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BEFORE THE
ARKANSAS PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE CONTINUATION, EXPANSION, AND ENHANACEMENT OF PUBLIC UTILITY ENERGY EFFICIENCY PROGRAMS IN ARKANSAS	))))	DOCKET NO. 13-002-U

SUPPORTING TESTIMONY

OF

MATTHEW S. KLUCHER
DIRECTOR, RATES AND DEMAND RESOURCES

ON BEHALF OF THE GENERAL STAFF
OF THE ARKANSAS PUBLIC SERVICE COMMISSION

October 1, 2014

INTRODUCTION

Q. Will you please state your name and business address?

A. My name is Matthew S. Klucher and my business address is Arkansas Public Service Commission (Commission), 1000 Center Street, Little Rock, Arkansas 72201.

Q. By whom are you employed and in what capacity?

A. I am employed by Commission's General Staff (Staff) as the Director of Rates and Demand Resources. In that capacity, I am responsible for the coordination and development of Staff's recommendations in utility filings regarding a variety of issues including cost allocation, rate design, energy efficiency (EE) and conservation programs, and other demand resource issues. I direct other Staff members in analyzing utility company filings, identify and evaluate issues, develop positions on those issues, and present those positions, when necessary, in written and oral testimony before the Commission.

Q. Please state your qualifications and background.

A. I joined Staff in March 2010 as a Rate Analyst and was promoted to the position of Director in September 2012. My educational qualifications include a Bachelor of Science in Mathematics and Minor in Statistics from the University of Arkansas at Little Rock. Prior to joining Staff I worked in the telecommunication industry in wholesale tariff administration and billing. I worked as a Senior Analyst for Windstream Communications, and prior to that I was with Alltel Wireless in Strategic Pricing. Since joining Staff, I have received specialized training by completing the Advanced Regulatory Studies Program at Michigan State

University's Institute of Public Utilities, the Introduction to Cost of Service Concepts and Rate Design for Electric Utilities sponsored by EUCI, the Electric Industry Regulation Course at New Mexico State University's Center for Public Utilities, the Certified Energy Management Courses sponsored by the Association of Energy Engineers and the Energy Efficiency Management Certificate Program sponsored by the American Public Power Association.

Q. Please describe your role and responsibilities as they relate to the issues in this proceeding.

A. As noted above, I am responsible for the coordination and development of Staff's position on EE issues. In addition, I provide leadership to the Parties Working Collaboratively (PWC), which is a working group initiated by the Commission to provide a forum for EE stakeholders to identify issues and work collaboratively to develop potential solutions, with the goal of ultimately presenting such issues, along with recommendations, to the Commission for its approval. Issues currently addressed by the PWC include the development of a recommended approach to weatherization for the electric and gas utilities in Arkansas under the jurisdiction of the Commission and subject to the Commission's *Rules for Conservation and Energy Efficiency Programs*.

PURPOSE

Q. What is the purpose of your Supporting Testimony?

A. Order No. 7 in this docket directed the PWC to develop a more consistent approach to residential weatherization programs. In compliance with Order No. 7, I am providing testimony in support of the PWC's recommendation for a

consistent approach for weatherization across all utilities in Arkansas. Additionally, the PWC's *Proposal to Develop a Consistent Approach for Weatherization Programs Across all Utilities in Arkansas* (Recommended Weatherization Approach) is attached to my testimony as Attachment A.

RECOMMENDED WEATHERIZATION APPROACH

Q. Has the PWC Weatherization working group reached a consensus on the Recommended Weatherization Approach?

A. Yes. The Recommended Weatherization Approach represents a consensus agreement of the PWC Weatherization working group.

Q. Has the Recommended Weatherization Approach been subject to a collaborative and transparent development process?

A. Yes. The PWC Weatherization working group undertook an in-depth and lengthy process to thoroughly develop the Recommended Weatherization Approach. The process undertaken by the PWC Weatherization working group is more fully explained in the testimony of Dr. Johnson, on behalf of Staff.

Q. Are there any contested issues regarding the content of the Recommended Weatherization Approach that have not been satisfactorily resolved?

A. I am unaware of any contested issues among the PWC Weatherization working group regarding the Recommended Weatherization Approach. This recommended approach is the result of collaborative and cooperative effort and represents a document that is suitable for the Commission's review and consideration and will provide a consistent approach to weatherization across all utilities in Arkansas.

Q. What are your recommendations?

A. For the reasons set forth herein and as supported by the testimony of Dr. Johnson, I recommend that the Commission approve the PWC's Recommended Weatherization Approach, included as Attachment A to my testimony.

Q. Does this conclude your testimony?

A. Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing has been delivered on all parties of record by electronic mail via the Electronic Filing System this 1st day of October, 2014.

/s/ Fran C. Hickman
Fran C. Hickman

ATTACHMENT A

A Proposal to Develop a Consistent Approach for Weatherization Programs Across all Utilities in Arkansas

Prepared for:

Parties Working Collaboratively on Behalf of the

Arkansas Public Service Commission

Prepared by:

The Independent Evaluation Monitor

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With

FINAL

September 30, 2014

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Executive Summary

In Order No. 7 of Docket No. 13-002-U, the Arkansas Public Service Commission (Commission) directed the Parties Working Collaboratively (PWC) to submit a plan describing how the PWC would engage a facilitator and other consultants to assist the PWC in developing a consistent weatherization approach across all utilities and weatherization program coordination for natural gas and electric utilities in Arkansas under the jurisdiction of the Commission and subject to the Commission's *Rules for Conservation and Energy Efficiency Programs (C&EE Rules)*. The PWC plan must address the process the PWC will employ to develop a recommended whole-house energy efficiency program that is consistent across all utilities and that is available to all residential customers, including those in severely energy inefficient homes[1], that incorporates the six elements outlined by the Commission in 13-002-U, Order No. 7, beginning on page 79, as well as other components discussed in that Order.

To achieve these goals, the PWC engaged the Independent Evaluation Monitor (IEM) to serve as the facilitator for the PWC Weatherization working group, outside consultants, subject-matter experts, and key stakeholders to craft an approach to developing a consistent weatherization approach across all utilities. This document summarizes the activities conducted by the PWC Weatherization working group to develop this approach that incorporates the key Commission objectives. It also summarizes the PWC Weatherization working group's recommendations for implementing this approach to meet the Commission's goals that are consistent across all utilities.

Based on a careful review of current program activities of the seven investor owned utilities (IOUs), gaps in program offerings, a Weatherization Technical Conference[2], and a Weatherization Best Practices literature review, the PWC Weatherization working group developed an approach that is consistent across all utilities. Throughout this document, the consistent approach across all utilities is addressed as the Core Program. As Table E-1 illustrates, the Core Program not only addresses but also exceeds all of the requirements specified by the Commission. In addition, this approach will provide a consistency to delivering weatherization programs across the broad spectrum of Arkansas ratepayers to install cost-effective measures in a fuel-neutral manner. It also provides a pathway for these utility customers to install additional measures on their own, obtain financing if they qualify, and learn about additional ways to reduce energy usage in their homes.

[1] Program eligibility is based on the age of the house, **or** the cost per energy on a square foot basis, which varies based on fuel. However, the goal is to make the program available to all qualifying residential utility customers and to target customers who live in severely energy inefficient homes.

[2] Staff from the Arkansas rural electric cooperatives participated in this Weatherization Technical conference and the Arkansas Electric Cooperative Corporation was included on all communications of the PWC Weatherization working group.

Table E- 1: Comparison of the Commission's Objectives with the Core Program's Features

Commission Objective	Core Program Feature	Core Program Enhancements
1) Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features.	Will be jointly funded by IOUs, where customers overlap between utilities, in a coordinated way to include an energy assessment and installation of insulation and infiltration reduction measures.	The program includes installing additional water and energy savings measures that will provide immediate and direct savings to eligible customers.
2) Comprehensive technical standards following best practices with a single set of standards and coordinated with federally funded weatherization services requirements.	Incorporates the industry-best practices for contractor training and requirements. Measure savings and standards will be consistent with the Arkansas Technical Reference Manual (TRM) and measures will be installed following industry best practices.	Provides a gateway for certified WAP contractors to also participate in an energy efficiency program; Offers a coordinated approach with the Weatherization Assistance Program (WAP) agencies; Encourages ongoing contractor training. Measures will be added and/or subtracted from the program mix as technology changes.
3) Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as the Home Energy Affordability Loan (HEAL) program.	HEAL financing is offered as a complementary feature for customers who want to install Other Utility Offerings (OUO) measures beyond the Core Program.	The HEAL program can continue offering the program to natural gas customers served by a co-op. Other financing mechanisms will continue to be explored.
4) Eliminate duplication of programs that prevent trade allies to work together or create customer confusion.	Provides a standard set of cost effective measures that can be installed by contractors statewide that will minimize contractor and customer confusion.	Will ensure consistency of measure offerings in an electric and gas utility coordinated manner throughout the state.
5) Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding	The Core Program provides a way to effectively leverage the WAP program and for the WAP to leverage utility programs.	The Core Program offers a way to reach customers in severely energy-inefficient homes that are not tied to fluctuating levels of DOE funds. Through the OUO programs, customers will be also able to leverage other federal programs as appropriate.
6) Effectively market coordinated Electric and Gas -utility weatherization services including the HEAL program.	Each utility will leverage current marketing and outreach activities for its weatherization programs. The Arkansas Energy Office (AEO) will continue to provide a central point for information through the Energy Efficiency Arkansas (EEA) which will be linked to each utility's website.	The Core Program provides a consistent approach to reach customers who are interested in receiving weatherization program services.

In addition, the Core Program incorporates the following best practices for delivering an approach that is consistent across all utilities as identified in other successful weatherization programs (Literature Review 2014, p. iii):

- Delivers measures using an Electric and Gas Utility-coordinated approach
- Based on proven and successful program designs
- Ensures consistent contractor training and guidelines, ongoing training and provides opportunities to enlist contractors from the Community Action Program (CAP) Agencies to participate in this new consistent approach.
- Has a flexible platform to accommodate market changes, TRM and Evaluation, Measurement and Verification (EM&V) changes in a timely manner.

Therefore, the PWC requests that the Commission approve this proposed approach to be implemented by the seven IOUs.

I Introduction

In Order No. 7 of Docket No. 13-002-U, the Commission directed the PWC to submit a plan describing how the PWC would engage a facilitator and other consultants to assist the PWC in developing a weatherization approach and weatherization program coordination for natural gas and electric utilities in Arkansas under the jurisdiction of the Commission and subject to the Commission's C&EE Rules that is consistent across all utilities. The PWC plan must address the process the PWC will employ to develop a recommended, whole-house energy efficiency program that is consistent across all utilities and is available to all qualifying electric and gas utility residential customers, including those in severely energy inefficient homes, that incorporates at least the six elements outlined by Commission Order No. 7 of Docket No. 13-002-U, beginning on page 79, as well as other components discussed in that Order.

Order No. 7 provided a summary of the current residential weatherization programs that are offered to Arkansas customers. As this Order described, the seven IOUs are relying on multiple approaches to reach the various sectors within the residential weatherization market. While all the utilities are currently participating in the Arkansas Weatherization Program (AWP), which has weatherized nearly 4,000 homes since program initiation in 2007 (p. 66 of 91), the AWP faces numerous barriers and challenges, including fluctuating levels of federal funding, reaching non-WAP eligible homes, and geographic gaps in service delivery (pp. 68-69 of 91). These challenges have led to uneven service delivery and cost-effectiveness results for the funding utilities.

Other weatherization programs targeting residential customers have experienced differing degrees of success, including the HEAL program, administered by the Clinton Climate Initiative (CCI), and part of Arkansas Gas Company's (CenterPoint) Energy Efficiency Program Portfolio (pp. 70 of 91). This program has achieved success in its limited implementation and could serve as a "model" for financing and cross-fuel programs (p. 71 of 91). HEAL also participates as a contractor within the Entergy Arkansas, Inc. (EAI) Home Energy Solutions (HES) Program described below, demonstrating another successful model to incorporate HEAL's expertise in a utility weatherization program.

Arkansas Oklahoma Gas Corporation (AOG) and Oklahoma Gas & Electric Company (OG&E)'s joint weatherization program is yet another program model that has achieved remarkable success in customer awareness, participation, and satisfaction (p. 72 of 91). Further the AOG and OG&E model is a joint funding program between gas and electric utilities. Therefore, this weatherization model could provide useful insights into effective program designs for residential weatherization programs that could be implemented on the statewide level.

EAI's HES Program has been the most successful program in the State in energy savings achievement[3], growth in customer participation[4], and the expansion of a qualified contractor base. EAI's HES Program achieved more than 377% of targets in the 2013[5] program year, and includes strong contractor training requirements (p. 74 of 91). Further EAI's HES Program and SourceGas Arkansas, Inc.'s (SourceGas) Home Energy Savings Program (HESP) presently coordinates offers to customers to address both gas and

[3] 2013 Cadmus Report p. 71.
[4] 71 (Id (The HES Program had 6,431 participants in 2013 alone).
[5] Id.

electric measures and cost share in weatherization measures installations. Southwestern Electric Power Company, Inc.'s (SWEPCO) Residential Standard Offer Program (RSOP) also encourages residential customers to make weatherization improvements through rebates and incentives. This program, based on the EPA's "whole house approach," offers customers a comprehensive audit combined with rebates to encourage the installation of energy efficiency measures. SWEPCO has also partnered with the HEAL program in late 2012 (p. 75 of 91). SourceGas' HESP has been designed to integrate with both SWEPCO and EAI's weatherization programs and is on track to reach its savings goals for 2014. SourceGas has also been partnering with HEAL in 2014.

Therefore, the Commission directed the PWC to "collaboratively develop uniform whole house program offerings for all residential customers, including those in severely inefficient homes, for implementation in January 2015."[6] These programs should include the following elements (Order No. 7, pp. 79-82 of 91):

1) Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features.
2) Comprehensive technical standards following best practices with a single set of standards and coordinated with federally funded weatherization services requirements.
3) Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as HEAL.
4) Eliminate duplication of programs that prevent trade allies to work together or create customer confusion.
5) Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding.
6) Effectively market coordinated Electric and Gas-utility weatherization services including the HEAL program.

To achieve these goals, the PWC engaged the Independent Evaluation Monitor (IEM) to serve as the facilitator for the PWC Weatherization working group, and to work with the PWC, and other interested individuals and organizations to craft an approach to developing a consistent weatherization program offering across all utilities. This document summarizes the activities conducted by the PWC Weatherization working group to develop this approach that incorporates the key Commission objectives. It also summarizes the PWC Weatherization working group's recommendations for implementing this consistent approach across all utilities to meet the Commission's goals.

[6] Docket No. 13-002-U, Order No. 7 p. 80. The Commission extended the date to January 2016 in Order No. 15

II Market Analysis

A. Summary of Current Arkansas Weatherization Programs

The first step in developing an approach that is consistent across all utilities is to gain a better understanding of the current programs available to Arkansas' ratepayers. The Commission identified several core weatherization programs that provide the foundation for offering services to customers of the seven IOUs. However, there are also several other programs that provide ancillary services that complement and enhance these weatherization programs. Therefore, with assistance from the PWC Weatherization working group, the IEM developed a Summary of Weatherization Programs. This report, which was finalized in June 2014, is provided in Appendix A. The summary report confirmed that the IOUs currently offer a diverse group of weatherization programs targeting a variety of customer segments throughout the State. The purpose of this report was to summarize the breadth and depth of current program offerings to better understand the current market conditions and to better identify market needs. This report also identified potential program strategies that could be incorporated into an approach to weatherization that is consistent across all utilities. While Order No. 7 was specific in directing the PWC to recommend an approach that is consistent across all utilities, it did not require abandoning or discontinuing current weatherization program offerings. This summary helped to clarify current program offerings as well as identify potential strategies to deploy an approach that is consistent across all utilities.

This summary report accomplished two important goals in informing the PWC Weatherization working group regarding potential approaches that are consistent across all utilities:

1. To summarize the current program offerings regarding weatherization measures; and
2. To compare these program offerings across all utilities, as a way to inform both the gap analysis and identify "best practices" that could be incorporated into these current weatherization program designs.

The program summaries were based on the IEM's review of current weatherization program offerings available to Arkansas's residential ratepayers. The programs were selected based on the following three criteria:

1. The programs were specifically highlighted in Commission Order No. 7;
2. The programs included an energy audit as part of the program offering; and
3. The programs included cost effective measures specifically designed to improve building envelopes, such as air sealing, duct sealing, or insulation.

While Commission Order No. 7 did identify several other programs, those programs were more focused on specific incentive programs to encourage the installation of energy efficient measures such as energy efficient heating or cooling. Similarly, our review of the current program portfolios offered by the seven IOUs identified a number of rebate-specific programs targeting heating, cooling, and water heating replacement. While these measures are components of weatherization programs, the focus of weatherization programs is two-fold: initial inspection and installation of measures to cost-effectively reduce energy savings. Table 1 summarizes the current weatherization programs offered to residential customers of the seven IOUs as of PY 2013.

Table 1: Weatherization Program Summary Matrix

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
		AOG Wx	**HEAL**	**Res. Wx**	**HES** [7,8]	**OG&E Wx**	**HES**	**HPwES**
Organization	ACAAA	AOG	CenterPoint	Empire	EAI	OG&E	SourceGas	HPwES
PROGRAM DESIGN METRICS								
Target Markets	Severely energy-inefficient homes	Severely energy-inefficient homes	Employees of participating businesses, especially low-to-moderate income households	Severely energy-inefficient homes	Single Family homes, Multifamily up to 4 units. At least one year old.	Severely energy-inefficient homes	Single Family, Multifamily owners, renters and tenants	Single Family, Multifamily up to 4 units, property owners or renters
Participation Process								
Energy Audit Type	Comprehensive audit							
Energy Audit Co-pay	Range from $50 - $196 for initial audit	$0	$0	$0	$300 EAI Only/$150 EAI + SourceGas	$0	$150	$300
Utility Co-pay	Up to $855 for one utility, $1710 for all-electric home[9]	$1,500	NA		$300 EAI Only/ $150 EAI SGA	$1,500	$150	$300 SWEPCO Only/ $150 SWEPCO SGA
Direct Install of Measures at Audit	No	No	Yes	No	Yes	No	Yes	Yes
Trade Ally Types								
Auditor	BPI-Certified/ RESNET Auditors							
Auditing Software/Tools								
Onsite auditing tool	NEAT	EnerTrek	Optimiser	EnerTrek	Optimiser	EnerTrek	Optimiser	Optimiser

[7] It is recommended to HES customers to purchase via the Lighting and Appliance program.

[8] Retrofit on replace on burn-out existing electric heating only

[9] This is the total utility payment per home, including the audit plus measures.

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
		AOG Wx	HEAL	Res. Wx	HES [7, 8]	OG&E Wx	HES	HPwES
QA/QC	QA/QC 10%	QA/QC 10%	Post-test to verify savings	QA/QC 10%	QA/QC 10% for the program. Contractors are required to post-test to verify savings.	QA/QC 10%	QA/QC 10% for the program. Contractors are required to post-test to verify savings.	QA/QC 10%
Program follow-up	NA						No	Yes
Marketing & Outreach Strategies								
Types	Targeted marketing only	Residential mass market	Residential mass market- comprehensive	Program sign up/ website	Residential mass market- comprehensive	Residential mass market	Residential mass market	Residential mass market
Trade Ally Outreach/Training Provided								
Types	Comprehensive training							
Educational Materials Provided	Yes		Yes		Yes		Yes-Limited	Yes
Eligible Measures								
	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓			✓		
	✓	✓		✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓		✓
	✓	✓				✓		
	✓					✓		
	✓	✓	✓	✓	✓	✓		✓
	✓	✓				✓		✓
			✓		✓			
	✓	✓		✓		✓		

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
		AOG Wx	HEAL	Res. Wx	HES [7, 8]	OG&E Wx	HES	HPwES

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
	✓	✓				✓		✓
	✓	✓			✓	✓	✓	✓
		✓			✓	✓	✓	✓
	✓	✓		✓	✓	✓	✓	✓
	✓	✓		✓	✓	✓	✓	✓
	✓	✓			✓	✓		
	✓	✓	✓		✓	✓		✓
	✓	✓	✓		✓	✓	✓	✓
	✓	✓	✓	✓		✓	✓	✓
	✓	✓				✓		
	✓	✓				✓		
	✓	✓				✓		✓
	✓	✓				✓		✓
	✓	✓			✓	✓	✓	✓
	✓	✓				✓		
		✓				✓		

	✓	✓				✓		
	✓	✓				✓		
								✓
	✓	✓	✓	✓	✓	✓	✓	✓

Table 2 provides a summary of five energy efficiency programs that complement the current Arkansas weatherization program portfolio. These five programs were selected because they currently reach critical target markets (i.e., manufactured homes and multifamily buildings), or they offer rebates that should be part of a comprehensive energy efficient installation (i.e., energy appliances, lighting, and tune-ups). However, this list is not meant to be exhaustive since each of the seven IOUs offers equipment specific rebates and information about the benefits of making energy efficiency improvements.

However, as Table 2 shows, these programs could provide valuable links to the current weatherization program offerings, and may also provide additional insight into the best ways to meet the objectives described in Commission Order No. 7.

Table 2: Summary of Additional Complementary Energy Efficiency Programs

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Organization	**SWEPCO**	**EAI**	**EAI**	**EAI**	**EAI AC Tune-Up**
PROGRAM DESIGN METRICS					
Target Markets	Single family homes; multifamily component; manufactured homes; permanently installed mobile homes	Multifamily properties composed of five or more units located within the EAI electric service territory	Customers who live in manufactured homes; mobile home park owners	All residential and small business customers	Residential and Commercial AC<25 tons; no EAI tune-up in past 5 years
Participation Process					
Energy Audit Type	Walk-thru audit for single family homes; direct install for multifamily homes	Walk-thru audit with recommendations	Walk-thru audit		
Energy Audit Co-pay	$25	$0	$0		
Utility Co-pay	Provides incentives of up to $15/unit for MF homes				
Direct Install of Measures at Audit	Yes- MF only	Yes	Yes		
Trade Ally Types					
Auditor	Contractors must be enrolled in SWEPCO's contractor network	BPI-certified	BPI-certified		HVAC contractors must be certified/ trained by EAI
Contractor					
Auditing Software/Tools					
Onsite auditing tool	None	None	None		
QA/QC	10%	10%	10%		Follow program protocols
Program follow-up	Thank You Cards	None	None		
Marketing & Outreach Strategies					
Types	Mass market methods, home shows and health fairs, direct outreach to property/building managers	Mass market; direct outreach to property/ building managers	Mass market; direct outreach to property/ building managers	Direct outreach at events; POP signage; mass media	Via contractor promotions; mass market, website

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Trade Ally Outreach/ Training Provided					
Types	Contractor trade ally outreach; direct recruitment to MF property owners				
Educational Materials Provided	Measure Sales Sheets, Program Brochure	Shares low-cost/no cost tips for EE; info about other programs	Shares low-cost/no cost tips for EE; info about other programs	Program Brochures	None
Eligible Measures					
Insulation	✓				
Attic	✓				
Floor					
Wall	✓				
Duct	✓				
Foundation					
Sillbox					
Light bulbs	✓	✓	✓	✓	
Lighting Retrofits	✓				
Smart-Strips				✓-rebate	
Refrigerator Replacement				✓-rebate	
Water Savings Measures					
Low-Flow Showerheads	✓	✓	✓		
Faucet Aerators	✓	✓	✓		
Water Heater Pipe Wrap	✓				

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Water Heater Pipe Insulation	✓				
Water Heater Blankets					
Equipment Replacement					
Cooling	✓				
Heating	✓				
Water Heating	✓				
Equipment Repair					
Furnace Tune-Ups					
AC/Heat Pump Tune-Ups					✓
Windows	✓				
Health and Safety checks?					
Doors					
Roof Repairs					
Smoke Detectors					
Solar Screens					
Window Film	✓				
Room A/C Units				✓-rebate	

B. Gap Analysis

The second element of the market situation analysis was to complete a gap analysis of the current weatherization programs across the state. This gap analysis was organized by the Commission's key objectives and identified where programs are currently meeting these needs and where there are opportunities to address these market disparities through a new consistent approach across all utilities. This report is provided in Appendix B. However, two of the major findings are summarized here as they provide additional support for the proposed framework to deliver a consistent approach across all utilities.

Table 3 demonstrates how the seven IOUs are currently collaborating on weatherization programs.

Table 3: Joint Collaboration Utility Gap Analysis

GAP Analysis	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
Utility Joint Collaboration	**All Utilities**	**AOG WX**	**HEAL**	**Res. WX**	**HES**	**OG&E WX**	**HES**	**HPwES**
Dual Fuel Program Offerings	✓	✓	✓		✓	✓	✓	
Direct Install	✓[10]		✓	✓	✓		✓	✓
Comprehensive "Whole House" Approach	✓	✓	✓	✓	✓	✓	✓	✓
Leverages national brands	NA							✓
Leverages federal funding sources	✓							
Leverages other non-federal funding programs	✓	✓			✓			

Green = gap in current program offering ✓= addressed in current program NA= not applicable for this program

This analysis identified one major gap in the current market; the lack of uptake in the AWP program due to changes in program administration and fluctuations in funding from the Department of Energy (DOE). Of particular note, many utilities are already pursuing joint programs including CenterPoint and EAI via HEAL, EAI and SourceGas, and SourceGas and SWEPCO. These findings suggested that the foundation for developing an effective and consistent approach across all utilities was already in place in Arkansas, the challenge would be rather to develop an approach that provided a consistent framework across all utilities for program implementation.

[10] The AWP program provides some direct install measures as part of a comprehensive program approach to install weatherization measures in participating homes.

The similarity of target markets, measure offerings, contractor requirements and training, and marketing and outreach programs were also revealed through the gap analysis. The findings, especially regarding the current target markets as highlighted in Table 4, provided additional guidance on the best way to develop a program implementation framework to deliver a weatherization approach that is consistent across all utilities on a collaborative basis leveraging the existing programs to the greatest extent possible.

Table 4: Target Market Utility Gap Analysis

GAP Analysis	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI			
Target Markets	**All Utilities**	**AOG WX**	**HEAL**	**Res. WX**	**HES**	**OG&E WX**	**HES**	**HPwES**	**RSOP**	**MultFam Program**	**MFG Homes**	**AC Tune-Up**	**Lighting & Appl.**
Severely Energy-Inefficient Homes-Income Qualified	NA	NA	✓	NA	NA	NA	NA	NA	NA	NA	NA	NA	N/A
Severely Energy-Inefficient Homes-No Income Qualifications	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
Single-Family Home Owners	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	✓	✓
Single-Family Renters	✓	✓	✓	✓	✓	✓	✓	✓	✓	NA	✓	✓	✓
Multifamily Up To 4 Units Renter		✓		✓	✓	✓	✓	✓	✓	NA	NA	✓	✓
Multifamily 5 Units Or Greater- Renter	NA	NA		NA	N/A	NA	✓	NA	✓	✓	NA	✓	✓
Multifamily Property Managers/Bldg. Managers	NA	NA		NA	NA	NA	✓	✓	✓	✓	NA	NA	NA
Manufactured Home Owners	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
Mobile Home Park Residents	✓	✓		✓	✓	✓	✓	✓	✓	NA	✓	✓	✓
Mobile Home Park Owners	NA	NA		NA	NA	NA	NA	✓	✓	NA	✓	✓	NA

Green = gap in current program offering ✓= addressed in current program NA= not applicable for this program

C. Best Practices Literature Review

The Best Practices literature review identified several other program models that could provide a solid foundation for Arkansas to pursue in developing this consistent approach across all utilities. This review, provided in Appendix C, was also organized by the Commission's key objectives. These findings offered additional guidance regarding the best ways to establish a consistent weatherization approach across all utilities by leveraging the experiences from other weatherization efforts in other states. These key features included:

- Uses a consistent WAP network to deliver program services
- Targets customers with high energy usage or high utility bills or outstanding balances
- Integrates health and safety with weatherization
- Involves key stakeholders
- One-stop shop approach to reach deeper retrofits
- Leverages use of DOE Funds
- Leverages utility funding level through HPwES contractors

D. Key Conclusions from the Market Analysis

The review of current programs, the gap analysis, and the literature review of Weatherization Best Practices provided a rich foundation on which to develop a recommended approach that is consistent across all utilities. The major conclusions from these three research activities were as follows:

- *Arkansas already has a successful history of utility collaboration models delivering weatherization services.*

The AWP is a successful model of joint utility and agency collaboration by including representatives from the PWC, the utilities, state government agencies, and Arkansas Community Action Agencies Association (ACAAA). However, this program falls short of its participation goals each year and therefore is not effectively serving qualifying residential customers including those with severely energy inefficient homes.

The AOG/OG&E Weatherization program is a jointly funded utility program that provides comprehensive weatherization services through trained private contractors. This program continues to exceed its goals. It has also served as an effective model for other utilities, including The Empire District Electric Company, to develop a similar program leveraging the training and experience from the AOG/OG&E Weatherization Program.

SGA/SWEPCO and SGA/EAI provide funding for weatherization services through trained private contractors.

- *The essential program elements are already in place to deploy a consistent approach across all utilities in Arkansas.*

The Arkansas weatherization programs are already remarkably consistent in terms of measure mix, contractor training and outreach, target markets, and marketing and outreach strategies. Therefore, rather than having to create an entire new program framework, it would be simpler and easier to leverage the current program elements and deploy them in a consistent way across all of the seven IOUs in the state.

- *Contractor-delivered programs have been critical to the success of the weatherization programs.*

This finding, which was supported in all three research areas, suggested that relying only on CAP agencies for delivery of weatherization services was not a model that would achieve the Commission's goals.

The conclusions from these research activities led to development of a recommended framework of a consistent approach across all utilities for weatherization services. This framework, and the consistent elements, is described next.

III Recommended Approach to Delivering a Consistent Weatherization Approach Across all Utilities

Through a series of ongoing discussions, the PWC Weatherization working group developed the following approach to meet the specific objectives described in Order No. 7:

1) Individual utility-coordinated funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features when customers with overlapping utilities are available.[11]
2) Comprehensive technical standards following best practices with a single set of standards and that does not prohibit coordinated with federally-funded weatherization services requirements.
3) Offer optional financing mechanism/s that encourage installation of OUO's measures such as HEAL.
4) Eliminate duplication of programs that prevent trade allies to work together or create customer confusion.
5) Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding.
6) Effectively market coordinated electric and gas-utility weatherization services including the HEAL program.

The IEM and the PWC Weatherization working group conducted a Weatherization Technical Conference on March 6, 2014[12] in Little Rock, AR. The purpose of this conference was to elicit feedback and comments from all interested stakeholders to assist the PWC Weatherization working group in formulating a consistent approach across all utilities to delivering weatherization services.

A. Overall Framework for Program Implementation

The PWC Weatherization working group developed a recommended approach that leveraged the current success of Arkansas' programs. This approach retains a decentralized delivery of a consistent weatherization programs by the IOUs. The consistent program consists of core elements[13] that will be offered by all of the IOUs and allows each utility to incorporate additional elements to address the specific needs of the utility's service territory. In addition, this approach retains much of the existing weatherization program infrastructure facilitating an easy transition, which minimizes costs. The Core Program will replace the existing AWP program funding. In this way, the Core Program's key elements are the same across all the IOUs substantially reducing confusion by customers and contractors.

[11] SourceGas is currently working with the rural electric cooperatives to deliver joint services. The eligible measures that will be installed in a customer's home which receives services from both a rural electric cooperative and an IOU will be determined by the IOU.

[12] The link to the Weatherization Technical Conference is available at the following link: http://www.johnsonconsults.com/weatherization%20agenda%203-6.html

[13] Core elements and core measures will be offered by each utility based upon final program cost effectiveness.

The Core Program will also make cross utility coordination simpler and more transparent. The Core Program relies on a proven model of program delivery in a small market, through certified weatherization contractors, who are both motivated and capable of meeting each utility's participation objectives. However, this model does not exclude CAP agencies from participating in the program, but rather opens up the participation in this program to a broader range of qualified contractors. This approach has been successfully used in both Arkansas as in the AOG-OG&E Program as well as in other jurisdictions as highlighted in the literature review. The PWC Weatherization working group recommends that the AWP be discontinued and the IOUs instead administer individual utility programs that are coordinated between electric and gas-utilities and include the Core Program elements. However, the Arkansas Energy Office (AEO) would still be actively involved in providing information and promoting the Core Program by acting as a centralized point of information.

The key program elements of this consistent approach across all utilities are as follows:

- A comprehensive assessment of the customer's home;
- Direct installation of immediate energy saving measures;
- Installation of a set of weatherization measures, including insulation and air sealing, based on the funding levels provided by the utilities; and
- Management of the contractors that deliver the home assessments and installations, requiring standardized protocols, energy assessment tools and quality control.

