy conscious	YES	NO	NA

18. Are there any other energy saving actions or behaviors that you have adopted in the last 12 months?

Yes (Specify _____)

No

Program Participation

19. When you are in the market for new equipment, how knowledgeable would you say you are about the energy efficiency of available equipment? Would you say you are very knowledgeable, somewhat knowledgeable or not at all knowledgeable about the energy efficiency of equipment available for purchase?

Very Knowledgeable

Somewhat Knowledgeable

Not at all Knowledgeable

20. **OG&E's** Commercial Lighting program provides incentives to Arkansas commercial and industrial customers who purchase and install energy efficient indoor and outdoor lighting, lighting controls and LED exit lights in both retrofit and new construction applications. This program helps customers reduce monthly energy costs while reducing some of the initial cost barrier. On a scale of 1 to 10, with 1 meaning not at all likely and 10 meaning extremely likely how likely are you to take advantage of this OGE program?

1 Not at all likely

2

3

4

5

6

- 7
- 8
- 9
- 10 Extremely likely

21. [IF Q20 = 5 OR LESS] Why do you say that?

22. **OG&E's Commercial/Industrial Standard Offer program provides incentives for the** installation of a wide range of measures that reduce customer energy costs, reduce peak demand, and/or save energy. In this program, customers are eligible for incentive payments of \$250/kW for energy efficiency projects that significantly reduce customer peak demand. The Standard Offer program was designed to offer a flexible program to help larger customers achieve energy and demand savings.. On a scale of 1 to 10, with 1 meaning not at all likely and 10 meaning extremely likely how likely are you to take advantage of this OGE program?

- 1 Not at all likely
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 Extremely likely

23. [IF Q22 = 5 OR LESS] Why do you say that?

24. **OG&E's Commercial Tune-Up Offer** program provides incentives to help customers improve the efficiency of their commercial air conditioning, food service, refrigeration and/or ventilation systems by upgrading in efficiency or performing a tune-up of commercial air conditioning. On a scale of 1 to 10, with 1 meaning not at all likely and 10 meaning extremely likely how likely are you to take advantage of this OGE program?

- 1 Not at all likely
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10 Extremely likely

25. [IF Q24 = 5 OR LESS] Why do you say that?

26. Do you have any suggestions for ways OG&E could help you use energy more wisely and save money on your utility bill?

That's all the questions that I have for you today. Thank you for your time. Have a great day.

About EnerNOC Utility Solutions

EnerNOC's Utility Solutions Consulting team is part of EnerNOC's Utility Solutions, which provides a comprehensive suite of demand-side management (DSM) services to utilities and grid operators worldwide. Hundreds of utilities have leveraged our technology, our people, and our proven processes to make their energy efficiency (EE) and demand response (DR) initiatives a success. Utilities trust EnerNOC to work with them at every stage of the DSM program lifecycle – assessing market potential, designing effective programs, implementing those programs, and measuring program results.

EnerNOC's Utility Solutions deliver value to our utility clients through two separate practice areas – Implementation and Consulting.

- **Our Implementation team leverages EnerNOC's deep "behind-the-meter expertise" and world-class technology platform** to help utilities create and manage DR and EE programs that deliver reliable and cost-effective energy savings. We focus exclusively on the commercial and industrial (C&I) customer segments, with a track record of successful partnerships that spans more than a decade. Through a focus on high quality, measurable savings, EnerNOC has successfully delivered hundreds of thousands of MWh of energy efficiency for our utility clients, and we have thousands of MW of demand response capacity under management.
- The Consulting team provides expertise and analysis to support a broad range of utility DSM activities, including: potential assessments; end-use forecasts; integrated resource planning; EE, DR, and smart grid pilot and program design and administration; load research; technology assessments and demonstrations; evaluation, measurement and verification; and regulatory support.

The team has decades of combined experience in the utility DSM industry. The staff is comprised of professional electrical, mechanical, chemical, civil, industrial, and environmental engineers as well as economists, business planners, project managers, market researchers, load research professionals, and statisticians.

Utilities view EnerNOC's experts as trusted advisors, and we work together collaboratively to make any DSM initiative a success.

6.0 Appendix E:

**BEFORE THE
ARKANSAS PUBLIC SERVICE COMMISSION**

Energy Efficiency Arkansas

2012 Annual Report

Part 1. Narrative Report

1.0 Executive Summary

The Energy Efficiency Arkansas (“EEA”) 2012 report for the EEA program is provided by the Arkansas Economic Development Commission-Energy Office (the “AEO”) on behalf of the Arkansas Oklahoma Gas Corporation, Arkansas Western Gas Company, CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Arkansas Gas, The Empire District Electric Company, Entergy Arkansas, Inc., Oklahoma Gas and Electric Company, and Southwestern Electric Power Company (the “EEA Utilities” and, together with the AEO, the “Parties”) for the statewide education program approved by the Arkansas Public Service Commission (“APSC” or “Commission”) in Order No. 7 of Docket No. 07-083-TF. Although not required by the APSC to participate in the Memorandum of Understanding (the “MOU”) between the parties, the Arkansas Electric Cooperatives Corporation (“AECC”) agreed to voluntarily contribute their pro-rata share for expenses contained in the MOU.

This EEA 2012 Annual Report covers the recommendations filed in the Second Amended MOU. The report covers the activities for the EEA Comprehensive program from January 1, 2012 through December 31, 2012. The EEA 2012 report discusses the EEA Working Group Activities and the four EEA Program Components.

On May 15, 2012, EEA staff testified during the APSC hearing and notified the Commission that EEA planned to file an extension to the Second Amended MOU so that EEA’s programming would correspond with the Utilities’ current three-year portfolios, which will end on December 31, 2013. On August 8, 2012, the EEA Working Group met to discuss the details of extending the Second Amended MOU through December 31, 2013 and how to best utilize the \$563,796 of surplus funds from the prior MOU. The EEA Working Group discussed expanding programs to encompass activities such as Residential Energy Codes Training (“RECT”), Centers of Excellence (“CoE”), the Arkansas Industrial Energy Clearinghouse (“AIEC”) and legal representation,. The EEA Working Group approved funding the RECT (\$26,560), but the EEA Working Group requested more program information from the CoE and a more comprehensive budget outline from EEA staff.

During the August 15, 2012 EEA Working Group conference call, the EEA Working Group approved new funding for CoE (\$187,460), additional funding for AIEC (\$70,509), and new funding for legal representation for EEA (\$30,000). The total amount of expanded programming was \$342,158; the EEA Working Group agreed to fund the expanded programs with the prior MOU's surplus funding of \$563,796. After funding the additional and extended programs, \$221,638 would still remain. The EEA Working Group voted to credit the \$221,638 to the Utilities' 2013 invoices.

On December 4, 2012, EEA filed the Third Amended MOU with the Commission which extends the EEA Comprehensive Program through December 31, 2013 and incorporates all the expanded programs. The Commission approved the Third Amended MOU on December 31, 2012.

The EEA Comprehensive Program consists of four primary components: Education and Information Outreach (Residential), Media Promotion, Commercial and Industrial Education and Information Outreach, and Program Evaluation. The following is an overview of many of the EEA activities for each of the four components:

- I. The EEA's Education and Information Outreach (Residential) Program was aided by the AEO outreach staff which played a major role in the distribution of EEA material. At the beginning of 2012, EEA and AEO developed the *Track and Save Program*, this program allows library patrons the opportunity to check out kilowatt meters from participating public libraries throughout Arkansas to measure energy use at home. EEA provided a total of 35,899 CDs and fact sheets (*Heating, Cooling, Water Heating, Lighting and Appliances, Locating and Sealing Air Leak*) to participating public libraries throughout Arkansas. The AEO and EEA outreach staff was able to distribute a total of 17,226 fact sheets and CDs through 17 grassroots events. Through EEA's toll-free phone number, EEA fulfilled requests for 21,028 packets of EEA's energy efficiency material. EEA also reprinted 10,000 copies of "*30 Simple Things You Can Do To Save Energy and Money*" booklets. With the approval of the RECT by the EEA Working Group, EEA sponsored 11 Residential Energy Code Trainings which trained a total of 279 builders, code officials, remodelers, HVAC contractors and insulation installers on the updated 2013 Energy Codes.

- II. The purpose of the EEA media promotion is to make consumers aware of energy and cost-savings opportunities, motivate individuals to reduce energy consumption, provide information on specific cost-effective energy efficiency measures, and inform

the public how and where to get additional energy information with the ultimate goal of changing individual and/or collective behavior. EEA and Stone Ward contracted over 2,200 television advertisements and 460 radio advertisements in the major metro areas of Little Rock, Fort Smith/Fayetteville, and Jonesboro. EEA placed print advertisements in the following publications aimed at minority markets: *The Stand, News, Green Living Guide, Perspectives, El Latino, Hola Arkansas, Amigo News, and La Prensa*. During August 13th - August 17th, EEA hosted a summer "Tighten-Up Week" to increase interest in home energy efficiency practices. The Director of AEO appeared on morning radio and television talk shows to emphasize the benefits of energy efficiency practices and promote utilities' rebates and incentives.

III. The Commercial and Industrial Education component is designed to provide training to school districts, state agencies and large commercial and industrial sectors. The EEA Commercial and Industrial Education program trained a total of 344 participants in such topics as Commercial HVAC, Industrial Compressed Air Systems, Pumping System Optimization, Boiler Operations and Safety, Motors and Drives, and Refrigeration Energy Management. Commercial and Industrial trainings increased by 63 participants, or 22 percent above 2011 training levels. The EEA utilities have participated in commercial training by enrolling and sending utility staff or utility contractors. Many of the utilities have promoted their rebates and incentives during the commercial trainings.

IV. EEA posted a Request for Proposal ("RFP") for program evaluation on October 17, 2012. The selected program evaluator will provide expert advice to the EEA stakeholders regarding improving efficiency and effectiveness of the EEA program. Evaluation activities will begin in 2013.

Highlights

- The EEA distributed over 17,226 copies of EEA materials (fact sheets, CDs and magnets) at 17 Arkansas grassroots events.
- As a partner of the AEO *Track and Save Program*, EEA distributed 35,899 copies of EEA materials (fact sheets and CDs) to participating Arkansas Public Libraries.

- EEA sponsored 11 Residential Energy Code Trainings which trained a total of 279 builders, code officials, remodelers HVAC contractors and insulation installers on the updated 2013 Energy Codes.
- The Boiler Operations and Safety training resulted in 21 students passing the Arkansas Boiler Operators licensing examination.
- EEA incorporated AIEC into the EEA Commercial and Industrial Education and Outreach.
- Commercial and Industrial trainings increased by 63 participants, or 22 percent above 2011 training levels.
- The EEA program received a Webby Award for outstanding website design.
- EEA received an award for Leadership in Environmental Education for sponsoring the CEM training with Arkansas Environmental Federation.

What is working and what needs improvements

What is working:

- Increased interaction with the EEA Working Group and Utilities with the following activities :
 1. Active participation in Grassroots Events - Fairs, Tradeshows and Conferences.
 2. Active participation in training events - making presentations regarding incentives and taking the training courses.
- AIEC recommending energy and cost-savings opportunities to Arkansas' industrial and manufacturing sectors.

What needs improvements:

- Social media, such as facebook and twitter, could significantly help EEA in its outreach efforts. However, these tools have not been fully utilized. After EEA received the year-end summary from the marketing group, EEA advised the marketing team to increase its usage of these tools.

Utilities Participation

The utilities or their contractors have participated in all of the EEA trainings by having account representatives attend the training and/or by providing rebate and incentive information. The utilities also

provided major support with staff and energy incentives information for trade shows, fairs and other grassroots events.

All of the utilities participated in the EEA working group meeting on August 8 and 15, 2012, and provided valuable feedback regarding extending and expanding the EEA program. The utilities also provided major input in the Third Amend MOU.

EEA - Electric Utilities 07-083-TF EE Portfolio Summary by Program					
Program Name	Program Type	Market	2012		% Of Rbudget
			RBudget (\$)	Actual (\$)	
Entergy	Public Education	Res / C&I (All)	317,952	268,137	84.33%
OG&E	Public Education	Res / C&I (All)	25,929	21,867	84.33%
SWEPSCO	Public Education	Res / C&I (All)	48,332	40,760	84.33%
Empire	Public Education	Res / C&I (All)	1,787	1,507	84.33%
Regulatory	-	-	0	0	-
Total:			533,215	449,674	84.33%

EE Portfolio Summary by Cost Type - Electric				
EE Program Cost Summary		2012 Total Cost		
Type	% of Total	RBudget (\$)	Actual (\$)	% of Total
Planning / Design	0%	0	0	0%
Marketing & Delivery	100%	533,215	449,674	100%
Incentives / Rebates	0%	0	0	0%
Evaluation, Measurement, and Verification	0%	0	0	0%
Administration	0%	0	0	0%
Regulatory	0%	0	0	0%
Total	100%	533,215	449,674	100%

EEA - Natural Gas Utilities 07-083-TF EE Portfolio Summary by Program					
Program Name	Program Type	Market	2012		% Of Rbudget
			RBudget (\$)	Actual (\$)	
Centerpoint	Public Education	Res / C&I (All)	150,462	126,889	84.33%
SourceGas	Public Education	Res / C&I (All)	54,879	46,281	84.33%
AOG	Public Education	Res / C&I (All)	16,645	14,037	84.33%
Regulatory	-	-	0	0	-
Total:			221,986	187,206	84.33%

EE Portfolio Summary by Cost Type - Natural Gas

EE Program Cost Summary		2012 Total Cost			
Type		% of Total	RBudget (\$)	Actual (\$)	% of Total
Planning / Design		0%	0	0	0%
Marketing & Delivery		100%	221,986	187,206	100%
Incentives / Rebates		0%	0	0	0%
Evaluation, Measurement, and Verification		0%	0	0	0%
Administration		0%	0	0	0%
Regulatory		0%	0	0	0%
Total		100%	221,986	187,206	100%

2.0 Portfolio Impact

The purpose of the EEA Program is to cost-effectively deliver relevant, consistent, and fuel neutral information and training that causes people to consume less energy through energy efficiency and conservation measures.