Each utility will be responsible for the following:

- Delivery of a cost effective Core Program;
- Including the Core Program in its energy efficiency program plan portfolio filed with the Commission;
- Establishing its budget for the Core Program;
- Developing appropriate marketing and outreach for the program, as part of its overall marketing strategies for weatherization programs;
- Offer consistent requirements regarding contractor enrollment, training, and management; and
- Coordination with other utilities such as electric utilities coordinating with gas utilities to make it easy for the customer to participate and eliminate multiple outreach and service delivery.

Each IOU will have flexibility to provide additional services to include but not limited to:

- Rebates for measures that are not addressed in this Core Program offering (e.g., measures from the complementary programs; OUOs); and
- Financing options which may include the HEAL program model for OUO measures.

The unifying elements of this proposed approach are:

- Consistent approach across all utilities to comprehensive audit for eligible customers;
- Consistent contractor requirements across all utilities such as the Building Performance Institute (BPI) or the Residential Energy Services Network (RESNET) and;
- Ongoing coordination by utilities and key stakeholders to monitor implementation, trouble-shoot problems and develop consistent solutions, review and recommend additional or substitute measures as technologies develop to ensure a consistent approach across all utilities.

Each key feature of this proposed implementation model is summarized next.

B. Key Features of the Consistent Approach Across all Utilities

This section summarizes the overall recommended strategy proposed by the PWC Weatherization working group. Each element of the Core Program is described more fully in order to provide a thorough understanding of how this recommendation will address the Commission's key objectives and goals. The name for this approach is ***"The Core Program for Weatherization Services."***

Core Program Description

The Core Program is a cost effective residential weatherization program targeting severely inefficient homes to improve comfort and reduce energy costs by upgrading the thermal envelope. This is designed to be a "one-stop" shop where customers could enroll in the program, schedule an audit, and receive the measures by contacting the utility or participating contractors directly.

The Core Program consists of a consistent audit, a standard set of Direct Install (DI) measures, and a list of non-DI measures. At the time of the audit, the auditor would work with the customer to select Non-DI measures for implementation based on the audit results. In addition, customers would be informed about other programs offered by their respective utilities that they might participate in, such as an appliance rebate or air conditioner tune-up program as well as any other types of financing that may be available to cover the cost of making additional energy efficiency improvements.

Each utility has the flexibility to offer and promote other energy efficiency programs in addition to the Core Program. Other programs will be designed to address other target markets and not to compete with the Core Program.

Core Program Target Market

This Core Program will target residential customers who live in severely energy inefficient homes as defined by the utilities. The initial participant prescreening process will validate that the home is at least 10 years old **or** has a minimum energy usage cost per square foot of five cents for natural gas and ten cents for electricity based on the customer's highest bill in the past 12 months.

This program does not require any specific income qualifications. It will therefore not preclude any customer from participating in any other program currently offered by federal agencies, such as the Federal Weatherization Assistance Program (WAP) or the Low-Income Home Energy Assistance Program (LIHEAP) but would potentially provide additional opportunities to reach customers who may not meet the federal income qualifications. Customers meeting the federal income guidelines will be referred to the WAP for additional WAP-qualifying measures, as appropriate, or when the participant is a customer of only one IOU and, therefore, not eligible for all electric and natural gas measures that would otherwise be cost-effective.

In addition, AEO will continue to coordinate with the statewide WAP to encourage closer collaboration with the Core Program. For example, WAP-eligible customers may receive the Core Program measures from the utility's contractor (which could be a WAP implementation agency) and also receive additional, non-Core measures (such as a refrigerator or window air conditioner) from a WAP implementation agency using WAP funding.

Core Program Eligibility

The eligible premise must have been occupied for the previous 12 months and not received weatherization services through a utility weatherization program in the past five years including the AWP program.

Eligible customers may be homeowners, renters or tenants in severely energy-inefficient single family, duplex, or mobile homes, which are a minimum of 10 years old or have a minimum energy usage cost per square foot of five cents for natural gas and ten cents for electricity based on the customer's highest bill in the past 12 months. Actual measure implementation will be based on a set of criteria established by each utility to determine cost effectiveness.

Core Program Delivery

The Core Program would be delivered through trained contractors serving Arkansas' IOUs either as private contractors or those working through the WAP program.

Implementation Method/ Core Program Delivery

The PWC Weatherization working group developed the following operational flow-chart (see Figure 1) illustrating this joint-collaborative approach as well as the interplay between the Core Program and the OUOs.

Direct Install Measures (DI) as applicable to utility type

- Aerators (Electric and Gas)
- Low –flow showerheads (Electric and Gas)
- Efficient lighting (Electric only)
- Smart strips (Electric Only)

Prequalification prior to audit -

- Premise must have been occupied for the previous 12 months
- Can not have received weatherization services through a utility in the past 5 years including the AWP

One of the following must also be true -

- Home must be a minimum of 10 years old
- Minimum energy usage cost per sq. ft. of $.05 for natural gas and $.10 for electricity based on the customer's highest bill in the past 12 months

Cost Effectiveness

- Total Resource Cost (TRC) tests will be performed by each utility as the determining factor for program implementation

Measure Validation

- Savings to Investment Ratio (SIR) or comparable metric will be used to determine which measures will be installed
- Combined utility incentive is limited to an average of $3,000 per premise

Core No Cost measures -

- Audit
- DI measures
- Ceiling insulation
- Wall insulation
- Duct sealing
- Air infiltration
- Safety testing and/or measures

Other Utility Offering (OUO) measures –

- Prescriptive offerings by utilities
- Any other measures available by utility

Contractors -

- Private or CAP agency qualified
- Certified BPI Analyst or RESNET Rater on staff
- Insulation only contractors require appropriate certification
- All installation contractors are to have appropriate licenses and certifications.

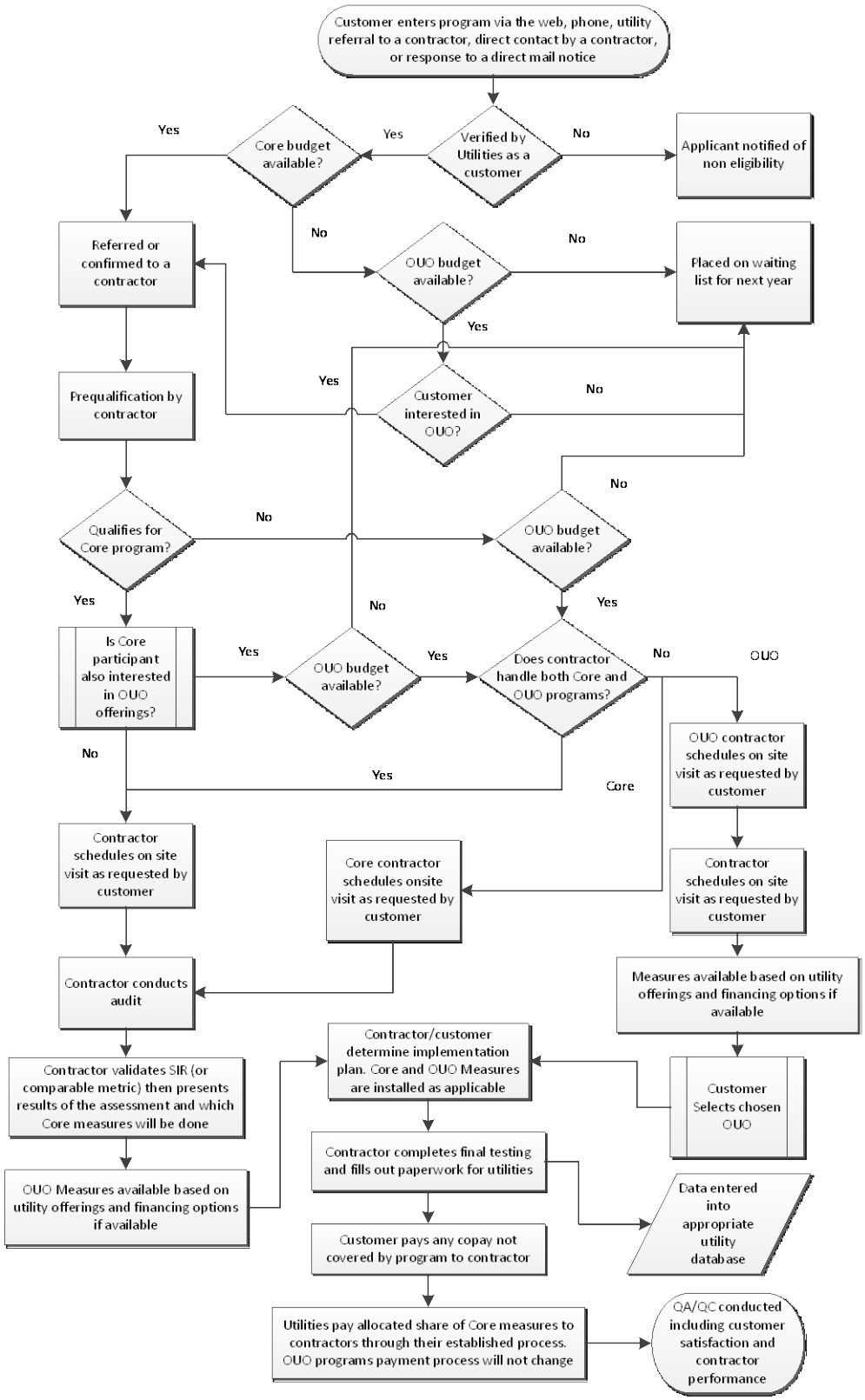

Figure 1: Proposed Program Delivery Model for the Core Program

Core Program Technical Standards/ Requirements

Each utility is responsible for managing its auditors and contractors for the Core Program. Auditors need to be certified by the BPI or RESNET. Contractors are the entities performing the audits and directly installing measures during the audit. Contractors will be required to execute a Participation Agreement that defines their responsibilities and how their performance will be evaluated.

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. This delivery approach is consistent with the following best practices described in the literature review (2014, p 16).

- Comprehensive audits to include blower door testing, and combustion safety testing
- BPI certification requirements for at least one energy auditor or installation crew lead
- Continuing education plan for contractor network
- No requirement for complex technical reports
- Relationship-building between utilities and contractors is critical

Eligible Measures

Based on information from current Arkansas weatherization programs and the Best Practices research, the IEM created a list of potential measures for inclusion in the Core Program. The list included information on whether the measure is included in the current TRM. The list was disseminated to the PWC Weatherization working group for review and comment. The following table includes the comments that were received as well as the results of the Best Practices research.

The IEM synthesized the input from the PWC Weatherization working group with the Best Practices literature review to develop the recommended core measures for the Core Program. “Core” measures in the table are recommended for the Core Program. They are indicated as “CORE-DI” for direct install measures or “CORE” for the non-direct-install measures. “OUO” measures are those measures related to weatherization or building improvements that are NOT recommended for inclusion in the Core Program but may be available via other utility programs as illustrated in Figure 1. The IEM also included as Core measures, some measures that may have potential as indicated by utility input and experience. All of the measures will require a cost-benefit analysis to be performed by each utility as the next step in measure selection and to confirm that the program is cost effective overall.

The OUO measures available to a customer via a utility program would be addressed during the audit to provide the customer with a comprehensive list of applicable measures for the home: the one-stop shop. The eligible customer could implement the measures from the Core Program and any of the OUO measures. The eligible customer could also defer OUO measures for implementation at a later date if the utility program were still available.

All of the installed measures are subject to the savings estimates or approaches as described in the current version of the Arkansas TRM.

Table 5: Recommended Measures for the Core Program

								Proposed Measures		
Measure	**TRM Section**	**AOG**	**OG&E**	**SGA**	**SWEPCO**	**EAI**	**Best Practices**	**Electric Only**	**Gas Only**	**Both**
Central Air Conditioner Tune-Up	2.1.5					OUO		OUO		
Ceiling (Attic) Insulation	2.2.2	Core	Core	Core	Core	Core	Core			Core
Wall Insulation	2.2.3	Core	Core	Core	Core	Core	Core			Core
Window Film	2.2.8				OUO		Core	OUO		
Air Infiltration	2.2.9	Core	Core	Core	Core	Core	Core			Core
Water Heater Replacements	2.3.1			OUO	OUO		OUO			OUO
Water Heater Jackets	2.3.2		Core	Core	Core	Core	Core			OUO
Water Heater Pipe Insulation	2.3.3	Core	Core	Core	Core	Core	Core			OUO
Faucet Aerators	2.3.4	Core	Core	Core	Core	Core	Core			Core-DI
Low-Flow Showerheads	2.3.5	Core	Core	Core	Core	Core	Core			Core-DI
Advanced Power Strips	2.4.4				Core	Core	Core	Core-DI		
ENERGY STAR® (CFLs)	2.5.1.1		Core		Core	Core	Core	Core-DI		
ENERGY STAR® LED	2.5.2.3		Core		Core	Core		Core-DI		
Window Repair										OUO
Door Repair/ Replacement										OUO
Roofs minor repair										OUO
Duct Sealing	2.1.11	Core	Core	Core	Core	Core				Core
HVAC Equipment-Central AC								OUO		
HVAC Equipment-Furnace									OUO	
HVAC Equipment-Heat Pump								OUO		

Marketing/Outreach Activities

The Core Program will be marketed by each utility using various channels as the utility has determined will best accomplish the goal and maximize participation. Each utility will highlight the Core Program on its website and the AEO will provide a complementary website with links to the utility websites. Each IOU is encouraged to promote the Core Program to current customers using a combination of materials and market channels in a uniform format/brand including program brochures, flyers, trade allies, group presentations to targeted customers in multifamily buildings and manufactured home parks focusing on the more cost effective method to achieve energy savings results.

As both the review of current programs and the most recently completed PY2013 program evaluations confirmed, the utilities are doing an excellent job of creating effective promotional and outreach materials to reach key customer groups. Several examples of the types of current marketing and advertising materials are provided next to illustrate the ways in which these IOUs are incorporating marketing and outreach best practices into current program delivery.

Figure 2: AOG-OG&E Yard Signs

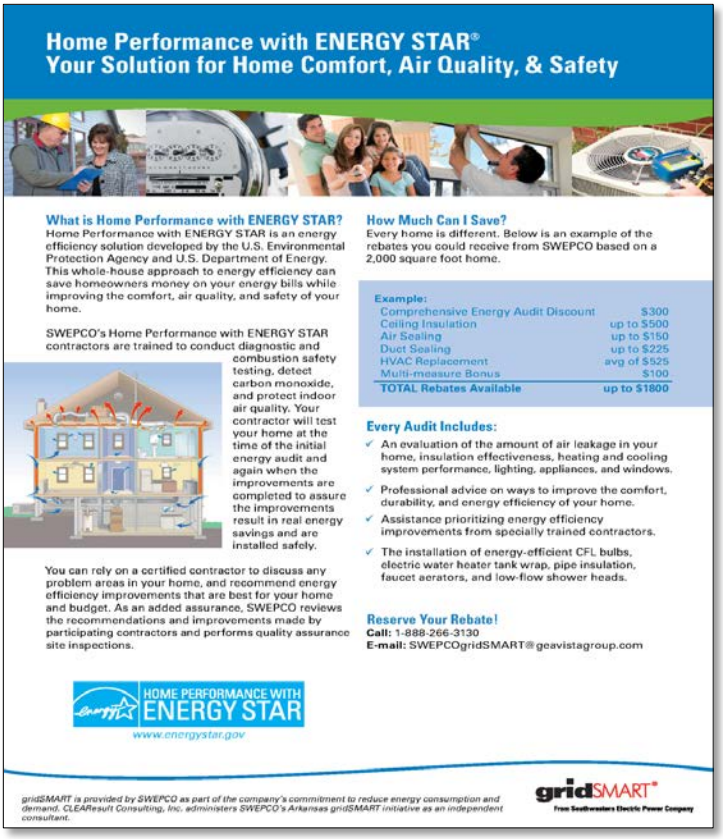

Figure 3: Example of Leveraging ENERGY STAR Programs - SWEPCO

Each utility is encouraged to incorporate industry best practices by including information for program participants featuring educational tips as well as information on other utility programs available to them. As the Best Practices literature review indicated, leaving these types of materials during an audit increases overall cost-effectiveness by both lowering the acquisition cost and by "bridging" ineligible customers to other utility programs from which they may receive some benefits. Figure 3 illustrates this tactic currently used in some SWEPCO marketing materials. Information will be provided in English and in any other languages spoken by a substantial number of customers within a utility's service territory.

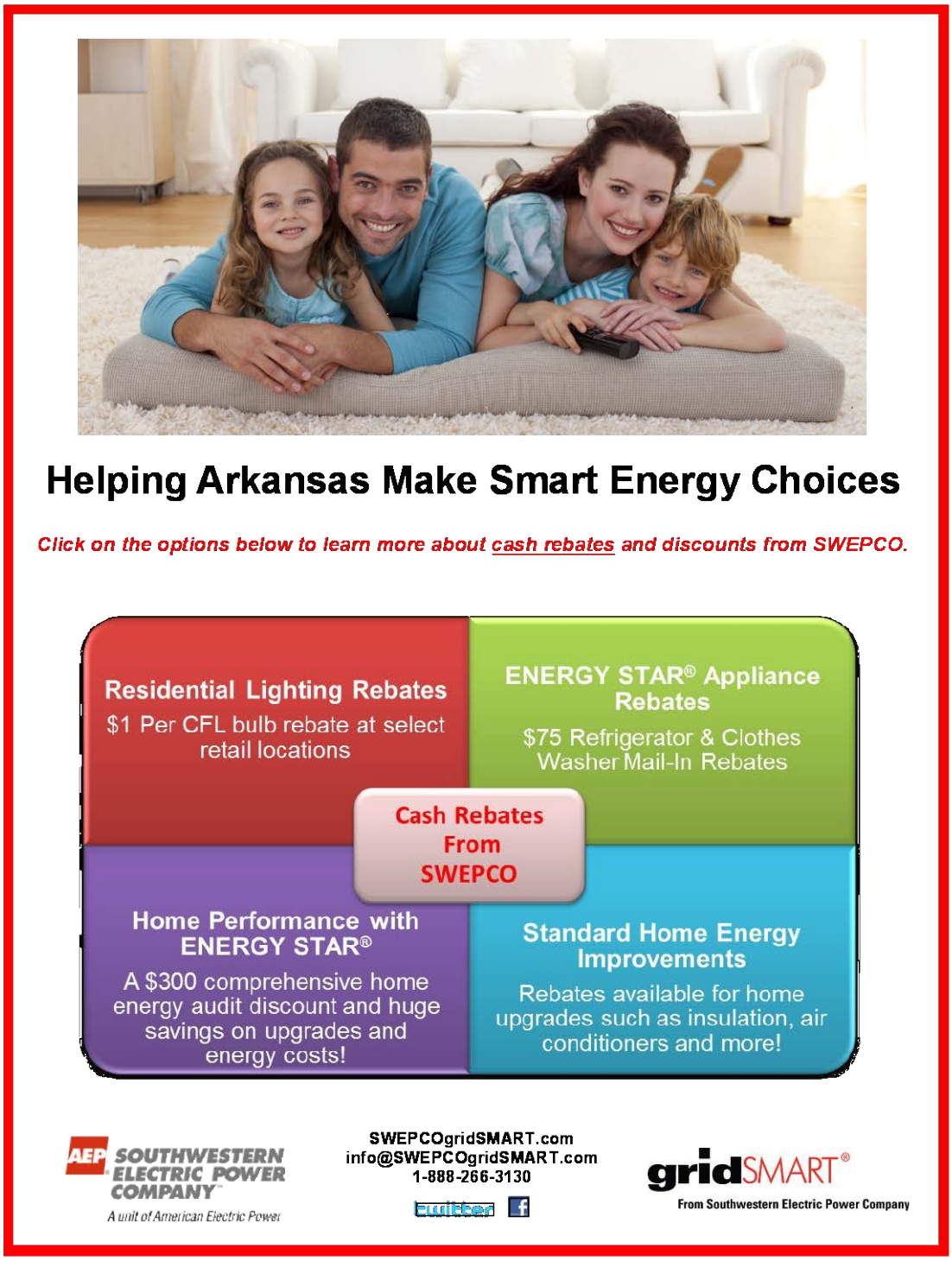

Figure 4: Example of Program Bridging and Cross-Promotion

The marketing and outreach activities for the Core Program should incorporate the following best practices described in the literature review (2014, p. 31).

- Use multiple marketing outreach delivery strategies
- Meet customer needs
- Avoid energy jargon
- One touch is not enough
- Engage the wider community
- Encourage customer follow up
- Provide customer educational materials
- Translate materials into multiple languages, as appropriate

Financing

In Order No. 7 the Commission asked the PWC for a proposal for a consistent weatherization approach across all utilities. Specifically,

> *Based on this review, the Commission refines its original proposal and directs the utilities and Staff, and requests the PWC in general, to collaboratively develop uniform whole house program offerings for all residential customers, including those in severely energy inefficient homes, for implementation by January, 2015 that include the following elements:*
>
> *. . .*
>
> *3. A proposal by the PWC for the provision of a financing mechanism or mechanisms by utilities, or the facilitation of a financing mechanism or mechanisms through non-utility parties that allow customers to finance any measures with significant costs that go beyond initial no-cost measures and to thereby implement multiple cost-effective measures, in effect allowing the customer to implement a multiple measure, cost-effective energy plan to substantially reduce whole-house energy use. Based on the apparent success of the HEAL model, the Commission favors financing options that feature automatic repayment through payroll or utility collection (regardless of whether the utility actually finances the measures). The Commission requests that the PWC assess the extent to which HEAL'S financing mechanism could be extended to and would likely be implemented by employees of state agencies and other employers who may be willing to adopt its payroll collection method.*
>
> *The financing mechanism should, inter alia, enable non-low-income residential utility customers to obtain or afford the "good funds" required to participate in the AWP.*

The PWC Weatherization working group held a meeting to discuss this element of the Commission's order in which the IOUs expressed their preference to avoid an on-bill financing model. It is also acknowledged that the utilities will offer all Core Program measures at no cost to qualifying customers of severely energy inefficient homes. Therefore, there is no financing mechanism required to implement the Core Program.

A energy efficiency financing approach would therefore provide supplemental financing options in instances where OUOs are to be implemented, or Core Program funds are insufficient to install all cost effective energy savings measures. During the August 2014 PWC meeting, the CCI, AAEA and AEO facilitated by the Southeast Energy Efficiency Alliance (SEEA) ("Project Team") offered to conduct further study into a statewide energy efficiency financing mechanism that would be responsive to the Commission's Order, the PWC Weatherization working group's preferences and the design of the consistent weatherization approach across all utilities. During that meeting and again in the September PWC meeting, members of the PWC Weatherization working group affirmed their support for the study.

The Project Team will be informed by the HEAL program's experience facilitating third-party financing for customers of electric and gas IOUs via its employer-based delivery model. Furthermore, HEAL has coordinated a consistent financing program for members of an Arkansas electric cooperative. The Project Team will incorporate the lessons learned from these models with best practices from the industry into a proposed approach. The Project Team will prepare a proposal for the PWC Weatherization working group's consideration during 2015 with one or more financing models. Consequently, the PWC Weatherization working group recommends that the Commission not incorporate any financing requirements for weatherization programs at this time. The PWC Weatherization working group requests that the Commission enable the group to continue examining the issue during 2015 and report on its findings and provide a recommendation to the Commission by September 30, 2015.

Core Program Tracking/Reporting

The Core Program will use each utility's current rebate processing and tracking software for program reporting. The participating contractors will input each customer audit, identify the direct install (DI) measures installed and highlight rebates available for non-DI and the OUO measures.

Each IOU will be responsible for conducting its own Quality Assurance/Quality Control (QA/QC) of contractors who are participating in the Core Program in its service territory. In addition, it is the responsibility of each utility to coordinate with the other utilities overlapping its service territory to ensure customers are only contacted once and there is no duplication of effort with regard to QA/QC efforts. The QA/QC methodologies will include documenting overall contractor performance, including measure installation, customer satisfaction, and quality of overall program reporting. In this way, the Core Program will align with the industry best practices regarding providing a robust and meaningful QA/QC for weatherization programs (Literature Review, 2014, p. 23).

Core Program Communications

Just as the PWC Weatherization working group has provided valuable feedback and insight into the formulation of the Core Program, ongoing communications will be part of this continuing effort. The current PWC Weatherization working group will provide a forum for ongoing feedback from participants. The PWC Weatherization working group participants can also review new technologies as they are developed and will refer them to the TRM review process for possible inclusion in the Core Program. Engaging stakeholders in statewide weatherization programs has been a hallmark of some of the most successful program models, and therefore it is important that there be a forum for exchanging ideas, successes, and failures. The PWC Weatherization working group can perform this function as it is already established (Literature Review 2014, p. iii, 34).

Budgets and Spending

Each utility will be responsible for its own budget and spending. The total utility incentive contribution paid to the participating contractors (from natural gas and electric utilities combined) is limited to an average of $3,000 per eligible customer, with no additional out-of-pocket costs required of the customer.

Conclusions and Recommendations

This proposed consistent approach to weatherization for all utilities across the state describes the basis and rationale for developing the proposed Core Program that could be deployed consistently across all utilities. This Core Program approach leveraged Best Practices, both those currently operating in Arkansas as well as in other successful weatherization programs nationwide.

As Table 6 shows, the Core Program not only addresses but exceeds all of the requirements specified by the Commission. In addition, this program will provide a consistent approach to deliver weatherization programs across a broad spectrum of residential Arkansas ratepayers to install cost-effective measures in a consistent manner across all utilities. It also provides a pathway for these utility customers to install additional measures on their own, obtain financing if they qualify, and learn about additional ways to reduce energy usage in their homes.

Table 6: Comparison of the Commission's Objectives with the Core Program's Features

Commission Objective	Core Program Feature	Core Program Enhancements
Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features.	Will be jointly funded by IOUs, where customers overlap between utilities, in a coordinated way to include an energy assessment and installation of insulation and infiltration reduction measures.	The program includes installing additional water and energy savings measures that will provide immediate and direct savings to eligible customers.
Comprehensive technical standards following best practices with a single set of standards and coordinated with federally funded weatherization services requirements.	Incorporates the industry-best practices for contractor training and requirements. Measure savings and standards will be consistent with the TRM and measures will be installed following industry best practices.	Provides a gateway for certified WAP contractors to also participate in an energy efficiency program; Offers a coordinated approach with the WAP agencies; Encourages ongoing contractor training. Measures will be added and/or subtracted from the program mix as technology changes.
Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as HEAL	HEAL financing is offered as a complementary feature for customers who want to install OUO measures beyond the Core Program.	The HEAL program can continue participation to natural gas customers served by rural electric co-ops. Other financing mechanisms will continue to be explored.
Eliminate duplication of programs that prevent trade allies to work together or create customer confusion.	Provides a standard set of cost effective measures that can be installed by contractors statewide that will minimize contractor and customer confusion.	Will ensure consistency of measure offerings in an electric and gas utility coordinated manner throughout the state.

Commission Objective	Core Program Feature	Core Program Enhancements
Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding	The Core Program provides a way to effectively leverage the WAP program and for the WAP to leverage utility programs.	The Core Program offers a way to reach customers in severely energy-inefficient homes that are not tied to fluctuating levels of DOE funds. Through the OUO programs, customers will be also able to leverage other federal programs as appropriate.
Effectively market coordinated Electric and Gas -utility weatherization services including the HEAL program.	Each utility will leverage current marketing and outreach activities for its weatherization programs. The AEO will continue to provide a central point for information through the EEA which will be linked to each utility's website.	The Core Program provides a consistent approach to reach customers who are interested in receiving weatherization program services.

In addition, this proposal incorporates the following best practices for delivering a consistent approach to weatherization across all utilities, as identified in successful weatherization programs (Literature Review 2014, p. iii):

- Delivers measures using an Electric and Gas Utility-coordinated approach
- Based on proven and successful program designs
- Ensures consistent contractor training and guidelines, ongoing training and provides opportunities to enlist contractors from CAP agencies to participate in this new consistent approach.
- Has a flexible platform to accommodate market changes, TRM and EM&V changes in a timely manner.

Therefore, the PWC Weatherization working group requests that the Commission approve this proposed approach to be implemented by the seven IOUs.

Appendix A: Summary of Weatherization Programs

Prepared for:

Parties Working Collaboratively on Behalf of the

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With

Final Report

June 3, 2014

Executive Summary

The State of Arkansas currently offers a diverse group of weatherization programs targeting a variety of customer segments. This report summarizes the breadth and depth of current program offerings, as a first step to better understand the current market conditions and to better identify market needs.

In Commission Order No. 7, the Arkansas Public Service Commission (PSC) described the multiple approaches that the seven investor-owned utilities and their program implementers are using to reach these various customer segments.

However, this order also highlighted some of the challenges that are facing current weatherization program providers. The purpose of this report is two-fold:

1. To summarize the current program offerings regarding weatherization measures
2. To compare these program offerings statewide, as a way to inform both the gap analysis and identify "best practices" that could be incorporated into these current weatherization program designs.

The following program summaries are based on the IEM's review of current weatherization program offerings available to Arkansas' residential ratepayers. The selection of these programs for the review was based on three criteria:

1. The programs were specifically highlighted in Commission Order No. 7
2. The programs included an energy audit as part of the program offering
3. The programs included measures specifically designed to improve building envelopes, such as air sealing, duct sealing, or air infiltration.

While the Commission Order No. 7 did identify several other programs in its order, these were more focused on specific incentive programs to encourage the installation of energy efficient measures such as energy efficient heating or cooling. Similarly, our review of the current program portfolios offered by the seven investor-owned gas and electric utilities identified a number of rebate-specific programs targeting heating, cooling, and water heating repair or replacement. While these measures are components of weatherization programs, the focus of weatherization programs is two-fold: initial inspection and installation of measures to cost-effectively reduce energy savings.

The following section summarizes the seven current programs that meet all of our criteria for this review. Appendix A highlights five additional programs that may provide complementary program offerings to enhance current weatherization efforts.

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Introduction

Commission Order No. 7 described a number of tasks that the PWC through its weatherization collaborative must address regarding unified weatherization approach and weatherization program coordination. The Commission identified the following aspects that should be considered and addressed by the PWC weatherization collaborative:

1) Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features.
2) Comprehensive technical standard following best practices with a single set of standards and coordinated with federally-funded weatherization services requirements
3) Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as HEAL
4) Eliminate duplication of programs that prevent trade allies from working together or create customer confusion
5) Active participation in the reorganization of the Department of Energy's Weatherization Assistance Program (WAP) to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding
6) Effectively market joint-utility weatherization services including exploration of the HEAL program (pp. 81-82 of 91).

Before embarking on a new program design, it is essential that the PWC has a solid understanding of the current status of residential weatherization programs throughout the state.

Task 1.1 Review Current Weatherization Program Designs

As Commission Order No. 7 described, the seven investor-owned utilities are relying on multiple approaches to reach the various sectors within the residential weatherization market. While all the utilities are currently participating in the Arkansas Weatherization Program (AWP) it faces numerous barriers and challenges (pp. 68-69 of 91). These challenges have led to uneven service delivery and cost-effectiveness results for the funding utilities, and require the PWC to actively participate in the WAP reorganization (p. 82 of 91).

Other weatherization programs, targeting residential customers, have met with moderate success including the HEAL program, and this could serve as a "model" for financing and cross-fuel programs (p. 71 of 91).

AOG and OG&E's joint weatherization program is another program model that has achieved remarkable success. Therefore, the PWC could benefit from the lessons learned from this successful joint-utility funding model.

EAI's Home Energy Solutions (HES) program has also achieved its goal in reaching its energy targets, and includes strong contractor training requirements (p. 74 of 91) and strong data collection/retention for M&V (p. 74 of 91). HES also encourages the development of many certified contractors. Project financing is available through both contractor financing as well as

through the HEAL financing for specific projects. Furthermore as of November 1, 2013 EAI and SourceGas are running complementary programs and working cohesively together to service shared customers and reduce program costs.

SWEPCO's program, Home Performance with ENERGY STAR® also encourages residential customers to make weatherization improvements through rebates and incentives. This program, based on the EPA's 'whole house approach' offers customers a discounted comprehensive energy audit combined with rebates to encourage the installation of energy efficiency measures. SWEPCO is partnering with the HEAL program.

Therefore, all of the PWC members have differing levels of experience and perspectives regarding the current status of residential weatherization programs in Arkansas. As a first step, the IEM team members completed review comparing each of the key program characteristics across all of the current program models. This review focused on the following key features to the extent that this information was provided by the program administrators.