Below is the program cost by each utility which includes the budgeted and actual dollars for each report year.

EEA - Electric Utilities 07-083-TF Portfolio Impact

Program Cost - Electric										
RBudget (\$)	2010			2011			2012			
	Utility	RBudget (\$)	Actual (\$)	% of Rbudget	RBudget (\$)	Actual (\$)	% of Rbudget	RBudget (\$)	Actual (\$)	% of Rbudget
	Entergy	271,542	412,212	152%	297,988	190,489	64%	317,952	268,137	84%
	OG&E	22,039	32,763	149%	24,211	15,458	64%	25,929	21,867	84%
	SWEPCO	39,780	58,806	148%	45,912	29,353	64%	48,332	40,760	84%
	Empire	1,451	2,081	143%	1,696	1,086	64%	1,787	1,507	84%
	Regulatory	0	0	-	0	0	-	0	0	-
	Total	482,303	732,611	152%	482,271	308,291	64%	533,215	449,674	84%

**EEA - Natural Gas Utilities
07-083-TF
Portfolio Impact**

Program Cost - Natural Gas

RBudget (\$)	2010			2011			2012		
	RBudget (\$)	Actual (\$)	% of Rbudget	RBudget (\$)	Actual (\$)	% of Rbudget	RBudget (\$)	Actual (\$)	% of Rbudget
Centerpoint	142,061	220,095	155%	133,181	85,106	64%	150,462	126,889	84%
SourceGas	50,099	74,508	149%	48,971	31,307	64%	54,879	46,281	84%
AOG	15,483	23,957	155%	14,876	9,509	64%	16,645	14,037	84%
Regulatory	0	0	-	0	0	-	0	0	-
Total	207,643	318,560	153%	197,028	125,921	64%	221,986	187,206	84%

3.0 Portfolio Programs

The EEA Comprehensive Program consists of four primary program components which are:

- Residential Education and Information Outreach
- Media Promotion
- Commercial and Industrial Education and Information Outreach
- EEA Program Evaluation

The following is a brief summary of the activities and progress of EEA:

I. RESIDENTIAL EDUCATION AND INFORMATION OUTREACH

The Residential Education and Information Outreach component of the EEA Comprehensive Program is comprised of the following four activities: updating and reproducing fact sheets; reproducing and co-branding publications; distribution of information via requests and outreach events; and Residential Energy Codes Training/Energy Star Homes Seminar

- **Updating and reproducing fact sheets**

The EEA has developed and updated the five fact sheets (*Heating, Cooling, Water Heating, Locating and Sealing Air Leaks, and Lighting and Appliances*). Each fact sheet provides customers with

an explanation of low-cost/no-cost actions that they can take within key topic areas and the resulting benefits. Thirty-thousand (30,000) copies of each fact sheet were printed in the 2012 program year.

- **Reproducing and Co-branding Publications**

The EEA has converted *The Home Energy Project (HEP) booklets and the Five Fact Sheets* to a CD for general distribution to customers. The CD will have information regarding utilities incentives such as rebates, energy efficiency products and tips. EEA reproduced 10,000 CDs for general distribution. EEA also reprinted 10,000 copies of "30 Simple Things You Can Do To Save Energy and Money" booklets.

2013 Outlook: The HEP Booklet has been requested by several code officials and energy efficiency professionals. EEA will update and reprint 10,000 copies of the HEP booklet for 2013. Also, EEA will produce 15,000 CDs, adding "How To" video clips for 2013.

- **Responding to Requests for Distribution of Information**

EEA distribution of information was aided by AEO staff for program year 2012. Arkansans obtained a majority of EEA material by phone (toll-free), public library (Track and Save Program), or grassroots events (fairs, tradeshow, and conferences).

EEA distributed a total of 74,153 items of EEA material. The Track and Save program accounts for 49 percent of the total distribution of EEA material. The Track and Save program allows library patrons the opportunity to check out kilowatt meters from participating public libraries throughout Arkansas to measure energy use at home. EEA materials are available at all participating libraries.

The AEO and EEA outreach staff was able to distribute a total of 17,226 fact sheets and CDs during 17 grassroots events, including the Arkansas State Fair and several regional fairs (see events table). Also, the utilities were able to distribute energy efficiency light bulbs, incentive, and rebate information.

2013 Outlook: Increase grassroots events participation. EEA's goal is to attend 35 events with high visibility.

Below is a listing of EEA material that was distributed and the remaining inventory as of 12/31/2012:

**Distribution of EEA Fact Sheets, CD's and 30 Simple Things Booklets
1/1/2012-12/31/2012**

Name of Material Distributed	Track & Save	Phone Request	Grassroots Outreach	Total	
				Distributed by Item	Inventory As of 12/31/2012
Heating Fact Sheets	7,100	3,648	2,615	13,363	16,637
Cooling Fact Sheets	7,100	3,648	2,750	13,498	16,502
Water Heating Fact Sheets	7,100	3,648	2,750	13,498	16,502
Lighting and Appliances Fact Sheets	7,100	3,648	2,750	13,498	16,502
Locating and Sealing Air Leaks Fact Sheets	7,100	3,648	2,750	13,498	16,502
EEA CD's	399	2,148	2,728	5,275	4,725
30 Simple Thing Booklet		640	883	1,523	8,477
Total	35,899	21,028	17,226	74,153	95,847

Events

EXTERNAL Events EEA information was distributed

Event No.	Date	Event and Location	Sponsor	Information Distributed
1	1/9/2012	First Time Home Buyer Classes-Russellville	Universal Housing Development Corp.	600
2	1/11/2012	Business Expo Pine Bluff	Pine Bluff Jefferson County Economic Opportunities Commission	1,520
3	2/8/2012	Arkansas Industrial Energy Conference-Little Rock	Arkansas Industrial Energy Clearinghouse	100
4	2/22/2012	Employee Event -Gentry	McKee Foods	350
5	2/9/2012	First Time Home Buyer Classes-North Little Rock	Family Service Agency North Little Rock	600
6	3/16/2012	Annual National EAST Conference-Hot Springs	All east schools throughout AR participating.	66
7	3/29/2012	Energy Outreach-Fayetteville	NCAT Fayetteville	720
8	4/18/2012	DHS-Turn It Off Day-Little Rock	Dept. of Human Services	650
9	4/19/2012	UAMS Earth Day, Little Rock	UAMS	500
10	4/27/2012	Energy Outreach	Interfaith Power and Light	280
11	5/31/2012	Energy Outreach	Arkansas Energy Corps	600
12	7/27/2012	Arkansas Weatherization Conference, Springdale, AR	Arkansas Weatherization-DHS	300
13	9/11-15/2012	Garland County Fair-Hot Springs	Garland County	1,350
14	9/24-29/2012	South Arkansas District Fair-Pine Bluff	Jefferson County	2,100
15	10/4-5/2012	AEF Conference-Hot Springs	Arkansas Environmental Federation	450
16	10/12-21/2012	Arkansas State Fair-Little Rock	Arkansas Livestock Association	6,650
17	11/3/2012	Asian Festival	Asian Pacific Resource and Cultural Center	390
Total Distributed 2012				17,226

- **Residential Energy Codes Training and Outreach**

EEA contracted with the Arkansas Home Builders Association and conducted 11 Energy Star Home classes around the state. A total of 279 building professionals and code officials participated in the

trainings. The eleven trainings covered aspects of the code as they pertain to residential construction. The trainings included a discussion regarding the current 2011 Arkansas Energy Code, an overview of building sciences, an overview of the coming update to the code in 2013 and presentations from the local utilities regarding their energy efficiency programs.

II. MEDIA PROMOTION

EEA combined radio, television, and printing into one mass media category with a single consolidated budget. Consolidating media costs into a single budget category allowed the media contractor to better capitalize on media block buys at a cheaper price and enabled the marketing firm to allocate media dollars in a manner that maximized the benefits to the program.

The mass media budget was \$250,000 which covered print ads, TV and radio spots during the program term June 2010 through December 2012. The media budget for 2012 was \$100,000 budgeted. The mass media cost for 2012 totaled \$114,769.82. Due to TV advertisement, the cost was higher than expected; the EEA media promotion exceeded the 2012 budget by \$14,769.82. This cost difference was mitigated by other program cost savings.

- **Develop and Maintain a Fuel Neutral EEA Website.**

The website offers fuel neutral information on energy efficiency measures, practices, resources, and technologies for all customer classes. The website has direct links to the utility partners as well as AEO publications, EEA media advisories, upcoming events, etc.

The EEA website has plenty of energy saving information plus an interactive energy saving game that encourages consumers to test their energy saving knowledge and review their energy usage behavior. Also the website has direct links to incentives offered by the utilities. The EEA website was updated to include a Commercial and Industrial section to promote EEA trainings.

III. COMMERCIAL AND INDUSTRIAL EDUCATION AND INFORMATION OUTREACH

Below is a description of the Commercial and Industrial training opportunities and the budget:

- **Energy Efficiency in Industry Workshops**

The AEO, through the EEA, contracted with Arkansas Manufacturing Solutions to develop and implement an information outreach program comprised of two activities:

1. **Energy 101** focuses on topics that are current and relevant and present timely opportunities for energy and demand savings.
2. **Energy management Seminars** focus on energy efficient technologies and best practices.

2012 Activities: AMS conducted two Economics of Energy Efficiency classes, two Refrigeration Energy Management classes and two Boiler Efficiency seminars; a total of 110 participants attended the trainings.

2013 Outlook: EEA will sponsor four Industrial Energy Efficiency workshops for 2013.

- **Commercial HVACR Load Sizing and Duct Design Workshops**

The AEO contracted with Air Conditioning Contractors of America (ACCA) to conduct several three-day workshops. The workshops provide HVACR contractors with practical applications for properly sizing ducts and Manual N heat load calculations. HVACR contractors completing the workshop receive a certification of completion and 24 North American Technical Excellence (NATE) recertification hours.

2012 Activities: EEA sponsored Commercial HVACR Load Sizing and Duct Design workshop; a total of 10 participants attended the workshop.

2013 Outlook: EEA will sponsor one Commercial HVACR Load Sizing and Duct Design workshop for 2013.

- **Energy Audits for Commercial/Industrial Training**

The commercial audit encompasses the total building. The industrial audit focuses on efficiency improvements in the production process, but also includes a building envelope assessment. The benefits of the commercial and industrial audit training are below:

- Analyze building envelope, roofs, walls between conditioned spaces, construction joints and connections, and door and window frames and seals
- Analyze HVAC systems ductwork, fans and blowers, and electrical connections
- Analyze motors and generators

- Analyze lighting

The C/I audit gathers energy data and reviews previous utility bills from the previous year to find areas of the facility that may be using the most energy. Also the audit reviews the current rate structure, demand and consumption figures, and other fees for natural gas, electric, and other fuel. Completion of this training prepares energy auditors, other energy professionals and participants to take the Arkansas Association of Energy Engineers' (AEE) certification test for Certified Energy Auditor ("CEA").

2012 Activities: EEA sponsored CEA training; a total of 21 participants attended the training.

2013 Outlook: EEA will sponsor a CEA training for 2013.

- **Industrial Compressed Air Systems Training**

In many industrial facilities, air compressors use more electricity than any other type of equipment. The impact of inefficiencies in compressed air systems can therefore be significant. A properly managed compressed air system can save energy, reduce maintenance, decrease downtime, increase production output, and improve product quality.

2012 Activities: EEA sponsored three Industrial Compressed Air Systems trainings; a total of 56 participants attended the trainings.

2013 Outlook: EEA will sponsor one Industrial Compressed Air Systems training for 2013.

- **Certified Energy Management ("C.E.M.") – Program for Professional Certification**

Certified energy managers can assist school districts, hospitals, large commercial facilities, and industries identify unnecessary energy waste. Offering energy based education to large commercial and industrial facility and plant management personnel (with the added benefit of and opportunity for professional certification) increases the likelihood that real savings will be achieved. Additionally, an increased number of professionals in the energy trades workforce in Arkansas can enhance the state's

readiness for future utility and state incentives for energy improvements that are dependent on certified professionals.

2012 Activities: EEA sponsored two CEM seminars; a total of 38 participants attended the trainings. Of the 38 participants, 24 students passed the CEM examination.

2013 Outlook: EEA will sponsor two CEM seminars for 2013.

- **Benchmarking and Performance C/I Training**

The US Department of Energy (“DOE”) and the US Environmental Protection Agency (“EPA”) have developed a nationally recognized and accepted benchmarking tool: ENERGY STAR[®] Portfolio Manager (“ESPM”). ESPM is an interactive energy management tool that allows businesses and industries to track and assess energy and water consumption across an entire portfolio of buildings in a secure online environment.

2012 Activities: EEA sponsored one Benchmarking seminar; a total of 30 participants attended the trainings.

2013 Outlook: EEA will sponsor one Benchmarking seminar for 2013.

- **Pumping System Optimization**

The one day workshop covers practical issues involved in field measurements and electrical data. It offers an introduction to the Pumping System Assessment Tool (“PSAT”) software which is used to assess the performance of the pump systems. Participants learn how the software functions, what data is required, how to use the software when measured data are not available, and what the assessment results mean.