- Program Administration and Oversight
- Program Description
- Program Target Markets
- Eligible Measures
- Current funding levels
- Current technical standards and program requirements
- Alternative financing approaches currently used
- Current marketing and outreach activities
- Program tracking and reporting systems
- Program Results

To complete this review, the IEM team members summarized previous evaluation reports, annual workbooks and program materials which documented these program features.

Summary Matrix

Table 1: Summary of Weatherization Programs - 2012*

Utility	AWP-All Utilities	AOG	CenterPoint	Empire	EAI	OG&E	SourceGas	SWEPCO
Program Name	AWP	AOG Wx	HEAL	Res. WX	HES [1,2]	OG&E Wx		HPwES
Funding (PY2012)								
Planning / Design	$7,175	$3,169	$1,025		$42,189			$6,944
Marketing & Delivery	$1,009,375	$130,117	$4,413		$1,058,502			$296,383
Incentives / Rebates	$0	$1,447,423	$47,688		$735,144			$3,674
Evaluation, Measurement, and Verification	$54,037	$23,112	$8,349		$92,905			$29,407
Administration	$87,077	$558	$4,396		$599,014			$26,184
Total	**$1,157,664**	**$1,604,379**	**$65,871**	**$0**	**$2,527,754**	**$2,324,406**	**$0**	**$362,592**
Percent of Budget (%)	52%	102%	47%		75%	100%		37%
Participation (PY2012)								
Planned Participation Rates (Homes)	1,722	1300	334		2880	1620		3115
Actual Participation Rates (Homes)	1,047	1360	217		2882	1631		2
First Year Annualized Net Savings (PY2012)								
Total therm / kWh savings	1,339,633	223,453	19,636		3,248,354	3,638,503		9,360
Total Demand (kW/therm) savings	3,639	4,509	467		1,475	1,006		3
Cost-effectiveness Results (PY2012)								
TRC Ratio	1.99	1.43	2.80		1.47	1.57		0.03
PAC	1.88	1.21	3.75		2.07	1.38		0.03

*2013 numbers; program began in 2013

[1] HEAL is one contractor within the program. There are 37 participating contractors within the HES program. HEAL has 2 HEC's (Home Energy Consultants) in the program, and there are 22 other companies that perform assessments, and have home auditing certifications. These companies represent 28 install crews for measures. These are approximately 2-3 person crews and represent over 75 workers.

[2] As of November 1, 2013 Entergy Arkansas and SourceGas Arkansas are running complementary programs and working cohesively together to service shared customers and reduce program costs.

Table 2: Weatherization Program Summary Matrix

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
		AOG Wx	HEAL	Res. Wx	HES [3,4]	OG&E Wx	HES	HPwES
Organization	ACAAA	AOG	CenterPoint	Empire	EAI	OG&E	SourceGas	HPwES
PROGRAM DESIGN METRICS								
Target Markets	Severely energy-inefficient homes	Severely energy-inefficient homes	Employees of participating businesses, especially low-to-moderate income households	Severely energy-inefficient homes	Single Family homes, Multifamily up to 4 units. At least one year old.	Severely energy-inefficient homes	Single Family, Multifamily owners, renters and tenants	Single Family, Multifamily up to 4 units, property owners or renters
Participation Process								
Energy Audit Type	Comprehensive audit							
Energy Audit Co-pay	Range from $50 - $196 for initial audit	$0	$0	$0	$300 EAI Only/$150 EAI + SourceGas	$0	$150	$300
Utility Co-pay	Up to $855 for one utility, $1710 for all-electric home[5]	$1,500	NA		$300 EAI Only/ $150 EAI SGA	$1,500	$150	$300 SWEPCO Only/ $150 SWEPCO SGA
Direct Install of Measures at Audit	No	No	Yes	No	Yes	No	Yes	Yes
Trade Ally Types								
Auditor	BPI-Certified/ RESNET Auditors							
Auditing Software/Tools								
Onsite auditing tool	NEAT	EnerTrek	Optimiser	EnerTrek	Optimiser	EnerTrek	Optimiser	Optimiser

[3] It is recommended to HES customers to purchase via the Lighting and Appliance program.

[4] Retrofit on replace on burn-out existing electric heating only

[5] This is the total utility payment per home, including the audit plus measures.

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
		AOG Wx	HEAL	Res. Wx	HES [3,4]	OG&E Wx	HES	HPwES
QA/QC	QA/QC 10%	QA/QC 10%	Post-test to verify savings	QA/QC 10%	QA/QC 10% for the program. Contractors are required to post-test to verify savings.	QA/QC 10%	QA/QC 10% for the program. Contractors are required to post-test to verify savings.	QA/QC 10%
Program follow-up	NA						No	Yes
Marketing & Outreach Strategies								
Types	Targeted marketing only	Residential mass market	Residential mass market-comprehensive	Program sign up/ website	Residential mass market-comprehensive	Residential mass market	Residential mass market	Residential mass market
Trade Ally Outreach/Training Provided								
Types	Comprehensive training							
Educational Materials Provided	Yes		Yes		Yes		Yes-Limited	Yes
Eligible Measures								
Insulation								
Attic	✔	✔	✔	✔	✔	✔	✔	✔
Floor	✔	✔	✔			✔		
Wall	✔	✔		✔	✔	✔	✔	✔
Duct	✔	✔	✔	✔	✔	✔		✔
Foundation	✔	✔				✔		
Sillbox	✔					✔		
Light bulbs	✔	✔	✔ w/EAI	✔	✔	✔		✔
Lighting Retrofits	✔	✔				✔		✔
Smart-Strips			✔ w/EAI		✔			
Refrigerator Replacement	✔	✔		✔		✔		

Program Name	AWP- All Utilities	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
Water Conservation Measures	✔	✔				✔		✔
Low-Flow Showerheads	✔	✔			✔	✔	✔	✔
Faucet Aerators		✔			✔	✔	✔	✔
Water Heater Pipe Wrap	✔	✔		✔	✔	✔	✔	✔
Water Heater Blankets	✔	✔		✔	✔	✔	✔	✔
*E*quipment Replacement	✔	✔			✔	✔		
Cooling	✔	✔	✔ w/EAI		✔	✔		✔
Heating	✔	✔	✔		✔	✔	✔	✔
Water Heating	✔	✔	✔	✔		✔	✔	✔
Equipment Repair	✔	✔				✔		
Furnace Tune-Ups	✔	✔				✔		
AC/Heat Pump Tune-Ups	✔	✔				✔		✔
Windows	✔	✔				✔		✔
Health and Safety checks	✔	✔			✔	✔	✔	✔
Doors	✔	✔				✔		
Roof Repairs		✔				✔		
Smoke Detectors	✔	✔				✔		
Solar Screens	✔	✔				✔		
Window Film								✔
Air Infiltration Measures(Sealing)	✔	✔	✔	✔	✔	✔	✔	✔

Summary Program Descriptions

The following program summaries are based on the IEM's review of current weatherization program offerings available to Arkansas' residential rate payers. The selection of these programs for the review was based on three criteria:

4. The programs were specifically highlighted in Commission Order No. 7
5. The programs included an energy audit as part of the program offering
6. The programs included measures specifically designed to improve building envelopes, such as air sealing, duct sealing, or air infiltration.

While the Commission Order No. 7 did identify several other programs in its order, these were more focused on specific incentive programs to encourage the installation of energy efficient measures such as energy efficient heating or cooling. Similarly, our review of the current program portfolios offered by the seven investor-owned gas and electric utilities identified a number of rebate-specific programs targeting heating, cooling, and water heating repair or replacement. While these measures are components of weatherization programs, the focus of weatherization programs is two-fold: initial inspection and installation of measures to cost-effectively reduce energy savings.

The following section summarizes the seven current programs that meet all of our criteria for this review. The purpose of this review was to provide an understanding of the current breadth and depth of weatherization programs offered in Arkansas, which will provide the foundation for the gap analysis and weatherization program redesign in the next two tasks.

The information in this report is based upon the information provided to the IEM review team.

1. Arkansas Weatherization Program (AWP)

Program Implementer/s: Arkansas Community Action Agencies Association, Inc. (ACAAA)

Program Description

The AWP targets severely energy-inefficient homes in Arkansas, is open to all residential customers of participating utilities, and is "piggy-backed" onto the federally-funded U.S. Department of Energy's Weatherization Assistance Program (DOE WAP) for low-income Americans.

The participating "AWP Utilities" are Arkansas Oklahoma Gas Corporation (AOG), SourceGas Arkansas, CenterPoint Energy Arkansas Gas, Empire Electric District Company, Entergy Arkansas, Inc., (EAI), Oklahoma Gas & Electric Company (OG&E), and Southwestern Electric Power Company (SWEPCO). Through a Weatherization Services Agreement with the AWP Utilities, the AWP administrator is Central Arkansas Development Council, Inc. (CADC), of Benton, Arkansas, with work performed by existing weatherization services providers of the DOE WAP (Weatherization Network). The AWP is coordinated by ACAAA.

Program Eligibility

To qualify for the AWP, the customer's home must meet the following criteria:

- Site-constructed or mobile homes
- Homes built prior to 1997 must meet three of the following seven criteria.[6]

    1. Attic insulation equal to or less than R-30
    2. Wall insulation equal to R-0
    3. Floor insulation equal to R-0
    4. Single pane windows with no storm windows attached
    5. Non-working heating system or heating system with less than 70% efficiency
    6. Non-working cooling system or cooling system with Seasonal Energy Efficiency Rating ("SEER") of 8 or less
    7. Air infiltration problems identified through: a) visual inspection of ductwork, walls, floors, ceilings, doors, and windows; or b) pre-blower door test resulting in: i) greater than 2,200 CFM at 50 pa (for households of five persons or fewer); or ii) greater than 2,700 CFM at 50 pa (for households of more than five persons)

        - Pre and post carbon monoxide (CO) readings must meet the health and safety regulation specified by the DOE.

The AWP is modeled on the DOE WAP; however, it is open to all AWP Utility residential customers living in homes meeting the program eligibility criteria.

[6] Homes built in 1997 or later do not qualify for the AWP.

Eligible Measures

Eligible homes may receive the following measures, depending upon the results from the on-site audit. Homes may participate in the AWP only once. Table 3 summarizes the types of measures that are installed through this program.

Table 3: Eligible Measures - AWP

Measure	
Attic insulation	Furnace replacements
Floor insulation	Furnace tune-ups
Wall insulation	Air conditioner replacements
Duct insulation	Air conditioner tune-ups
Duct sealing/repair	Heat pump replacements
Sillbox insulation	Heat pump tune-ups
Foundation insulation	Refrigerator replacements
Air infiltration	Lighting retrofits
Window sealing	Water heater tank insulation/blankets
Window replacements	Water heater pipe insulation
Storm windows	Water heater replacement
Low-flow showerheads	Smart thermostats

Implementation Method/Program Delivery

The AWP is coordinated by ACAAA and administered by CADC, with work performed by the "Weatherization Network" (i.e., Community Action Agencies/DOE WAP Service Providers) through Weatherization Services Agreements with the AWP Utilities.

In 2013, the administrative roles for the WAP transitioned to the Arkansas Energy Office (AEO) from the Department of Human Services (DHS). This transition was implemented for organizational efficiency purposes, and is expected to result in some procedural modifications for the WAP.

Technical Standards/Requirements

Through a computerized energy audit of the home and advanced diagnostic technology, using the DOE-approved NEAT, appropriate energy-efficiency measures are determined that can provide cost-effective energy savings. The Weatherization Network provider installs the approved measures in the home. Part of the cost of the audit and installation is covered by the customer's AWP Utility, and the balance is the responsibility (co-payment) of the customer. Customers eligible for the DOE WAP have their co-payment covered by that federal program.

Marketing/Outreach Activities

Each AWP Utility may, but is not required to, promote the AWP locally using targeted marketing techniques designed to create demand for the AWP to match the capacity of the Weatherization Network to deliver AWP services.

AWP Utilities agree to not use statewide promotion of AWP unless targeted marketing is not successful in meeting program objectives.

AWP Utilities agree that promotion of AWP will include the following message elements:

1. The local AWP Utility is, or AWP Utilities are, offering to assist customers in making cost-effective energy efficiency improvements to their homes, to save them money while helping to improve the environment by weatherizing their homes and providing other energy efficiency measures;
2. Customers will receive services on a first- come-first-served basis;
3. Customers will be required to contribute to the cost of energy audits and to the cost of energy efficiency improvements to their homes, although those eligible for the low-income WAP may have federal funds used to pay their contribution;
4. Program design and availability of AWP services may be changed with approval of the PSC; and
5. Should the AWP be under-subscribed, as it has been in some areas previously, the program will be analyzed for barriers to participation, and those barriers will be addressed collaboratively with an appropriate marketing and promotion strategy.

Funding Levels

AWP cost of services (for energy audits, health and safety, materials and labor to install measures, and program support) will be capped at $8,000[7] for each home. This includes the utility share of costs combined with the customer co-payment.

Weatherization Network administrative expenses are 14 percent of the AWP cost of services for each home, with each customer co-payment amount and utility co-payment amount grossed up proportionately for Weatherization Network administrative expenses.

The AWP Utilities will pay a percentage of the costs, with the share depending on whether the customer has only one participating utility (gas or electric), two participating utilities (both gas and electric), or lives in an all-electric house, provided that savings can be attributed to the respective utility.

Where there is one participating AWP utility (gas or electric):

1. The AWP utility will pay $146 toward the pre-installation audit, and the customer co-payment will be $196.
2. The AWP Utility will pay up to $855 for installation of determined energy-efficiency measures, and the customer co-payment will be the remaining cost of installing the measures.

[7] This amount includes funding from other sources outside utility contributions.

3. The AWP Utility will pay $57 toward the post-installation audit, and the customer co-payment will be $57.

Where there are two participating AWP utilities (Gas and electric):

1. Each of the AWP Utilities will pay $146 toward the pre-installation audit, and the customer co-payment will be $50.
2. Each AWP Utility will pay up to $855 for installation of determined energy efficiency measures, and the customer co-payment will be the remaining cost of installation.
3. Each AWP Utility will pay $57 toward the post-installation audit, and the customer co-payment will be $0.

Where the customer lives in an all-electric AWP Utility home (i.e., electric space heat):

1. The electric AWP Utility will pay $292 toward the pre-installation audit, and the customer co-payment will be $50.
2. The electric AWP Utility will pay up to $1,710 for installation of determined energy-efficiency measures, and the customer co-payment will be the remaining cost of installation.
3. The electric AWP Utility will pay $114 toward the post-installation audit, and the customer co-payment will be $0.

Each AWP Utility will make utility co-payments each year up to at least its spending target amount, provided there exists both demand for AWP services by its customers and capacity for delivery of AWP services by the Weatherization Network. Total AWP Utilities' co-payments during a year may not exceed 120% of that year's AWP spending target.

Program Tracking/Reporting

The Weatherization Network maintains financial and operational data for each AWP home. Relevant data are provided to the AWP Utilities' contractor Frontier Associates for calculating deemed savings and tracking. Utility-specific data are provided to each AWP Utility. Commission-approved deemed savings included in the Arkansas TRM are used by the program evaluator, ADM Associates, Inc., to estimate energy savings and demand savings for both natural gas and electricity for each AWP utility. Consistent with DOE WAP protocols, the Weatherization Network audits 100 percent of their own AWP projects and DHS OCS and/or CADC audits at least 10% of all AWP projects. In addition to providing data on energy and demand savings, productivity, program costs, and other quantitative data, as part of the annual reporting process, to assess customer satisfaction with the AWP, the Weatherization Network providers survey each household that receives AWP services during a program year and reports the results to the PSC.

Although progress has been made, database tracking continues to be an area of ongoing need for improvement. While 2012 EM&V Reports provided numerous suggestions for continued improvement in the program databases, it will be important to continue to make these updates (IEM 2012 EM&V Annual Report).

Results

AWP had the following three-year goals. For the period July 1 through December 31, 2011, the AWP's goal was 620 homes weatherized, and a total utility spending target of $1,051,771. In 2012, the goal increased 10 percent from the 2011 annualized number, to 1,259 homes and the total utility spending target was $2,130,818. In 2013, the goal increased another 11 percent to 1,402 homes, for a total utility spending target of $2,389,360.

During this three-year program, the utilities spent almost $1.2 million on AWP and federal funds (including American Recovery and Reinvestment Act (ARRA) funds) contributed about $3 million.

However, this was far short of program goals with goals for specific IOU territories ranging from 30 percent for SWEPCO to a high of 78 percent for CenterPoint. (CenterPoint 2012 Annual Report, p. 12).

- Program year 2012 302,120 therms (normal weather conditions); 6.4 therms per day per home (peak demand conditions); 5,155,668 kWh (normal weather conditions); 1.12 kW per home (peak demand conditions).
- Program year 2013 327,020 therms (normal weather conditions); 6.4 therms per day per home (peak demand conditions); 5,748,480 kWh (normal weather conditions); 1.12 kW per home (peak demand conditions).

Cost-Effectiveness

AWP Cost-Effectiveness in 2012 ranged from a TRC score of 1.06 to 5.01 among natural gas utilities, and from 0.31 to 3.65 among electric utilities (Table B.2 2012 Annual EE Report Workbooks).

2. AOG-OG&E Weatherization Program

Program Implementer/s: AOG & OG&E

Program Description

A comprehensive residential weatherization program targeting severely inefficient homes to improve comfort and reduce energy costs by upgrading the thermal envelop and appliances (AOG –OG&E Program Eligibility Document).

Program Eligibility

AOG serves more than 40,500 residential customers and OG&E serves more than 54,000 residential customers in Arkansas. There are an estimated 30,000 homes in need of weatherization improvements in these utility's service territories.

Eligible customers are homeowners, renters or tenants in a single family, duplex, or mobile home built before 1997 and have three of the following:

- Attic insulation is equal or less than R-22
- Wall insulation is equal or less than R-4
- Floor insulation is equal to R-0
- Single pane windows with no storm windows
- Heating system equal or less than 78% efficient
- Cooling system equal to SEER 10 or less
- Air infiltration problems
- Customer of AOG or OG&E

Eligible Measures

Table 4 summarizes the types of measures that are installed through this weatherization program.

Table 4: Eligible Measures - AOG/OG&E

Measure	
Attic insulation	Air conditioner replacements
Floor insulation	Air conditioner tune-ups
Wall insulation	Window Unit Replacement - ENERGY STAR®
Duct insulation	Carbon Monoxide detectors
Duct sealing/repair	Heat pump replacements Heat pump tune-ups
Sill box insulation	Refrigerator replacements
Foundation insulation	ENERGY STAR® Lighting retrofits with CFLs
Air infiltration	ENERGY STAR® Water heater tank insulation/blankets
Window sealing/caulking	Water heater pipe insulation
Window replacements	Water heater replacement
Moisture control	ENERGY STAR® Exterior door replacement/repair
Ventilation	Interior door replacement from conditioned area to non-conditioned area
Storm windows	
Furnace replacements	Solar screens
Furnace tune-ups	Minor roof repairs
Smoke detector	Low-flow showerheads

Implementation Method/Program Delivery

Technical Standards/Requirements

The auditors for this program are certified by the Building Performance Institute or the Residential Energy Services Network (RESNET) (OG&E 2012 Annual Report, p. 12)

AOG and OG&E use three independent contractors: DK Construction, Total Home Efficiency, and Williams Energy Efficiency. The contractors received over 20 hours of training on weatherization techniques. Each contractor has certified Building Performance Institute ("BPI") and RESNET auditors on staff. AOG& and 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.

Using blower door technology the contractors are 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.

OG&E and AOG continued to work with the existing contractors already in the program while they recruited an additional contractor to help relieve the stress of the summer time heat for the existing contractors.

OG&E and AOG, along Frontier Associates, continue to fine-tune Frontier's EnerTrek software to meet the criteria of the TRM. 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 (OG&E 2012 Annual Report, p. 15).

Funding/Financing Mechanisms

The total utility contribution (from both utilities combined) is limited to $3,000 per eligible customer, with no out-of-pocket costs required of the customer.

Marketing/Outreach Activities

Table 5 summarizes the marketing and outreach activities used to recruit customers for this program.

Table 5: Marketing/Outreach Activities - AOG/OG&E

Marketing/Outreach Activities
Customer Outreach
Brochures
Word-of-Mouth
Website
Trade Ally Outreach
Direct recruitment

Program Tracking/Reporting

Results

The Program served a total of 1,631 OG&E homes (7% of the homes in OG&E's Arkansas territory) and 1,360 AOG homes in 2012 (OG&E 2012 Annual Report p. 6; AOG/OG&E 2012 EM&V Report, p. 1-4). It produced 3.6 million kWh in annual electricity savings and 0.2 million therms in annual natural gas savings (AOG/OG& 2012 EM&V Report, p. 1-4).

Cost-Effectiveness

The EnerTrek software applies a Savings to Investment Ratio (SIR) and prioritizes the possible measures for each home. Each measure must rank an SIR of 1.0 or better to be installed. Using the SIR on a per measure basis resulted in the 2012 Annual Energy Savings of 3,638,503 kWh with an effective Net-to-Gross ratio of 1.01 yielded a Lifetime Energy savings of 56,760 MWh and a Total Resource Cost (TRC) Ratio of 1.57 (see Table 6).

Table 6: EnerTrek Cost Comparison

Cost-Effectiveness Test	2012 Program Year							
	Participant Cost Test		Ratepayer Impact Measure		Program Administrator Cost		Other Test	
	(PCT)		(RIM)		(PAC)		Societal Test - (ST)	
Program	Net Benefits ($000's)	Ratio	Net Benefits ($000's)	Ratio	Net Benefits ($000's)	Ratio	Net Benefits ($000's)	Ratio
Weatherization	2,538	2.37	-1,085	0.74	863	1.38	1,370	1.59

3. (EAI) Entergy Home Energy Solutions Program

Program Implementer/s: Entergy (EAI)

Program Description

EAI offers multiple participation opportunities for customers in its service territory who own or rent single-family homes, as well as for customers who live in multifamily complexes with four or fewer units. The program is designed to help customers achieve significant long-term electric savings through the use of local Home Energy Consultants (HECs), who perform home energy surveys and assessments, and participating installation trade allies. As of November 1, 2013 Entergy Arkansas and SourceGas Arkansas are running complementary programs and working cohesively together to service shared customers and reduce program costs.

Program Eligibility

- Are current Entergy Arkansas customers.
- Live in a single-family home or a multi-family unit of four units or fewer.
- Live in a home that is at least one year old.
- Live in a home that has ducted central heat and air conditioning.
- Customers that have electric usage higher than 10 cents per square foot.

Participation Process

HES offers incentives for energy audits, direct-install measures and equipment replacement. There are multiple level of participation process combining audits and coupons (rebates) to offset costs of energy surveys and installations. Additional incentives are possible to encourage installations of multiple measures.

All customers that meet the program eligibility requirements may participate in this program. There are multiple levels of evaluations, called surveys and assessments. A survey is a walk through assessment and an assessment includes comprehensive testing Customers whose electrical consumption is below $0.10 per square foot are encouraged to participate in a survey rather than an assessment to maximize customer benefit and program costs. If during a survey, customers have site details that warrant upgrading to an assessment, they can choose to upgrade at that time. Customers also receive incentives to cover most of the cost of the evaluations if they redeem two measures or more.

Eligible Measures

Table 7 summarizes the types of measures that are installed through this program.

Table 7: Eligible Measures - Entergy Home Energy Solutions

Measure	Description
Ceiling Insulation	up to r-38
Air Sealing	$.25/cfm50 reduction deducted from participating contractor's invoice
Wall Insulation	up to r-13
Duct Sealing	determined based on audit results
A/C Replacement	for minimum of 14.5 seer or higher
Heat Pump Replacement	for installation of equipment with 14.5 seer or higher
Replacement Air Handler with ECM	As part of matched unit replacements
Central Air Conditioner	residential retrofit
	packaged unit or split system consisting of an indoor unit with a matching remote condensing unit
	maximum cooling capacity per unit is 65,000btu/hour
Direct Install Program	
CFLs	six 60 watt-equivalent
	one smart power strip
Customers with electric hot water heaters	faucet aerators
	low-flow showerhead
	water heater wrap
	water heater pipe insulation

Program Barriers

Energy evaluations alone do not result in significant energy savings and the cost of installing energy efficiency upgrades may discourage or prevent some customers from implementing measures.

Customers lack awareness of energy efficiency improvement opportunities and potential savings.

Contractor costs for participating in the Program (EAI HES Operations Manual, p. 6)

Implementation Method/Program Delivery

Home Energy Consultants (HEC) perform energy surveys/assessments. Trade allies install eligible measures. Some HECs also install most or all of the program measures. All program coupons must be given to the account holder and signed as evidence the EE installations are completed to the customer's satisfaction.

The program also provides incentive bonuses for contractors who install multiple measures. Air sealing coupon is capped at 4 cfm per square foot and duct sealing is capped at 35 percent of

system capacity based on 400 cfm per ton, both per TRM3. Table 8 summarizes the program's incentive structure.

Table 8: Program Delivery - Entergy Home Energy Solutions

Measure	Incentive	Description
HEC Bonus	$100	Bonus sent to HEC after customer has received assessment and installed two or more measures.
Contractor Bonus	25% of total incentive of measures	Bonus sent to trade ally after customer has installed one or more of the following measures: air sealing, duct sealing, or wall insulation.

Technical Standards/Requirements

EAI encourages trade allies to expand their services and promote measures beyond their initial area of expertise.

- Auditing Tools/Approaches
  - Optimizer

Certification Requirement

- Certification as either a BPI-BA or a RESNET Home Energy Rater is required.

If an HEC, for any reason, no longer employs an individual with the certification, the contractor has 30 days to either:

- Employ an individual with the proper certifications
- Have a current employee complete the required course(s) to gain certification

If no course is offered within the 30-day grace period, this grace period will be extended to the date of the next available course (EAI 2011-2013 HES Program Operations Manual, p.5).

- Training Standard to be completed prior to a contractor participating in the Program:
  - New contractor orientation class
  - Combustion safety testing class (required for contractors who engage in the following measures: duct sealing, air sealing, and wall insulation). Training to be completed on an annual or as-needed basis
  - Field proficiency training:
    - Annual program update class (HES Program Operations Manual p. 24)

Funding/Financing Mechanisms

- Coupons to offset the auditing costs
- In order to promote comprehensive home EE improvements, EAI provides a bonus incentive to customers who choose to implement multiple measures.
- Contractor financing products are used, including HEAL program for HEAL projects as well as contractor self-implemented pricing adjustments to implement work for incentives only.

Marketing/Outreach Activities

Table 9 summarizes the marketing and outreach activities used to promote this program.

Table 9: Marketing/Outreach Activities - Entergy Home Energy Solutions

Marketing/Outreach Activities	
Customer Outreach	
High-energy users identified by program	
Participating Contractor Outreach	Education - Phone and E-blast
Participating Contractor Welcome Packet	Inform contractors on program changes, updates, etc. via email
Training Sessions	Continuous training sessions to contractors
Conference/Events	Home Shows Earth Day
Meetings/Presentations/Education	Ongoing presentations to key organizations Educational meetings with CSR/CSMs Home Owners Association (HOA) meetings/emails
Paid Advertising	Create co-op advertising program for contractors
PR/Earned Media	Press Releases Check Presentations Possible televised audit on the home of a high-profile resident
Print Collateral	Case Study development as needed Program brochure Fact Sheets Contractor Ad templates Yard signs
Cross Promotion	Home Shows – CoolSaver and Lighting and Appliances Programs Retailer demonstration – CoolSaver and Lighting and Appliances Programs Regional blitz Arkansas Earth Day (EAI Residential Market Plan, p. 3)
Trade Ally Outreach	
Customizable business cards, ad templates, flyers, etc.	
Program brochures	
Yard sign for neighborhood awareness	
A photo ID badge to establish credibility	
Participating contractor ad templates	
Customer Outreach	

Program Tracking/Reporting

EAI has built a robust database system to collect and maintain program savings and participant information. This system has been built to meet and exceed Protocol A as listed in the Arkansas TRM. EAI's Energy Efficiency Tracking system is an extensive data model that supports the key subject areas used in end-to-end EE program management, including Customer/Premise, Program/Year, Measure, Installed Measure, Vendor and trade ally. The data base environment enforces strict data integrity, end-to-end data traceability, data privacy, and auditability.

The system provides Batch Data Upload (work package) capabilities for programs with high volumes of simple measures, such as CFL and Energy Star Appliance rebates, and Direct Install programs for both Commercial and Residential programs. The system utilizes Gross and Net kWh and kW savings calculators, based on deemed savings values, engineering formulas, and/or custom input. The system supports a wide variety of gross-to-net savings formulas using realization rates and other net savings formulas. This calculator allows users to enter and update measure saving formulas (kWh, kW) on the fly. The calculation process also performs LCFC calculation of measure based on annualized sums of degree day data.

The system also has robust reporting and dashboards of budgeted, forecast, and actual savings, based on a wide variety of criteria (program, customer type, vendor, etc.). Entergy Arkansas continues to work diligently to maintain and utilize the database per the intent of the IEM, independent evaluators and the TRM.

Furthermore, Entergy Arkansas' implementation contractor CLEAResult has built a robust database, and field tools to collect field data and process customer data before final upload into the EAI system for payment. Both of these systems track the data of the HES program and are utilized to ensure proper data collection and management are performed, while offering a high level of customer service to the contractors and ratepayers.

Savings Results

The program exceeded its goals for net MWh energy savings. The HES Program surpassed its net MWh energy-savings goal by 10% but only achieved 89 percent of its net peak coincident demand reduction goal of 1.8 MW. The program also fell short of its participation goal by 32 percent (910 customer homes).

The participation goal was not needed to make mandated targets. Further, EAI attempted to increase the number of participants in 2013 by filing for an expansion in August of 2013 and was denied by the APSC in November of 2013. The goal achievement demonstrates that the program is reaching the desired impact of being more comprehensive. EAI believes the participant count is important, but more budgets will be needed to reach participation levels. Participation levels are not a part of goal achievement, though a desired outcome.

The PY2013 results show a dramatic and marked increase in the number of measures above 2012 levels, to further show the increased number of installed measures per home, and exceeded the kWh goal by over 200 percent. Furthermore, the level of comprehensiveness is exceptional as described more fully in the 2013 EM&V Report prepared by the independent evaluators. Tables 10 and 11 summarize these results

Table 10: HES Program 2012 and 2013 Participation and Net Savings Goals vs. Actual

2012

Participation (# homes)		Energy Savings (MWh)		Demand Savings (MW)	
Projected	Actual**	Projected	Evaluated Net	Projected	Evaluated Net
2,880	1,970	3,209	3,524	1.8	1.6

2013

Participation (# homes)		Energy Savings (MWh)		Demand Savings (MW)	
Projected	Actual**	Projected	Evaluated Net	Projected	Evaluated Net
6072	6431	11,822,693	13,399,583	4.52	5.03

Total Number of Participating Contractors in 2013: 40

Cost-Effectiveness: The TRC for evaluated savings in 2012 was 1.47.

4. Empire District Electric Company's Arkansas Residential Weatherization Program

Program Implementer/s: Empire

Program Description

This program has the same aim as the AOG/OG&E weatherization program. It provides energy efficiency improvements to participants, thereby decreasing demand and energy usage for those customers. The purpose of Empire's Weatherization Program is to improve comfort and reduce energy costs by upgrading the thermal envelope and appliances in targeted households. Since this program is targeted to customers who are unlikely to take any measures absent a 100% rebate, rebates and incremental costs are identical (T. Tarter Direct Testimony, 07-076-TF Doc. 174, Dec. 28, 2012)

Home audits are available on a "first-come, first-served" basis to Arkansas homeowners and renters who are customers of Empire and have expressed an interest in the program.

Program Eligibility

Empire's program's eligibility requirements mirror that of the AOG/OG&E program, which lists the following requirements and guidelines:

Eligible customers are homeowners, renters or tenants in a single family, duplex, or mobile home built before 1987 and have three of the following:

- Attic insulation is equal or less than R-11
- Wall insulation is equal or less than R-4
- Floor insulation is equal to R-0
- Single pane windows with no storm windows
- Heating system equal or less than 78% efficient
- Cooling system equal to SEER 10 or less
- Air infiltration problems
- Applicant must be an Empire customer

Eligible Measures

Table 11 summarizes the eligible measures for Empire's program.

Table 11: Eligible Measures - Empire District

Measure
Attic Insulation
Methods To Alleviate Air Infiltration Around Doors And Windows,
Water Heater Blankets
Water Heater Pipe Insulation
Window AC Units
AC Tune-Ups
Compact Fluorescent Light (CFL) Bulbs,
Refrigerator Replacements
Duct Sealing

Implementation Method/Program Delivery

AOG and OG&E lent the services of one of its preferred auditors: Williams Energy Efficiency. In doing so, AOG and OG&E allowed Empire to save money by leveraging both the training and the in-the-field experience of Williams Energy Efficiency. This also saved Empire valuable time in rolling out the new program. The energy auditor from Williams Energy Efficiency performs an energy audit to determine if a home qualifies for the program. For qualifying homes, an approved contractor will install cost-effective energy upgrades.

Technical Standards/Requirements

Because the Empire program mirrors the AOG/OG&E program in nearly every way, its description is much the same as well.

The auditors for this program are certified by the Building Performance Institute or the RESNET (OG&E 2012 Annual Report, p. 12)

Empire uses one contractor for the program: Williams Energy Efficiency. Williams Energy Efficiency is one of the contractors used by the AOG/OG&E program. The contractor received over 20 hours of training on weatherization techniques. Williams Energy Efficiency 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. Empire obviously benefits from OG&E's continuous efforts to refine the program and continue training.

Using blower door technology the contractors are 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 (OG&E 2012 Annual Report, p. 15).

Marketing/Outreach Activities

Empire tries o continually increase awareness of this program in its service territory through the following channels:

- Direct mail marketing in the form of letters sent to Empire customers on a mailing list derived from customer inquiries and billing data.
- Cross-promotion in the boxes of deliverables from other Empire rebate programs, such as its Residential High-efficiency Lighting program and its School-based Energy Education program.
- Inclusion on media advertisements for Empire's energy efficiency programs.
- A printable online application form.
- Developing working relationships with landlords and owners of multi-family dwellings and rental properties, allowing Empire to gain owner approval for multiple jobs at once.

Funding Levels

Like the AOG/OG&E program, Empire's contribution is limited to $3,000 per eligible customer, with no out-of-pocket costs required of the customer.

Program Tracking/Reporting

With the AOG/OG&E program already establishing, and fine-tuning, Frontier Associates' EnerTrek software program to meet the requirements of this program, Empire was able to adapt the same program to meet its specific requirements some modifications. Empire is under contract with Frontier Associates to use a version of the EnerTrek database that is tailored to its specific service territory, scope, and program needs. Empire's efforts are also ongoing to fine-tune the program, however possible, as the program matures.

Results

This program was launched in 2013; results from this program will be provided in the 2013 EM&V Evaluation.

Cost-Effectiveness

Empire's Weatherization Program has a TRC value of 1.42.

5. Home Energy Affordability Loan Program (HEAL)

Program Implementer/s: Clinton Climate Initiative coordinating with CenterPoint, Entergy, Ouachita Electric Co-op and, beginning in 2014, SourceGas SWEPCO and Ozarks Electric Co-op.

Program Description

The Home Energy Affordability Loan (HEAL) program is an Arkansas born program implemented by the Clinton Climate Initiative for improving energy performance in residential and commercial buildings. The HEAL program is positioned as an employer-assisted energy benefit and customizes the marketing and outreach based on each unique employer culture. The program works with commercial partners to provide low or no interest loans to employees for retrofitting their homes to become more energy efficient. In some cases, HEAL may also offer the program to non-employees or electric co-op members living in neighborhoods adjacent to participating employers.

There are two HEAL program models, one in which a company performs a commercial retrofit to fund the HEAL program with the energy savings, and one in which only the residential audit/retrofit program is provided as an employee benefit. In the first model, employers may receive a commercial assessment audit and install qualifying energy efficiency retrofits to their facilities. The employer then creates a revolving loan fund generated by energy efficiency savings available to its employees to fund home retrofits. Alternatively in the second model, an employer works with commercial financial partners, primarily credit unions, to provide low- or no-interest loans to employees to retrofit their homes (CenterPoint Annual Report p.12 Appendix A, p 11-1). These unsecured, low interest loans range from 3.50 to 5.75 percent currently, with amortizations up to seven years. In both models, loans to employees for EE measures are repaid through payroll deductions, after deducting applicable utility rebates.

While the HEAL Program specifically listed as part of CenterPoint's energy efficiency portfolio, it is designed to coordinate with and utilize all existing utility programs, providing the employee with a single point of information, eligibility and financial modeling of expected measures across applicable utility offerings. The program may include co-op and municipal utilities, although the option can only be offered if audit costs are covered by the muni, co-op or the participating employer.

Program Eligibility

HEAL is generally offered through the workplace to employees of participating businesses, but has also offered the program to electric co-op members and non-employees living in neighborhoods adjacent to participating employers. Employees receive a free home energy audit, including a blower-door test and duct blaster and a Personal Energy Plan that outlines findings, recommendations and the financial and environmental impact. While there is no income restriction on program participation, HEAL is largely limited to participating employers (CenterPoint 2012 Annual Report pp. 12-14).

The HEAL program is available to all income levels and provides a financing mechanism for energy saving home improvements that are re-paid through payroll deductions. The Technical Reference Manual information is used to provide participants with recommendations for energy saving improvements and estimated energy reductions. CenterPoint's financial assistance, such as providing rebates, for reducing air infiltration, repairing ductwork and increasing insulation is scaled according to energy savings and can be applied to the participant's loan repayment or directly to the participant if no loan exists.

Eligible Measures

The program focuses on primarily, though not exclusively, on four key measures: lighting, air sealing, ceiling insulation, and duct repair, however the audit results include other measure recommendations as well *(*CenterPoint 2012 Annual Report, Appendix A, p. 11). In a 500 home analysis of HEAL Arkansas retrofits, these measures consistently offered the best paybacks for homeowners, and were the basis for the CenterPoint program design. For homes served by both CenterPoint and EAI, the program follows the EAI Home Energy Solutions program protocols for direct installs and audit/measure rebate eligibility, so that those homeowners are eligible for both program rebates, not to exceed the costs of the individual measures.

HEAL also uses the HES measures of air sealing, ceiling insulation, duct sealing, A/C retrofit and replace on burnout, heat pump retrofit and replace on burnout. Table 12 summarizes these measures.

Table 12: Eligible Measures - HEAL

Measure- CenterPoint	
Air Sealing	Other Measures as participating Electric Programs allow
Ceiling Insulation	
Duct Repair	

In late 2012/early 2013, HEAL undertook a small pilot in Northwest Arkansas with SWEPCO. In 2014, HEAL launched a pilot program with City of Fayetteville that will coordinate with the SWEPCO, SourceGas and Ozarks Electric Co-op offerings.

Implementation Method/Program Delivery

A central focus of the HEAL model is to eliminate those places in the home energy efficiency process where homeowners historically drop out or lose interest. Employees' sign up by attending an informational session on the employer's campus, presented by HEAL in much the same fashion as traditional employee benefits (e.g. like 401Ks). Two weeks after the employee-participant's home energy audit, HEAL returns to the workplace to personally deliver the audit results in a comprehensive report (Personal Energy Plan) that educates the employee on what was found, what is recommended, costs and projected savings. After each completed retrofit, HEAL program partners verify the results with diagnostic equipment and approve the work for payment, or request corrective action from the contractor.

Technical Standards/Requirements

- Certification as either a BPI-BA or a RESNET Home Energy Rater is required.
- Within Entergy Arkansas service areas, must be an approved EAI contractor and comply with EAI HES Operations Manual.
- Since HEAL requires that energy auditors must be independent of the retrofit contractor, retrofit contractors must verify the test in results before beginning retrofits to ensure consistent energy use starting points.
- After the retrofit has been completed, a post evaluation re-test of the home serves as a quality assurance measure and to verify the energy savings. This testing should be performed by an auditor unaffiliated with the contractor installing the eligible measures.

When HEAL began in 2009, there was insufficient audit and retrofit capability to meet program needs. Accordingly, the program had green retrofit and energy auditor training and apprentice programs that produced more than 50 trained and apprenticed energy professionals. The program now uses independent contractors for both audits and retrofits, which are held to best practice standards by program quality control. Each contractor is vetted in the field by the HEAL construction manager prior to program participation, and then on a random inspection basis thereafter.

Funding/Financing Mechanisms

HEAL is marketed primary through medium to large size employers as an employee benefit and as such the employer, after a successful pilot, often provides a stipend to the Clinton Climate Initiative for program administration support to offset the cost of program provision.

HEAL utilizes the existing EE programs of electric utilities along with CenterPoint rebates and especially noteworthy are the offerings of EAI which when combined with CenterPoint provide a comprehensive package for dual fuel homeowners.

As a participating contractor in the EAI HES Program, HEAL has funding for every customer project they make application for as long as the EAI HES has incentive funding available.

Marketing/Outreach Activities

Since the HEAL program is marketed primary through medium to large size employers, most activities occur within the employer, but include direct educational presentations to groups of employees, brochures, email blasts, website articles, case studies and use of in-house closed circuit or video displays.

After the direct educational presentations, it is not uncommon to have 90-100 percent of employees sign up for an energy audit. Further, of those moving from audit to retrofit the percentage of those who are CenterPoint and EAI customers is higher than in the general employee population, which HEAL believes is due to the presence of dual rebates on air sealing, duct sealing and attic insulation. Table 13 summarizes the current HEAL marketing and outreach activities.

Table 13: Marketing/Outreach Activities - HEAL

Marketing/Outreach Activities
Customer Outreach
Direct educational presentations
Brochures
Client Referral System
Infographics
Email blasts through Employers
Website articles
Case studies
Closed circuit or video displays
Large user filtering (CenterPoint and Ouachita)
Trade Ally Outreach
Contractor Best Practice and QA Training
In-field Inspection and Tutoring

It addition, when both CenterPoint and EAI rebates are applied, these measures may have paybacks of less than four years and when combined with low/no interest financing creates an attractive value proposition.

Program Tracking/Reporting

Results

After longer than expected ramp-up in 2012 (47% of goal) by HEAL, the CenterPoint program outperformed expectations by completing over 320 measures in 2013, resulting in savings of 54,000 therms, nearly triple the 2012 level. Electric side participation numbers and kWh electric savings for HEAL clients are not separately reported.

In late 2013, HEAL began a 50 retrofit pilot program with Ouachita Electric Co-op to test the HEAL program with co-op members and those employed within the Highland Industrial Park in Camden. The program is expected to result in over 33 homes implementing energy efficiency measures, for which Ouachita Electric provides on-bill collection for the balance of the retrofit cost. The on-bill collection option with co-ops expands the eligibility opportunity to include homeowners not necessarily connected with an employer. The pilot program is expanding in 2014 with Ouachita, Ozarks Electric and up to three additional Arkansas electric co-ops in other parts of the State.

For 2014, HEAL expects similar performance to 2013 in CenterPoint and Entergy service areas, while expanding into the other parts of the state in coordination with other IOUs and Co-ops. Statewide, total audits should exceed 1,000 with approximately 550 home retrofits.

Cost-Effectiveness

TRC Cost-Effectiveness of 2.80

EAI HES 2012 evaluated cost effectives was 1.47

6. SGA 2013 Home Energy Savings Program

Program Implementer/s: SourceGas

Program Description

The SourceGas Arkansas (SGA) Home Energy Savings (HES) Program– a component of SGA's Home Energy Efficiency program portfolio – offers many participation opportunities for home owners and renters in SGA's service territory by working with participating home energy consultants and contractors who will help residential customers analyze their energy use, identify energy efficiency improvement projects and install low-cost, energy-saving measures at home. The program also provides residential customers with incentives for home energy assessments and eligible energy efficiency measures that are installed in their home (2014 HES Contractor Program Manual, p. 1).

Program Eligibility

To participate in the program, the customer must:

- Be a residential customer of SGA with a valid account number.
- Live in a single-family home or a multifamily residential unit (both renters and owners are eligible).
- Live in a home that is a minimum of one year old.
- Live in a home that has ducted, natural gas-fueled central heating.

The program offers two levels of participation:

- Tier 1 Survey: A walk-through audit and some direct install measures.
- Tier 2 Assessment: The home must be over 1 year old and have ducted natural gas heat. Customers also have a minimum level of spending per sq. ft. of heated space based on the customers' highest winter natural gas bill.
    - Customers whose usage is less than the minimum amount per square foot can have a Survey performed and if potential measure eligibility is identified, they can upgrade to an assessment at that time.
    - Customers may also use an installation contractor to select eligible measures if they do not want to have a survey or assessment performed.

Eligible Measures

The program is divided into two tiers: direct install measures at the time of the energy audit and more comprehensive envelope measure installations based on eligibility criteria for each measure. The measures installed during each program part are summarized in Tables 13-15.

Direct install measures

Table 14: Eligible Measures - Direct Install Devices

Device	Description
Low-flow Showerheads (Up To 1)	1.6 gpm
Faucet Aerators	1.5 gpm
Pipe Insulation	minimum insulation thickness of ¾ inch; six (6) feet
Water Heater Wrap	(SourceGas 2014 HES Program Manual, p. 6)

Insulation Rebates Customers Completing A Tier 2 Assessment

Table 15: Eligible Measures - Insulation Rebates

Measure	Rebate
Ceiling Insulation	up to $0.115/sq ft
Air Sealing	$0.125/cfm50 reduction
Wall Insulation	$.0.30/sq ft
Duct Sealing	determined after final leakage rate is known

Home Energy Evaluations/ Comparison Matrix

Table 16: Home Energy Evaluations/ Comparison Matrix

Measure	Tier 1 Survey	Tier 2 Assessment
Direct Install Devices	✓	✓
Walk-Through Inspection	✓	✓
Blower-Door Test		✓
Duct Blaster Test		✓
Combustion Safety Education		✓
Walk-Through Report	✓	✓
Tier 2 Report		✓
Program Coupons Issued		✓

Source: 2014 HES Program Contractor Manual, p. 7

Home Energy Survey and Assessment Incentives

The level of incentive is determined by the type of audit completed:

- Tier 1 Assessment: SourceGas pays $37.50
- Tier 2 Assessment: SourceGas pays $150.00[8]

[8] Homes 750 sq.ft. or less receive $75, homes >750 sq. ft. $150

Implementation Method/Program Delivery

All rebates and payment for surveys and assessments are paid directly to the contractor after verification that the customer received the benefit by submission of the invoice

The program began in November of 2013 with two contractors. To encourage the program in homes with non-participating electric utilities, we offered a $100 additional bonus to the contractor performing ceiling insulation measures.

Walk-Through Inspection Description: A Home Energy Consultant (HEC) will conduct a thorough inspection of the home, equipment and appliances, and will interview the homeowner to determine lifestyle and other practices as they pertain to home energy use. Using industry standard energy auditing inspection practices, the HEC will inspect and record the condition of:

- Ceiling, walls, floors, doors, windows, openings, and ventilation
  - Ceiling inspection involves gaining access to the attic and determining the type of insulation present, analyzing issues that will degrade the effective R-value of the insulation, and estimating the existing R-value
  - Wall inspection involves the removal of several wall plate covers (receptacle or switch) on the exterior walls of the home to allow the inspection or extraction (through the use of a plastic hook) of existing insulation to determine the type, amount, and condition, in order to determine an existing R-value.
- HVAC equipment and systems in order to estimate the efficiency of existing HVAC equipment.

1. **Blower-Door Test**: Determine the leakage rate of the home at CFM50 and, where possible, identify the source(s) of the leakage.
2. **Duct Blaster Test**: Determine the leakage rate of the duct system at CFM25 and, using a pressure pan, identify the source(s) of the leakage.
3. **Combustion Safety Education**: The HEC will discuss combustion safety issues with the homeowner when relevant.
4. **Tier 1 Report**: Visual inspections and analysis in addition to providing recommendations and Participating Contractor list. Based on the inspections, the HEC may recommend that the customer upgrade to Tier 2 to be eligible for program coupons.
5. **Tier 2 Report**: Tier 1 Report plus savings potential, payback calculations and coupons issued based on the testing results.

6. **Coupon Issuance**: Customers can be issued coupons two ways. They can contact an installing contractor directly who would issue them coupons or, they can have a Tier 2 Assessment performed through the Program, the HEC will identify efficiency improvement opportunities within the qualifying measures (see the "Program Incentives" section for detailed information on the measures). The customer will then be provided a coupon (or coupons) for dollars-off savings on the implementation costs of the identified improvements and a list of participating contractors who can offer and accept the incentive coupons. Tier 1 Surveys are not eligible for the issuance of coupons beyond the Survey incentive amount. (SourceGas 2014 HES Program Manual, p. 7).

Home Energy Consultant (HEC) Eligibility

- To participate in the Program as a Home Energy Consultant, a contractor must sign the HEC Agreement; attend all required classroom, on-site and in-field training; and meet all of the eligibility qualifications and standards that are listed below. HECs may continue as part of the Program as long as they maintain compliance with all Program requirements, achieve suitable customer satisfaction rates and meet Program standards for quality assurance and verification.
- To remain an eligible participant in the Program, a HEC must submit a minimum of three (3) coupons per quarter. If, at the end of the quarter, the minimum requirement has not been met, then the company will be removed from the list of eligible contractors on SourceGas Arkansas' website. If, at the end of two (2) consecutive quarters, the minimum requirement has not been met, then the company will be removed from the Program.
- Follow-up training will be provided as needed to ensure HEC proficiency. Contractors will not be listed as an HEC on the Program's website until they demonstrate proficiency in the skills required to be a Program HEC.

Certification Requirements

- Certification as either a BPI-BA or a RESNET Home Energy Rater is required.
- If an HEC, for any reason, no longer employs an individual with the certification, the contractor has 30 days to either:
    - Hire an individual with the proper certifications.
    - Have a current employee complete the course(s) required to gain certification.
        - If no course is offered within the 30-day grace period, this grace period will be extended to the date of the next available course. (2014 HES Contractor Program Manual, p. 3).
- HECs are required to own, use and maintain the following tools (not all tools are required for every evaluation):
    - Blower door.
    - Duct blaster.
    - Combustion safety test tools.

- Ladder and assorted hand tools.
- Energy modeling software (this will be provided by the Program; see the HEC Agreement for further details).

- HECs are required to adhere to the manufacturer's calibration requirements that are included with each tool.(2014 HES Program Contractor Manual, p. 4)

Participating Contractor Eligibility

Contractors of various trades that meet all program qualifications and standards are eligible to participate. Contractors may continue to participate as long as they comply with all program requirements, achieve satisfactory customer satisfaction and pass quality control inspections and validations.

- To remain an eligible participant in the program, a participating contractor must complete a minimum of three (3) coupons per quarter. If, at the end of the quarter, the minimum requirement has not been met, then the company will be removed from the list of eligible contractors on SourceGas Arkansas' website. If, at the end of two (2) consecutive quarters, the minimum requirement has not been met, then the company will be removed from the Program.
- To participate, contractors must sign participating contractor agreements and attend all required classroom, on-site and in-field training to comply with guidelines set forth in this manual. Follow-up training will be provided as needed to ensure participating contractor proficiency. Contractors will not be listed on the Program's website until they demonstrate proficiency in the skills required to be a participating contractor in the program.

Certification Requirements

- Understanding of basic building science principles.
- All HVAC, duct sealing, air sealing and wall insulation contractors will be required to have at least one of these certifications: BPI-BA (Building Analyst), RESNET Home Energy Rater. Contractors that install ceiling insulation only may substitute the Attic Prep & Air Sealing certification offered by Pulaski Technical College or the BPI Building Science Principles Certificate of Knowledge.
- If a participating contractor no longer employs an individual with the certification, the contractor has 30 days to either:
  - Hire an individual with the proper certifications.
  - Have a current employee complete the courses(s) that are required to gain certification.
    - If no course is offered within the 30-day grace period, this grace period will be extended to the date of the next available course.

Tools

- Participating contractors must own, use and maintain all tools necessary for all energy efficiency measures to be installed to manufacturer's specifications.
- Participating contractors are required to adhere to the manufacturer's calibration requirements included with each tool.

Quality Performance

- A participating contractor, upon request from CLEAResult and at no additional cost to the customer, will be required to make reasonable repairs or corrections to work that the contractor has performed if the work does not meet Program standards. The repairs or corrections must to be completed within the time frame specified by CLEAResult. Participating contractors who have performed unsatisfactory work must also agree to take steps to ensure that future work will comply with Program standards.

Quality Assurance Standards

The program implementer conducts random field inspections of work that has been performed. A minimum of 10 percent of measures installed will be inspected; inspection rates will be heavier for HECs and participating contractors who are experiencing problems with program compliance. Table 17 summarizes the key quality control metrics used in this program.

Table 17: Quality Control Inspection Metrics

Metric	Description
QA Inspection Metric General	• Major Violation: A Failure in this category requires immediate resolution that may include a contractor charge back for the coupon amount. • Minor Violation: The Quality Assurance Specialist will determine the impact of failing these measures and the schedule for their resolution.
QA Inspection Metric- Insulation	• Major Violation Examples (not all inclusive) ○ Stated existing R-value: error of >1 step difference in R-value range chart on the coupon. ○ Stated finished R-value: error of >10% in R-value. ○ Stated squared footage: error of >10% in square feet. • Minor Violation Examples (not all inclusive) ○ Improper installation of new insulation (varying depths, etc.). ○ Bag count card not properly displayed. ○ Depth markers not properly installed.
QA Inspection Metric- Duct & Air Sealing	• Major Violation Examples (not all inclusive) ○ Starting vs. finished air leakage rate: Verification reveals a discrepancy of >20%. ○ Minimum Ventilation Rate (MVR): Failure to identify correct MVR or to take the proper action in the event of the MVR not being met. ○ Duct sealing or air sealing materials: Use of improper sealing materials. ○ Combustion Safety Test (CST): Not performing the CST or failing to take proper action on the results. • Minor Violations (none)
QA Inspection Metric- Direct Install Devices	• Major Violation Examples (not all inclusive) ○ Verified devices installed does not match claimed devices installed ○ Device installed on an appliance of a non-eligible fuel type ○ Installation of direct install equipment results in damage or inoperability of existing equipment. • Minor Violations (none)

Source: 2014 HES Contractor Manual

Funding/Financing Mechanisms

The program offers no specialized financing mechanisms, however some contractors offer their own financing, and some offer their services for the incentives only to remove financing barriers for customers.

Marketing/Outreach Activities

Table 18 summarizes the marketing and outreach activities used by this activity.

Table 18: Marketing/Outreach Activities - SourceGas

Marketing/Outreach Activities	
Customer Outreach	
Utility website	
Contractor referrals	
Customer 800 number	
Trade Ally Outreach	
Direct recruitment with program training provided	

Program Tracking/Reporting

Due to the short timeframe to implement this program after program approval, the initial year was tracked manually. In 2014 the program transitioned into the CLEAResult database and will implement field tools to gather field data and track appropriate data.

Results

SourceGas had 166 participants in 2013 and is anticipating 550 audits in 2014.

7. SWEPCO Home Performance with ENERGY STAR

Program Implementer/s: SWEPCO, CLEAResult

Background:

HPwES, which SWEPCO launched in the Spring of 2012, is a US DOE and Environmental Protection Agency (EPA)- sponsored whole-house program that begins with a comprehensive home energy audit (2012 SWEPCO Annual Report).

Program Description

The Home Performance with ENERGY STAR (HPwES) Program targets single-family homes and multifamily dwellings with separate utility meters. Participating customers receive a discounted comprehensive energy audit that identifies energy-savings opportunities and incentives to offset the upfront cost of installing energy-efficient upgrades. These upgrades may be installed by the auditor or by a qualified home performance team. Customers may receive recommendations for measures that generate both electric and gas savings; however, SWEPCO only provides incentives for electricity-saving measures.

Customer Eligibility

SWEPCO residential customers who meet the following requirements are eligible to participate in the HPwES Program:

- Any residential dwelling served by a SWEPCO electric meter.
- The residence must be separately metered, as verified by an active SWEPCO account number.
- Tenant-occupied dwellings are eligible to receive an incentive, providing the property owner provides permission.
- Manufactured and mobile homes are eligible for incentives, providing all mobility devices have been removed

Funding Levels

HPwES program incentive funding levels in 2012 and 2013 were $417,351 and $767,014 respectively.

Eligible Measures

Eligible measures include the major measures listed in Table 19, in addition to direct install measures listed in Table 19.

Table 19: Customer Incentives - HPwES

Measure	Customer Incentive Amount
Duct Sealing	From $225 to $300
Duct Insulation	$.50/linear ft. of insulated duct
Air Infiltration	From $100 to $150
Attic Knee Wall Insulation	$0.15/sq ft of knee wall insulated
Ceiling Insulation	$0.12 to $0.25/sq ft
Wall Insulation	$0.15/sq ft
ENERGY STAR Windows	$2.00/sq ft of window
Window Film	$.50/sq ft of window
Electric Water Heater Replacement	$50
AC Replacement	From $125 to $800
Heat Pump Replacement	From $125 to $825

Customers also receive a number of free direct-install measures. Water saving measures are installed in homes with electric water heating only. The trade allies who install these measures receive corresponding incentives for each measure installed (see Table 20).

Table 20: Direct Install Measures and Trade Ally Incentives - HPwES

Measure	Contractor Incentive Amount
Faucet Aerators	$25
Low-Flow Showerhead	
Water Heater Jacket	
Water Heater Pipe Insulation	
Compact Fluorescent Lamp	
Comprehensive Energy Audit • Highest electric in previous 12 months ≥ 10 cents / sq ft of heated & cooled area	$300

Implementation Method/Program Delivery

SWEPCO customers have two entry points to the program. Customers may: 1) directly contact a participating energy auditor to schedule an onsite audit, or 2) call the program implementer who will connect the customer with a program auditor. Incentives are handled as follows:

- Reserved by the customer or trade ally prior to any work being performed,
- Held for 90 days, and
- Paid by check to the customer or trade ally within four to six weeks of project completion.

In addition to specific measure incentives (See Table 19), customers who install two or more qualifying measures within six months of the completed audit, receive a $100 bonus incentive.

After having only two HPwES participants in 2012, SWEPCO launched a pilot in December 2012 with HEAL to deliver HPwES services to University of Arkansas Medical Sciences employees; 14 of 20 homes audited by HEAL installed measures in early 2013.

In 2013, SWEPCO's HPwES program grew significantly with 264 participants; with 171 of the 264 audited homes installing measures. The HPwES program is complemented by the SourceGas Home Energy Savings Program. As of November 1, 2013, SWEPCO and SourceGas working together together to assist mutual customers and developed a single application form to encourage contractors and customers to take advantage of both programs.

Trade Ally Eligibility

Participating trade allies are required to meet participation requirements including minimum general liability insurance requirements and state licenses and trainings in order to perform specific services associated with the program. To become a participating trade ally, the following items must be completed and submitted:

- A network contractor application and agreement
  - Plus HPwES Addendum
- An IRS W-9 Form
- A Certificate of Insurance, verifying required commercial general liability
- Required licenses and/or certification as listed in Table 21

Table 21: Required Trade Ally Credentials

Measure / Service	Required Licenses, Trainings / Certifications
Heat Pump and A/C Replacement =	Arkansas HVAC License
Duct Sealing	Arkansas HVAC License and Duct Blaster Training
Air Infiltration	BPI Building Analyst or RESNET HERS Rater Certification
Comprehensive Audit	BPI Building Analyst or RESNET HERS Rater Certification

HPwES trade allies are required to develop Home Performance "Teams." These teams consist of an auditor and additional staff or sub-contractors that can provide energy efficiency services to a home. Measures not covered by the HPwES trade allies' service offerings are procured through designated sub-contractors.

Technical Standards/Requirements

- Auditing Tools/Approaches-
  - Optimiser is recommended by SWEPCO, however the trade ally may use other audit software, contingent upon the implementer's approval.
  - Trade allies are required to be mentored by program staff on the first three HPwES projects.

Quality Assurance Standards

Quality Assurance (QA) is an essential component of the HPwES Program and in order to comply with the national program an extensive QA process was developed. The QA procedures use on-site inspections and customer surveys to ensure proper installation of recommended measures, customer satisfaction with work and the Program and validate the project savings. In order to achieve the HPwES goals, the implementer will carry out the following QA/QC tasks for the HPwES Program:

- Review all submitted documentation including comprehensive home audit, scope of work, and project test-in and test-out data
- Conduct on-site inspections
- Conduct customer satisfaction surveys
- Pursue corrective action measures when projects fail to meet program standards
- Provide feedback to trade allies on their performance

A tiered approach is used to comply with the HPwES inspection process which is summarized next:

- Tier 1: In-field mentoring and inspection on the first 3 projects by a new trade ally
- Tier 2: Ten percent of completed projects will be inspected for new trade allies for the first 25 projects
- Tier 3: After first 25 projects have been submitted, 5% of trade ally projects will be inspected

The program implementer will reduce the inspection rate after on-site inspections show that the contractor is making satisfactory progress to meeting program standards. Corrective actions will move contractors back to the previous tier level until that tier's requirements are satisfied and given program approval to move to the next tier. The corrective action process will be initiated by the implementer when a repetitive non-conformance or inspection failure is discovered. Corrective action is a formal process that ensures problems are investigated, root causes are identified, corrective actions are implemented, and results are tracked and documented.

Funding/Financing Mechanisms

- A $300 incentive is provided to the trade ally auditor to offset the comprehensive audit costs.
- In order to promote comprehensive home energy efficiency improvements, HPwES provides a $100 bonus incentive to participating customers who install two or more measures within six months of the completed audit.

Marketing/Outreach Activities

Table 22 summarizes the marketing and outreach activities used to promote HPwES.

Table 22: Marketing/Outreach Activities - HPwES

Marketing/Outreach Activities	
Customer Outreach	
Marketing Tactics	Brochures, direct mail, direct e-mail, bill inserts, bill messages, print, radio, third party internet site ads, billboards, program website, home shows, health fairs,
Trade Ally Outreach	
Scholarships to Contractors	BPI or RESNET Certification, Audit Equipment, Audit Software (Optimiser)
Marketing Collateral	Flyers
	Access to the My ENERGY STAR ACCOUNT (MESA) for ENERGY STAR logo downloads, Marketing Tool kit materials, and business tools Yard signs Door Hangers Advertising design

Customer Outreach

SWEPCO uses an umbrella marketing campaign for their residential programs, including HPwES. The primary intention with this approach is to drive residential customers to the utility website where they can select an appropriate program. In addition to tactics such as direct mail, direct e-mail, bill inserts, bill messages, billboards, print and radio advertising to raise awareness of the HPwES program, the implementer sponsored a media day and invited the local media to a customer's home for an HPwES demonstration. Unfortunately, no media representatives chose to attend.

Trade Ally Outreach and Recruitment

In addition, even though the program provides scholarships to trade allies to offset the costs of training, software, and equipment, it has been difficult to attract qualified trade allies due primarily to an immature market. The program had 12 enrolled trade allies as of December 31, 2013.

The program implementer provides marketing collateral to trade allies including flyers, access to MESA, yard signs, door hangers and advertising design support. Additionally, according to the HPwES Program Manual, "*The contractor will produce a report on all audit findings, recommend cost effective improvements, and calculate the potential incentives and estimated energy savings*." Without customer and trade ally surveys, the Evaluation Team cannot assess whether contractors used the marketing materials or the audit report to try to sell further program participation for customers.

Furthermore, although incentives may be reserved only by the trade ally or customer for 90 days (this is meant to encourage customers to take action), the implementer reported that trade allies do not necessarily follow up with customers after the audit to ask if they planned to complete the recommended upgrades or to answer additional questions. The implementer

performs customer follow up with “Thank You” cards and telephone inquiries.

Trade allies are required to submit audit reports with the rebate paperwork to the implementer for each completed project. SWEPCO reviews all rebate applications as part of their incentive processing protocol including the audit report.

Program Tracking/Reporting

The program implementer uses energyOrbit as the database to administer the program, track projects, execute incentives and provide monthly reporting to SWEPCO.

Results

During the first year of implementation, the HPwES Program had a slow start and did not meet its savings or participation goals for 2012.

During 2012, participating trade allies completed two HPwES projects. These projects represent 10 MWh of net energy savings and 0.003 MW of net demand reduction, representing just 1.3 percent and 0.08 percent of SWEPCO’s goals, respectively.

In 2013, the HPwES program experienced significant growth, although it did not meet its savings or participation goals for 2013. HPwES completed 269 projects in 2013 representing 270 MWh of gross energy savings and 79 kW of gross demand reduction.

In 2014, SWEPCO anticipates 600 HPwES projects.

Cost-Effectiveness

In 2012, the HPwES program’s TRC cost-effectiveness was .03.