2012 Activities: EEA sponsored two Pumping System Optimization workshops; a total of 20 participants attended the workshops.

2013 Outlook: EEA will sponsor one Pumping System Optimization workshop for 2013.

- **Motor Systems Management Training**

This training helps the end-users gain skills necessary to effectively manage electric motor systems; the knowledge results in reduced energy costs and increased system reliability. In addition, the workshop provides an overview of DOE's MotorMaster+ and MotorMaster+ International software.

2012 Activities: EEA sponsored three Motor Systems Management trainings; a total of 37 participants attended the trainings.

2013 Outlook: EEA will sponsor Motor Systems Management training for 2013.

- **Boiler Operation and Maintenance Training**

The AEO contracted with Applied Thermal Engineering Inc. to conduct several three-day EEA boiler training workshops. The workshops were designed to provide in-depth training on safe and energy-efficient boiler operation including maintenance, inspections, and codes and troubleshooting. At the conclusion of the training, the students were presented with a certificate of completion and credited with 2.4 Continuing Education Units.

2012 Activities: EEA sponsored one Boiler Operator workshop; a total of 22 participants attended the workshop. Of the 22 participants, 21 passed the Arkansas licensing exam for Boiler Operators.

2013 Outlook: EEA will sponsor one Boiler Operator workshop for 2013.

- **Building Operator Certification ("BOC") Training**

BOC training teaches trainees how to recognize practical and no-cost/low-cost solutions, work with existing building systems, and improve energy performance. BOC training includes a variety of topics such as electrical and lighting systems, HVAC, indoor air quality, sustainability practices, and energy conservation.

The BOC training is certified by the Northwest Energy Efficiency Alliance. The Level I training provides 7 to 14 hours CEU's. The BOC exam is offered for participants seeking for BOC Level I certification.

2012 Activities: BOC training was not feasible due to an insufficient budget for training costs. While EEA may have been able to host one class with the prescribed budget, the EEA Working Group believed the return on investment would not be favorable. The funds were redistributed to support other programming.

Comprehensive Program C/I Training							
Name	2012 Budgeted Workshops	2012 Completed Workshops	2012 Attendees	Beginning Balance 2012	2012 Budget	2012 Cost	Balance
School Facility Managers Training & Webinars	6			\$47,078	\$17,600		\$47,078
Energy Efficiency in Industry Workshops	4	6	110	\$0	\$61,800		\$0
Commercial HVACR Load Sizing & Duct Design	2	1	10	\$27,769	\$24,725	\$20,500	\$7,269
Building Commissioning Workshops	1			\$61,667	\$20,150		\$61,667
Energy Audits for Commercial/Industrial Training	1	1	21	\$23,000	\$23,000	\$23,000	\$0
Industrial Compressed Air Systems Training	1	3	56	\$61,256	\$20,150	\$28,332	\$32,924
C.E.M. Certification	2	2	38	\$0	\$30,280		\$0
Benchmarking and Performance Training	1	1	30	\$55,500	\$18,500	\$10,500	\$45,000
Pumping System Optimization	1	2	20	\$55,500	\$18,500	\$22,290	\$33,210
Motor Systems Management Training	1	3	37	\$55,500	\$18,500	\$19,259	\$36,241
Boiler Operation and Maintenance Training	1	1	22	\$41,750	\$12,500	\$24,482	\$17,268
Building Operator Certification Training*	0			\$55,500	\$0		\$0
Totals	12	20	344	\$484,520	\$265,705	\$148,363	\$280,657

* Reallocation to AIEC

- **Arkansas Industrial Energy Clearinghouse**

The AIEC is a joint project of the University of Arkansas and the AEO. The primary function of the AIEC is to support and promote energy efficiency developments in Arkansas manufacturing plants. The AIEC has a full-time engineering staff and part-time students available to respond to inquiries from industry, at no cost to the participants.

The AIEC has been in existence for two years, has experienced staff, and is well known and trusted within the state. Energy savings recommendations for companies located across the entire state have covered a wide spectrum of energy systems, including compressed air, lighting, process heat, steam/condensation, waste heat recovery, fans, pumps, and more. EEA began sponsoring AIEC in June 2012. AIEC has served 46 different companies in the state of Arkansas with energy efficiency recommendations and other support. In addition to supporting the manufacturers directly, the AIEC indirectly supported these companies through interactions with their utility companies and their energy efficiency programs. Cost of AIEC for 2012 was \$70,509.

2013 Outlook: EEA will continue to fund the AIEC for 2013; the 2013 cost will be an additional \$98,138.

IV. EEA Program Evaluation

EEA posted a RFP for a Program Evaluator on October 17, 2012. The solicitation closed on November 21, 2012, and the RFP evaluator selection committee was established in December 2012. The Evaluator Selection Committee was composed of seven reviewers that represented gas utilities, electric utilities, Attorney General, APSC, AEO, ACAAAA and the IEM.

2013 Outlook: EEA will select and hire a Program Evaluator. The Program Evaluator will provide an evaluation report as required by the APSC.

Benefits Cost Results-N/A

4.0 Supplemental Requirements

4.1 Training

Training										
EXTERNAL TRAINING (contractors, trade allies, consumer groups, etc.)										
Event No.	Date	Class	Class Description	Training Location	Sponsor	No. of Attendees (A)	Length of Session (B)	Training Session Man-hours (A x B)	Any Certificates Awarded? (Y or N)	# of Certificates Awarded
1	February 21-23, 2012	Commercial HVAC Training	Training is designed to encourage improve installation and energy efficient practices for the heating, ventilation and air conditioning equipment.	Little Rock	EEA	10	16	160	Y	10
2	March 13-15, 2012	Boiler Operation Safety Training	The training objective is to teach safety and energy efficiency techniques with proper maintain of a steam boiler.	Jonesboro	EEA	22	20	440	Y	21
3	March 12-16, 2012	Certified Energy Manager Training	The CEM certification recognizes individuals who have demonstrated high levels of experience competence, proficiency and ethical fitness in the energy management profession	Bentonville	EEA	21	40	840	Y	21
4	March 27, 2012	Economics of Energy Efficiency	Workshop provides an overview of topics to understand the economics around energy efficiency.	Searcy	EEA	15	6	90	N	
5	March 28, 2012	Economics of Energy Efficiency	Workshop provides an overview of topics to understand the economics around energy efficiency.	Fort Smith	EEA	20	6	120	N	
6	April 2-5, 2012	Certified Energy Auditor	The training is certification offered by the Association of Energy Engineers	Little Rock	EEA	21	40	840	Y	21
7	April 17, 2012	Fundamentals of Compressed Air	Training course designed to teach facility engineers, operators and maintenance staff how to achieve 15-25% cost savings through more effective production and use of compressed air	Russellville	EEA	25	7	175	Y	25
8	April 18, 2012	Fundamentals of Compressed Air	Training course designed to teach facility engineers, operators and maintenance staff how to achieve 15-25% cost savings through more effective production and use of compressed air	Little Rock, AR	EEA	15	7	105	Y	25
9	May 3, 2012	Boiler and Steam System Efficiency	The training objective is to teach energy efficiency techniques with proper maintain of a steam boiler.	Fayetteville	EEA	23	6	138	N	
10	May 23-24, 2012	Motor Systems Management	Training covers motor construction, performance, and energy saving due to variable speed applications	Fort Smith	EEA	17	12	204	Y	17
11	August 16, 2012	Boiler and Steam System Efficiency	The training objective is to teach energy efficiency techniques with proper maintain of a steam boiler.	Little Rock	EEA	24	6	144	N	
12	August 21-22, 2012	Pumping System Optimization	Training identifies the importance of energy conservation and highlights opportunities to optimize pumping systems for energy efficiency	Jonesboro	EEA	8	16	128	Y	8
13	September 5, 2012	Refrigeration Energy Management	The training addresses the concepts of energy consumption in industrial refrigeration systems	Little Rock	EEA	11	8	88	Y	11
14	September 6, 2012	Refrigeration Energy Management	The training addresses the concepts of energy consumption in industrial refrigeration systems	Russellville	EEA	17	8	136	Y	17
15	September 12-13, 2012	Advanced Management of Compressed Air Systems	The workshop teaches participants the advantages of optimizing their compressed air systems - higher productivity, energy saving, and increase product quality.	Little Rock	EEA	16	15	240	Y	16
16	September 22, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Siloam Springs	EEA	23	7	161	N	

Training										
EXTERNAL TRAINING (contractors, trade allies, consumer groups, etc.)										
Event No.	Date	Class	Class Description	Training Location	Sponsor	No. of Attendees (A)	Length of Session (B)	Training Session Man-hours (A x B)	Any Certificates Awarded? (Y or N)	# of Certificates Awarded
17	September 25, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Searcy	EEA	3	7	21	N	
18	September 26, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Jonesboro	EEA	23	7	161	N	
19	September 27-28, 2012	Motor Systems Management	Training covers motor construction, performance, and energy saving due to variable speed applications	Texarkana	EEA	10	12	120	Y	10
20	October 9, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	:Hot Springs	EEA	34	7	238	N	
21	October 15-18, 2012	Certified Energy Manager Training	The CEM certification recognizes individuals who have demonstrated high levels of experience competence, proficiency and ethical fitness in the energy management profession	Little Rock	EEA	17	40	680	Y	17
22	October 16, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Bentonville	EEA	50	7	350	N	
23	October 24, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Mountain Home	EEA	19	7	133	N	
24	October 25-26, 2012	Motor Systems Management	Training covers motor construction, performance, and energy saving due to variable speed applications	Little Rock	EEA	10	12	120	Y	10
25	October 17, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Fort Smith	EEA	39	7	273	N	
26	October 25, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	North Little Rock	EEA	25	7	175	N	
27	October 31, 2012	Energy Management Benchmarking	The workshop provide the important of energy management steps of assessing current and past energy performance.	Russellville, AR	EEA	30	5	150	Y	30
28	November 13, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Ozark	EEA	16	7	112	N	

Training										
EXTERNAL TRAINING (contractors, trade allies, consumer groups, etc.)										
Event No.	Date	Class	Class Description	Training Location	Sponsor	No. of Attendees (A)	Length of Session (B)	Training Session Man-hours (A x B)	Any Certificates Awarded? (Y or N)	# of Certificates Awarded
29	November 14, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	North Little Rock	EEA	30	7	210	N	
30	November 16, 2012	Residential Energy Code Training	Classes are designed for builders, code officials, remodelers, HVAC and insulation installers. Training covers aspects of the codes as they pertain to residential construction	Texarkana	EEA	17	7	119	N	
31	December 5-6, 2012	Pumping System Optimization	Training identifies the importance of energy conservation and highlights opportunities to optimize pumping systems for energy efficiency	Fayetteville	EEA	12	12	144	Y	12
Totals:		Sessions:	31			623		7,015		271

4.2 Lost Contribution to Fixed Cost-NA

4.3 Unity Performance Incentives-N/A

4.4 Challenges & Opportunities

4.5 Market Maturity

4.6 Staffing

The EEA current staffing is one full time person.

4.7 Stakeholder Activities

4.8 Estimation of EE Resource Potential

4.9 Information Provided to Consumers to Promotion EE

EEA FACT SHEETS

energy efficiency facts HEATING

If you're like most Arkansians, the cost of heating is a large portion of your winter utility budget. In fact, the average Arkansas household spends about \$412 a year on heating costs (see figure 1). Whether you are a furnace or boiler, you can reduce your energy costs without sacrificing comfort. Surprising savings can be achieved through basic energy efficiency measures, many of which have little or no cost. Other energy improvements may require a larger investment, but they typically pay for themselves in the form of energy savings within a few years — then, it's money in your pocket!

Average Annual Utility Costs



Source: Energy Information Administration 2011 Residential Energy Consumption Survey Applying 2007 Average Utility Costs

No Cost

- **Turn down the thermostat.** For every degree you lower your thermostat you will save up to 5 percent on heating costs in Arkansas. Lowering it just one degree can save you \$14 to \$26 a year.
- **Let the sunshine in.** Open south-facing window coverings during the day to let in free heat from the sun. Close all draperies and shades at night to reduce heat loss.
- **Don't block the flow.** Move furniture and other objects away from heating registers to prevent the blockage of heat.
- **Don't let heat go up the chimney.** A fireplace is a very inefficient heating system and can account for about 14 percent of the cold air entering your home, which increases

your heating costs. Make sure that the fireplace damper and glass doors are closed when the fireplace is not in use — until you close them, warm air escapes 24 hours a day.

Myths and Facts

Myth: When I turn down my thermostat at night, it takes more energy to reheat the house in the morning when I turn the thermostat back up.

Fact: No matter how long you will be gone or asleep, you will save energy by turning down the thermostat.* Heat escapes faster when there is a larger difference between indoor and outdoor temperatures. When you turn down the thermostat, the indoor temperature is closer to the outdoor temperature, the furnace runs less and you lose less heat and save energy. In the morning, the furnace will run a little longer to bring the house back to temperature; however, the nighttime energy savings is much greater than the energy needed to re-heat the house.

*Only if the furnace is a gas or oil furnace. Electric heat pumps are an exception.

Myth: The higher the thermostat is set, the faster the furnace will heat the house.

Fact: Most furnaces deliver heat at the same rate, no

energy efficiency facts COOLING

In Arkansas, almost one-fourth of our annual utility costs are paid to keep us cool (see figure 1). There are many ways to reduce cooling costs while maintaining comfort. First, reduce heat gain by reflecting or blocking sunlight from the home; second, reduce heat-generating sources in the home; and third, remove built-up heat in the home. Reducing summertime humidity is also needed to stay comfortable. It is important to maintain and repair the air conditioning system (including ducts) to get the most from your air conditioning system. Also, when replacing your old air conditioner, make sure that the new system is properly sized and installed so it will provide years of cool, dry air.