Appendix A.1: Appendix A for Summary of Complementary Weatherization Programs

Prepared for:

Parties Working Collaboratively on Behalf of the

Arkansas Public Service Commission

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With

Final Report

June 3, 2014

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Appendix A

Introduction

This appendix provides a summary of five energy efficiency programs that complement the current Arkansas weatherization program portfolio. These five programs were selected because they current reach critical target markets (i.e., manufactured homes and multifamily buildings), or they offer rebates that should be part of a comprehensive energy efficient installation (i.e., energy appliances, lighting, and tune-ups). However, this list is not meant to be exhaustive since all of the seven Investor-Owned Utilities (IOU) also offer equipment specific rebates and information about the benefits of making energy efficiency improvements.

However, as Table 1 shows, these programs could provide valuable links to the current weatherization program offerings, and may also provide additional insight into the best ways to meet the objectives described in Commission Order No. 7.

Table 1: Summary of Additional Complementary Energy Efficiency Programs

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Organization	**SWEPCO**	**EAI**	**EAI**	**EAI**	**EAI AC Tune-Up**
PROGRAM DESIGN METRICS					
Target Markets	Single-family homes; multifamily component; manufactured homes; permanently installed mobile homes	Multifamily properties composed of five or more units located within the EAI electric service territory	Customers who live in manufactured homes; Mobile home park owners	All residential and small business customers	Residential and Commercial AC < 25 tons; no tune up in past year
Participation Process					
Energy Audit Type	Walk-thru audit for single family homes; direct install for multifamily homes	Walk-thru audit with recommendations	Walk-thru audit		
Energy Audit Co-pay	$25	$0			
Utility Co-pay	Provides incentives of up to $15/unit for MF homes				
Direct Install of Measures at Audit	Yes- MF only	Yes	Yes		

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Trade Ally Types					
Auditor	Meet program requirements	BPI-certified			HVAC contractors must be certified/ trained by EAI
Contractor	Meet program requirements				
Auditing Software/Tools					
Onsite auditing tool	energyOrbit	None	None		DuctBlaster
QA/QC	10%	10%			
Program follow-up	Yes	Product Measures installed summary report with estimated savings sent to Property Manager; Common area survey with general energy efficiency recommendations mailed.	Product measures installed summary report with estimated savings mailed to the resident.		
Marketing & Outreach Strategies					
Types	Mass market methods, home shows and health fairs; ; direct outreach to property/building managers	Mass market; direct outreach to property/ building managers	Bill inserts ; post cards; door to door canvassing	Direct outreach at events; POP signage; mass media	Via contractor promotions; mass market, website
Trade Ally Outreach/ Training Provided					
Types	Contractor trade ally outreach; direct recruitment to MF property owners				
Educational Materials Provided	Program brochure, measure sales sheets		Shares low-cost/no cost tips for EE; info about other programs	Program brochures	None

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Eligible Measures					
Insulation	✔				
Attic	✔				
Floor					
Wall	✔				
Duct	✔				
Foundation					
Sillbox					
Light bulbs	✔	✔	✔	✔	
Lighting Retrofits					
Smart-Strips				✔-rebate	
Refrigerator Replacement	✔			✔-rebate	
Water Savings Measures					
Low flow showerheads	✔	✔	✔		
Faucet aerators	✔	✔	✔		
Water heater pipe wrap	✔				
Water heater pipe insulation					
Water Heater Blankets					
Equipment Replacement					
Cooling	✔				
Heating	✔				
Water Heating	✔				
Equipment Repair					

	RSOP	Multifamily Program	Manufactured Homes	Lighting & Appliance	AC Tune-Up
Furnace Tune-Ups					
AC/Heat Pump Tune Ups					✔
Windows	✔				
Health and Safety checks?					
Doors					
Roof Repairs					
Smoke Detectors					
Solar Screens					
Window Film	✔				
Room A/C Units				✔–rebate	

The remainder of this appendix provides additional details for each program.

Program Name: Residential Standard Offer Program (RSOP)

Program Implementer/s: SWEPCO/CLEAResult

Program Description

SWEPCO offers customers a Residential Standard Offer Program (RSOP) which pays incentives to customers and to contractors to install energy efficiency measures. RSOP is designed to provide assessment services and prescriptive incentives for equipment replacements, and building shell improvements. Eligible measures are listed in Table 2. The program also enrolls qualified contractors to provide customers with access to a network of experienced contractors to perform installations and energy-efficient services.

Table 2: Eligible Measures - RSOP

All Measures	Multi-Family Direct Install Only
Ceiling Insulation	Faucet aerators
Wall Insulation	Low-flow showerheads
Attic Knee Wall Insulation	CFL
Air Infiltration	Pipe-wrap
Duct Sealing	
Duct Insulation	
Electric Water Heater	
ENERGY STAR Windows	
Window Film	
Central A/C Replacement	
Heat Pump Replacement	

SWEPCO also partners with SourceGas similar to EAI's approach. However, the customer rebates for SWEPCO and SourceGas are combined and given to customers, rather than shared, which offers a more comprehensive approach for customers. In addition, SWEPCO has worked with HEAL starting with audits in 2012 and including upgrades in 2013. This partnership will continue in 2014.

In the summer of 2012, SWEPCO and the program implementer added the Multifamily Housing Energy Efficiency Pathway to serve the estimated 10 to 15 percent of SWEPCO residential customers who live in multifamily units, most of which are rental properties.

SWEPCO also provides property owners with an incentive of up to $15 per tenant unit where direct install measures are installed.

Implementation Method/Program Delivery

SWEPCO made several changes to the program delivery in 2012 as a way to generate more interest in the program. These changes are summarized below:

- Increased the incentive levels for select standard home improvement measures.

- Offer a $25 incentive for a Walk-Through Assessment exclusively to the contractor and the customer receives the assessment as a free service.
- Enrolled 41 additional contractors into the SWEPCO Contractor Network, bringing the total to 90 contractors. As of 12/31/2013, 109 contractors were enrolled in RSOP.
- Eliminated the Comprehensive Energy Audit and Direct Install measures; and added them to the HPwES program.
- Launched a Multifamily Pathway within RSOP, offering direct install measure incentives and ENERGY STAR appliance incentives.
- E-mailed a quarterly contractor newsletter to network contractors and program allies to keep them informed about program activities.
- Developed new contractor sales tools, including co-branded yard signs and measure specific sales sheets for HVAC and building envelope measures (SWEPCO 2012 Annual Report, p. 37).

Customer Eligibility

SWEPCO residential customers who meet the following requirements are eligible to participate in RSOP:

- Any residential dwelling served by a SWEPCO electric meter.
- The residence must be separately metered, as verified by an active SWEPCO account number.
- Tenant-occupied dwellings are eligible to receive an incentive, providing the property owner provides permission.
- Manufactured and mobile homes are eligible for incentives, providing all mobility devices have been removed

Contractor Eligibility

The Residential Energy Efficiency Program is implemented by participating contractors, who are responsible for properly installing qualifying improvements and providing eligible services to eligible SWEPCO customers. To become a participating contractor, the following items must be completed and submitted:

- A Contractor Network Application and Agreement
- An IRS W-9 Form
- A Certificate of Insurance, verifying the following commercial general liability insurance minimums:
    - $500,000 per occurrence
    - $1,000,000 general aggregate
    - $1,000,000 aggregate for products and completed operations
- The applicable license and/or certification as listed Table 3.

Table 3: Contractor License Requirements

Program	Measure/Service	Required Certifications and Trainings
Standard Improvements/ HPwES	Insulation or Windows	Arkansas Home Improvement License (Companies with projects costs exceeding $2000 on a project)
	Heat Pump and A/C Replacement	Arkansas HVAC License
	Duct Sealing	Arkansas HVAC License
	Air Infiltration	BPI Building Analyst or RESNET HERS Rater Certification
HPwES	Comprehensive Audit	BPI Building Analyst or RESNET HERS Rater Certification

Quality Assurance

Before a rebate is paid for any work performed on a project, Residential Program staff will provide a complete review of all projects and submitted documentation. In addition, program staff will conduct field inspections. The inspections will consist of equipment verification and an on-site inspection of completed projects. The contractor conducts inspections on a minimum of five percent of the total monthly completed projects. Program Administrator will initiate the corrective action process when a repetitive non-conformance or inspection failure is discovered. A listing of quality installation requirements can be found in the program manual.

Marketing/Outreach Activities

The program is promoted through mass-market outreach channels and via contractors. Mass market tactics include bill inserts, bill messages, billboards, direct mail, direct e-mail, print, radio, third party internet sites, program website, home shows and health fairs.

Funding Levels

RSOP incentive funding levels in 2012 and 2013 were $936,767 and $1,030,444 respectively.

Program Tracking/Reporting

The program implementer uses energyOrbit as the database to administer the program, track projects, execute incentives, and provide monthly reporting to SWEPCO.

Results

In 2012, RSOP completed 545 projects in addition to the 2,497 multifamily direct install projects (SWEPCO 2012 Annual Report, p. 39). Among non-direct-install customers and measures, ceiling insulation at 348 homes provided the vast majority of energy savings, followed by 39 heat pump replacements and 75 central air conditioner replacements (SWEPCO 2012 Annual Report, p. 96).

The energy and demand savings goals for PY 2012 were 3,032,000 kWh and 1,580 kW, respectively. The program achieved 2,269 MWh and 0.45 MW of net annual savings. (SWEPCO 2012 EM&V Report, p. 104)

The expansion of the program to the multifamily sector helped SWEPCO to achieve 94 percent of the program's planned energy savings goal in PY 2012. (SWEPCO 2012 Annual Report, p. 10)

In 2013, RSOP continued its growth with 822 completed projects, in addition to 4,123

multifamily direct install projects. Among non-direct-install customers and measures, ceiling insulation accounted for 55 percent of the energy savings, followed by central air conditioners and at 29 percent.

The energy and demand savings goals for PY 2013 were 3,335,000 kWh and 1,738 kW, respectively. The implementer has reported gross savings of 3,456,430 kWh and 757 kW, respectively.

Program Name: Entergy Solutions Multifamily Program

Program Implementer/s: EAI Arkansas

Program Description

The EAI Multifamily Program offers energy assessments in common areas to identify cost-effective energy-efficiency upgrades and offers free direct install measures in tenant spaces to the multifamily residential market throughout the EAI, Inc. (EAI) electric service territory. EAI launched the Energy Solutions for Multifamily Program in April 2012 (EAI 2012 EM&V Report, p. 290).

Program Eligibility

Eligible projects must meet the following criteria:

- Multifamily properties composed of five or more units located within the EAI electric service territory are eligible for the EAI Multifamily Program. Properties under a residential, multifamily or commercial rate code all qualify for this program
- There are no maximum limits on the size of a building or number of qualifying buildings in a single complex (EAI 2013 Multifamily Guidebook, p. 3)

Eligible Measures

In this program, energy-efficient products are furnished and installed at no cost to EAI multifamily customers. The measures available for direct installation in eligible properties and locations are as summarized in Table 4.

Table 4: Eligible Measures - Multifamily Program

Eligible Measures
CFLs in fixtures and lamps that replace incandescent bulbs
Faucet aerators- 1.5 gpm
Low-flow showerheads- 1.5 gpm

Source EAI 2013 Multifamily Guidebook, p. 3

Energy Survey Services

The energy survey consists of an on-site survey of the property and applicable equipment. Property owners/managers receive a summary report of the property's potential energy savings from the program implementer as well as information about other EAI programs for which they may be eligible (EAI 2012 EM&V Report, p. 289).

Implementation Method/Program Delivery

Through the program, qualified technicians install energy efficiency measures in dwelling units of participating customers at no cost. The program provides energy surveys of the common areas to property managers/owners of multifamily properties, helping them to learn about other energy saving opportunities and programs

The enrollment form is a one-page document that all property manager/owners must complete. This form collects information required to confirm eligibility for the program, and also helps determine which energy efficiency measures are appropriate for the property.

Technical Standards/Requirements

Completed projects are subjected to a post-installation inspection, selected on a random basis. Typically, it will consist of 10 percent of the properties.

The multifamily walk through survey is conducted by a BPI certified auditor. The auditor does not use a software tool, but gathers property site data to prepare the report that is mailed back to the property manager. The report is based upon the current version of the TRM Deemed savings. While conducting the survey, the auditor performs QA/QC on the measures installations.

Marketing/Outreach Activities

The program target markets directly to eligible property managers, which led to a significant participant acceptance of the program. The marketing methods included direct outreach by email and telephone to secure projects with larger property management companies. This proved to be a highly cost-effective strategy as it resulted in the program exceeding its regulatory targets and avoided the cost of promoting the program directly to individual customers. In addition, more than a third of the building managers had heard about the program through other channels such as flyers, word of mouth, and public meetings or seminars, indicating that a diverse marketing strategy that is focused on direct outreach but supplemented with more traditional tactics could also be effective (EAI 2012 EM&V Report, p. 301).

Funding Levels

Table 5 summarizes the current program funding levels by category.

Table 5: Funding Levels

Funding Levels	
Multifamily Budget Type	**2013 and 2104 Budgets**
Program Planning	$2,866
Marketing and Delivery	$28,858
Incentives/Rebates	$288,575
EM&V	$14,429
Administration	$14,429
Total	$349,176

Program Tracking/Reporting

The tracking database update from TRM 1.0 to TRM 2.0 was delayed until early 2013, however the data was uploaded with all parameters necessary to calculate savings. It is important to note that retroactive adjustments of deemed savings creates administration cost and data collection issues, market cost and issues since customer energy saving reports are estimated using deemed savings, benefit cost analysis issues because utilities never really know if measures are going to be cost effective for customers or utilities any year and many times database updates are delayed until utility and database vendors can complete contractual modification prior to the implementation of retroactive deemed savings can be negotiated and implemented.

Database tracking begins with good field tools and then ultimately loaded into EAI's ARCHEE database for program management and reporting. In the case of this program field data is collected via electronic tools and uploaded for energy saving calculation, technology cost etc.

Results

The program exceeded its goals in 2012. The program achieved 522% of its 2012 net annual goal of 364 MWh and 250% of the net annual goal of 0.089 MW. The program also achieved 298% of the aggregate 2011-2012 net annual goal of 638 MWh and 1,431% of the aggregate 2011-2012 net annual goal of 0.156 MW. As a result of the program's significant early success, EAI and ICF agreed increase the program savings goal to 1,741 MWh. The program met 87% of this revised internal goal The program treated 3,075 residences in 820 buildings at approximately 80 properties and greatly exceeded its 2012 annual participation goal of 326 treated residences (EAI 2012 Annual Report, p. 72).

Program Name: Energy Solutions for Manufactured Homes Program

Program Implementer/s: EAI

Program Description

Through the Energy Solutions for Manufactured Homes Program, EAI provides cost-effective energy- efficiency measures to customers who live in manufactured homes throughout its electric service territory. Through the program, the program implementer installs energy-efficiency measures in participating customers' residences at no cost to property owners or residents. The program was launched in April 2012.

The program also offers a survey of the residence and applicable equipment. The technician shares with the resident various low cost/no cost ways they can save energy in their home and information about other EAI energy efficiency programs. After the direct installation service is completed, customers receive a summary report of the home's potential energy savings in the mail. Mobile home park owners also receive information about other EAI programs for which they may be eligible (EAI 2012 EM&V Report, p. 271).

Program Eligibility

Electric customers who live in manufactured homes.

Eligible Measures

Table 6 summarizes the types of measures that are installed through this program.

Table 6: Eligible Measures – Energy Solutions for Manufactured Homes Program (Direct Installation)

Eligible Measures
CFLs in fixtures and lamps that replace incandescent bulbs
1.5 gallons per minute (gpm) showerheads
1.5 gpm faucet aerators

Implementation Method/Program Delivery

Through the program, trained technicians install energy efficiency measures in dwelling units of participating customers at no cost. While on site, the technician provides participants with low cost/no cost ways to save energy, based upon a survey of the home. The technician also recommends other possible energy efficiency programs. A measures summary report is mailed to the participants, which details what measures were installed in the home and the projected energy savings. The measures summary report is based upon the current version of the TRM Deemed Savings for the measure.

Technical Standards/Requirements

Completed installations are subject to QA/QC both for site verifications and verifications by phone. In addition to the site/telephone surveys, the Products measures summary reports that are mailed to participants acts as another lever for Quality Control. The Products Measures summary report lists the products installed in the home and potential energy savings from the

installation. The program telephone number is provided if customers have any questions or if the report data is inaccurate.

Marketing/Outreach Activities

The program is promoted in a variety of ways, including bilingual flyers, an appointment card, handouts to participants, radio interview on a Spanish-language station, and door-to-door canvassing.

EAI has a dedicated Web page for the manufactured homes program and other residential programs. The Web page's messaging describes the program's free measures and opportunities for participants to save money on their energy bills.

The program implementer imported a strategy it uses elsewhere to boost participant confidence in the program and to mitigate initial participant misgivings about the free installation offers. According to written statements in ICF's promotional plan as well as comments we received in interviews, ICF worked to obtain customer trust and familiarity by using strong branding and signage that included identification badges and shirts worn by field staff and program-branded vehicles (EAI 2012 EM&V Report, pp. 283-284). In late 2013, yard signs were approved for the installers to use when they are working multiple days in a park.

Funding Levels

Budgets are adequate and the programs are adequately staffed, but additional funding levels are not available (EAI 2012 EM&V Report, p. 285) (see Table 7).

Table 7: Funding Levels

Funding Levels	
Multifamily Budget Type	**2013 and 2104 Budgets**
Program Planning	$4,547
Marketing and Delivery	$318,307
Incentives/Rebates	$454,724
EM&V	$22,736
Administration	$68,209
Total	$868,524

Program Tracking/Reporting

The tracking database update from TRM 1.0 to TRM 2.0 was delayed until the first quarter of 2013. The program database for TRM 2.0 to TRM 3.0 was accomplished on time in 2013. . It is important to note that retroactive adjustments of deemed savings creates administration cost and data collection issues, market cost and issues since customer energy saving reports are estimated using deemed savings, benefit cost analysis issues because utilities never really know if measures are going to be cost effective for customers or utilities any year and many times database updates are delayed until utility and database vendors can complete contractual modification prior to the implementation of retroactive deemed savings can be negotiated and implemented.

Database tracking begins with good field tools and then ultimately loaded into EAI's ARCHEE database for program management and reporting. In the case of this program field data is collected via electronic tools and uploaded for energy saving calculation, technology cost etc.

Results

The program achieved 165 percent of its 2012 net annual goal of 427 MWh but reached only 28 percent of the 0.330 MW goal. The program also achieved 110 percent of its combined 2011-2012 net annual goal of 641 MWh but reached only 17 percent of the combined 0.0495 MW goal.

Although the program treated 840 residences at 88 properties , it did not meet its 2012 annual participation goal of 1,213 treated residences (EAI 2012 EM&V Report, p. 271) The total number of treated residences was less than forecast to achieve the program kWh savings goal. Increasing participation goals would require new APSC budget increases.

Program Name: Residential Lighting & Appliances Program

Program Implementer/s: Entergy Arkansas, CLEAResult

Program Description

The Entergy Arkansas, Inc. (EAI) Residential Lighting & Appliances Program offers residential customers in the EAI service territory discounts and rebates on the purchase of ENERGY STAR qualified lighting, appliances and energy saving advanced power strips. The program evolved from the successful 2007 CFL QuickStart program, becoming the program as it is currently offered in August of 2011.

Program Eligibility

The 2014 program is being offered to all residential and small business customers of Entergy Arkansas. Customers may be required to verify eligibility with their Entergy Arkansas account number for participation in some of the measures.

Eligible Measures

Eligible measures include ENERGY STAR qualified compact fluorescent light bulbs and fixtures, light-emitting diode (LED) light bulbs and fixtures, room air conditioning units and refrigerators. Advanced power strips are also eligible for incentives under this program. Incentives for these measures are as summarized in Table 8.

Table 8: Eligible Measures – Residential Lighting & Appliances Program

Eligible Measures		
Measure Type	**Incentive Level**	**Measure Description**
CFLs Spirals Specialty Styles Dimmable bulbs	Up to $1 per bulb $1.50 per bulb $3 per bulb	This measure will replace incandescent bulbs with energy-saving CFL bulbs.
CFL Fixtures One-Bulb Fixture Two- Bulb Fixture Fixtures over Three-Bulbs	$10 per fixture $12.50 per fixture $15 per fixture	This measure will replace incandescent fixtures with energy-saving CFL fixtures
LED Bulbs 40w replacement 60w replacement	$4 per bulb $5 - $7 per bulb, depending on type	This measure will replace incandescent bulbs with energy-saving and long-lasting LED bulbs.
LED Fixtures One-Bulb Fixture	$10 per fixture	This measure will replace incandescent fixtures with energy-saving and long-lasting LED fixtures
ENERGY STAR Room A/C Unit **<6,000-7,999 BTU** **8,000+ BTU**	$25 per appliance $35 per appliance	This measure will replace traditional room A/C units with ENERGY STAR room A/C units.
Advanced Power Strips 7-outlet 12-outlet	$10 per unit $15 per unit	This measure will replace traditional power strips with surge protection with advanced power strips with current sensing technology that makes it possible to shut off the flow of electricity to computers or peripherals automatically when not in use.

Source: EAI 2011-14 Lighting & Appliances Program Manual, p. 4

Non-Cash Benefits

In addition to discounts and rebates available at participating retail locations, the program incorporates activities designed to educate eligible customers about the energy efficiency technologies and incentives that are available. For example, educational outreach events are held periodically as an opportunity to distribute energy efficient measures and educational brochures to customers. Support in the form of communications and public relations is offered to participating retailers through sales associate training, in-store promotional events, and program marketing through various channels to raise awareness of the benefits of energy efficiency. (EAI 2011-14 Lighting & Appliances Program Manual, p. 1 & 4)

Implementation Method/Program Delivery

CLEAResult is responsible for recruiting eligible retailers and manufacturers to participate in the program. Once participating, retailers and manufacturers apply discounts by adjusting pricing on eligible products per the agreement and display signage advertising the promotion. They also provide monthly reports for each measure. Any cash incentives received through the program are paid directly to the customer either at the point of purchase (via discounts) or after the purchase, as in the case of refrigerators (EAI 2011-14 Lighting & Appliances Program Manual, p. 1 & 2).

The refrigerator program is delivered via a mail-in rebate. Rebate applications for eligible units are available online and in participating retail locations. Funds for refrigerator rebates are delivered in the form of a check once the purchase has been verified.

Technical Standards/Requirements

In order to qualify for the program, measures must be ENERGY STAR qualified, or in the case of advanced power strips, must meet certain eligibility criteria.

Entergy Arkansas has provided CLEAResult access to confidential and secured customer database to allow for customer verification at outreach events where measures are distributed. The database is queried by CLEAResult program staff in order to ensure the eligibility of individual customers for participation in the program.

Marketing/Outreach Activities

The program targeted residential customers at all income levels and in all areas of the service territory. The marketing methods included direct outreach at events, presentations at schools and civic organization meetings, creating and distributing point-of-purchase signage to participating retailers, creating and distributing educational brochures, creating and distributing direct mail pieces designed to raise awareness and incite action, advertisements in local high school sports programs, radio spots and on-air interviews, posts to social media sites, advertisements in retail weekly circulars, setup and maintenance of a toll-free phone line to answer customer questions, and maintenance of program information on various national EE databases. These proved to be effective strategies as they resulted in the program exceeding its regulatory targets. (EAI 2011-14 Lighting & Appliances Operations Manual, p. 18)

Further the program is promoted through other EAI energy efficiency programs like Home Energy Solutions.

Funding Levels

Table 9 summarizes program expenditures by category.

Table 9: Program Budget

2014 Lighting and Appliance Program Funding Budget	
Program Planning	$11,536
Marketing and delivery	$793,277
Customer Incentives	$3,310,785
EM&V	$180,565
Administration	$151,284
Total	$4,447,447

Program Tracking/Reporting

CLEAResult uses a constituent relationship management system called "Pulse" to track program participation and savings. Some of the items tracked in Pulse include:

- Participating retailer and manufacturer contact information
- Participant information, if available
- Key measure information needed for savings calculation
- Savings by measure, tracked against savings goals
- Invoicing and incentive payment information
- Incentive dollars spent

CLEAResult provides two standard reports to EAI: a monthly progress report and annual report. Monthly progress reports track tasks associated with program planning, design, and kick-off, marketing, outreach, and communications, program implementation, QA/QC activities, savings & installation verification, and data management & processing, as well as budget management items. Annual reports will summarize overall program results and accomplishments in narrative and numerical formats to allow for easy incorporation into Commission-required tabular and narrative reports

CLEAResult tracks the following for products that receive incentives, according to the requirements of the program filing. Measure data will be tracked internally and reported monthly.

- Number of transactions / participants
- Type, including wattage, Btus, number of outlets or bulbs, and
- Quantity sold / given away

Note: Tracking products and reporting accomplishments will be completed through agreements reached with retailers and manufacturers.

Ultimately all data is uploaded into the EAI database for program management and evaluation.

Results

The program exceeded its goals in 2012. The program achieved 175 percent of its 2012 participant goal, 120 percent of its net annual goal of 24,789 MWh and 106% of the net annual goal of 3.25 MW. Despite a late start in 2011, the program also achieved 91 percent of the aggregate 2011-2012 net annual goal of 45,799 MWh and 81% of the aggregate 2011-2012 net annual goal of 5.95 MW.

Final results are not yet available for 2013, however the preliminary results indicate that the program is expected to achieve 103 percent of its 2013 gross annual goal of 43,030 MWh. Between 2011 and 2013, the program has incented the purchase of 3,267,662 CFL bulbs, 92,552 CF fixtures, 1,870 ceiling fans, 13,887 LED bulbs, 10,143 Room ACs, 4,686 advanced power strips, and 353 refrigerators. (2012 Energy Efficiency Program Portfolio EM&V Report, p. 99 and 2011 Energy Efficiency Program Portfolio EM&V Report, p. 21).

Program Name: CoolSaver℠ A/C Tune-up Program

Program Implementer/s: Entergy Arkansas

Program Description

The EAI CoolSaver A/C Tune-up Program assists residential and commercial customers in accessing comprehensive air conditioner and heat pump tune-up services. The program provides training to HVAC contractors in best industry practices in order to achieve extraordinary savings and improvements to comfort and delivered cooling capacity. This is accomplished through:

- Use of a required set of state-of-the-art digital diagnostic and refrigerant charge-adjustment instruments
- Required Technician training/mentoring and Qualification regimen
- Required service techniques including cleaning components and adjusting airflow and refrigerant charge.
- Rigorous Quality Assurance inspections and monitored corrections if needed.

EAI originally launched the CoolSaver Program in March, 2009 as part of the QuickStart portfolio, and has grown the program each year to provide the tune-up service to over 8,000 systems annually.

Program Eligibility

Eligible projects must meet the following criteria:

- Residential or Commercial installation
- Central air conditioner or heat pump, packaged or split system
- Size of up to and including 25 tons of capacity
- At least a one-year old installation
- Has not had a program tune-up in the past 5 years

Eligible Measures

The following measures are incentivized as components of the CoolSaver Tune-up (see Table 10).

Table 10: Eligible Measures - CoolSaver Tune-ups

Eligible Measures
Clean condenser coils
Clean evaporator coils
Clean blower
Adjust refrigerant charge to manufacturer's specs.

Implementation

HVAC contractors are recruited to participate in the program, or may contact the program to enroll. Contractors must acquire the program-required toolkit before attending training. Technicians are trained to program standards, reporting, and data-submission. Technicians must prove competency in the field to become "Qualified" and thus receive a Qualification Number, before submitting completed tune-ups for approval. Contractors offer the program incentive to the customer as an up-front discount off the contractor's invoice. The contractor then receives reimbursement of the incentive after the tune-up is approved through the review and QA process.

Contractors submit documentation of program-required data including pressures and temperatures of air and refrigerant, and document the specific measures performed. This is done using an online data entry form which is uploaded to the implementer. These submissions undergo engineering review and customer verification, and a statistically significant sample is selected for QA inspections. If corrective action is required, all payments are frozen to the contractor until the program verifies that corrections have been performed and meet the program standards.

Marketing/Outreach Activities

Contractors market and promote the program themselves and recruit their own customers. Several utility-approved marketing pieces have been designed and are available to contractors to use in messaging the program to potential customers. In addition, the program is promoted directly to a wide variety of Entergy customers through a variety of channels, including direct outreach, website, radio, and cross-promotion with other Entergy programs.

Funding Levels

The incentives paid in 2013 totaled $1,524,462.50 for 8,751 projects. The incentive budget will increase in 2014 to $2.034 million (see Table 11).

Table 11: Funding Levels

2014 CoolSaver (A/C Tune-up) Program Funding	
Program Planning	$13,687
Marketing and delivery	$941,164
Customer Incentives	$2,034,051
EM&V	$81,347
Administration	$82,430
Total	$3,152,679

Program Tracking/Reporting

Savings calculations are performed in the Data Submission tool, and updated as necessary to meet state and evaluator requirements. Data for each tune-up is transferred from the Data Submission tool to a CLEAResult online database used for review and analysis, and each tune-up moves through a variety of stages before reaching eligibility for payment.

Data are then transferred to EAI's database for managing and evaluating the program.

Results

The program has met or exceeded its goals in each program year since 2010. In 2013, the program achieved 10.6 Million kWh, or 254% of the goal of 4.15 Million kWh. The program reached 4.73 MW or 263% of the annual goal of 1.8 MW.

The program had 105 Participating Contractors, who conducted 8,751 tune-ups in 2013.

Appendix B:Gap Analysis of Weatherization Programs

Prepared for:

Parties Working Collaboratively on Behalf of the

Arkansas Public Service Commission

Prepared by:

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With

Final

June 3, 2014

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Executive Summary

A gap analysis provides the framework to better understand both the current weatherization program offerings in Arkansas as well as to identify areas of both program success and program improvement. This report summarizes various aspects of the current program elements for all of the weatherization programs, as well as five complementary programs that focus on encouraging the installation of energy efficiency measures in the residential market.

This report is based on a review of the current program offerings, with the goal of identifying current gaps in program design or delivery. However, these findings will continue to be refined based on feedback from the Parties Working Collaboratively (PWC) members, interested parties and the results of the 2013 EM&V Program Evaluations.

The scope of this gap analysis is to examine the ways in which the current weatherization programs operate by analyzing the key program elements such as target markets, marketing and outreach, contractor training standards, and measures that are currently installed in these programs. These elements were selected as they provide a way to both objectively assess the current weatherization program offerings in Arkansas while also addressing the key goals described in Commission Order No. 7 of Docket 13-002-U:

- Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features.
- Comprehensive technical standard following best practices with a single set of standards and coordinated with federally-funded weatherization services requirements
- Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as HEAL
- Eliminate duplication of programs that prevent trade allies from working together or create customer confusion
- Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding
- Effectively market joint-utility weatherization services including the HEAL program (pp. 81-82 of 91).

To identify the current gaps in program delivery affecting the achievement of the goals outlined above, the IEM Weatherization Collaborative Team conducted a gap analysis, which examined the current weatherization programs across the various critical program components:

- Joint Utility Collaboration
- Program Target Markets
- Energy Auditing Approaches
- Trade Ally and Contractor Qualifications
- Auditing Software Tools
- Program Follow-Up
- Financing
- Marketing and Outreach Activities
- Educational Materials and Activities
- Installed Measures

Table E-1 compares the Commission objectives with the areas for investigation of gap analysis.

Table E- 1: Gap Analysis Area of Investigation

Commission Objective	Joint Utility Collaboration	Program Target Markets	Energy Auditing Approaches	Trade Ally and Contractor Qualifications	Auditing Software Tools	Program Follow-Up	Financing	Marketing and Outreach Activities	Educational Materials and Activities	Installed Measures
Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features.	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Comprehensive technical standard following best practices with a single set of standards and coordinated with federally-funded weatherization services requirements				✔	✔					
Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as HEAL		✔				✔	✔			
Eliminate duplication of programs that prevent trade allies from working together or create customer confusion	✔	✔	✔	✔				✔		✔
Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Effectively market joint-utility weatherization services including the HEAL program	✔					✔	✔	✔	✔	✔

This report is designed as a companion piece to the Summary of Weatherization Programs, which includes detailed descriptions of the current weatherization programs currently offered by the Arkansas investor-owned electric and gas utilities. However, brief profiles of each utility program have been provided in Appendix A to aid the reader.

Glossary of Acronyms and Definitions of Key Terms

AC-Tune-Up: Air Conditioning Tune Up Program offered by EAI

AWP: Arkansas Weatherization Program

ACAAA: Arkansas Community Action Agencies Association

American Electric Power Southwestern Electric Power Company: (AEP-SWEPCO)

AOG/OG&E WX: Arkansas Oklahoma Gas and Oklahoma Gas & Electric; offer a joint utility weatherization program

Empire District Electric Company: Empire

Oklahoma Gas and Electric: OG&E

Arkansas Oklahoma Gas Corporation: AOG

CenterPoint Energy: CenterPoint

SourceGas Arkansas: SourceGas

CFLs: Compact Fluorescent Lamps

Direct Install Program: A weatherization program that includes the direct installation of several low-cost measures including water conservation measures such as pipe wrap, faucet aerators, low-flow showerheads, water heater blankets and CFLs.