Arkansas Average Annual Utility Costs



Source: Energy Information Administration 2011 Residential Energy Consumption Survey Applying 2007 Average Utility Costs

No Cost

- **Shut the shades** and drapes on the sunny side of the home to keep us cool (see figure 1). For the most benefit, drapes should be made of a tightly woven, light-colored, opaque fabric.
- **Make sure that your attic is adequately ventilated** to remove excess heat. Natural attic ventilation works best by

Myths and Facts

Myth: Setting your air conditioner thermostat to its lowest setting will cool the home faster.

Fact: The thermostat is not a throttle, setting it lower than necessary will not cool the home any faster.

Myth: The bigger the air conditioner the better it cools the house.

Fact: Air conditioners cool and dehumidify. An oversized air conditioner can quickly cool a home, but results in it frequently cycling on and off, which doesn't allow it enough time to remove moisture and may make the house feel clammy. A properly sized A/C will operate for a longer period of time during the hottest days, which will remove that uncomfortable moisture. Although a properly sized unit will run longer, it will be more efficient and use less energy.

Myth: The square footage of the house is all that's needed to size an air conditioning system.

Fact: A good load calculation program takes into account window types, window orientation and window shading, insulation of ceiling, walls and floor, air leakage and many other factors such as the color of the roof and the number of occupants. Using the square footage of a home to size an air conditioner is outdated and will almost always yield an oversized system. Don't use a contractor who wants to size your unit solely on the square footage of your house. Request a Manual J or equivalent analysis before purchasing.

energy efficiency facts WATER HEATING

Water heating is the fourth largest energy expense in your home. It typically accounts for about 13 percent of your utility bill. For the average Arkansas household, this could add up to \$247 a year (see figure 1).

Figure 1

Arkansas Average Annual Utility Costs

- **Insulate all hot water pipes that you can see and reach.** For easy installation, ask your hardware store about insulating pipe sleeves.

Reducing Hot Water Consumption

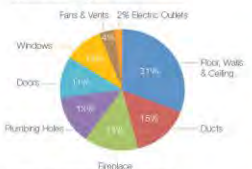
Source: Data and Ebers

energy efficiency facts LOCATING & SEALING AIR LEAKS

According to the Environmental Protection Agency, 25 to 40 percent of the energy used for heating and cooling a typical home is due to air leakage. Warm air leaking into your home during the summer and out of your home during the winter can waste a lot of energy dollars. That's why tightening up your home is the first step you should take in cutting your energy costs. A modest investment in time and effort can pay real dividends when it comes to reducing energy costs. Experts say a \$25 investment in caulking and weatherstripping could result in hundreds of dollars of energy savings every year.

How does air escape? Air leaks in and out of your home through every hole, nook and cranny. Common leakage sites include: plumbing holes through walls, floors and ceilings; around doorways; fireplace dampers; attic access hatches; recessed lights and fans; wiring holes; missing plaster; electrical outlets and switches; moldings around windows, doors and baseboards; and dropped ceilings above bathtubs and kitchen cabinets (see figure 1).

Typical Air Leakage Locations



Source: U.S. Department of Energy, ENERGY STAR® Tips on Sealing Energy & Money at Home

or floor. Check anywhere building materials join and look for daylight that is visible through the cracks. After these have been properly sealed, you will be ready to tighten up other less obvious air leakage areas.

Building via Weatherstripping

Caulking is used between non-moving parts where the gap is less than 1/8-inch wide (e.g., between window frame and wall). Apply caulk on a clean, dry surface after removing any old caulk and paint — the best time to caulk is during dry weather when the temperature is above 45 °F. Weatherstripping comes in clevis

Myths and Facts

Myth: A house can be too air tight.

Fact: It's almost impossible to make a home too tight, especially an older home. If your home feels stuffy or there is condensation forming on your windows, it is probably the result of inadequate ventilation—make sure that kitchens and bathrooms have good exhaust ventilation (recommended to the outside and not into an attic or crawlspace).

Note: If you are heating with an unvented gas or kerosene heater, it is necessary to crack open a nearby window to allow moisture and exhaust gases to escape and fresh air to enter.

Myth: Windows are the largest source of air leakage in the home.

Fact: Only about 10 percent of a home's air leakage is through windows (see figure 1). The majority of air leakage in older homes is through the floor and ceiling, and these areas are the first priority. However, if your windows are beyond repair or

energy efficiency facts LIGHTING & APPLIANCES

Electrical appliances, lighting, and refrigeration can account for 43 percent or more of your household energy consumption. For the average Arkansas household, this could add up to \$820 a year (see figure 1). Understanding where and how much electricity is used to power your home's appliances and lighting will help you use energy more efficiently, reduce wasteful use and save money.

Arkansas Average Annual Utility Costs



Source: Energy Information Administration 2011 Residential Energy Consumption Survey Applying 2007 Average Utility Costs

Figure 2 shows the average annual energy costs for appliances, lighting and other uses. A surprising number of electronic devices are consuming electricity when not in use, even when the switch is turned off — these are called "phantom loads," which can account for 5 to 10 percent of your electricity bill. Phantom loads

Average Annual Costs for Lights & Appliances



include such things as the digital clocks, instant-on TVs, DVD/VCR players, computers and small plug-in transformers that charge cell phones, batteries, etc.

Myths and Facts

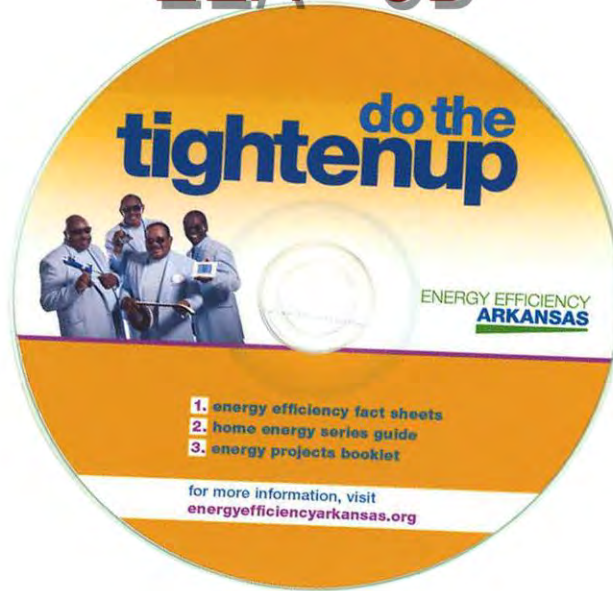
Myth: "Long life" incandescent bulbs are a good investment.

Fact: While a "long life" bulb does last longer than a standard incandescent bulb, it still uses a lot of energy and it doesn't last as long as a CFL. A long life 60-watt incandescent bulb usually lasts for 2,000 hours, but an equivalent 13-watt ENERGY STAR® qualified CFL will last 6,000 hours or more and use 75 percent less energy.

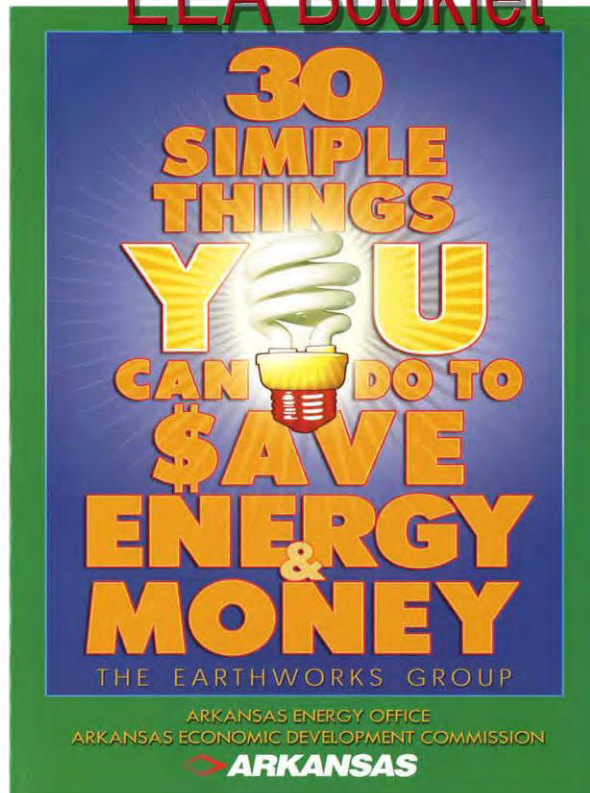
Myth: Computers last longer when they are left on all the time.

Fact: According to the Environmental Protection Agency (EPA), because of built-in "power down" modes, and by reprogramming to turn off your equipment when not in use, computers and home office equipment can last up to ten times longer than conventional products. If your computer must be left on when you are not using it, make sure that you enable the power management feature on your computer for "sleep" mode. Set it to turn the monitor off after 10 minutes and the computer off after 20 minutes. At full power your computer and monitor could draw over 250 watts of power; in "sleep" mode, 15 watts. Also, screen savers do not save energy and can prevent your computer from "sleeping." Many computers and home office equipment now offer energy-saving power management features. Products incorporating this technology are most easily recognized by the ENERGY STAR® label.

EEA - CD



EEA Booklet



<u>Term</u>	<u>Definition</u>
ABudget (Approved Budget)	This is the budget most recently approved by the Commission.
Annual Energy Savings	Energy savings realized in a full year. (8,760 hours)
Benefit Cost Ratio	The ratio of the total benefits of the program to the total costs over the life of the measure discounted as appropriate.
Custom Savings	Savings that are derived from custom measures where deemed savings are not addressed in the currently approved TRM.
Deemed Savings	A “book” estimate of gross energy savings (kWh) or gross energy demand savings (kW) for a single unit of an installed energy efficiency measure that (a) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose and (b) is applicable to the set of measures undergoing evaluation.
Demand	The time rate of energy flow. Demand usually refers to electric power measured in kW but can also refer to natural gas, usually as Btu/hr or therms/day, etc. The level at which electricity or natural gas is delivered to users at a given point in time.
Demand Savings	Demand that did not occur due to the installation of an EE measure. (non coincident peak)
Energy Sales	Energy sold by the utility in the calendar year.
Energy Savings	Energy use that did not occur due to the installation of an EE measure.
Gross Savings	The change in energy consumption and/or demand that results directly from program-related actions taken by participants in an efficiency program, regardless of why they participated.
kW	A Kilowatt is a measure of electric demand - 1000 watts.
kWh	The basic unit of electric energy usage over time. One kWh is equal to one kW of power supplied to a circuit for a period of one hour.
LCFC Energy Savings	For the current Program Year, the sum of eligible net energy savings from (1) measures installed in prior Program Years (8,760 hours) and (2) measures installed in current Program Year as adjusted for time of installation, weather, etc. (less than 8,760 hours). Clarification for item (1) above: The savings reported in the current year should only reflect the current year impact of measures installed in prior years but, should not include the savings claimed and reported in prior years.

Lifetime	The expected useful life, in years, that an installed measure will be in service and producing savings.
Lifetime Energy Savings	The sum of the energy savings through the measure's useful life.
Measures	Specific technology or practice that produces energy and/or demand savings as a result of a ratepayer's participation in a Utility/TPA energy efficiency program.
Net Benefits	The program benefits minus the program costs discounted at the appropriate rate.
Net Savings	The total change in load (energy or demand) that is attributable to an energy-efficiency program. This change in load may include, implicitly or explicitly, the effects of free drivers, free riders, energy-efficiency standards, changes in the level of energy service, and other causes of changes in energy consumption or demand.
Net-to-Gross Ratio (NTGR)	A factor representing net program savings divided by gross program savings that is applied to gross program impacts, converting them into net program load impacts.
Other Savings	Savings for which no deemed savings exist and no custom M&V was performed.
Participant Cost Test (PCT)	A cost-effectiveness test that measures the economic impact to the participating customer of adopting an energy efficiency measure.
Participant	A consumer that received a service offered through the subject efficiency program, in a given program year. The term "service" is used in this definition to suggest that the service can be a wide variety of services, including financial rebates, technical assistance, product installations, training, energy-efficiency information or other services, items, or conditions. Each evaluation plan should define "participant" as it applies to the specific evaluation.
Plan Savings	Annual energy savings budgeted by the Utility for the Program Year.
Portfolio	Either (a) a collection of similar programs addressing the same market (e.g., a portfolio of residential programs), technology (e.g., motor-efficiency programs), or mechanisms (e.g., loan programs) or (b) the set of all programs conducted by one organization, such as a utility (and which could include programs that cover multiple markets, technologies, etc.).
Program Administrator Cost (PAC) Test	The Program Administrator Cost Test measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant.
Program Year	The Year in which programs are administered and delivered, for the purposes of planning and reporting, a program year shall be considered a calendar year,

	January 1 - December 31.
Program	A group of projects, with similar characteristics and installed in similar applications. Examples could include a utility program to install energy-efficient lighting in commercial buildings, a developer's program to build a subdivision of homes that have photovoltaic systems, or a state residential energy-efficiency code program.
Ratepayer Impact Measure (RIM) Test	The Ratepayer Impact Measure (RIM) test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program.
RBudget (Revised Budget)	This is the Budget the utility used for the Program Year. This budget may be different from the Approved Budget (Abudget).
Sales as Adjusted for SD Exemptions	The Utility's 2010 Annual Energy Sales minus the 2010 Annual Energy Sales of the customers granted self-direct exemptions by Commission Order.
Total Resource Cost (TRC) Test	The Total Resource Cost Test measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.
TRC Levelized Cost	The total costs of the program to the utility and its ratepayers on a per kWh or per therm basis levelized over the life of the program.

6.0 Appendix B: EM&V Contractor Report

Evaluation Plan

Independent Evaluator for the Energy Efficiency Arkansas Program

March 26, 2013

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INTRODUCTION

This document provides the evaluation plan (the Plan) for the Arkansas Energy Office's (AEO) Energy Efficiency Arkansas (EEA) program for calendar year 2012.

The AEO contracted with Cadmus to evaluate the EEA program and make meaningful, actionable recommendations for improvement.

Energy Efficiency Arkansas Summary

The AEO launched the Energy Efficiency Arkansas (EEA) program in November of 2007 as a quick-start program. The program has since expanded to be a comprehensive energy-efficiency effort. The EEA Program is designed to deliver relevant, consistent, and fuel-neutral information and training cost-effectively that results in decreased energy consumption when consumers implement energy-efficiency and conservation measures. The EEA's 30-month operating budget is \$1.88 million.

EEA uses information and training to promote energy efficiency and facilitate the adoption of saving technologies, services, and best practices throughout Arkansas. The program is organized into three distinct efforts:

- **Residential Education and Information Outreach:** Update and print fact sheets, reproduce and co-brand publications, distribute to consumers collateral they request through call center and events, and sponsor ENERGY STAR[®] home seminars for builders.
- **Media Promotion:** Use TV, radio, print, and Web to raise awareness and educate consumers on energy-saving opportunities.
- **Commercial Industry Education and Information Outreach:** Provide webinars, trainings, and workshops for school districts, state agencies, and the large commercial and industrial sectors. (Training may include energy management seminars; school facility and state building manager training and webinars; and technical trainings such as HVACR load sizing, duct design, energy audits, building commissioning, compressed air systems, energy management certification, pumping system optimization, building operator certification, motor systems management, and benchmarking.)

This evaluation will focus primarily on EEA's 2012 efforts.

EVALUATION OBJECTIVES AND APPROACH

This section provides an overview of the research objectives for the project, and the proposed approach of Cadmus team (the Team) to meet those objectives.

Research Objectives

In collaboration with the AEO, Cadmus developed these main research areas.

1. **Program Design.** Determine program design effectiveness by assessing these key elements: goal setting, budget creation, implementation resources, delivery channels, and outreach strategies.
2. **Program Performance and Implementation.** Assess the program's 2012 performance by examining: progress towards goals, customer and trade ally awareness of the program and energy-efficiency, factors influencing participation, and satisfaction among trade allies regarding training.
3. **Market Effects.** Determine the program's market effects, such as the energy-saving actions taken by customers who received materials or heard media ads or internal business changes made by trade allies who attended trainings and workshops.
4. **Data and Information Tracking.** Examine EEA record-keeping practices and assess thoroughness, identify gaps, and recommend a tracking system that will allow AEO to monitor and maintain the information necessary for a comprehensive evaluation.

Table 1 lists the researchable questions and the methods proposed by the Team to meet the project's research objectives.

Table 1. Research Questions and Methodologies

Research Objective	Research Questions	Evaluation Methodology
Program Design	How is the program designed? What are the program goals and objectives?	Materials review Program staff interviews
	Who is the target audience and does the program target all appropriate segments?	Program staff interviews Materials review Customer surveys
	What are the marketing/advertising/promotion materials and outreach strategies, and how well do they support program objectives?	Materials review Program staff interviews
	How appropriately do materials, content, channels, and messaging target intended audiences?	Materials review Program staff interviews Trade ally interviews/customer surveys

	How clear, actionable, educative, and motivating are outreach materials and activities?	Materials review Program Staff Trade ally interviews
	Are marketing and media resources optimized by channel and target audience?	Materials review Program staff interviews Trade ally interviews/customer surveys
	Do the marketing plan, messaging, strategies, and metrics of success correlate to the objectives of the program?	Materials review Stakeholder interviews Trade ally interviews/customer surveys
	What are the outreach delivery channels and how effective are they at achieving program objectives?	Materials review Stakeholder interviews Trade ally interviews/Customer surveys
Program Performance and Implementation	How did the program progress towards achieving its planned goals?	Data and tracking review Program staff interviews
	Is actual spending consistent with planned budgets?	Data and tracking review Program staff interviews
	What is the optimal budget for EEA marketing and training?	Program staff interviews Trade ally interviews
	How effective are the program implementation processes and operations at achieving program objectives?	Program staff interviews Trade ally interviews
	What barriers exist that prevent the program from achieving goals and objectives?	Program staff interviews Trade ally interviews
	What opportunities for improvement exist to further enable program staff to achieve program goals and objectives?	Program staff interviews Trade ally interviews Materials Review
	How did customers hear about the program?	Trade ally interviews Customer surveys
	What are customers' preferred marketing and communications channels for target audiences?	Trade ally interviews Customer surveys
	How are customers motivated to move from awareness to participation?	Customer surveys Trade ally interviews
	Are customers satisfied with the training?	Trade ally interviews
	Does training participation correlate to trade ally satisfaction? If so, how?	Program staff and trade ally interviews Training plans and materials review
	How does the variety of trainings correlate to participation in programs and their satisfaction?	Trade ally interviews Training plans and materials review
	Are there suggested areas of improvement? Future training needs?	Trade ally interviews Customers surveys
Market Effects	Are participating segments consistent with targeting activities?	Program staff interviews Trade ally interviews

	What impacts have the marketing and promotions had on awareness, knowledge, and satisfaction with EEA's programs?	Trade ally interviews Customer surveys
	What actions have customers taken as a result of the outreach and training? What factors led to those actions?	Data and tracking systems review Program staff interviews Trade ally interviews/Customer surveys
Data and Information Tracking	How effective are data being captured and reported in an effective manner?	Data and tracking review Program staff interviews
	How effective are the program's data tracking processes and systems?	Data and tracking review Program staff interviews
	Are there any gaps in data collected that are needed for effective program implementation or evaluation?	Data and tracking review Program staff interviews

Evaluation Activities

To address the research questions outlined above, the Team will perform the following activities.

1. **Review the Program Materials and Records Review.** Review and assess the thoroughness and effectiveness of the following program information:
 - a. EEA program materials such as marketing, advertising, promotion, and training materials; and
 - b. Participation records and methods for record-keeping for customers and trade allies who participated in the program in 2012.
2. **Interviews and Surveys.** Conduct in-depth interviews and surveys with these groups:
 - a. 6 program stakeholders, including the program managers and vendors hired to support the program;
 - b. 30 trade allies who received program training, including HVAC contractors, boiler operators, building contractors, statewide and school facility managers, and potential Certified Energy Managers;
 - c. A sample of 200 random customers in the state.
3. **Analyze Data and Report Results.** Provide findings in a report that also contains actionable, meaningful recommendations for program improvements.

Task 1. Review the Materials

Through a comprehensive review of the program's outreach materials, the Team will assess such elements as adequacy, clarity, messaging effectiveness, and the materials' ability to support program target achievement. The Team will pay particular attention to the objectives for and the intended outcomes specified for the outreach activities. This approach will reveal whether the outreach activities

are aligned with—and can be evaluated based upon—their intended outcomes. Where possible, the Team will provide comparisons with industry best practice approaches.

Cadmus will also analyze the metrics used to monitor success in each outreach channel for the target audience. This analysis, which will focus on differences across channels and audiences, will compare the effectiveness of each approach to:

- Distill lessons learned, and
- Identify the most effective mechanisms and how they can best be applied.

To identify potential barriers and/or opportunities for improvement, the Team will:

(1) highlight those marketing, education, and training efforts that resulted in the greatest participation or action, and (2) identify activities that failed to produce significant results. Additionally, the Team will provide insights into best marketing and outreach practices for each sector, based on previous evaluation and marketing experience.

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Cadmus will review a variety of outreach materials, which fall into three basic categories.

Marketing and Educational Materials

- Marketing implementation plans and goals;
- AEO research, such as segmentation studies, media research, focus group and survey results, and customer profiles, if applicable;
- Market analyses conducted before the program's launch;
- Campaign and brand guidelines;
- Relevant marketing and education plans;
- Marketing and educational collateral and advertising creative materials;
- Media strategies and flowcharts;
- Overview of community outreach; and
- Public relations plans.

Training Materials

- Promotional plans, program goals, and trade ally participation counts (ideally organized by segment, by month and in total);
- Promotional collateral;
- Training materials;
- Agendas and detailed training schedule;
- Instructor qualifications; and
- Training evaluations/feedback from trade allies.

Data and Operational Materials

- Financials and tracking systems;
- Campaign recaps;
- Online analytics (such as Google Analytics reports), social media analytics, and media statistics (such as affidavits and reconciliations, post-buy analyses), e-mail, and reports;
- Community event recaps; and
- Public relations clippings.

Cadmus will also assess the program database to ensure that project data have been recorded adequately and correctly. This step will help identify any missing data needed to achieve the goals of this and future evaluations.

Task 2. Conduct Interviews

Cadmus will interview three groups: program staff, trade allies, and customers.

Task 2a. Interview Program Staff

To assess key program elements from the perspectives of administrators and implementers, the Team will conduct in-depth interviews with: (1) AEO staff members who oversee program administration and implementation, and (2) marketing implementation contractor staff members who have primary program outreach responsibilities. The Team will also focus on program outreach strategy considerations, plan execution, and established metrics.

The interviews will be designed to explore the following topics:

- Program staff roles and responsibilities;
- Process of developing and tracking program goals;
- Process of developing outreach plans;
- Expected outputs for each outreach activity or educational/training event;
- Target audiences for the various program components targeted;
- Perceive barriers to program participation and approaches to overcome those barriers;
- Program changes, if any, since inception;
- Program successes and challenges as well as areas of improvement; and
- Additional key researchable issues to address.

Task 2b. Interview Trade Allies

To obtain information related to participation motivators and barriers, Cadmus will interview the trade allies who attended the training or workshops (identified by their inclusion in an AEO-provided trade ally list). These interviewees may include HVAC contractors, boiler operators, building contractors, statewide and school facility managers, and Certified Energy Managers.

The interviews will be designed to obtain the following information:

- How they learned about the training;
- Motivators and perceived barriers for program participation;
- Effectiveness of training;
- Their satisfaction with training content, delivery, and support services;
- Suggestions for improving future training;
- Future training opportunities and needs; and
- Impacts the training has made on business models, services offered, marketing approaches or their ability to perform job function.

Task 2c. Survey Residential Customers

Working closely with AEO, Cadmus will create a customer survey instrument to gather information to: (1) establish a baseline of customer awareness, barriers, motivations, and impressions of marketing activities; and (2) identify responses to marketing and education efforts. The Team will also ask a limited number of questions regarding household and customer characteristics, such as their homes' physical attributes and customer demographic data. This information will supplement the baseline data and inform future segmentation analyses and targeted marketing approaches.

AEO will provide a sample of customers (including their contact information) to be used for survey efforts. Cadmus will segment the results by participants who either took no-cost energy-efficiency actions or who participated in a utility program.

In collaboration with AEO, the Team will develop and implement these customer surveys, which will address the following:

- Program awareness;
- How they learned about the program;
- Recall for specific marketing and educational materials;
- Barriers and motivations;
- Energy-efficiency actions taken as a result of the program;
- Factors that influenced participation/non-participation;
- Interest in participating in utility programs in the future; and
- Interest in energy-efficient measures and practices.

Cadmus will work with the Joint Utilities' Evaluation Team and communicate with the Independent Evaluation Monitor (IEM) and Parties Working Collaboratively (PWC) to ensure the survey results can be assessed relative to statewide evaluation efforts. The result will be a comprehensive discussion of Arkansas consumers' reactions to EEA outreach activities. Also, as many of the utility evaluation surveys are in progress for the 2012 evaluation, the Team anticipates there may be opportunities to leverage those survey activities in future evaluation periods.

Task 3. Analyze Data and Report Results

To provide answers to the researchable questions listed in

Table 1, Cadmus will conduct a cross-data analysis that involves having key team members participate in discussions of the findings, conclusions, and recommendations. This process will provide the basis for a draft detailed report and subsequent final report.

Cadmus will work with the AEO, PWC, and IEM to ensure that the Standardized Program Evaluation Report template incorporates all regulatory reporting requirements and key areas of interest. The report will contain the following elements:

- **Detailed Program Description:** The process evaluation report will present a detailed description of the program, focusing on the components being evaluated. This report will provide sufficient detail to enable readers to understand program operations and the likely effects of recommended program changes.
- **Program Theory:** The process evaluation will include a presentation of the program theory. It will be complete enough for the reader to understand the context for program recommendations, but will not provide a finely detailed program theory or logic model.
- **Detailed Presentation of Findings:** This presentation to the PWC, AEO, and IEM will contain detailed both findings and their implications for the program’s overall operations and cost-effectiveness.
- **Support for Recommended Program Changes:** The findings section will contain a description of each recommendation’s expected program impact.

Table 2. Timeline for EEA Process Evaluation

Activity	2013						
	Mar	Apr	May	Jun	Jul	Aug	Sept
Process Evaluation							
Request & Review Program Materials	■						
Interview Marketing Staff		■					
Samples Provided by AEO			■				
Develop Survey and Interview Instruments			■				
Interview Trade Allies				■			
Conduct Customer Surveys				■			
Analysis and Reporting							
Data Analysis				■			
Submit Draft Plan					■		
Submit Draft CY 12 Report						■	
Present CY 12 Findings, if requested							■

7.0 Appendix X:

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6.0 Appendix F:



Annual Report of Energy Efficiency Programs - Program Year 2012



April 2013

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Introduction

Oklahoma Gas & Electric's Arkansas Energy Efficiency portfolio was approved by the Arkansas Public Service Commission (APSC) for program year 2012 on December 30, 2011 in Docket Number 07-075-TF, Order Number 34. As required by the Conservation and Energy Efficiency Rules, OG&E is submitting its annual report addressing the performance of all approved energy efficiency programs. This report covers program savings and the amount spent per program and total amount spent. It also includes a cost-effectiveness analysis of each program and the portfolio of programs, including all costs and benefits from January 1, 2012 through December 31, 2012.