EAI: Entergy Arkansas Inc.

IEM: Independent Evaluation Monitor; serves as the Weatherization Collaborative Facilitator for this work scope

HEAL: Financing program offered by the Clinton Climate Initiative for CenterPoint and EAI customers

HES-EAI: Home Energy Solutions from EAI

HES: Home Energy Solutions

SourceGas: Home Energy Savings program from SourceGas

HPwES: Home Performance with Energy Star from SWEPCO

RSOP: Residential Standard Offer Program from SWEPCO

MFAM: Multifamily program from EAI

MFG: Manufactured Homes Program offered by EAI

QA/QC: Quality Assurance/Quality Control

PWC: Parties Working Collaboratively

1. Introduction

A gap analysis provides the framework to better understand both the current weatherization program offerings in Arkansas as well as to identify areas of both program success and program improvement. This report summarizes various aspects of the current program elements for all of the weatherization programs, as well as five complementary programs that focus on encouraging the installation of energy efficiency measures in the residential market.

This report is based on a review of the current program offerings, with the goal of identifying gaps in program design or delivery including relevant findings from the PY2013 program evaluations.

This report is designed as a companion piece to the Summary of Weatherization Programs, which includes detailed descriptions of the current weatherization programs currently offered by the Arkansas investor-owned electric and gas utilities. However, brief profiles of each utility program have been provided in Appendix A to aid the reader.

In addition, there is a glossary of acronyms and definitions of key terms to ensure a more complete understanding of this report.

The remainder of this report summarizes the current market situation, identifies gaps and provides recommendations for the PWC to consider as part of the work of the Weatherization Collaborative.

2. Key Findings and Recommendations

The findings for each section are summaries drawn from the IEM Weatherization Collaborative Team (IEM) review of the current program materials, information provided by the utilities and program sponsors and reviews of the most recently completed evaluation reports.

The recommendations to address these gaps in each program area are based on a review of the previous evaluation reports, and the professional judgment and experience from the PWC members, stakeholders, and interested parties together with the IEM's team members experience in these areas.

2.1 Joint Collaboration

One of the critical issues to address in this gap analysis is the area of joint collaboration between the investor-owned utilities across the entire spectrum of weatherization programs, including funding, marketing, program implementation, financing, and the installed measures.

The review of current programs identified several areas in which the Arkansas utilities are currently working together. For example, the Arkansas Weatherization Program (AWP) has developed a strong track record of successful utility coordination of all of the of the electric and natural gas utilities weatherization efforts to save both electricity and gas, while leveraging federal funding – two of the goals specified by the Commission.

However, the most recently completed program evaluation (AWP 2013 EM&V Report, pp. 1-10-11), identified the following issues that are still affecting the overall delivery of this statewide weatherization program:

- **Program Coordination Complexity:** The program has continued to struggle with meeting participation goals, facilitating efficient communication, and ensuring prompt, accurate data reporting. The AWP operational structure is composed of many different entities: Six active community action agencies and their contractors, the Arkansas Community Action Agencies Association (ACAAA), and seven utility providers. Each utility is operating within the context of its other energy savings programs, with specific energy savings goals and cost effectiveness targets. These factors place the AWP in a somewhat fragile operational framework, where delays and performance issues have been difficult to avoid.
- **Program Interruption:** Although the AWP has not met participation or savings goals in prior years, the continued decrease in participation levels during the 2013 program year may be due to the fact that the program ceased implementation activity in April due to funding issues. These issues were partially related to the initiation of program restructuring on a statewide level, and the uncertainties surrounding the timing and availability of DOE funding. The end result has left the AWP with fewer participants than past years, and the program has not met the savings goals for any of the participating utilities.
- **Beneficial Agency Reduction Effects:** The reduction in weatherization agencies has been a beneficial modification as the remaining agencies are committed to recruit participants and implement services. The agencies appear to be adequately managing the increased distance between service providers, and all utility service territories are represented by at least one of the six agencies. Although the majority of the remaining agencies report that they do not prioritize AWP funds over WAP funds, two agencies report that they are actively seeking non-WAP participants.

While AWP continues to struggle to meet its production goals, the AOG/OG&E Weatherization Program serves as a model for effective joint utility collaboration activities (AOG/OG&E 2013 EM&V Report) the 2013 program evaluation provided the following key conclusions and recommendations:

- **Program Resources are Sufficient:** The AOG/OG&E Weatherization Program currently has adequate staffing and budget allocations. Program budgets are sufficient to support the savings goals, and the overall program infrastructure is able to meet program demands.
- **Improved Utility Coordination:** AOG and OG&E staff reported that the previous issue of occasionally miscategorizing participants' utility providers has been resolved. Both AOG and OG&E noted that the working relationship between the two utilities has continued to function effectively.
- **Program is Meeting Savings, Participation, and Satisfaction Goals:** The AOG/OG&E Weatherization Program has succeeded in reaching its savings and performance goals for the 2013 program year. Program staff indicates that the program demand has been consistently increasing, and that there remains a large pool of potential participants for future program years.

While there appears to be no gaps in the current program delivery mechanisms for the AOG/OG&E Weatherization Program, the evaluation did identify several program implementation and marketing areas that are discussed in the appropriate sections of this report.

In addition, the most recently completed 2013 EM&V Reports identified gaps in joint-utility collaboration for some program offerings. For example, there is a lack of cross-fuel coordination between CenterPoint's Low Flow Showerhead & Faucet Aerator Program (kits) with Entergy's programs (CenterPoint 2013 EM&V Report, p. 11-27).

Furthermore, while CenterPoint's HEAL financing program could be a template to promote cross-fuel coordination; there are some gaps that need to be addressed related to its current target markets (CenterPoint 2013 EM&V Report, p. 1-6).

Some of the Arkansas utility programs are currently leveraging federal programs, such as the Department of Energy (DOE)'s low income home energy assistance program (LIHEAP) and ENERGY STAR's Home Performance with ENERGY STAR's program (HPwES), there are several other federal programs that could be used to support weatherization efforts in Arkansas such as the PowerSaver loan program and the SCORE benchmarking programs.

Table 1 summarizes the gaps in the current joint delivery programs that should be addressed as part of the design of a unified statewide weatherization approach.

Table 1: Joint Collaboration Utility Gap Analysis

GAP Analysis	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO
Utility Joint Collaboration	**All Utilities**	**AOG Wx**	**HEAL**	**Res. Wx**	**HES**	**OG&E Wx**	**HES**	**HPwES**
Dual Fuel Program Offerings	✔	✔	✔		✔	✔	✔	
Direct Install	✔[1]		✔	✔	✔		✔	✔
Comprehensive "Whole House" Approach	✔	✔	✔	✔	✔	✔	✔	✔
Leverages national brands	NA							✔
Leverages federal funding sources	✔							
Leverages other non-federal funding programs	✔		✔		✔			

Green - gap in current program offering ✔= Addressed in current program NA= not applicable for this program

[1] The AWP program provides some direct install measures as part of a comprehensive program approach to install weatherization measures in participating homes.

Table 2: Summary of Gap Analysis for Joint Funding Collaboration

Current Situation	Gaps in Market	Recommendations
AWP program is successfully coordinating joint utility programs across Arkansas. AOG/OG&E's Weatherization Program continues to successfully deliver a coordinated utility program. The HEAL program offers opportunities to promote dual fuel installations but has not yet capitalized on these The utility programs have leveraged some federal funding/program support.	AWP continues to struggle to reach production goals. There are several opportunities to promote joint utility collaboration including joint funding/ delivery of programs for the other utilities, especially coordination between CenterPoint, EAI, SourceGas and SWEPCO	Develop consistent opportunities for statewide feedback to ACAAA agencies to promote joint utility collaboration; Focus on targeting the most active/engaged ACAAA agencies Determine if the AOG/OG&E model could be developed statewide; The utilities should look for ways to coordinate joint fuel offerings, such as kits as a way to maximize funds; Explore opportunities available at the federal level to encourage both statewide and joint utility collaboration.

2.2 Target Markets

The PY2012 and PY2013 evaluation reports continue to point to an ongoing need for weatherization programs in Arkansas. One area of particular need is those customers who live in severely energy-inefficient homes as well as residents whose household incomes are at or below the 200 percent federal poverty level (ACAAA 2012 PSC Filing, p. 40 Docket No. 07-079-TF).

According to estimates from AOG/OG&E, there are approximately 30,000 homes in need of weatherization improvements in these utilities' service territories (AOG/OG&E 2012 EM&V Report, p. 1-5). In addition, more than half of SWEPCO's customers (approximately 53%) live below the federal poverty level and have limited disposable incomes (SWEPCO 2012 EM&V Report, p. 6).

In Empire's service territory, the average per capita income for the territory is $26,199[2] based on the most recent US Census data, further indicating the overwhelming need to provide services to these lower income households.

However, the Commission's authority to implement low-income programs is limited by its legislative authority *Arkansas Gas Consumers, Inc. v. Ark. Pub. Serv. Comm'n*, 118 S.W.3d 109, 123. In that case, the Supreme Court of Arkansas concluded that "[t]here is no authority granted [to the Commission] for the implementation of social programs." Accordingly, although no programs are targeted specifically for low-income customers, it is likely that a number of customers would be captured within programs offered, such as the AWP program or EAI's manufactured homes program.

Several other utilities have also developed or refined their current weatherization programs. For example, Empire modeled its smaller weatherization program offering on the AOG/OG&E program model.

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2 United States Census Bureau: http://quickfacts.census.gov/qfd/states/05/05007.html.

SWEPCO expanded its current Residential Standard Offer Program (RSOP) to include tenants living in multifamily homes, which helped SWEPCO achieve 94 percent of the program's planned energy savings goal in PY 2012.

Through the RSOP Multifamily Pathway, SWEPCO provides the direct install of water saving measures and CFLs, while providing an incentive to the property owner and the installation contractor to install weatherization measures (SWEPCO 2012 Annual Report, p. 10).

SourceGas launched its own Home Energy Savings (HES) Program in late 2013 targeting all types of residential segments including homeowners, tenants, and those living in mobile and manufactured homes. According to the 2013 EM&V Report, including these targets helped SWEPCO meet its performance goals (SWEPCO 2013 EM&V Report).

While, EAI does not offer a specific weatherization program in addition to the AWP program, the utility targets residential customers through a number of programs that promote comprehensive assessments of energy uses, including weatherization measures. Although none of EAI's programs are specifically designed to target hard-to-reach customers, EAI programs likely serve a large segment of these hard-to-reach customers through its manufactured and mobile home programs, targeting both property owners as well as building managers and park owners. Furthermore, the contractors who install qualifying measures through the HES program also serve a number of hard-to reach customers.

In addition, the HEAL Program, has not yet captured low to moderate income customers originally intended under its current program design. Rather the PY2013 evaluation found that the typical HEAL participant has a significantly higher income level than average in Arkansas (CenterPoint 2013 EM&V, p. 1-6).

The current weatherization programs target a variety of residential segments, however there are still areas for joint collaboration on utility and program sponsors, especially those targeting manufactured homes, mobile homes, and to the degree possible targeting multifamily property owners.

Table 3 illustrates the current gaps in the key weatherization target markets based on a comprehensive review of all current weatherization programs.

Table 3: Target Market Gap Analysis

GAP Analysis	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI			
Target Markets	**All Utilities**	**AOG Wx**	**HEAL**	**Res. Wx**	**HES**	**OG&E Wx**	**HES**	**HPwES**	**RSOP**	**MFam Pgrm**	**MFG Homes**	**AC Tune-Up**	**Lighting & Appl.**
Severely energy- inefficient Homes- Income qualified	NA	NA	✔	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Severely energy-inefficient homes- no income qualifications	✔	✔	✔	✔	✔	✔	✔	✔	✔			✔	✔
Single family home owners	✔	✔	✔	✔	✔	✔	✔	✔	✔	NA	NA	✔	✔
Single family renters	✔	✔	✔	✔	✔	✔	✔	NA	✔	NA	✔	✔	✔
Multifamily up to 4 units renter		✔		✔	✔	✔	✔	✔	✔	NA	NA	✔	✔
Multifamily 5 units or greater- renter	NA	NA		NA	NA	NA	✔	NA	✔	✔	NA	✔	✔
Multifamily property managers/bldg. managers	NA	NA		NA	NA	NA	✔	✔	✔	✔	NA	NA	NA
Manufactured home owners	✔	✔			✔	✔	✔	✔	✔	✔	✔	✔	✔
Mobile home park residents	✔	✔		✔	✔	✔	✔	✔	✔	NA	✔	✔	✔
Mobile home park owners	NA	NA		NA	NA	NA	NA	NA	✔	NA	✔	✔	NA

Green- gap in current program offering ✔= Addressed in current program NA= not applicable for this program

Table 4 summarizes the current situation and provides possible recommendations for the PWC to consider in its weatherization program offerings

Table 4: Summary of Gap Analysis for Current Weatherization Target Markets

Current Situation	Gaps in Market	Recommendation
Some programs are missing key residential sectors RSOP has the most comprehensive bundling of measures program targeting most key sectors within a single program, for electric program offerings.	Larger multifamily homes are not targeted in current programs: AWP, AOG/OG&E, Empire, and CenterPoint programs Manufactured homes are not targeted in all programs[3] Building owners/property managers are not targeted in multifamily market Mobile home parks are not targeted in all programs	Any new weatherization program should include the following targets: • Multifamily tenants in buildings with four or more units with electric service • Mobile home tenants • Building managers, property owners and owners of mobile home parks

2.3 Energy Audit/Assessment Process

There are currently several types of weatherization programs offered in Arkansas. The direct install programs focus on installing simple measures, such as low-flow showerheads and faucet aerators, to encourage immediate energy savings. The more comprehensive programs begin with an energy audit or assessment of the residence and its major end uses.

The review of current weatherization programs identified several common areas of strength, while also highlighting some current gaps in these areas.

The following weatherization programs AWP, AOG/OG&E, Empire, CenterPoint's HEAL Program, SWEPCO's HPwES, EAI's HES and SourceGas' HES Tier 2 assessments all include a comprehensive audit of the residence and all major end-uses. These programs all rely on certified auditors to conduct a variety of in-home assessments such as blower door and duct blaster testing.

However, there are some missed opportunities for direct installation of energy savings measures in the programs that offer more comprehensive energy audits, including AWP, AOG/OG&E and Empire's Programs.

In addition, these weatherization programs also provide an opportunity to promote cross-participation in incentive programs by providing information regarding equipment rebates as a way to encourage customer follow-through and measure installation.

[3] A manufactured home (formerly known as a mobile home) is constructed according to a code administered by the U.S. Department of Housing and Urban Development (HUD Code). The HUD Code requires manufactured homes to be constructed on a permanent chassis.
http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/ramh/mhs/faq

Table 5 illustrates the gaps regarding the delivery of energy audit.

Table 5: Energy Audit Gaps

GAP Analysis	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI			
Type of Energy Audit	**All Utilities**	**AOG Wx**	**HEAL**	**Res. Wx**	**HES**	**OG&E Wx**	**HES**	**HPwES**	**RSOP**	**MFam Program**	**MFG Homes**	**AC Tune-Up**	**Lighting & Appl.**
Comprehensive Energy Audit	✔	✔	✔	✔	✔	✔	✔	✔				NA	NA
Walk-Thru Audit	NA	NA	✔		✔	NA	✔	NA	✔	✔	✔	NA	NA
Direct Install of Measures	✔		✔		✔		✔	✔	✔	✔	✔	NA	NA
Rebate/ Incentives	NA	NA	✔	NA	✔		✔	✔	✔			✔	✔

Green- gap in current program offering ✔= Addressed in current program NA= not applicable for this program

The 2012 SWEPCO EM&V Report identified that the most effective residential energy audit programs offer multiple audit tracks with varying levels of assessment rigor and corresponding incentives. Many such programs also include prescriptive incentives for building shell upgrades, HVAC tune-ups or replacement, or other appropriate residential technologies and services (SWEPCO 2012 EM&V Report, p. 17). The evaluators also recommended revising the current program auditing approach to incorporate the following possible program designs:

- *Three audit tracks.* Supplement the free, basic walk-through evaluation and comprehensive approach with a middle option, low-cost audit with blower door, and full visual assessment of major energy-using systems and home envelope.
- *Delivery by the implementer* or a small number of program-contracted, professional energy auditors that do not provide single-measure installation services (and therefore offer potentially biased energy-efficiency recommendations).
- *Free direct install measures for every participant*. This ensures the utility/program sponsor will be able to achieve some energy savings from every audit and improves the program's cost-effectiveness. Free direct install measures also provide a strong messaging platform for promoting the program to lower-income populations (SWEPCO 2012 EM&V Report, p. 17.

Table 6 summarizes the key findings regarding this area of program delivery as well as some recommendations for improvement.

Table 6: Summary of Energy Audit Gap Analysis

Current Situation	Gaps in Market	Recommendations
All of the programs provide some type of energy audit to residential customers.	Some weatherization programs are missing opportunities to bridge customers to rebate programs, especially for programs not targeting customers in severely energy inefficient homes.	Include a suite of direct install measures for all weatherization program offerings Include information on all available energy savings opportunities for all weatherization programs

2.3. Trade Ally/Contractor Qualifications

Trade allies are key program ambassadors for weatherization programs as customers often seek them out for guidance regarding equipment needs and recommendations. All of the current weatherization programs are using qualified and trained trade allies, who are either certified by BPI or RESNET. This standard is both consistent with industry standards and best practices. Participating HVAC contractors must also pass qualification tests for EAI's AC Tune-Up Program. There are no gaps in the market regarding trade ally qualifications, as current practices are more than sufficient to meet program needs.

SWEPCO also offers scholarships to its network contractors to assist in the cost of BPI or RESNET training, audit equipment, and audit software.

One gap that is narrowing in the market is the network of qualified contractors. In recent years, EAI developed a successful and growing base of qualified contractors, including recruiting contractors from out-of-state (EAI 2012 Annual Report, p. 119). [4]

Similarly both SWEPCO and SourceGas have expanded their current contractor networks as a way to build up capacity to both perform the comprehensive audits as well as install qualifying measures.

2.4. Auditing Software Tools

The current weatherization programs in Arkansas rely on several different energy auditing software tools to determine energy efficiency savings opportunities as well as calculate energy savings. All of these software tools are well established in the weatherization industry (see Table 7).

[4] However, EAI notes that the program design must also not lead to contractors' perception that the utility via its programs is dictating contractor pricing within the Arkansas contractor market.

Table 7: Summary of the Energy Auditing Tools Used

Program	Energy Software Used
AWP	NEAT/MHEA: May be changing to EnerTrek
AOG/OG&E	EnerTrek
CenterPoint	Optimizer
EAI HES	Optimizer
Empire	EnerTrek
SourceGas HES	Optimizer
SWEPCO-HPwES	Optimizer
SWEPCO-RSOP	-
EAI AC Tune-Up	-

However, there are some concerns that the current software tool used to calculate savings in the AWP does not fully align with the savings estimates provided in the approved Technical Reference Manual (TRM). Specifically, the NEAT software tool does not have any demand reduction information and may not align with the annually changing TRM energy savings, although there is a formula built in which translates energy-savings data into estimated demand savings.

So, there will need to be a coordinating entity to compile data from multiple audit and savings tools into a single database for reporting purposes, if there is a single unified statewide approach is put into place.

2.5. Lack of Customer Follow-Up

In comprehensive weatherization programs, such as the AWP, all cost-effective energy efficiency measures identified through the audits typically are installed. However, one of the biggest gaps in the delivery of the non-comprehensive weatherization programs is the lack of follow-up among program participants regarding the recommended audit improvements.

For example, 54 percent of the customers who received a walk-through assessment as part of the RSOP program reported their contractor did not recommend any additional energy-saving improvements as a result of the walk-through audit. Moreover, program follow-up procedures are not included in the program design for SourceGas' HES programs (SWEPCO 2012 EM&V Report, p. 17).

To address this issue, SWEPCO sent follow-up postcards to all of its customers who participated in its residential programs in 2013.

EAI's 2012 program provided recommendations to address these gaps which were implemented by EAI in full during the 2013 program year. In 2013 EAI began the following activities to encourage participant follow-up:

- Sending follow-up post cards to participants to help them link their coupon incentive and/or assessment to the program and EAI. The postcard should thank them for participating; reiterate the program benefits, note the services provided and cross-promote other relevant programs (EAI 2012 EM&V Report, p. 85).
- In the EAI Manufactured Home Direct Install program, each participant is mailed the Product Summary report that provides their energy use for the past year and the projected savings for the

products installed. The report also refers the participant to the Entergy Solutions website and other efficiency programs, such as the Summer Advantage, Entergy Solutions Rewards, and the Cool Saver program.

- The HES follow up letter contains the following*: "Don't forget we offer additional energy efficiency incentives. You can find more opportunities to save money and energy at EntergyArkansas.com/EntergySolutions.*"

The 2013 EM&V Evaluation for CenterPoint also indicated that customer follow-through is a serious problem for program participants as it reduces the TRC due to inefficient allocation of costs which leads to reduced savings and overall cost-effectiveness. The evaluators recommended a similar approach to EAI but developing an automated system to send thank-you emails to participating customers 6-8 weeks after receiving the kit, in order to remind the customer of their program participation (CenterPoint 2013 EM&V Report, p. 11-27)

Another follow-up approach is the "energy concierge" model used by the HEAL program. Each participant is assigned a client care contact that works with the participant until a retrofit decision is reached or the client drops out.

EAI tried to use contractors to engage customers to complete measure installations, but without any real success. In 2013, EAI provided the contractors with a list of their customers that had evaluations done but did not implement the recommended measures so that they could follow up with them. The result was that the majority of customers that were going to take action had already done so. The number of customers that took action after their evaluation was 70 percent for 2013.

Table 8: Gaps in Customer Follow-Through

GAP Analysis	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI	
Type of Follow-Through Approach	**All Utilities**	**AOG Wx**	**HEAL**	**Res. Wx**	**HES**	**OG&E Wx**	**HES**	**HPwES**	**RSOP**	**MFam Program**	**MFG Homes**
Timely follow-through after initial audit	NA	NA	✔	NA	✔	NA		✔	✔		✔
Cross-promotion of other rebates/incentives	NA	NA		NA	✔	NA	✔				✔
Contractor engagement to follow-through	NA	NA	NA	NA	✔	NA					✔

Green- gap in current program offering ✔= Addressed in current program NA= not applicable for this program

Table 9: Summary of Customer Follow Through Analysis

Current Situation	Gaps in Market	Recommendations
The energy audit/assessment programs do not have a standard approach to encourage customer follow-through for measure installation. Customers are not committed in making improvements, thus wasting valuable program resources.	The audit programs are missing opportunities to encourage cross-participation and equipment installations. There should be some type of prequalification for customers to receive comprehensive audits	Send follow-up post-cards or letters to engage program participants. Encourage contractor follow up. Provide information on other financing opportunities to encourage measure installation. Charge a nominal audit “fee” that can be rebated if customers install equipment, as a way to reduce the number of “tire kickers” and make programs more cost-effective.

2.6. Financing

Access to affordable financing to fund energy efficiency improvements remains one of the major barriers to program participation in the Arkansas weatherization programs. Even though in the AWP, customers who meet the income eligibility requirements for the WAP may have their co-payment covered for the direct installation of measures, there is a large segment of customers who do not meet these program eligibility requirements. Therefore, this remains a significant barrier to program participation among the moderate and higher income customer segments (ACAAA 2012 Annual Program Filing, p. 40).

Since first-cost continues to be a barrier to program participation, the program evaluators recommended reviewing options for offering low-cost financing to customers through partnerships with local banks, credit unions or an on-bill mechanism (SWEPCO 2012 EM&V Report, p. 8).[5] The HEAL program can be used as 'wrap around' financing of the remaining retrofit cost not covered by utility rebates. The client has the choice of using HEAL financing with repayment through payroll deduction, securing alternative financing or self-financing.

But the 2013 program evaluation found that currently HEAL is attracting higher income participants, rather than focusing on reaching the low and moderate income customers. So this approach needs to be redesigned to reach those customers who require the financing the most (CenterPoint 2013 EM&V Report, p. 11-27).

However, none of program sponsors wants to preclude any contractor or external financing option from participating in offering funding for the installation of weatherization measures. This is especially important in order to comply with both legal requirements and ensure a competitive market to offer these financing mechanisms.

Identifying the appropriate financing options will be an area of ongoing discussion and review with the PWC to explore ways to more effectively integrate financing with the delivery of the weatherization programs. This discussion will also be more fully informed upon the completion of the 2013 evaluations of the current weatherization programs, especially the HEAL program, complemented by the review of financing best practices in other jurisdictions as well programs available nationally.

[5] EAI notes that there are legal issues that will need to be addressed in connection with any such offering (e.g., whether an "on-bill" mechanism would violate Ark. Code Ann. 23-4-202 (customers can only be billed in accordance with rate schedules duly filed with the APSC).

Table 10: Gap Analysis Regarding Financing for Weatherization Programs

Current Situation	Gaps in Market	Recommendations
Currently only one financing option, HEAL, is being deployed in Arkansas.[6] EAI notes that contractor financing combined with measure incentives can lead to low cost/no cost measure installations. Those most in need of financing are often unable to access the financing. The HEAL financing model has some success in the market, but may not be appropriate for all target markets.	There are other financing options available from third-party lenders, contractors, and other funding mechanisms that should be explored in the Arkansas market. However many customers do not qualify for or take advantage of these financing options. This type of financing is currently not viable for low income customers.	Financing options need to be explored that specifically target renters/tenants. Explore the barriers to offering financing programs from utilities, especially the legal requirements. The weatherization best practices review will provide examples of other financing models that the PWC should consider in this program design. [7].

2.7. Marketing/Outreach

All of the weatherization programs rely on a variety of marketing outreach tools designed to build awareness and encourage participation in these weatherization programs (EAI, 2012 EM&V Report p. 26; SWEPCO 2012 EM&V Report, p. 24).

Although the HES program brochure cross-promotes other EAI programs, such as CoolSaver and ENERGY STAR Appliances, there are still numerous opportunities to cross-promote complementary programs (EAI, 2012 EM&V Report p. 71).

The HEAL program presents participants with a summary of available rebates from all applicable utilities and evidence indicates that both the audit to retrofit conversion rate and the number of measures chosen increase when multiple programs are represented.

These findings are applicable to the other weatherization programs, and therefore these programs should feature more cross-promotion to encourage program participation and facilitate joint-utility participation.

Table 11 highlights the gaps regarding marketing and outreach activities while Table 12 summarizes the findings and recommendations from this analysis.

[6] Clinton Climate Initiative notes that HVAC contractor financing can be extremely high, commercial banks require high FICO scores and high rates for unsecured loans. On the contrary CCI's experience with credit unions affiliated with a particular employer or geographic locations "negotiate" an aggregated financing model that is very attractive for most consumers. The rate of participation for financing the net cost of energy retrofits has been as high as 90% with some employers and the default rate has been zero since the inception of HEAL's program. All HEAL financing is voluntary; it is not required for participation.

[7] New program designs must also include provisions to avoid dictating contractor pricing in Arkansas in order to prevent legal and market barrier issues.

Table 11: Gaps in Weatherization Marketing/Outreach Strategies

Marketing & Outreach Strategies	AWP-	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI			
	All Utilities	AOG Wx	HEAL	Res. Wx	HES	OG&E Wx	HES	HPwES	RSOP	MFam Prgrm	MFG Homes	AC Tune-Up	Lighting & Appl.
Mass Market Strategies targeting residential customers	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Direct outreach through special events	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	NA	✔
Contractor outreach	NA	✔	✔	✔	✔	✔	✔	✔	✔			✔	✔
Targeted marketing	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	NA	NA

✔with filled in green= currently being done, areas for program improvement
Green- gap in current program offering

✔= Addressed in current program
NA= not applicable for this program

Table 12: Summary of Marketing and Outreach Gap Analysis

Current Situation	Gaps in Market	Recommendations
Most programs rely on a variety of marketing strategies to encourage customer participation. However, the effectiveness of these activities has been mixed.	The weatherization programs are missing opportunities to bridge customers to rebate programs, especially for programs not targeting low-income customers. Targeted marketing focusing on those customers who are most in need of weatherization programs could lead to improved participation and installation rates.	The programs will need to provide a more comprehensive marketing strategy that includes better targeting to the key customer segments. Include information on all available energy savings opportunities for all weatherization programs Narrowing the focus of the program benefits featured in these marketing materials may provide a clearer and more understandable message, which may lead to increased program participation.[8]

[8] EAI notes, however, programs cannot become so narrow that they become discriminatory only toward certain income folks. Marketing targeting is important for program delivery, but the program needs to be designed so that discriminatory perceptions can be avoided.

2.8. Educational Materials

The HEAL and SourceGas' HES program, EAI Multifamily, EAI Manufactured Homes[9] and EAI HES[10] programs provide some type of educational materials in conjunction with the energy audit. However, the most effective weatherization programs include low-cost/no-cost tips to encourage further energy savings, especially among those residents in moderate or lower income households. Therefore, the PWC members and interested parties should review and evaluate the types of educational materials that could be best integrated with the weatherization program offerings.

2.9. Installed Measures

The direct install programs provide a comprehensive suite of measures designed to address the needs of severely energy-inefficient homes. However, some programs are missing opportunities to install water and energy conservation measures, such as faucet aerators and low-flow showerheads, and therefore missing energy savings opportunities.

In addition, the programs are also missing opportunities to install electronic power strips in all but one weatherization program. The weatherization programs should also include health and safety checks in all program offerings related to installed measures.

Table 13 summarizes the gap analysis for the current measure offerings in these weatherization programs, while Table 14 provides additional recommendations for consideration in the program design and implementation.

[9] The EAI Multifamily program provides a mailed report covering the property's common areas, which provides energy efficiency recommendations to the property manager. The EAI Manufactured Home program mails a report to the residents providing a summary on the projected energy efficiency savings of the installed measures and recommendations on other energy efficiency programs.

[10] The program trifold is a leave behind that gives further information on the program. The Evaluation report includes no/low cost tips and suggestions.

Table 13: Summary of Gap Analysis of Installed Measures

	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI			
	All Utilities	AOG Wx	HEAL	Res. Wx	HES	OG&E Wx	HES	HPwES	RSOP	MFam Pgrm	MFG Homes	AC Tune-Up	Lighting & Appl.
Insulation													
Attic	✔	✔	✔	✔	✔	✔	✔	✔	✔			NA	NA
Floor	✔	✔	✔			✔					NA	NA	NA
Wall	✔	✔			✔	✔	✔	✔	✔	NA	NA	NA	NA
Duct	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	NA	NA
Foundation	✔	✔			NA	✔	NA	NA	NA	NA	NA	NA	NA
Sillbox	✔	✔			NA	✔	NA	NA	NA	NA	NA	NA	NA
Light bulbs	✔	✔	✔	✔	✔	✔	NA	✔	✔	✔	✔	NA	✔
Lighting Retrofits	✔	✔				✔	NA					NA	✔
Power Strips			✔		✔							NA	✔
Refrig. Replacement	✔	✔		✔		✔				✔	✔	NA	✔
Water Savings Measures	✔	✔				✔		✔	✔	✔	✔	NA	NA
Low-flow showerheads	✔	✔			✔	✔	✔	✔	✔	✔	✔	NA	NA
Faucet aerators		✔			✔	✔	✔	✔	✔	✔	✔	NA	NA
W.H. pipe wrap	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	NA	NA
W.H pipe insulation	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔	NA	NA
Water Heater Blankets	✔	✔		✔	✔	✔	✔	✔		✔	✔	NA	NA

Green - gap in current program offering ✔= Addressed in current program NA= not applicable for this program

	AWP	AOG	Center Point	Empire	EAI	OG&E	Source Gas	SWEPCO		EAI			
	All Utilities	AOG Wx	HEAL	Res. Wx	HES	OG&E Wx	HES	HPwES	RSOP	MFam Pgrm	MFG Homes	AC Tune-Up	Lighting & Appl.
Equipment Replacement	✔	✔			✔	✔							
Cooling	✔	✔	✔ w/EAI		✔	✔		✔	✔			NA	NA
Heating	✔	✔	✔		✔	✔	✔	✔	✔			NA	NA
Water Heating	✔	✔	✔		✔	✔	✔	✔	✔			NA	✔
Infiltration Measures		✔		✔		✔		✔	✔			NA	NA
Equipment Repair	✔	✔			NA	✔		NA		NA	NA	NA	NA
Furnace Tune-Ups	✔	✔			NA	✔				NA	NA	NA	NA
AC/Heat Pump Tune Ups	✔	✔		✔	NA	✔				NA	NA	✔	NA
Windows	✔	✔		✔		✔	✔	✔	✔	NA		NA	NA
Health and Safety checks	✔	✔			✔	✔	✔	✔				NA	NA
Doors	✔	✔		NA	NA	✔	NA	NA	NA	NA	NA	NA	NA
Roof Repairs		✔		NA	NA	✔	NA	NA	NA	NA	NA	NA	NA
Smoke Detectors	✔	✔		NA	NA	✔	NA	NA	NA	NA	NA	NA	NA
Solar Screens	✔	✔	NA	NA	NA	✔	NA	NA	NA	NA	NA	NA	NA
Window Film			NA	NA	NA			✔	✔				NA

Green - gap in current program offering ✔= Addressed in current program NA= not applicable for this program

Table 14: Summary of Gaps in the Installed Measures

Current Situation	Gaps in Market	Recommendations
The comprehensive weatherization programs focus on improving homes through installation of building envelope and equipment tune-ups and replacements The direct install programs focus on water conservation measures.	Only one program is capturing savings from advanced power strips. Other than AWP, the comprehensive programs do not include direct-install measures such as water conservation measures or lighting.	There are opportunities to encourage joint-utility participation and encourage savings by including direct install measures of water conservation measures and advanced power strips for all programs.

3. Conclusions and Recommendations

The preliminary findings from this gap analysis identified the following promising trends:

- The current weatherization programs are meeting a market need; however some market segments are overlooked
- There needs to be some additional review of the best way to conduct energy audits including reviewing the software tools
- The contractor base is qualified and expanding to meet program needs

However, the PWC will need to address the following issues in developing a new unified approach for weatherization program delivery:

- Improved participant education and bridging to other programs
- Better follow-up to encourage installation
- Improved access to program financing
- Review of measure combinations including direct install with comprehensive weatherization programs
- Increase ability to capture savings for both electric and gas installations for all the other program offerings.

Appendix A: Program Profiles

Arkansas Weatherization Program (AWP)

Program Implementer/s: Arkansas Community Action Agencies Association, Inc. (ACAAA)

Program Description

The AWP targets severely energy-inefficient homes in Arkansas, is open to both electric and gas customers of participating utilities, and is "piggy-backed" onto the federally-funded U.S. Department of Energy's Weatherization Assistance Program ("DOE WAP") for low-income Americans.

Program services such as residential audits and measure installation are implemented by local community action agencies in Arkansas. The program is offered in conjunction with the Department of Energy (DOE) Weatherization Assistance Program (WAP), which provides federal assistance to fund the customer co-payment in the AWP for income-qualified households.

In 2013, the administrative roles for the WAP transitioned to the Arkansas Energy Office (AEO) from the Department of Human Services (DHS). This transition was implemented for organizational efficiency purposes, and is expected to result in some procedural modifications for the WAP.

Eligibility for the AWP is based on a set of criteria regarding customer residence energy efficiency. In order to qualify, customer homes must meet specific criteria indicating that the residence is severely energy-inefficient. The AWP is designed based on the "whole house" 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. The program provides a wide range of measures in order to improve residential energy efficiency and to increase comfort and safety levels in the home.

AOG-OG&E Weatherization Program

Program Implementer/s: AOG & OG&E

Program Description

A comprehensive residential weatherization program targeting severely inefficient homes to improve comfort and reduce energy costs by upgrading the thermal envelop and appliances (AOG –OG&E Program Eligibility Document).

Program Eligibility

AOG serves more than 40,500 residential customers and OG&E serves more than 54,000 residential customers in Arkansas. Eligible customers are homeowners, renters or tenants in a single family, duplex, or mobile home built before 1997 and have three of the following:

- Attic insulation is equal or less than R-22
- Wall insulation is equal or less than R-4
- Floor insulation is equal to R-0
- Single pane windows with no storm windows
- Heating system equal or less than 78% efficient
- Cooling system equal to SEER 10 or less
- Air infiltration problems
- Customer of AOG or OG&E

(EAI) Entergy Home Energy Solutions Program

Program Implementer/s: Entergy (EAI)

Program Description

EAI offers multiple participation opportunities for customers in its service territory who own or rent single-family homes, as well as for customers who live in multifamily complexes with four or fewer units. The program is designed to help customers achieve significant long-term electric savings through the use of local Home Energy Consultants (HECs), who perform home energy surveys and assessments, and participating installation trade allies. As of November 1, 2013 Entergy Arkansas and SourceGas Arkansas are running complementary programs and working cohesively together to service shared customers and reduce program costs.

Program Eligibility

- Are current Entergy Arkansas customers.
- Live in a single-family home or a multi-family unit of four units or fewer.
- Live in a home that is at least one year old.
- Live in a home that has central heat and air conditioning.

Empire District Electric Company's Arkansas Residential Weatherization Program

Program Implementer/s: Empire

Program Description

This program has the same aim as the AOG/OG&E weatherization program. It provides energy efficiency improvements to participants, thereby decreasing demand and energy usage for those customers. The purpose of Empire's Weatherization Program is to improve comfort and reduce energy costs by upgrading the thermal envelope and appliances in targeted households. Since this program is targeted to customers who are unlikely to take any measures absent a 100% rebate, rebates and incremental costs are identical (T. Tarter Direct Testimony, 07-076-TF Doc. 174, Dec. 28, 2012)

Home audits are available on a "first-come, first-served" basis to Arkansas homeowners and renters who are customers of Empire and have expressed an interest in the program.

Program Eligibility

Eligible customers are homeowners, renters or tenants in a single family, duplex, or mobile home built before 1987 and have three of the following:

- Attic insulation is equal or less than R-11
- Wall insulation is equal or less than R-4
- Floor insulation is equal to R-0
- Single pane windows with no storm windows
- Heating system equal or less than 78% efficient
- Cooling system equal to SEER 10 or less
- Air infiltration problems
- Applicant must be an Empire customer

Home Energy Affordability Loan Program (HEAL)

Program Implementer/s: Clinton Climate Initiative coordinating with CenterPoint, Entergy, Ouachita Electric Co-op and, beginning in 2014, SourceGas SWEPCO and Ozarks Electric Co-op.

Program Description

The Home Energy Affordability Loan (HEAL) program is an Arkansas born program implemented by the Clinton Climate Initiative for improving energy performance in residential and commercial buildings. The HEAL program is positioned as an employer-assisted energy benefit and customizes the marketing and outreach based on each unique employer culture. The program works with commercial partners to provide low or no interest loans to employees for retrofitting their homes to become more energy efficient. In some cases, HEAL may also offer the program to non-employees or electric co-op members living in neighborhoods adjacent to participating employers.

There are two HEAL program models, one in which a company performs a commercial retrofit to fund the HEAL program with the energy savings, and one in which only the residential audit/retrofit program is provided as an employee benefit.

Program Eligibility

HEAL is generally offered through the workplace to employees of participating businesses, but has also offered the program to electric co-op members and non-employees living in neighborhoods adjacent to participating employers. Employees receive a free home energy audit, including a blower-door test and duct blaster and a Personal Energy Plan that outlines findings, recommendations and the financial and environmental impact. The HEAL program is available to all income levels and provides a financing mechanism for energy saving home improvements that are re-paid through payroll deductions.

Eligible Measures

The program focuses on four key measures: lighting, air sealing, ceiling insulation, and duct repair, however the audit results include other measure recommendations as well *(*CenterPoint, Appendix A, p. 11).

SGA 2013 Home Energy Savings Program

Program Implementer/s: SourceGas

Program Description

The SourceGas Arkansas (SGA) Home Energy Savings (HES) Program– a component of SGA's Home Energy Efficiency program portfolio – offers many participation opportunities for home owners and renters in SGA's service territory by working with participating home energy consultants and contractors who will help residential customers analyze their energy use, identify energy efficiency improvement projects and install low-cost, energy-saving measures at home. The program also provides residential customers with incentives for home energy assessments and eligible energy efficiency measures that are installed in their home (2014 HES Contractor Program Manual, p. 1).

Program Eligibility

To participate in the program, the customer must:

- Be a residential customer of SGA with a valid account number.
- Live in a single-family home or a multifamily residential unit (both renters and owners are eligible).
- Live in a home that is a minimum of one year old.
- Live in a home that has ducted, natural gas-fueled central heating.

The program offers two levels of participation:

- Tier 1 Assessment: A walk-through audit and some direct install measures.
- Tier 2 Assessment: The home must be over 1 year old and have ducted natural gas heat. Customers also have a minimum level of spending per sq. ft. of heated space based on the customers' highest winter natural gas bill.
    - Customers that have usage less than the minimum amount per square foot can have a Survey performed and if potential measure eligibility is identified, they can upgrade to an assessment at that time.

Eligible Measures

The program is divided into two tiers: direct install measures at the time of the energy audit and more comprehensive measure installations based upon the eligibility criteria for each measure.

SWEPCO Home Performance with ENERGY STAR

Program Implementer/s: SWEPCO, CLEAResult

The Home Performance with ENERGY STAR (HPwES) Program targets single-family homes and multifamily dwellings with separate utility meters. Participating customers receive a discounted comprehensive energy audit that identifies energy-savings opportunities and incentives to offset the upfront cost of installing energy-efficient upgrades. These upgrades may be installed by the auditor or by a qualified home performance team. Customers may receive recommendations for measures that generate both electric and gas savings; however, SWEPCO only provides incentives for electricity-saving measures.

Customer Eligibility

SWEPCO residential customers who meet the following requirements are eligible to participate in the HPwES Program:

- Any residential dwelling served by a SWEPCO electric meter.
- The residence must be separately metered, as verified by an active SWEPCO account number.
- Tenant-occupied dwellings are eligible to receive an incentive, providing the property owner provides permission.
- Manufactured and mobile homes are eligible for incentives, providing all mobility devices have been removed

Residential Standard Offer Program (RSOP)

Program Implementer/s: SWEPCO/CLEAResult

Program Description

SWEPCO offers customers a Residential Standard Offer Program (RSOP) which pays incentives to customers and to contractors to install energy efficiency measures. RSOP is designed to provide assessment services and prescriptive incentives for equipment replacements, and building shell improvements. The program also enrolls qualified contractors to provide customers with access to a network of experienced contractors to perform installations and energy-efficient services.

SWEPCO residential customers who meet the following requirements are eligible to participate in RSOP:

- Any residential dwelling served by a SWEPCO electric meter.
- The residence must be separately metered, as verified by an active SWEPCO account number.
- Tenant-occupied dwellings are eligible to receive an incentive, providing the property owner provides permission.
- Manufactured and mobile homes are eligible for incentives, providing all mobility devices have been removed

Entergy Solutions Multifamily Program

Program Implementer/s: EAI Arkansas

Program Description

The EAI Multifamily Program offers energy assessments in common areas to identify cost-effective energy-efficiency upgrades and offers free direct install measures in tenant spaces to the multifamily residential market throughout the EAI, Inc. (EAI) electric service territory. EAI launched the Energy Solutions for Multifamily Program in April 2012 (EAI 2012 EM&V Report, p. 290).

Program Eligibility

Eligible projects must meet the following criteria:

- Multifamily properties composed of five or more units located within the EAI electric service territory are eligible for the EAI Multifamily Program. Properties under a residential, multifamily or commercial rate code all qualify for this program
- There are no maximum limits on the size of a building or number of qualifying buildings in a single complex (EAI 2013 Multifamily Guidebook, p. 3)

Energy Solutions for Manufactured Homes Program

Program Implementer/s: EAI

Program Description

Through the Energy Solutions for Manufactured Homes Program, EAI provides cost-effective energy-efficiency measures to customers who live in manufactured homes throughout its electric service territory. Through the program, the program implementer installs energy-efficiency measures in participating customers' residences at no cost to property owners or residents. The program was launched in April 2012.

The program also offers a survey of the residence and applicable equipment. The technician shares with the resident various low cost/no cost ways they can save energy in their home and information about other EAI energy efficiency programs. After the direct installation service is completed, customers receive a summary report of the home's potential energy savings in the mail. Mobile home park owners also receive information about other EAI programs for which they may be eligible (EAI 2012 EM&V Report, p. 271).

Program Eligibility

Electric customers who live in manufactured homes.

Residential Lighting & Appliances Program

Program Implementer/s: Entergy Arkansas, CLEAResult

Program Description

The Entergy Arkansas, Inc. (EAI) Residential Lighting & Appliances Program offers residential customers in the EAI service territory discounts and rebates on the purchase of ENERGY STAR qualified lighting, appliances and energy saving advanced power strips. The program evolved from the successful 2007 CFL QuickStart program, becoming the program as it is currently offered in August of 2011.

Program Eligibility

The 2014 program is being offered to all residential and small business customers of Entergy Arkansas. Customers may be required to verify eligibility with their Entergy Arkansas account number for participation in some of the measures.

Eligible Measures

Eligible measures include ENERGY STAR qualified compact fluorescent light bulbs and fixtures, light-emitting diode light bulbs and fixtures, room air conditioning units and refrigerators. Advanced power strips are also eligible for incentives under this program.

CoolSaver[SM] A/C Tune-up Program

Program Implementer/s: Entergy Arkansas

Program Description

The EAI CoolSaver A/C Tune-up Program assists residential and commercial customers in accessing comprehensive air conditioner and heat pump tune-up services. The program provides training to HVAC contractors in best industry practices to achieve savings and improvements to comfort and delivered cooling capacity.

EAI originally launched the CoolSaver Program in March, 2009 as part of the QuickStart portfolio, and has grown the program each year to provide the tune-up service to over 8,000 systems annually.

Program Eligibility

Eligible projects must meet the following criteria:

- Residential or Commercial installation
- Central air conditioner or heat pump, packaged or split system
- Size of up to and including 25 tons of capacity
- At least a one-year old installation
- Has not had a program tune-up in the past 5 years

References

ACAAA 2012 PSC Filing, p. 40 Docket No. 07-079-TF

AWP 2013 EM&V Report, pp. 1-10-11

AOG/OG&E 2012 EM&V Report, p. 1-5

CenterPoint 2012 Annual Report, p. 12

SWEPCO 2012 EM&V Report, p. 6, 10).

Appendix C: Weatherization Best Practices: A Review of Successful Approaches

Prepared for:

Parties Working Collaboratively on Behalf of the

Arkansas Public Service Commission

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With

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Executive Summary

As a way to inform the Parties Working Collaboratively (PWC) members, interested parties and key stakeholders about the best strategies to consider when developing an approach to meet the Commission goals, the Weatherization Collaborative Facilitator completed a literature review of weatherization energy efficiency programs. The purpose of this review was to identify the key lessons learned and best practices used by these programs, in order to lay a foundation to guide future discussions of each issue with the PWC.

The term “Best Practice” refers to the business practice that, when compared to other business practices that are used to address a similar business process, produces superior results. Best practices are documented strategies and tactics employed by successful organizations and programs. But it is important to clarify that rarely is an organization or program "best-in-class" in every area (Best Practices Review 2004)[1]

Table E-1 summarizes the key best practices that should be considered when developing a new energy efficiency program. This list was modified to identify the key program areas as a way to facilitate comparison with the specific goals for Arkansas to consider when developing a unified approach.

[1] http://eebestpractices.com/about3.asp

Table E-1: Summary of Energy Efficiency Program Best Practices

Program Area	Best Practice
Market/Situation Analysis	Develop an understanding of the market
Target Marketing	Offer Programs for All Customer Classes
Joint Program Delivery	Coordinate with other utilities and third-party program administrators
Program Planning	Consider building codes and appliance standards in program planning
Program Planning	Plan to incorporate new technologies.
Program Planning	Create a roadmap of key program components, milestones and reduction goals
Program Planning	Start with demonstrated program models—build infrastructure for the future
Program Planning	Evolve to more comprehensive programs.
Marketing and Outreach	Invest in education, training and outreach
Marketing and Outreach	Leverage national programs like ENERGY STAR
Cost-Effectiveness	Use cost-effectiveness tests that are consistent with longer-term planning
Program Delivery	Keep participation simple
Program Delivery	Leverage customer contact- cross program participation
Program Delivery	Change measures over time to adapt to changing markets and new technologies
Program Delivery	Pilot test new program concepts
Financing	Align goals with funding
Financing	Keep funding consistent
Program Delivery/EM&V	Develop program tracking system
EM&V	Coordinate design and implementation with EM&V
Cost-Effectiveness	Use cost-effectiveness tests that are consistent with longer-term planning

(Source: Modified from NAPEE 2007)

The goal of this review is to examine the ways in which the current weatherization programs operate by analyzing the key program elements such as target markets, marketing and outreach, contractor training standards, and measures that are currently installed in these programs. These elements were selected as they provide a way to both objectively assess the current weatherization program offerings in Arkansas while also addressing the key goals described in Commission Order No. 7 of Docket 13-002U:

- Joint funding between electric and gas utilities for whole house energy assessment and energy efficiency services including auditing, insulation, and infiltration reduction features;
- Comprehensive technical standard following best practices with a single set of standards and coordinated with federally-funded weatherization services requirements;
- Offer financing mechanism/s that encourage installation of multiple cost-effective measures and explore viability of current options in use, such as HEAL;
- Eliminate duplication of programs that prevent trade allies from working together or create customer confusion;

- Active participation in the reorganization of WAP to optimize its coordination with utility funded weatherization services and leverage available personnel and federal funding;
- Effectively market joint-utility weatherization services including the HEAL program (pp. 81-82 of 91);

The key findings and recommendations from this literature review are presented next.

1. Introduction

Arkansas Public Service Commission Order No. 7 outlined the key areas that must be included in developing in a unified approach to a weatherization program for Arkansas' investor-owned utilities. This literature review summarizes the best practices for each of these key elements and identifies areas that could be incorporated into the approach developed by the Parties Working Collaboratively (PWC) members, stakeholders, and interested parties.

As a way to inform the Parties Working Collaboratively (PWC) members, interested parties and key stakeholders about the best strategies to consider when developing an approach to meet the Commission goals, the Weatherization Collaborative Facilitator completed a literature review of weatherization energy efficiency programs. The purpose of this review was to identify the key lessons learned and best practices used by these programs, in order to lay a foundation to guide future discussions of each issue with the PWC.

The term "Best Practice" refers to the business practice that, when compared to other business practices that are used to address a similar business process, produces superior results. Best practices are documented strategies and tactics employed by successful organizations and programs. But it is important to clarify that rarely is an organization or program "best-in-class" in every area (Best Practices Review 2004)[2]

2. Best Practices in Joint Utility Collaboration

The Commission Order emphasized that the new unified weatherization approach needed to include joint utility funding and foster utility collaboration. The following section summarizes some of the most effective examples of joint-utility collaboration to design and deliver weatherization program offerings, among others, to local residential customers.

Partners in Energy Savings: In Colorado, the four natural gas utilities fund a portfolio of energy efficiency programs through the Partners in Energy Savings (PIES) Program. These utilities, Atmos Energy Corporation, Colorado Natural Gas, Eastern Colorado Utilities and SourceGas Distribution are an example of successful joint-utility collaboration by developing a unified theme to customers and providing consistent guidelines for program implementers. Based on two separate program evaluations completed in 2011 (Navigant 2011) and 2014 (Johnson Consulting Group 2014), this joint-utility program delivery approach has succeeded for because all the participants view it favorably. While one utility, SourceGas, takes the lead in program activities, all the members are involved in making the final decisions and selecting the subcontractors (Navigant 2011, p. 16).

In addition to cost savings, the benefits from this collaborative approach included:

- Economies of scale associated with program marketing, administration, delivery, tracking, and bulk purchases of program materials;

[2] http://eebestpractices.com/about3.asp

- Integrated marketing, efficiency measures and rebate structures supporting a consistent message and less confusion among Colorado customers;
- Integrated, consistent training on program protocols, guidelines, and installation best practices;
- Development of a unique working partnership and cost savings benefits that have allowed the collaborating utilities to set among the most attractive rebate levels in the state, establish a good living wage for its service providers, and direct more of its DSM program dollars toward the installation of energy efficiency measures (Navigant 2011, p.4).

Mass Save® Home Energy Services (HES) Program: The Mass Save utilities are Berkshire Gas, Cape Light Compact, Columbia Gas, National Grid, New England Gas, NSTAR, WEMECO and UNITIL. This program integrates natural gas and electric improvements and includes air sealing at no cost.

The Mass Save program illustrates the following advantages from jointly delivered utility programs including:

- Establishing a statewide fuel-blind program provides the most available incentives to customers and helps reduce customer and contractor confusion (Nowak, Kushler et al 2013, pp. 169-172).
- Establishing regular working groups for Program Administrators, state agents, contractors, community groups, and others has ensured the program progresses in areas that meet all stakeholder needs. For instance, a statewide committee was setup to ensure fair and equitable pricing was available for participating contractors in the program (Nowak, Kushler et al 2013, pp. 169-172).

CenterPoint Energy and Xcel Energy's Home Energy Squad: The Home Energy Squad is offered in the Twin Cities metropolitan area as a partnership between CenterPoint Energy and Xcel Energy. The program is available to residential customers who have electric service from Xcel Energy and natural gas service from either CenterPoint Energy or Xcel Energy. This includes both Minneapolis and St. Paul, and the majority of the surrounding metro area (Nowak, Kushler et al 2013, pp. 112-117).

The program focuses on measures that together can create substantial energy savings and can be installed quickly. Through this program, these utilities learned that the greatest value to customers comes from the invisible mechanics of the Home Energy Squad's combined utility delivery platform. Customers benefit directly from the convenience of a single in-home visit, the low price of bulk-sourced materials, and the simplicity of a program that unifies gas and electric energy savings with professional direct installation (Nowak, Kushler et al 2013, pp. 112-117).

The key benefits of this collaboration included:

- The team has learned that two utilities can effectively work together to deliver energy savings to their shared customers.
- From a program design perspective the utilities learned to use the flexibility of the delivery platform to accommodate different energy saving measures and changing customer demand (Nowak, Kushler et al 2013, pp. 112-117).

Home Energy Solutions Program in Connecticut: The three Connecticut gas utilities (Yankee Gas, Connecticut Natural Gas, and Southern Connecticut Gas) partnered with United Illuminating and Connecticut Light & Power to offer weatherization direct install measures. This program offers customers a one-stop-shop for comprehensive energy efficiency services through its Home Energy Solutions™

program (Nowak, Kushler et al 2013, pp. 123-126). This program is implemented through 30 Home Performance contractors and more than 100 subcontractor companies.

Connecticut's Home Energy Solutions Program requires all of its contractors to be BPI-certified. It also provides comprehensive energy conservation opportunities in single family homes, provide on the spot improvements and educate and communicate further opportunities to the homeowner through blower door guided air sealing, duct sealing, installation of CFLs, LEDs, domestic hot water measures, and pipe insulation during the first visit. This Core Service is provided at an affordable $75-$99 co-pay for customers, and no charge to income eligible customers.

As part of HES Core Service, the technician provides the customer with a "kitchen table wrap-up" to summarize the work done and highlight estimates of energy savings resulting from the direct installation of measures during the core services. The Companies provide a tool to contractors to present to customers that features estimates of payback and investment information to help customers make decisions on purchasing and implementing additional energy efficiency measures. Rebates are provided for appropriate energy efficiency measures including rebates for HVAC equipment replacement, water heater upgrades, appliance upgrades, and window and insulation upgrades. The "kitchen table wrap-up" provides customers with a road map of opportunities and options including rebates, tax credits, on bill financing and next steps. In 2012, a mobile application was developed to streamline data collection and generate custom reports for the customer to enhance the kitchen table wrap up experience. As the program has grown, the vendor base has been successfully managed using a report card that evaluates contractor performance based on energy savings achieved in each home, field inspection results, customer surveys, and compliance with program rules.

The Multi-Family (MF) initiative is a program component that encourages energy efficiency measures in multi-family projects. Customers are offered a "one-stop" approach by having a single Program Administrator ("PA") serve as the primary contact to help facilitate the process and package the project making participation seamless. The MF Initiative serves any type of MF property including assisted living facilities, dorms, group homes, apartment complexes high-rise dwellings and mixed-use developments.

The final program component is attractive third-party consumer financing for energy improvement projects recommended and/or offered through HES. HES first began to offer financing through a Residential Financing Pilot Program that was initiated on June 1, 2010 and continued through May 31, 2011. The pilot program offered loans at attractive below-market interest rates and allowed the Companies to engage the customer and contractor/vendor in a new way by helping reduce a barrier to deeper energy efficiency.

The partnership involved key stakeholder group and the State of Connecticut to access State funding allowing the program to be "fuel blind." Therefore, a comprehensive program has the potential to address the needs of all the residential customers in Connecticut.

Program Performance

Currently, Connecticut is ranked number one in the country in Home Performance with ENERGY STAR® jobs completed per household. The Residential Financing Pilot successfully funded loans to over 1,250 loans funded and over $14.5 million in energy efficiency home improvements.

Based on the success of the financing pilot, the Companies, in conjunction with the Connecticut Energy Efficiency Board, sought alternative financing models to reduce the costs. On June 1, 2011 the Companies began an expanded relationship with the Connecticut Housing Investment Fund (CHIF) to offer a residential financing program. This program offers cost-effective financing for specific energy efficiency measures. This program is one of the first in the nation to offer on bill repayment of energy efficiency measures for residential customers. To qualify for the subsidized interest rates and obtain a loan, a customer must participate in the HES program. All measures or equipment financed must meet energy efficiency criteria including the HES participation criteria.

The tables below show reliable savings each year, with overall participation increasing.

Lessons Learned

Leveraging measures with high benefit-cost ratios (BCRs) to incorporate measures with lower BCRs provided the flexibility to offer a comprehensive program. Key factors contributing to success involve processes -- quality, stakeholder input, and messaging:

Importance of having a robust QA/QC process: When working with contractors' expectations must be clear and measurable, so insufficient performance can be identified and addressed to prevent service disruptions to customers. We use a monthly report card to evaluate contractors on their energy savings achieved per home, customer survey (satisfaction) results, compliance to program rules and field inspection results. The monthly report card has been extremely successful in managing the contractors as the program quickly expanded.

Having a process for stakeholder input: This program touches tens of thousands of customers a year and various trade associations, non-profit organizations and other stakeholders have valuable input and suggestions. We solicit public comment on our annual plan, and feedback from customers themselves through customer surveys. Working with community-based groups has also provided value to our program and helped to generate leads.

Managing customer expectations: the HES program evolved from an energy audit program, so the messaging has shifted from targeting participation alone to selling home performance (Nowak, Kushler et al 2013, pp. 123-126).
Some of the key benefits of this approach included:

- Having a process for stakeholder input: This program touches tens of thousands of customers a year and various trade associations, non-profit organizations and other stakeholders have valuable input and suggestions. We solicit public comment on our annual plan, and feedback from customers themselves through customer surveys. Working with community-based groups has also provided value to our program and helped to generate leads.
- Managing customer expectations: the HES program evolved from an energy audit program, so the messaging has shifted from targeting participation alone to selling home performance (Nowak, Kushler et al 2013, pp. 123-126).

Summary of Best Practices for Joint Collaborative Programs

Table 1 highlights the industry best practices demonstrated in these programs. It also shows that while not every program includes every strategy, the most successful ones include most of them, especially regarding standardized rebate offerings, integrated and consistent training and installation guidelines, and flexibility to accommodate market changes. Where possible, these joint programs are also fuel-neutral when delivered by both electric and natural gas utilities.

Table 1: Summary of Joint-Utility Collaboration "Best Practices"

Joint-Utility Collaboration "Best Practices"	PIES	Mass Save Home Energy Services (HES) Program	CenterPoint & Xcel Energy Home Energy Squad	Home Energy Solutions (CT)
Economies of scale	✓		✓	
Integrated marketing, efficiency measures	✓		✓	✓
Integrated and consistent training on program protocols, guidelines installation best practices	✓	✓	✓	✓
Standardized rebate levels	✓	✓		✓
Fuel-Blind Approach		✓	✓	
Regular Communications with Key Stakeholders	✓	✓		
Flexible platform to accommodate market changes			✓	✓

Best Practices in Low-Income Programs

This section highlights some of the industry best practices in delivering low-income programs.

Columbia Gas of Ohio's WarmChoice: WarmChoice was one of the first utility weatherization programs in the nation to partner with the low-income community-based organization weatherization network to provide services. While originally designed as a stand-alone service, in 1994 the program experimented with a cost-share approach in which the program could share resources with Ohio's HWAP Program.

This program serves households whose income is at or below 150 percent of the Federal poverty guidelines (FPG). It specifically targets high natural gas usage households and households that have accumulated high arrearages

The program provides a wide range of natural gas saving energy efficiency measures (EEMs) that are determined through a comprehensive diagnostic home energy inspection.

This low-income program's best practices included:

- Using the Ohio WAP network to deliver program services reduced program start up and training costs, allowing the program to focus on quality assurance.
- Participating households begin to pay down past debt and/or avoid accumulating new debt. Targeting higher usage households results in higher savings.
- Increased incentives when customers implement multiple measures.

- Program savings improved over time due to on-going quality assurance and evaluation efforts.
- Integration of combustion efficiency and safety testing, blower door testing, and infrared thermography improved program savings (Nowak, Kushler et al 2013, 173-177).

Efficiency Vermont's Residential Low-Income Program: The Vermont Energy Investment Corporation (VEIC) has been delivering low-income energy efficiency initiatives to Vermonters for over 25 years. In total, Efficiency Vermont's programs were designed to reach over 85 percent of households earning less than 80 percent of median income.

Their strategy to serve low-income households leverages the partnerships with non-profit service providers who have developed trusted relationships with low-income households.

The second component includes a range of initiatives that reach as many low-income households as possible, address a variety of needs, and achieve Efficiency Vermont budget and performance obligations.

This low-income program demonstrated the following critical best practices:

- **Demonstrating the importance of partnerships:** Through partnerships with existing organizations serving Vermont's low-income population, Efficiency Vermont was able to leverage its pre-existing trust-based relationships between current programs and target customers and gain access to qualified customers.
- **Mission Alignment:** To build and strengthen partnerships, research and align missions with partner organizations. Efficiency programs that can directly support the mission of program partners are the most successful.
- **Providing comprehensive customer education:** Educating end-use customers is a critical component in developing demand and understanding of energy efficiency improvements. However, when program success is reliant on partnerships, comprehensive education must be provided to the supply chain as well.
- **Creating advocates for energy efficiency:** When Efficiency Vermont's partners wanted to install measures that did not pass Vermont's cost effectiveness screening threshold; they became advocates petitioning the Vermont Public Service Board for adjustments to the State screening tool. The results included a 15% non-energy benefit adder for all projects, an additional 15 percent non-energy benefit adder for low-income projects, and an adjustment to the discount rate. These adjustments allow Efficiency Vermont to support its partners in implementing deeper measures in low-income projects (Nowak, Kushler et al 2013, pp. 182-187).

National Grid's Low-Income Retrofit Program: This program targets residential electric and gas customers at 60 percent or below state median income. It uses two different approaches to reach the low-income sector.

***Single-family Approach*:** The program implements cost-effective, energy efficiency products and services directly for residential customers living in 1 to 4 unit dwellings in which at least 50 percent of the occupants are at or below 60 percent of the state median income level.

The initiative leverages all applicable revenue streams and piggybacks on current WAP program and is

consistent with a comprehensive, whole-house approach. This initiative has no customer co-payment required.

Eligible customers receive an in-home energy assessment from their local CAP agency. The assessment evaluates the building shell, efficiency and appliance conditions, and home health and safety. The CAP agency arranges installation of measures by a qualified contractor.

Thus, the single-family program operates in a fuel-neutral manner. All applicable revenue streams available for energy efficiency upgrades are leveraged to enhance services consistent with a whole-house approach.

The agencies perform 100 percent post-installation quality assurance inspection of projects to ensure that all work is performed in accordance with program guidelines. The agencies also perform a minimum of 50 percent in-process inspection of projects.

***The Low-Income Multi-Family (LIMF) Approach*:** Targets properties with five or more units in which at least 50 percent of the occupants are at or below 60 percent of the state median income level.

The LIMF initiative leverages all applicable revenue streams and provides cost-effective, residential energy efficiency improvements benefitting income-eligible occupants and owners of multi-family buildings. Energy efficiency products and services are implemented directly in the dwellings units as well as common area space. National Grid provides up to 100 percent of the cost-effective project costs.

Eligibility for LIMF measures and services is based on a cost-effectiveness test, which includes agreed upon non-energy benefits, and is not restricted by the rate class associated with the gas or electric meters in the buildings. Projects receive efficiency upgrades for buildings with high-energy consumption while requiring that applicants participate in benchmarking of their building's energy usage post-improvements.