Report Organization

This report presents the following information, which is based on the Commission's Energy Efficiency Rule, but also includes the results of California Standard Practice Manual cost-benefit tests:

1. Brief description of each program;
2. The most current information available comparing projected savings to reported savings for each of the utility's programs;
3. The results of the standard cost/benefit tests for each program;
4. A statement of funds expended by the utility for program administration.

Program Descriptions

Student Energy Education (SEE):

The Student Energy Education program is an established residential energy efficiency program that uses a school delivery format, in which students are provided with take-home kits containing efficiency devices and are exposed to creative classroom and in-home education techniques which inspire families to adopt new resource usage habits. Students receive a kit of energy and water efficient devices, which are taken home and installed, and the learning experience is shared with family members. They work on subjects required by state learning standards to understand and appreciate the value of natural resources in everyday life. The program aims to shape new behaviors and encourage reduced energy use through a mix of new product installation and resource efficiency knowledge.

In OG&E'S Arkansas service territory, the program provides the teachers and their classes of 6th grade students a curriculum on home energy efficiency. At the end of the curriculum a SEE education kit, (which includes a CFL, air filter, aerator, low-flow shower head, night light and energy efficiency information), provides the students the opportunity to participate with their families on energy

awareness. The students take the kit home and install the energy efficiency measures with the assistance of their parents.

SEE is a turnkey program managed by Resource Action Programs (RAP) of Modesto, California. In coordination with OG&E, Resource Action Programs performs the marketing and outreach to acquire participation and enrollment in the program. Once schools are enrolled into the program, Resource Action Programs will deliver educational materials directly to participant teachers.

Arkansas Weatherization Program (AWP):

This program is targeted to severely energy inefficient homes. It provides energy efficiency improvements to participants, thereby decreasing demand and energy usage for those customers. The purpose of the AWP is to improve comfort and reduce energy costs by upgrading the thermal envelope and appliances in severely energy inefficient homes. The AWP program is designed to work in partnership with agencies that assist residents occupying severely energy inefficient homes. OG&E partners with the Fort Smith Community Clearing House and other CAP Agencies in Fort Smith, Arkansas. The program helps individuals and families primarily by making their homes more secure from the weather, which helps to conserve energy and reduce energy bills for future years. In addition, homes that are warm in the winter and cool in the summer are more comfortable for individuals.

OG&E Weatherization Program:

This measure is targeted to acutely energy inefficient homes. It provides energy efficiency improvements to participants, thereby decreasing demand and energy usage for those customers. The purpose of OG&E's Weatherization Program is to improve comfort and reduce energy costs by upgrading the thermal envelope and appliances in targeted households.

This program is delivered in association with the Ft. Smith region gas distribution company, Arkansas Oklahoma Gas (AOG). AOG is contributing resources to be used alongside OG&E's on a per household basis to ensure the most effective application of energy efficiency possible.

HVAC Tune-Up and Duct Repair Program:

This is an optional program offered by OG&E Arkansas, designed to help them reach the energy savings goals outlined in the Order. The program is targeted toward single family residential customers with central HVAC systems, and works towards improving the efficiency of these units. For both the HVAC tune-up portion and the duct repair portion of this program, the customer must contract for air conditioning tune-up and inspection services from an OG&E approved local, certified, and licensed HVAC contractor.

Window Unit A/C Program:

The purpose of the Window Unit A/C Program is to provide OG&E single family residential customers without central HVAC systems incentives for purchasing and installing high-efficiency air conditioners. The program is designed to increase energy efficiency of window unit sales, while is reducing energy consumption, lowering energy costs, and increasing the comfort of residential customers that cool part or all or their home with window units. This program is available to any residential customer without a central HVAC system.

Commercial Lighting Program:

The Commercial Lighting Program provides prescriptive rebates for customers that improve the efficiency of lighting systems in existing buildings. This measure is designed to educate, offer performance contracting services, and provide incentives on replacement of inefficient T-12 or T-8 lamps with higher efficiency T-8 or T-5 lamps to commercial and industrial customers. It also promotes replacing less efficient high intensity discharge (HID) lighting with high-bay and low-bay fluorescent lamps, replacing inefficient incandescent lighting with hardwired CFLs, and replacing incandescent exit lighting with LED exit lighting.

Additionally, this program provides incentives to OG&E construction commercial and industrial (C & I) customers who purchase and install energy efficient indoor and outdoor lighting, lighting controls, occupancy sensors, light emitting diode (LED), and exit lights. The measure offers incentives based on the kW and kWh reduction calculated from a lighting survey by a lighting contractor that takes into account the type and quantity of lighting fixtures installed, the building type, and control technologies in place.

Commercial and Industrial Standard Offer Program (SOP):

The SOP offers financial incentives for the installation of a wide range of measures that reduce customer energy costs, reduce peak demand, and/or save energy in non-residential facilities such as public authority buildings, schools, hospitals, and other industrial customers in OG&E's Arkansas jurisdiction (entities that qualify for the Power and Light rate or the Large power and Light rate). In this program, large individual customers, energy service companies (ESCOs), and qualified contractors are eligible for incentive payments for energy efficiency projects that significantly reduce customer peak demand. The applying entity, whether the customer, ESCO, or other contractor, is a "Project Sponsor," and is the responsible party for complying with all program requirements.

The SOP allows for incentivizing of many measures not covered under other OG&E programs. If the Commercial/Industrial customer participates in this program then they are not eligible to participate in the Commercial Lighting Program.

Commercial Tune-Up Program:

The program is designed to help customers by improving the efficiency of their Commercial Air Conditioning, Food Service, Refrigeration and/or Ventilation systems to upgrade in efficiency or tune-up of Commercial Air Conditioning. Commercial Tune-Up Program will target commercial, public authority and industrial facilities of all sizes for efficiency information and upgrades. OG&E will pay an incentive for Commercial Air Conditioning, Foodservice, Refrigeration and/or Ventilation systems to upgrades in efficiency. OG&E will also pay to tune-up the Commercial Air Conditioning systems.

Program Projections and Results

The following tables present program specific information, including forecasted savings, reported savings, the number of participants, participant costs, the economic benefit realized in 2012, and the economic benefits to be expected over the life of the measures. Note that economic benefits are restricted to avoided electricity generation and capacity costs and avoided natural gas costs.

Note also the important distinction between the "Forecasted Net Savings" displayed in this section and the "Ex Ante" savings stated as "Actual Net Savings". The "Forecasted Net Savings" are the net savings

included in OG&E's Arkansas Energy Efficiency Program Analysis and Plan, filed in Docket No. 07-075-TF (William L. Brooks' testimony, Exhibit WLB-01, No. 123), which were based on projections of program participation. The "Ex Ante" savings reflect the savings calculated using actual participation data and the deemed savings used to develop the forecasted savings and in continuous tracking of program savings. Assumptions related to measure costs, energy and demand savings used to calculate projected impacts, discount rates, line losses, fuel costs and other inputs in the cost-benefit calculation can be found in the exhibit accompanying Brooks' testimony. The modeling of the Forecasted Net Savings and Project Net Savings are based on the following assumptions:

- (a) Forecasted savings are based on the target participation levels for program year 2012 as approved by the APSC in Order 34 of Docket No. 07-075-TF.
- (b) Program participants are those who participated in the program year 2012.
- (c) The cost per kWh saved is calculated by dividing the total program costs by the lifetime energy saved. The cost per kW-year is calculated by dividing the total program costs by the product of the kW reduction and the approximate average effective useful life (EUL) of measures installed in the program.
- (d) The net present value of the total economic benefits was calculated by taking the discounted value of the annual avoided cost times the annual savings over the useful life of each program measure.
- (e) The Projected Net Savings for residential programs assume an energy rate based on Rate Arkansas Rate Tariff R-1. Commercial energy rates are assumed to be \$.09/kWh for all seasons. Commercial load rates are accounted for in this assumption. The energy rates' escalation rates are derived from the avoided costs.

The Forecasted Net Savings and Actual Net Savings are presented in Table 1.

Table 1 - Forecasted Net Savings vs. Actual Net Savings

Program	Forecasted Net Savings (2012)			Actual Net Savings (2012)		
	Annual Energy Savings (kWh)	Peak Demand Reduction (kW)	Participants	Annual Energy Savings (kWh)	Peak Demand Reduction (kW)	Participants
SEE Program	152,120	15.2	1,840	317,398	39.1	1,817
AWP	522,485	69.0	59	83,922	13.2	45
OG&E Weatherization Program	2,994,261	515.8	1,620	3,970,784	1097.2	1,631
Window Unit A/C Program	2,423	2.1	25	2,357	2.0	30
HVAC Tune-Up and Duct Repair	229,025	154.5	300	234,262	105.6	464
Commercial Lighting	5,238,456	1,323.0	125	2,974,969	558.8	66
Commercial and Industrial SOP	4,246,188	1,140.9	12	676,521	167.6	22
Commercial Tune-Up Program	759,969	112.0	10	28,440	23.7	11
TOTAL	14,144,927	3,332.5	3,991	8,288,653	2,007.2	4,086

The results of the Total Resource Cost Test show \$2,414,000 in present value net benefits for all of 2012, as illustrated in Table 2. Of these benefits, \$1,198,490 can be attributed to commercial programs and \$1,215,510 are associated with residential programs.

Table 2 - Energy Efficiency Program Total Resource Cost Test Net Benefits

Program Name	TRC Net Benefits (\$000s)	Lifetime Energy Savings (kWh)
SEE Program	57.83	3,173,983
AWP	-65.32	1,174,905
OG&E Weatherization	1,280.02	56,760,076
HVAC and Duct Repair Program	-55.26	2,602,671
Window Unit A/C Program	-1.76	30,645
Commercial Lighting	1,031.84	35,699,623
Commercial SOP	247.46	10,147,822
Commercial Tune-Up	-80.81	426,598
ALL RESIDENTIAL	1,215.51	63,742,280
ALL COMMERCIAL	1,198.49	46,274,043
TOTAL	2,414.00	110,016,323

Table 3 shows the cumulative results of OG&E's residential energy efficiency programs cost-effectiveness portfolio. The five cost tests deliver a snapshot of the general benefit of the residential energy efficiency programs. The TRC, being above 1, indicates that the residential programs produce an aggregate benefit.

Table 3 - ALL Residential Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	2.29	1.33	0.72	1.44	1.46
Net Benefits (\$000s)	2,766.23	860.20	-1,341.91	1,215.51	1,286.92
Total Benefits (\$000s)	4,908.76	3,493.94	3,493.94	3,984.92	4,056.33
Total Costs (\$000s)	2,142.53	2,633.74	4,835.84	2,769.41	2,769.41

Tables 4 through 8 individually show the results of OG&E's residential energy efficiency programs cost-effective portfolio.

Table 4 – SEE Program Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	3.04	1.57	0.72	1.76	1.81
Net Benefits (\$000s)	150.92	46.70	-50.23	57.83	61.90
Total Benefits (\$000s)	225.04	128.98	128.98	134.41	138.49
Total Costs (\$000s)	74.12	82.27	179.20	76.58	76.58

Table 5 - AWP Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	0.91	0.82	0.52	0.51	0.52
Net Benefits (\$000s)	-5.90	-12.34	-50.16	-65.32	-63.94
Total Benefits (\$000s)	60.87	54.42	54.42	68.21	69.59
Total Costs (\$000s)	66.77	66.77	104.59	133.53	133.53

Table 6 – OG&E Weatherization Program Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	2.37	1.36	0.74	1.55	1.57
Net Benefits (\$000s)	2,538.35	835.03	-1,112.09	1,280.02	1,342.97
Total Benefits (\$000s)	4,386.01	3,159.44	3,159.44	3,619.75	3,682.69
Total Costs (\$000s)	1,847.66	2,324.41	4,271.53	2,339.72	2,339.72

Table 7 – HVAC Tune-Up and Duct Repair Program Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	1.53	0.95	0.54	0.74	0.76
Net Benefits (\$000s)	80.96	-7.27	-126.00	-55.26	-52.29
Total Benefits (\$000s)	233.44	148.70	148.70	160.00	162.98
Total Costs (\$000s)	152.49	155.98	274.70	215.26	215.26

Table 8 – Window Unit A/C Program Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	2.27	0.55	0.41	0.59	0.60
Net Benefits (\$000s)	1.90	-1.92	-3.44	-1.76	-1.72
Total Benefits (\$000s)	3.40	2.39	2.39	2.56	2.59
Total Costs (\$000s)	1.50	4.31	5.83	4.31	4.31

Table 9 shows the cumulative results of OG&E's commercial energy efficiency programs cost-effectiveness portfolio. Tables 10-12 individually show the results of OG&E's commercial energy efficiency programs cost-effective portfolio. The SOP and Lighting Programs pass the Total Resource Cost Test, while the Tune-Up Program falls below the cost-effective ratio.

Table 9 - All Commercial Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	3.35	4.19	0.77	2.02	2.07
Net Benefits (\$000s)	2,559.28	1,708.35	-653.79	1,198.49	1,254.51
Total Benefits (\$000s)	3,646.91	2,244.16	2,244.16	2,375.23	2,431.25
Total Costs (\$000s)	1,087.63	535.81	2,897.95	1,176.74	1,176.74

Table 10 - Commercial Lighting Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	3.70	6.09	0.80	2.37	2.43
Net Benefits (\$000s)	2,056.87	1,414.82	-422.25	1,031.84	1,075.69
Total Benefits (\$000s)	2,819.36	1,692.90	1,692.90	1,784.21	1,828.06
Total Costs (\$000s)	762.50	278.08	2,115.15	752.37	752.37

Table 11 – Commercial and Industrial Standard Offer Program Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	3.19	2.81	0.75	1.80	1.84
Net Benefits (\$000s)	532.22	333.94	-169.95	247.46	259.14
Total Benefits (\$000s)	775.54	518.63	518.63	555.73	567.41
Total Costs (\$000s)	243.32	184.69	688.58	308.28	308.28

Table 12 – Commercial Tune-Up Program Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	0.64	0.45	0.35	0.30	0.31
Net Benefits (\$000s)	-29.80	-40.41	-61.59	-80.81	-80.32
Total Benefits (\$000s)	52.01	32.63	32.63	35.29	35.78
Total Costs (\$000s)	81.81	73.04	94.22	116.09	116.09

Table 13 shows the cumulative cost-effectiveness results for OG&E's energy efficiency portfolio for program year 2012.

Table 13 – Portfolio Cost/Benefit Tests

	PCT	PACT	RIM	TRC	SCT
Benefit/Cost Ratio	2.65	1.81	0.74	1.61	1.64
Net Benefits (\$000s)	5,325.51	2,568.55	-1,995.70	2,414.00	2,541.43
Total Benefits (\$000s)	8,555.68	5,738.09	5,738.09	6,360.15	6,487.59
Total Costs (\$000s)	3,230.16	3,169.54	7,733.79	3,946.15	3,946.15

Program-Related Expenditures

All program-related expenditures are presented in Table 14 and are separated by administrative costs and inducements. The administrative costs include program planning and design, marketing and delivery, EM&V, and third party implementation costs.

Table 14 - Program Costs - 2012

Program Name	Administrative and Other Non-Inducement Costs (\$)	Inducements (\$)	Total Program Cost (\$)
SEE Program	8,394	73,879	82,273
AWP	66,767	-	66,767
OG&E Weatherization	476,739	1,847,668	2,324,407
HVAC and Duct Repair Program	93,274	62,703	155,976
Window Unit A/C Program	3,111	1,200	4,311
Commercial Lighting	142,374	135,704	278,078
Commercial SOP	113,616	71,076	184,692
Commercial Tune-Up	50,646	22,392	73,038
TOTAL	954,921	2,214,622	3,169,543

Planned and actual program costs, including additional regulatory costs and costs associated with the Energy Efficiency Arkansas Program, are compared in Table 15.

Table 15- Planned and Actual Program Costs - 2012

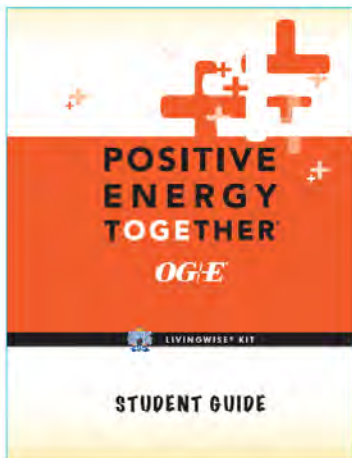
Program Name	Planned Program Cost (\$)	Actual Program Cost (\$)
SEE Program	82,353	82,273
AWP	78,388	66,767
OG&E Weatherization	2,324,460	2,324,407
HVAC and Duct Repair Program	155,976	155,976
Window Unit A/C Program	12,065	4,311
Commercial Lighting	316,331	278,078
Commercial SOP	326,284	184,692
Commercial Tune-Up	127,323	73,038
Energy Efficiency AR	25,977	25,929
Regulatory Costs	75,000	60,040
TOTAL	3,524,157	3,255,512

7.0 Appendix X:

LivingWise[®] Kit



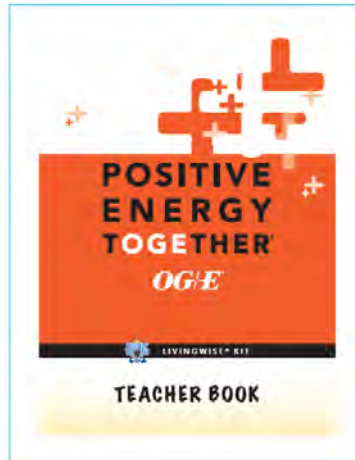
Living Wise Education Materials



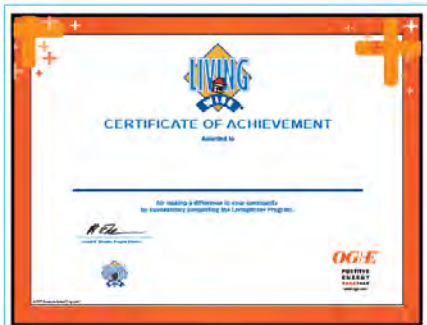
Student Guide



Student Workbook



Teacher Book



Certificate of Achievement



Kit Box

Comments and Letters

Dear OG+E, 4-10-12
Thank you for sending us the awesome kits. It was very fun installing everything I loved it! My favorite thing to install was the Filter Tone alarm. We figured out that our filter was really, really dirty. Its cool that you ~~are~~ trying to do that for kids and their families.

Four friends,
Lanee

April 5, 2012
Dear OG+E, Thanks for the wonderful living wise kit! I love it. My parents helped me do all the things in the book and kit. Thanks for giving them to us! Everyone loved them! I think it will help save money and energy. My favorite one was the showerhead. It was very cool. Thanks again for the awesome kit.

Yours truly,
Nacy

12

April 5, 2012
Dear OG+E,
Thank you so much for the kits. I did all of the supplies. First I did the faucet. My brother can wash his hands with out us now. Second we did the shower head we save money now. We found out we had a leak in our toilet from the tablets. it was fun it all took an hour. We also turned down our water heat. It was 105°f. Thank you so much.

Sincerely,
Josh K.

Dear OG+E

Thanks for the study guide
its helping me with saving
energy. Plus all the thing
you sent us now were
Saving energy our water
bill has gone down so
thanks for every thing.

From
Ariana

Dear OG+E

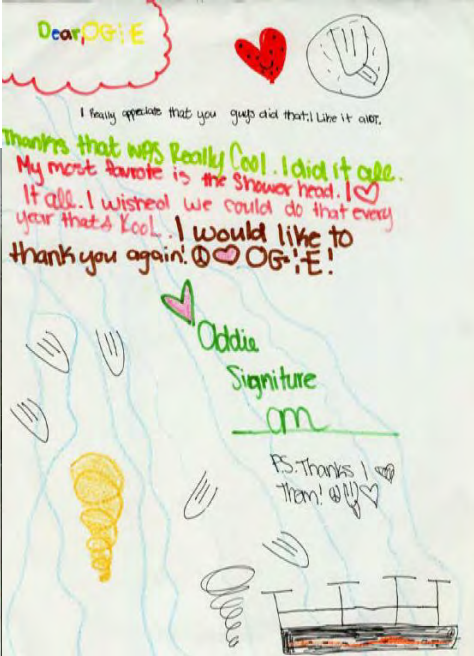
I really appreciate that you guys did that. I like it alot.

Thanks that was Really Cool. I did it all.
My most favorite is the Shower head. I
If all.. I wished we could do that every
year that's Cool. I would like to
thank you again! @OG+E!

Oddie
Signature
om

P.S. Thanks I
them! @OG+E!

Passes



Weatherization Program

Energy Savings Tips

JANUARY

- ❑ After cooking in your oven, leave the door partly open; the left over heat can help warm your home.
- ❑ Ring in the New Year by lowering the temperature of your water heater. A 10-degree temperature reduction can save about 13% of your water heating costs this year.
- ❑ During the day, open curtains and blinds on your south-facing windows to allow sunlight to naturally warm your home. Just be sure to close them at night to reduce the chill.
- ❑ Sealing air-duct leaks in your attic can reduce heating costs by up to 20%, with reductions of 10% common!
- ❑ Don't let heat go up the chimney! Make sure your fire place damper is closed when you're not using it.

FEBRUARY

- ❑ Love is in the air for Valentine's Day. Because heat rises, reversing the direction of your ceiling fan blades will pull warm air down from the ceiling and spread the heat more evenly throughout your home.
- ❑ Turn off the oven or stovetop a minute or two before cooking time has elapsed. It will still retain enough heat to finish the cooking.
- ❑ When you are asleep or away from home, turn your thermostat back 10-degrees for eight hours. Do this consistently and you'll save around 10% a year on your heating bills.
- ❑ Insulate hot water pipes and ducts wherever they run through unheated areas in your home.

MARCH

- ❑ As often as possible, wash your clothes in cold water. Experts agree that modern laundry detergents wash just as well in cold as in hot water, but without the cost to heat the water.
- ❑ Daylight Savings Time is all about the "lighter." When ever possible, use one light bulb instead of multiple bulbs. A single 100-watt incandescent bulb produces the same amount of light as two 60-watt bulbs - but uses 20% less energy for some extra savings. And to save even more, use compact fluorescent light bulbs.

- ❑ cool air and can reduce the "on" time of your air conditioner. A ceiling fan uses only about as much electricity as a light bulb.
- ❑ Don't place lamps or televisions near your air conditioning thermostat. The heat from these appliances will cause the air conditioner to run longer.
- ❑ If your heating system has a pilot light, turn it off during the summer. A pilot light costs about \$3 to \$5 per month to keep lit.
- ❑ Sometimes a summer breeze can be enough to keep you cool. Open doors and windows on opposite sides of your house for cross ventilation.

SEPTEMBER

- ❑ Consider using a dehumidifier instead of turning on the air conditioning. You will be comfortable at much higher temperatures if you reduce the humidity in your home.
- ❑ This Labor Day, reduce your air conditioner's labor; place window units on the north or shady side of your residence to avoid overworking the unit in the hot daytime sun.
- ❑ Use an attic fan to get rid of the heat build-up in your attic. Heat from your attic eventually finds its way into your home.
- ❑ Keep both indoor and outdoor lighting fixtures and light bulbs clean. Dirty fixtures are not only unattractive, but can absorb as much as 50% of the light's illumination.
- ❑ Save energy by air drying your dishes instead of using your dishwasher's drying heater.

OCTOBER

- ❑ Make a new discovery this Columbus Day and cut your heating bill by 1% to 2% with a 1° F change in temperature. Many energy experts recommend setting your thermostat at 68° F or less and several degrees cooler overnight.
- ❑ A programmable thermostat lets you set your home temperature by time of day. Set it to lower the thermostat when no one is home and overnight. Save up to 20% on heating costs!

- ❑ A faucet that leaks one drip per second can waste 400 gallons of water in a year.
- ❑ Never write or mail a check again. Sign up for EZ Pay from OG&E which lets you pay your electric bill automatically from your checking or savings account. Sign up today!

APRIL

- ❑ Spring is a great time to check your cooling system and proper sealing of all air ducts. And, it is the best way to improve the energy efficiency and overall performance of your system.
- ❑ Clean or change air filters every two to three months. The free flow of air is the key to cooling, so don't make your system work harder and use more energy than it has to.
- ❑ In as little as one hour, exhaust fans in your kitchen or bathroom can deplete a house of its warm or cool air. Turn fans off as soon as they have finished their job.
- ❑ In honor of Earth Day, plant leafy trees on the south and west sides of your home to block heat from the sun in summer and let heat in during the winter. For continuous shade or to block heavy winds, use dense evergreen trees or shrubs.

MAY

- ❑ When using your dishwasher and washing machine, washing full loads saves time, detergent and energy. Your dishwasher uses the same amount of hot water for both small and full loads.
- ❑ Every time you open the oven door, the temperature drops 25 degrees or more and your oven has to work harder and use more energy to sustain temperature settings.
- ❑ When you're done wrapping the May pole, wrap your hot water tank, which can save on energy costs.
- ❑ Switch to compact fluorescent light bulbs, which can save 75% over conventional light bulbs and last up to four years!
- ❑ When cooking, use the smallest pan that will do for the job. It takes less time and energy to heat a smaller volume.

- ❑ Electric outlets can be insulated with a special insulation (available at a local building supply store) by removing the outlet covers and inserting the insulation. Additionally, special insulation plugs can be installed on outlets that are not being used.
- ❑ Use a lighter wash cycle for lightly soiled dishes. Some dishwashers already have an "Energy Saver" setting for a lighter wash.

NOVEMBER

- ❑ Give "thanks" for your electronic conveniences, but to save energy, shut off computers and other electronic appliances when not in use. Many computer monitors have a sleep mode setting which, when activated, greatly reduces energy consumption.
- ❑ Use a dimmer switch or three-way incandescent bulbs to control the amount of light you need in a room. Dimming your lights' illumination by one-half cuts energy consumption almost in half.
- ❑ Have your heating and cooling system tuned and inspected by a service professional. Losses from a poorly-maintained system accumulate over time, wasting energy and costing you more to operate.
- ❑ Set refrigerator temperatures between 37 and 40 degrees, and don't forget to clean the coils. Keep the refrigerator stocked; it takes more energy to cool an empty refrigerator.

DECEMBER

- ❑ When using your clothes dryer, dry loads consecutively to take advantage of the heat already built up in your dryer.
- ❑ Here's a warm way to greet the first day of winter: Try to minimize the number of times that outside doors are opened and closed at your home. Each time you open the door, it allows cold air to enter your home and makes your heater work harder to keep up.
- ❑ Use energy saving products such as small electric pans or toaster ovens to cook small meals instead of heating your large stove or oven.
- ❑ Lighting accounts for about 15 percent of a typical residential utility bill. So, turn off the lights when not in use.

Reminder to clean or change the filter in your heat & air system every two to three months.

Reminder to clean or change the filter in your heat & air system every two to three months.

JUNE

- ❑ Replacing older shower heads with low flow units could save a family of four as much as 15-thousand gallons of water per year and can significantly reduce your water heating costs.
- ❑ If your oven has a self-cleaning cycle, start it while your oven is still warm from prior cooking.
- ❑ Clean the lint filter on your dryer after every load. Lint on the filter reduces air flow and makes your dryer use more energy.
- ❑ Father knows best! Celebrate dad's day by caulking windows and doors to prevent drafts from coming into your home and keep conditioned air from escaping out of your house.

JULY

- ❑ Keep your thermostat at a constant, comfortable level (75-78 degrees) when you are home. Lowering the thermostat setting too far will not cool your home faster.
- ❑ Declare your independence of wasteful energy! A microwave oven cooks up to 75% faster and saves up to 70% of the energy used by a conventional oven.
- ❑ At the start of the cooling season, replace the air conditioner filter and check its condition monthly.
- ❑ To reduce heat and moisture, run appliances such as ovens, washing machines, dryers and dishwashers in the early morning or evening hours when it's generally cooler outside.
- ❑ Keep shades, blinds and curtains closed. About 40% of unwanted heat comes through windows. Simply drawing blinds and curtains, which act as a layer of insulation, can reduce heat gain.

AUGUST

- ❑ August is National Literacy Month. To show your energy literacy, don't preheat your oven except when required. If you must preheat, most ovens will preheat in 10 minutes or less.
- ❑ Use fans to circulate air. This will more evenly distribute

Money Saving Tips for Your Home

12-Month To Do List

Season after season, keep this list handy and refer to it often for helpful ideas to raise your energy savings and lower your energy costs. And, for more money-saving tips and ideas, go to oge.com, today.



POSITIVE ENERGY TOGETHER

Weatherization Flyer

Could your home use protection against hot and cold weather?



If so, you could qualify for **FREE** home weatherization from OG&E.

The OG&E Electric Services weatherization program could help you manage the costs of your utility bills and improve the comfort of your home.

Typical home weatherization improvements could include:

- Adding insulation to your attic
- Caulking, air sealing and weather stripping throughout your home
- Door and window replacements
- Installing energy saving compact fluorescent light bulbs

You could qualify for OG&E weatherization if you meet the following criteria:

- You must be an OG&E customer
- Your home was built before 1997

The weatherization program has a limited time offering and will be completed at no charge to you.

To sign up or for more information, contact the **Community Service Clearinghouse at 479-782-5074. CALL TODAY!**

POSITIVE ENERGY TOGETHER

*An independent contractor will perform an audit on your home to help determine the criteria and qualifications of your home and the program.



Saving energy and money just got easier...

**POSITIVE
ENERGY
TOGETHER**

The OG&E Weatherization Program

The OG&E Weatherization Program provides free home energy efficiency upgrades to customers who's home was built prior to 1997. This program is designed to help customers manage the costs of their utility bills and improve the comfort of their home. Some improvements could include:

- *Adding insulation to the attic*
- *Caulking, air sealing and weather stripping throughout your home*
- *Door and window replacements*
- *Installing energy-saving compact fluorescent light bulbs (CFLs)*

If you or someone you know could benefit from free home weatherization improvements, contact the Community Services Clearinghouse from 8:30 a.m. to 4 p.m. Monday through Friday at 479-782-5074. *Some qualifications apply, talk to an OG&E representative for more information.

Know your power at **myOGEPower**. That's where you can view your electricity use and costs, track your estimated bill and compare your use to others in the area — all to manage your electricity more efficiently and save money. Go to **myOGEPower.com** to log in.



OG&E offers FREE home weatherization to qualified customers

The OG&E Weatherization Program offers FREE energy efficiency upgrades to help customers manage the costs of their utility bills and improve the comfort of their home.

Some home improvements may include:

- Adding insulation to the attic
- Caulking, air sealing and weather stripping throughout your home
- Door and window replacements
- Installing energy saving compact fluorescent light bulbs.

(See reverse side for details)



OG&E

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To qualify you must:

- Be an OG&E customer.
- Own or rent a home built before 1997.

If you or someone you know could benefit from FREE home weatherization improvements, contact the Community Services Clearinghouse at **479-782-5074** from 8:30 a.m. to 4 p.m.

The number of OG&E customer homes that can be weatherized with this FREE program is limited, so don't delay. Call today!

OG&E

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Window Unit A/C Program

Energy Tips For Window AC

Save Energy and Money



OG&E has a number of programs for our Arkansas Residential customers to help them save energy and money. See which of these programs will work for you.

Residential A/C Tune

Sign-up for OG&E's Residential A/C Tune program and save. Having a properly tuned and serviced air conditioning system is a great way to help with summertime electric bills. For a limited time, OG&E is offering a FREE air conditioner tune-up.

Along with the free tune-up (valued at \$75) you will also receive a duct system inspection and if needed, duct repairs. **Sign up now at, call 649-2838 for this free offer.**

Weatherization

The OG&E Weatherization Program provides FREE home energy efficiency upgrades to customers with severely energy inefficient homes. This program is designed to reduce energy consumption, lower energy costs, increase the comfort of homes and safeguard the occupant's health. Program eligibility is not based upon income, but upon the energy inefficiency of the home. To see if your home qualifies and to enroll in this program call the Community Service Clearinghouse at 1-479-782-5074.

Window Unit Rebates

OG&E offers appliance rebates for ENERGY STAR® qualified window air conditioners. This program provides customers without central HVAC systems incentives for purchasing and installing high-efficiency air conditioners. Look for the rebate forms where you purchase ENERGY STAR® qualified window air conditioners.



www.oge.com

Rebate Flyer

OG&E

Replacing your Air Conditioner Unit?

Get cash back from OG&E for purchasing an ENERGY STAR® qualified Window Air Conditioner.

\$40⁰⁰

rebate on Energy Star rated window units

Just fill out the form & return to OG&E to get your cash back.

Geothermal Program

Geothermal information on Web

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SYSTEM WATCH | CAREERS | CONTACT US



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TAP THE EARTH'S POWER

Going Geothermal

Geothermal power is an environmentally sensitive energy alternative that may be your winning solution. Drawing on the earth's fairly constant ground temperatures, heat is transferred from the earth to your house in the winter and vice-versa in the summer.

Unlike conventional heating and cooling systems, your geothermal system:

- Is not exposed to the elements; it's mostly indoors and underground
- Has few moving parts to wear out, break down, or maintain
- Operates without any noisy outside condenser fan unit
- Performs consistently regardless of outside air temperatures

Save with Geothermal

Installing a geothermal system is now more affordable than ever with a Federal tax credit of 30 percent for residential and 10 percent for business customers. Residential customers can receive a \$375 per ton rebate for residential geothermal installations for both new construction and existing homes.


In fact, you'll realize an immediate return on investment in the form of greater comfort and savings up to 60% on your heating, cooling and water heating costs. That's

ADDITIONAL RESOURCES

- [The International Ground Source Heat Pump Association](#)
Learn more about geothermal technology at IGSHPA
- [Federal Tax Credits for Energy Efficiency](#)
[Geothermal Tax Credits](#)

Positive Energy Home

Web Information



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Power at the speed of life.

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GET CERTIFIED AND SAVE

Your Positive Energy® Home

Available to Oklahoma customers only

Before starting any new construction, ask yourself: Is the home I'm building really energy-efficient? Then look at a Positive Energy® Home – OG&E's energy efficient home certification program. Making the right decisions up front is crucial. And while state and local building codes set minimum requirements, OG&E's Positive Energy® Home offers a higher standard in efficiency – saving energy, money and more. These homes employ advanced materials and innovative design to:

- Increase energy efficiency and reduce utility costs
- Deliver a higher level of comfort in every season
- Provide a higher standard of construction value and overall quality
- Meet or exceed all specifications of a 2010 Energy Star® home

For more information, contact Steve Sullivan at 405.553-3393.

Home Investments, Future Gains

When building a new home, take the time to explore forward-thinking investments. We're ready to help with proven, professional recommendations such as:

- Increased insulation
- High-performance windows
- Tight construction and tight ducts
- Heating and cooling systems such as:
 - Dual Fuel: A combination of electricity and natural gas
 - Total Electric: No fumes to vent, ultra-clean and whisper quiet
 - Efficiency: A 14-SEER A/C paired with a 90% AFUE furnace
 - Geothermal System: An underground system that uses the earth to heat and

ADDITIONAL RESOURCES

[ENERGY STAR® Homes](#)
Homes that earn the ENERGY STAR include four "must have" features behind the walls that will make you more comfortable, reduce utility bills, and help protect the environment. Learn what they are here.


[Home Improvement with ENERGY STAR®](#)
ENERGY STAR can guide you in making your home more efficient — whether you do-it-yourself or hire a qualified professional.


[Positive Energy Home Builders](#)
A list of Positive Energy Home builders in our service area.

Commercial Lighting

Retrofit Information Sheet

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Power at the speed of life.

OG&E Home > Business Customers > Save Energy and Money > Energy Efficiency Solutions > Lighting

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SAVE ENERGY & MONEY ▾

LARGE BUSINESS SOLUTIONS ▾

▼ Energy Efficiency Solutions

- Lighting
- Building Efficiency
- Geothermal
- Rate Tamer
- Time of Use (TOU)

• Energy Technology Center

EFFICIENCIES SHINING BRIGHT

Lighting Rebate Program

Lighting is one of the easiest areas to make a significant change in your expenses. Energy-efficient upgrades can reduce energy consumption and operating costs by 30 percent to 50 percent. To encourage these savings, we are pleased to provide a lighting rebate for commercial, industrial and school accounts.

Oklahoma Customers

Good News! Funding has been approved for our 2013 Commercial Lighting program and we will start accepting online applications very soon.

Note: OG&E will require at least two photographs of your lighting project, one before work begins and one after the project is completed, a material or labor invoice will also be required (additional photos may be required on larger projects). These pictures and documents can be uploaded (or faxed) as part of your online application. Please continue to monitor this site for updates on the start of the 2013 program.

Your participation in this program has greatly enhanced OG&E's vision of deferring construction of new fossil fuel power plants before 2020 and the reduced kilowatts and kilowatt-hours our customers realized from energy efficient lighting installations can pay big dividends on their electric bills.

If you have any questions, contact Gale Lewis at lewislg@ogc.com or 405-553-3163.

[2013 Lighting Rebate Brochure](#)

[Apply for an OG&E lighting rebate](#)

Arkansas Customers

The Commercial Lighting program provides incentives to Arkansas commercial and industrial (C&I) customers who purchase and install energy efficient indoor and outdoor lighting, lighting controls and light emitting diode (LED) exit lights in both retrofit and new construction applications. This program helps customers reduce monthly energy costs while reducing some of the initial cost barrier. Commercial buildings in the U.S. consume an estimated 18% of total U.S. energy use and contribute nearly 4% of global carbon dioxide emissions. Last year the average rebate for customers participating in OG&E's Commercial Lighting program was \$2,880.

If you have any questions, contact, Robin Arnold at arnoldrk@ogc.com or 479-649-2838.

ADDITIONAL RESOURCES

[Explore Your Lighting Options](#)

[OG&E Lighting Rebate Brochure](#)
Learn about the variety of lighting rebates OG&E offers to businesses.

[Apply for an OG&E lighting rebate](#)

[Energy Efficiency Programs Brochure](#)
Learn about the variety of programs OG&E offers to help your business save energy and money.

WITH ALL YOUR FIXES + WHAT YOU'VE FORGOTTEN + COMMERCIAL LIGHTING

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Work Site State:

Email:

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Commercial Tune Up Program

Contractor Information Sheet

C&I Standard Offer Program

Web Information

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[Positive Energy Home Builders](#)
A list of Positive Energy Home builders in our service area.

HVAC Tune Up and Duct Repair

Customer Postcard

**Saving energy and
money just got easier...**

**POSITIVE
ENERGY
TOGETHER**

The OG&E Residential A/C Tune Program

The OG&E Residential A/C Tune Program offers customers living in single-family homes, built prior to 2000, a FREE A/C tune-up. This service includes duct repair and tightening, if eligible.

Keeping your A/C tuned and in good working order will help keep your electric bill down while increasing the life of your system. For more information, visit oge.com or contact a representative at **479-649-2849**.

Know your power at **myOGpower**. That's where you can view your electricity use and costs, track your estimated bill and compare your use to others in the area — all to manage your electricity more efficiently and save money. **Go to myOGpower.com to log in.**

OG&E

Contractor Recruitment Information



WANTED!

HVAC contractors, in the Fort Smith area, who want to earn an additional **\$125** per home by participating in OG&E's Residential A/C Tune Program.

This is a free service to customers and includes duct system and plenum sealing and will be paid for by OG&E, with a budget of \$25,000, directly to the contractor.

A small investment by contractors can give customers increased comfort and savings while providing new revenue to contractors; a win-win for all.

Work can be performed during any routine A/C service call and takes 15 – 20 minutes.

Offer lasts through the end of the year or until 200 homes have received this service.

If interested or for more information, please contact Robin Arnold at 479-649-2838 or email arnoldrk@oge.com or Ryan Lee at 479-649-2849 or email leesr@oge.com.

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ENERGY
TOGETHER** **OG&E**
www.oge.com