Similar to Columbia Gas' WarmChoice, this program was also a model for other Program Administrators (PAs) in Massachusetts. This program leverages federal Department of Energy (DOE) and Health and Human Services (HHS) funding and is operated through local Community Action Program (CAP) network.

National Grid collaborates with the other Massachusetts Program Administrators (PAs), consisting of seven other Massachusetts utilities and one energy efficiency service provider in Massachusetts. This collaboration provides customers in dual territories with comprehensive fuel-blind assessments and offerings to eligible customers across the Commonwealth, comprising a consistent statewide low-income program.

A statewide low-income multi-family advisory committee reviews multi-family projects and distributes eligible facilities to each PA and their implementation vendors.

This low-income program demonstrated the following best practices:

- Develop target-specific strategies for both low-income single family and multi-family buildings that leverage federal funds;
- Provide measures in a fuel-neutral manner to ensure cost-savings and cost-effectiveness;
- Target high-usage buildings;
- Involve all appropriate sectors and stakeholders in the design and enhancements through monthly meetings to discuss items such as new cost effective measures/technologies to add to programs, quality control protocols, technical staff trainings, and customer educational materials.

(Nowak, Kushler et al 2013, pp. 182-187).

PECO Energy's Low-Income Energy Efficiency Program (LEEP)'s main goal of this program is to educate and assist eligible residential customers with making their homes more energy efficient. The program builds upon the Low-Income Usage Reduction Program (LIURP) objective: to make low-income customers' energy bills more affordable by helping to reduce energy usage. There are several program components:

1. In-home audits, education, and direct installation of measures for customers with household incomes below 200 percent of the federal poverty level (with a focus on those below 150 percent of the poverty level), and energy consumption of 500 kWh or more monthly for non-electric heating customers and 1,400 kWh monthly for electric heating customers.
2. Include up to ten additional CFLs, with weatherization improvements provided through weatherization programs other than LIURP.
3. Replace refrigerators in homes weatherized
4. LEEP will provide funding for the implementation of other measures using other contractors or agencies.

This program has incorporated several best practices that demonstrate the viability of using this type of approach in utility-sponsored low-income programs. These include:

- **Educational materials can lead to lasting changes.** The LEEP program combines customer education with the installation of energy efficiency measures and improvements, as part of its holistic delivery method. Customers who received these educational measures also reported high levels of both measure persistence and spillover.
- **Including both direct install and more comprehensive** weatherization measures is a highly cost-effective delivery strategy to low-income customers (Navigant 2012, pp. 7, 25-26).

Idaho Power's Weatherization Assistance for Qualifying Customers (WAQC): This program has been offering assistance to low-income customers for 24 years. Participating Community Action Partnership (CAP) agencies in Idaho and Oregon install a variety of cost-effective energy efficiency measures in qualified, electrically heated homes.

This program is also modeled after the Department of Energy's (DOE) Weatherization Programs, participating CAP agencies in Idaho and Oregon install a variety of cost-effective energy efficiency measures, including upgrades to windows, doors, wall, ceiling, and floor insulation, furnace tune-ups, repairs and replacements, water heater repair, refrigerator replacement, duct repair and sealing, pipe wrap, venting, infiltration measures, and compact fluorescent lamps (CFLs). Federal funds are allocated to IPC's service area based on the US census data of qualifying household income within each CAP agency's geographic area.

The CAP agencies oversee local weatherization crews and contractors, providing energy efficiency services including measure installation and customer education. WAQC funding allows these state agencies to leverage their federal dollars and serve more residences by supplementing the federal Low-Income Home Energy Assistance Program (LIHEAP) weatherization funds (Demand-Side Management 2012 Annual Report, p. 64).

The most recently completed process evaluation of this program identified additional best practices in both the marketing and outreach activities, as well as in program delivery and follow-through, which are described more fully in specific sections of this report.

Some low-income program best practices demonstrated by this program include:

- Successful integration of statewide weatherization agencies to effectively leverage federal funding;
- Combination of installation of both direct install and more complex weatherization measures to achieve deep and lasting energy savings;
- Specific program marketing and outreach materials for contractors and customers in hard-to-reach targets such as mobile home parks;
- Efficient program processing and invoicing procedures;
- Sufficient quality assurance/quality control procedures to verify and correct measure installations.

Idaho Power's Weatherization Solutions Program: This program is offered to those customers who do not qualify for the WAQC Program. It targets customers whose household incomes are between 175 percent and 250 percent of the Federal poverty level. This provides a chance to participate for residential customers who are financially unable to participate in cost sharing involved with other residential energy efficiency programs. The Weatherization Solutions Program is similar to the WAQC, but it is implemented by four private contracting firms who work either as a division of a Community Action Partner (CAP) agency (contractor) or as a separate LLC entity owned by a CAP which does not leverage any additional weatherization funding.

The program is similar in its focus on the "whole-house" concept as the WAQC program. However, this program was designed to fill the gap for those low-income households that "barely missed the income cut-off." This program was designed to help reduce the waiting list of customers for the WAQC program (Johnson & Eisenberg b 2013, p. 16).

Similar to the WACQ program, Weatherization Solutions also offers a variety of contractor-specific marketing materials that help target customers who may not be accustomed to seeking weatherization assistance. These materials have been very effective in reaching these program targets (Johnson & Eisenberg b 2013, p. 16).

In addition, this program serves another purpose by providing jobs for weatherization contractors after the American Recovery and Reinvestment Act (ARRA) funds were exhausted (Johnson & Eisenberg b 2013, p. 16).

Similar to its sister program, Weatherization Solutions has incorporated the following best practices:

- Innovative approach to reach customers who miss the cut-off for federal programs, but still need weatherization assistance;
- Proven model to create and sustain well-paying "green" energy jobs;
- Combination of installation of both direct install and more complex weatherization measures to achieve deep and lasting energy savings;
- Specific program marketing and outreach materials for contractors and customers in hard-to-reach targets such as mobile home parks;
- Efficient program processing and invoicing procedures;
- Sufficient quality assurance/quality control procedures to verify and correct measure installations.

Summary of Best Practices in Low-Income Programs

These low-income programs demonstrate the innovative ideas that can be incorporated into low-income programs (see Table 2). Most importantly, these programs have evolved into one-stop shop approaches that provide a mix of both direct install measures coupled with deeper retrofits to provide more savings that persist over time

Table 2: Summary of Low-Income Best Practices

Low-Income Program Best Practices	Columbia Gas WarmChoice	National Grid Low-Income Retrofit Program	PECO LEEP Program	Idaho Power's Weatherization Solutions Program	Idaho Power's Weatherization for Qualifying Customers
Using Statewide WAP network to deliver program services	✓	✓	✓		✓
Targets customers with high energy usage or high utility debt	✓			✓	
Integration of health, safety and imaging		✓		✓	✓
Involvement of key stakeholders at the statewide level	✓	✓		✓	✓
One-stop shop approach to reach deeper retrofits	✓	✓		✓	✓
Leverages use of DOE Funds		✓	✓		✓
Leverages utility funding level through HPwES contractors			✓	✓	

Best Practices in Program Delivery Strategies

This literature review also identified numerous examples of different types of delivery strategies to reach customers in the weatherization market. However a key feature of all these is that by simplifying the complex auditing process, it makes it easier for both the customer and building owner (for multi-family programs) to follow through with measure installations. The following program summaries provide additional insight into these approaches.

Another key feature of successful program delivery is the incorporation of CAP and other state agencies to provide a one-stop shop for the customer. The key success factor for end users was the program's ability to provide WAP, state, and other Federal funds into one comprehensive application thus making it easier for the customer to participate and implement multiple measures. This approach also allowed the utilities to apply DSM funds for energy efficiency measures.

Columbia Gas of Ohio's Home Performance Solutions simplifies the home energy audit process by looking for ways to simplify the application market based on feedback from customers and contractors. This flexible approach led to the development of a contractor "scoring system," creating a customer "kicker" that offers an additional incentive to encourage customers to complete energy efficiency upgrades, and a community-based marketing approach.

The program staff and implementers enacted these program changes while still maintaining strict data collection protocols including the mandatory use of infrared cameras and sidewall density calculation forms on all sidewall insulation jobs and Manual J heat load calculations for all HVAC jobs. (Nowak, Kushler et al 2013, pp. 106-109).

These efforts paid off resulting in a 20 percent increase in conversion rates, to 54 percent, and a shorter project cycle.

While adapting to the ever-changing market needs, program management has also adhered to the following industry a best practice including:

- Comprehensive BPI audits to include blower door testing, infrared thermography, combustion safety testing
- Integration of customer billing data to accurately model projected energy savings
- BPI certification requirements for energy auditors and installation crew leads
- Documented Materials & Installation Standards
- Program operations manual
- Rigorous hands-on continuing education plan for contractor network; including NATE training and certification, BPI Building Analyst training and certification, BPI Whole House Air Leakage Control Installer training and certification
- Mandatory use of infrared thermography and sidewall insulation density calculations, blower door guided air sealing, Manual J heat load calculations for HVAC system replacements ((Nowak, Kushler et al 2013, pp. 106-109).

PSE&G's Residential Multi-family Housing Program in New Jersey: This program was designed to address the market barriers and obstacles that prevent or impede affordable multi-family housing from participating in energy efficiency programs. Its approach is to bundle both rebates and cost-incentives to

tenants while also providing upfront payments to building owners. This eliminates the need for building owners to secure a loan to fund the capital investment in energy efficiency upgrades before the project begins. The program also provides on-bill financing for the customer share of the program costs.

This approach removes the key barrier of high upfront costs by providing financing to both the tenants and the building owners. The full cost of the energy efficiency upgrades is covered through a combination of PSE&G's buy-down incentive and zero- percent on-bill repayment/financing.

To achieve these program goals, PSE&G partnered with the New Jersey Housing and Mortgage Finance Agency (NJHMFA in the design and development the program projects (Nowak, Kushler et al 2013, pp. 182-187).

This innovative approach also incorporated a number of critical best practices that should be considered in developing multi-family program offerings including:

- Offer a flexible energy audit structure. Providing simpler, less costly audits where appropriate also saves the program money and allows program funding to be utilized by a greater number of participants.
- Align the progress payments with the customer's construction and cash flow schedules. From program implementation experience, the progress payment schedules were modified to provide payments commensurate with actual construction schedules.
- Recognize that not all audit-recommended energy measures will be approved for funding. The total project cost must meet cost effectiveness screening criteria, and second, there may be structural or health and safety related conditions present in the building that prevent the installation of some measures.
- Understand that project lifecycles can be long, sometimes up to 24 months. There may be long lag times between the time an audit is conducted and the customer decides to participate in the program. While the PSE&G program's design and results are highly effective; implementers need to understand potential project lifecycles and plan program resources accordingly (Nowak, Kushler et al 2013: pp. 197-201).

CNT Energy Savers Program: This program targets multi-family building owners located in seven Chicago-area counties and City of Rockford. The delivery approach is a one-stop shop model that helps building owners improve energy efficiency and reduce operating costs in their buildings.

Similar to PSE&G's program, each building receives recommendations for a comprehensive energy efficiency retrofit customized to the needs of individual facilities. Common measures targeted include insulation, air sealing, pipe insulation, high efficiency boilers, high efficiency hot water heaters, new boiler controls and high efficiency appliances.

In addition, this program follows a similar model as PSE&G by having utility staff members conduct a complete energy assessment of the buildings that includes an examination of utility bills and a comprehensive building audit. The audit includes an interview with the building operator and a visual and diagnostic inspection of the building envelop, public areas, representative living spaces and the mechanical systems, including HVAC, hot water and lighting equipment. CNT Energy then provides a report detailing recommended energy efficiency improvements.

However, this program also incorporates several innovative features including offering building services the following.

- Provide financial guidance and access to low fixed-rate loans to finance building improvements. In addition, the Energy Savers team helps building owners obtain grants or rebates that may be available through utilities or other sources.
- Offer construction support and oversight throughout the construction process, from developing a plan to inspecting installation work. Specific services include sending out bid proposals, reviewing bids, and assisting in implementing the recommended improvements by scheduling and monitoring.
- Ensure ongoing monitoring, education and continuing engagement to building owners to make certain that buildings are maintained and operated efficiently once the improvements are complete. The Energy Savers team trains building owners and maintenance staff in order to foster best practices for ongoing building management and ensure long-term savings.

  In addition, building owners who complete retrofits receive annual reports illustrating their energy and cost savings as a result of program participation. This helps to keep building owners engaged in efforts to continue to maintain and operate their buildings efficiently. If a building does not perform as well as expected, the Energy Savers team works with the owner to perform a tune-up at no cost.

This program illustrates the following program best practices:

- **Removed barriers to participation:** The one-stop-shop model of Energy Savers is key. Creating a resource hub for technical assistance, financing, utility rebates, and construction oversight is crucial to the program's high impact. The partnership with Community Investment Corporation, a trusted lending institution provides an effective entry point.
- **Determined that complex technical reports are not essential:** Original assessment reports were 15 pages long and included great detail of building science and heat transfer. After significant input from a marketing consultant, our current report is four to five pages.
- **Illustrated the importance of relationship building:** The Energy Savers team works directly with existing trusted information sources such as builders groups, housing authorities, and professional associations for program outreach. Additionally, we work with building owners who have completed retrofit work to share their stories via case studies, building tours, and features in publications and communications pieces.
- **Demonstrated that ongoing communication with building owners improves conversion rates:** Energy Savers has consistently improved the percentage of audited buildings that move on to implement energy efficiency upgrades. Techniques include an assessment report that focuses on cost and savings projections for the proposed ECMs and carefully planned "close the deal" meetings. Staff also follows up with owners who disengage from the process; individual attention helps owners move forward with investment decisions (Nowak, Kushler et al 2013, pp. 203-206).

National Grid's EnergyWise Program, Rhode Island: This is another combination program serving both single family (1 -4 units per building), market rate multi-family (five or more units per building) and

income eligible multi-family customers. The program offers a no-cost in-home energy assessment to evaluate a home's energy efficiency.

The home energy assessment includes a visit from an Energy Specialist who evaluates the home's energy use and provides a personalized summary of energy-saving recommendations with actionable steps to lower heating and cooling costs. Rebates of 75 percent of insulation costs up (capped at $2,000) and up to $750 worth of free air sealing for gas and electrically heated homes are available. Finally, 0 percent financing is available for the installation of qualified energy efficient improvements to the home. Income eligible services for multi-family customers are at no charge to the customer.

Specific measures targeted include:

- Energy assessment and customer education;
- Weatherization, including wall, attic, basement, pipe and duct insulation, and air sealing;
- Combustion safety testing of heating systems;
- Blower door analysis ;
- Installation of low-flow showerheads and faucet aerators, (CFLs) and LEDs ;
- Advanced power strips;
- Multi-family building measures include common area lighting fixtures, HVAC motors and controls, and heating systems

The program implementer oversees the day-to-day operations including scheduling, assessing and installing energy efficient instant savings measures such as advanced power strips and lighting and water conservation measures. In addition, the implementer coordinates the independent insulation contractors that provide air sealing and weatherization services when customers request follow on work. Finally, the lead vendor also conducts quality assurance inspections of all weatherization work.

Once a contractor is selected and scheduled, a blower door test will be conducted at the beginning of the workday before weatherization begins. Another blower door test is conducted at the completion of weatherization work. When work is completed, the program implementer conducts the quality assurance and quality control of weatherization services, provides invoicing to National Grid, and inputs savings achieved. A third-party vendor is also used to provide additional quality assurance inspections

Multi-family assessments proceed in a similar manner with an initial assessment of the facility. An additional component of the visit is that common room visits are included in recommendations. For units with more than 50 percent of occupants below 60 percent of the state median income level, all services are provided at no charge to the customer.

Although EnergyWise has been offered more than 20 years, there have been some significant changes in recent years including:

- Transition from a single vendor model to Lead Vendor role that oversees a pool of independent insulation contractors
- Emphasis on air sealing with no cost air sealing
- Emphasis on Building Performance Institute (BPI) training and certification

Some of the innovative best practices of this program include:

- In 2012, the EnergyWise program introduced the GetHouseFit. The messaging behind the

campaign communicates that an energy efficient home is a home that is fit. Similar to human fitness that takes continuous improvement, getting a house fit is not a one- time solution, but one step in a continuous process.

- Moving from a single-vendor implementation model to one where qualified independent insulation contractors were used to provide weatherization and air sealing. This change allowed more contractors to participate in state-funded programs, enhanced education and outreach to the contractors, and the change also positions the program for future growth (Nowak, Kushler et al 2013, pp 109-112).

The following table summarizes the program delivery strategies used by these programs.

Table 3: Summary of Program Delivery Best Practices

Program Delivery Best Practices	Columbia Gas of Ohio's Home Performance Solutions	PSE&G's Residential Multi-family Housing Program	CNT Energy Savers Program
Comprehensive audits to include blower door testing, infrared thermography, combustion safety testing	✓		
Integration of customer billing data to accurately model projected energy savings	✓		
BPI certification requirements for energy auditors and installation crew leads	✓		
Rigorous hands-on continuing education plan for contractor network	✓		
Offer a flexible energy audit structure		✓	
Align the progress payments with the customer's construction and cash flow schedules.		✓	
Understand that project lifecycles can be long, sometimes up to 24 months.		✓	
Removed barriers to participation through a one-stop shop		✓	✓
Determined that complex technical reports are not essential		✓	✓
Illustrated the importance of relationship-building		✓	✓
Demonstrated that ongoing communication with building owners improves conversion rates		✓	✓

Best Practices in Energy Financing Programs

On-bill financing generally needs to be complemented with other program approaches such as technical assistance, contractor training, and cash incentives to reduce the amount of loan needed or buy down interest rates. In some cases, the requirement for savings to exceed monthly bill payments can be a barrier to promoting deeper retrofits. However, on-bill finance does have promise, and has strong potential to penetrate markets that would not have access to upfront capital for energy-efficiency investments.

A fundamental consideration for establishing successful on-bill program is an understanding of how financial risks are distributed. Once that understanding is achieved, taking steps to mitigate and share risks amongst key stakeholders through innovative program design and the establishment of loan loss reserves could augment program success.

Understanding applicable laws and regulations is important. Given the variety of stakeholders associated with on-bill financing, technical assistance from policymakers and community-based organizations can contribute to program expansion and success (Bell, Nadel et al, 2011, p. 26)

Clean Energy Works of Oregon: Clean Energy Works began in 2009 as a pilot program run by the City of Portland. In 2010, the US department of Energy awarded $20 million to create a statewide nonprofit to expand the program beyond Portland and serve thousands of homeowners in urban, suburban and rural Oregon. CEWO also has funding from the State of Oregon, local governments, workforce investment boards and national foundations to support its efforts. CEWO is unique because it provides a one-stop program for whole-home energy upgrades in regions throughout Oregon.

According to the most recent program evaluation (CEWO 2013), this program has successfully expanded to a statewide offering by enrolling 39 active contractors working on more than 800 projects throughout the state.

The program completes approximately 1,500 projects annually. Its conversion rate, the number of customers who complete an audit who actually install measures, are between 36 to 39 percent, which is consistent with other Home Performance programs and well above the industry average of 25 percent.

This program offers a one-stop shop experience to help participants complete each of the program steps. Participants apply online through the program's web portal and receive advice from an "Energy Advisor." Energy Advisors are trained in building science and can give advice and step-by-step guidance to participants throughout their retrofit. (CEWO Staff, 2012)

Under this program, homeowners can finance up to $30,000 at a fixed interest rate for home energy efficiency retrofits for a variety of measures. Customers have varying lender and loan options depending on where they live.

There are now four lenders participating in the program and these loans expand beyond energy efficiency to also address other key customer drivers such as health, comfort and safety.

However, this program is delivered outside the traditional utility channels, and provides services independently including both installation and loan financing. To date, utilities provide rebates but are not directly involved in the on-bill financing aspect of this program.

This program is another successful example of the following industry best practices:

- Providing a simplified approach to a complex process: CEWO staff has spent a lot of time and energy to develop ways to identify and encourage customers to complete applications and install energy savings measures.
- Investing in a strong contractor network: CEWO provides coaching, mentoring, training, scholarships and supports the local weatherization trade association as a way to ensure a strong supply of qualified installers.
- Offering a competitive financing program directly to customers: CEWO successfully created a competitive market for energy efficiency loans in Oregon. This approach has not relied on using utility funding but rather includes a combination of rebates and loans to complete measure installations.
- Developed a "green jobs" program that pays a "livable wage" far exceeding the national standards. As part of the funding plan from ARRA, CEWO was required to ensure that all contractors pay an hourly wage well above the minimum as a way to develop green jobs (CEWO Evaluation, 2013).

How$mart Program: Midwest Energy is the first utility in the nation to voluntarily adopt a program like How$mart®. This program provides money for energy efficiency improvements such as insulation, sealing and heating and cooling systems to customers who will repay the funds through energy savings on their monthly utility bill.

Midwest Energy, a rural cooperative utility with 50,000 electric and 42,000 gas customers in western Kansas developed this program to serve primarily the aging existing housing market and increase measure installations in rental properties by addressing the split-incentives barrier.

Midwest Energy developed its program to leverage its in-house experience in home energy audits while providing a payment approach that funds energy improvements through the energy savings. In effect, Midwest Energy created a "residential ESCO" in which Midwest Energy identify cost-effective improvements through its energy audits, coordinates the installations through local improvement contactors, and then provides the financing on the tenant's utility bill. Repayment of the investment is subject to the same terms and conditions as traditional utility service.

Midwest Energy modeled this program after the Pay-As-You-Save® program that has been implemented on a limited basis by a rural electric cooperative in New Hampshire. Midwest Energy modified this program design and tailored it to meet its needs. The model received legislative support to allow utility service to be redefined such that investments in energy efficiency could be regulated by the Kansas Corporation Commission (KCC) under the governing utility statutes. Midwest Energy's proposal to implement a pilot program received regulatory approval from the KCC, and executive level support from the Kansas Energy Council – the energy advisory group of the governor.

This program has four key attributes:

- No up-front capital is required for qualifying investments. (Customers have the option of "buying-down" the cost of non-economic improvements when the projected savings will not cover the entire cost.)

- Efficiency is paid for on the utility bill. In this way, the program is similar to a traditional OBF program, but the regulation of the charge on the bill is no different than traditional utility service and subject to the same terms and conditions.
- The surcharge must be less than the savings estimate. A critical piece of this attribute is the integrity of the savings estimate. Midwest Energy uses auditing software that allows true statistical calibration, so the base home before improvements can be accurately modeled to reflect usage history. This gives considerably more accurate energy use projections when savings measured are installed. It should be noted that most energy modeling software (including the DOE REM/Rate models) were not designed for this.
- Repayment is tied to the premise. In this way, savings and the repayment for the efficiency investment stay tied together. This attribute allows the split incentive barrier to be bypassed - opening the door to the rental market. Careful considerations regarding notification to incoming tenants or purchasers of property with How$mart® obligations

Electric Cooperatives of South Carolina: Rural Energy Savings Program: Over the past several years, South Carolina electric cooperatives identified a serious need for energy efficiency investment in the residential market due to the growing number of cooperative members struggling to pay their increasing energy costs, difficulties managing peak loads, and the potential need for new power plants to handle the growing demand.

South Carolina's economic conditions are similar to Arkansas. For example South Carolina's per capita income was $23,688 in 2009 but energy expenditures in these households account for 22 percent of after-tax income. In addition, one-quarter of the state's cooperative customers live in manufactured homes, 35 percent of which were built before 1990 (Couick 2011).

South Carolina's on-bill financing programs are supported by Section 58-37-50 of the South Carolina Code of Laws. Section 58-37-50 passed in 2010 and allows for utilities to lend to their members (Couick 2011). The program currently used funds from USDA's Rural Economic Loans and Grants Program (REDLG). REDLG offers $740,000 loans at 0 percent interest for 10 years (Couick 2011).

The South Carolina program is a loan program as opposed to a tariff or service agreement that is tied to the building's meter. This allows for flexibility for homeowners that do not wish to stay in their home for the life of the loan, and eliminates split incentive issues for tenants who bear responsibility for their utility bills. In the event that a house that received a loan is sold, the new owner is informed of, and obligated to pay, the remaining amount. If a rental unit with a loan tied to the meter goes unoccupied, the loan is suspended, but still considered collectible, and the landlord bears no risk for repayment, unless the meter is still running (Couick 2011; Bell, Nadel et al 2011, pp. 8-9)

Our literature review also identified several other programs that include energy efficiency financing options. For example, Connecticut's HES program offers third-party consumer financing for energy improvement projects recommended and/or offered through HES. During the pilot period, more than 1,250 loans were funded to pay for $14.5 million in energy efficiency home improvements (Nowak, Kushler et al 2013, pp. 123-126).

Based on the success of the financing pilot, the utility companies in conjunction with the Connecticut Energy Efficiency Board, sought alternative financing models to reduce the costs. To qualify for the subsidized interest rates and obtain a loan, a customer must participate in the HES program. All measures or equipment financed must meet energy efficiency criteria including the HES participation criteria (Nowak, Kushler et al 2013, pp. 123-126).

PSE&G's Residential Multi-family Housing Program provides a three-step payment process, called "progress payments", to eliminate the building owner's need to secure a loan to fund the capital investment in energy efficiency upgrades before the project begins. Customers repay their share of the program installation costs over time, on their PSE&G utility bill, interest free. The program was designed so that the owner's share of the cost of the energy efficiency upgrades should be significantly offset by the cost-savings recognized as a direct result of the energy efficiency upgrade (Nowak, Kushler et al 2013: pp. 197-201).

The market for energy efficiency improvements is incredibly complex due in part to the number and diversity of different stakeholders involved, and in order for an on-bill program to succeed, the economic interests of each stakeholder needs to be addressed. Stakeholders include building owners, occupants, program funders, banks, utilities, contractors and the government (Sweatman and Managan 2010). Successful on-bill programs weigh the economic interests of key stakeholders, and leverage their awareness of environmental factors to optimize outcomes.

It is also important to note that elements from an on-bill program in an area with high rates of home ownership may not work well in a community with a concentration of multi-family housing units. Furthermore, the design of a program targeting multi-family units needs to carefully consider local rental agreements to determine whether landlords or tenants bear ultimate responsibility for energy bills so that they can determine who to offer on-bill service agreements.

Spasaro (2011b) highlights the following key principles for implementing on-bill programs (from a utility perspective: Keep it simple; Minimize defaults; and Comply with relevant lending laws (Bell, Nadel et al, 2011, pp.23-24)

Community-based organizations can play an important role in the implementation and administration of on-bill programs. They may assist program administrators in addressing stakeholder needs by offering knowledge and expertise regarding the community. Also, community-based organizations often have invested time and energy gaining trust and credibility and can work to market on-bill programs to prospective customers and support customers. (Gelman 2011 cited in Bell, Nadel et al, 2011).

A key lesson learned from this review is to demonstrate that each utility financing program has to address specific regulatory structures, meet particular needs of different communities, and comply with differing regional legal and regulatory landscapes. Therefore, these programs have to have flexible design features to open opportunities to markets that may not have had access to financing for energy efficient improvements in the past. However, this diversity can present challenges to defining key elements inherent to successful programs for the purpose of widespread replicability.

Table 4 summarizes these industry best practices.

Table 4: Summary of Financing Program Best Practices

Program Financing Best Practices	Clean Energy Works of Oregon	Midwest Energy's HowSmart Program	SC Rural Energy Savers Program
Keep participation process simple	✔	✔	✔
Follow proven industry models	✔	✔	✔
Provide financing options to meet moderate and lower income customers		✔	✔
Offer on-bill programs		✔	✔
Offer loan or non-tariff programs	✔		✔
Engage contractors in program delivery	✔	✔	✔

Summary of Other Weatherization Best Practices

These selected weatherization programs also provided additional insight into the critical "nuts and bolts" of running effective weatherization programs. Examples of industry best practices in each of the following topic areas have been gleaned from our review of these leading programs, described previously.

Multiple Contractor Delivery Systems

All of these weatherization programs have developed strategies to recruit, train, and continue to engage contractors that perform both the energy assessments and measure installations. Some of the best examples of good contractor engagement include MASS Save's HES Program that uses both Home Performance Contractors (HPC) and independent installation contractors (IIC) to complete weatherization projects.

All participating contractors must meet program eligibility and requirements. HPCs independently recruit customers, provide Home Energy Assessments, and implement weatherization measures. IICs provide installation of weatherization measures for those customers who received a Home Energy Assessment. IICs also have the opportunity to independently recruit customers and refer them for a Home Energy Assessment (Nowak, Kushler et al 2013, pp. 169-172).

Idaho Power relies on two separate groups of contractors to deliver its programs. The WAP agencies provide weatherization services to eligible low-income customers, which is similar to the approach used by the MASS Save and WarmChoice programs while its Weatherization Solutions program relies independent third-parties to install approved measures.

In addition, the EnergyWise program made a successful transition from a single vendor to a multiple vendor model which allowed more contractors to participate in the program thus also leading to good "green jobs" (Nowak, Kushler et al 2013, p. 112)

Therefore, it is possible to attract different groups of qualified weatherization contractors to participate in different program measures, by providing consistent installation protocols, guidelines, and standards. Consistency in the marketing approach is also a vital component that should be incorporated as well, as these programs demonstrate.

Trade Ally/Contractor Qualifications

Contractors are often the "program ambassadors" and they are therefore critical to developing a successful long-term program. NYSERDA found that more than half of their customers learned about the program from contractors (Fuller, 2009). Leveraging contractors' existing relationships to deliver program messages can be a cost-effective way to increase demand for comprehensive energy upgrades.

Contractors also play an essential role in that they perform the initial assessments to identify the types of energy efficiency improvements that are needed. Therefore, it is vital that these programs recruit qualified contractors who have the skill set needed to not just sell the program, but to also complete the assessments and make installations satisfactorily and safely.

Most programs require that contractors are on an approved list, and agree to perform extended warranty repairs for the duration of the repayment term at no cost to the participant. Contractors are also monitored for quality of work and underperforming contractors could be removed from the approved contractors list in many programs, including financing programs such as Clean Energy Works of Oregon, Midwest Energy, and Hawaiian Electric's SolarSaver Program. (Hee, 2012: Volker 2012, Johnson 2012)

MidWest Energy's How$mart Master Contractor list is simple: it is called "easy on, easy off." All the contractor has to do is agree to abide by local codes and complete the projects as prescribed in our Conservation Plan. On the other hand, shabby work, an unwillingness to fix problems, or refusal to abide by local codes or requirements will get the contractor quickly removed from the list (Volker, 2012).

The Home Energy Solutions Program demonstrated the importance of having a robust QA/QC process in its program delivery process. When working with contractors, expectations must be clear and measurable, so insufficient performance can be identified and addressed to prevent service disruptions to customers. The program uses a monthly report card to evaluate contractors on their energy savings achieved per home, customer survey (satisfaction) results, compliance to program rules and field inspection results. This has been a successful program management school (Nowak, Kushler et al 2013, pp. 123-126).

Columbia of Ohio's WarmChoice also personnel perform Quality Assurance inspections of strategically-selected homes in order to identify continuous improvement opportunities for the program. (Nowak, Kushler et al 2013, pp. 173-177)

This program also has a rigorous quality assurance plan in place requiring with 100 percent of the first 10 jobs inspected and an additional 10 percent thereafter. The Contractor Scoring System provides a systematic approach to evaluate the contractors' quality of work. (ACEEE 2013Report, p. 107)

Idaho Power has a similar quality assurance/quality control standard for its utilities to ensure that ensure the measures are properly installed. IPC conducts QA/QC of 10 percent of the completed jobs. For those installations that are in remote parts of IPC's territory, they rely on local IPC staff to conduct these QA/QC inspections (Johnson & Eisenberg 2013, a p 19; b. p. 20)

Contractor Training

It is not sufficient to simply recruit contractors into the program; successful programs also invest in contractor training. The Energy Trust of Oregon supports the Home Performance Contractors Guild, a local trade association, by offering both training and support to strengthen the home performance

contracting community in the state. Similarly, CEWO has provided contractors with Executive Coaching, mentoring, and business management classes as ways to ensure that their contractors are equipped to deal with the anticipated program volume (CEWO Staff, 2012; Energy Trust Staff, 2012).

The most successful energy efficiency programs also require higher standards such as certification by the Building Performance Institute (BPI)(Fuller, 2009).

Continuous "Test-and-Learn" is necessary to improve participation among all customer demographics and increase savings through new technologies (Nowak, Kushler et al 2013, pp. 169-172).

In addition, the Columbia Gas of Ohio offers contractors a robust continuing education program now exists for the contractor network, including BPI Building Analyst and Whole House Air Leakage Control Installer training (Nowak, Kushler et al 2013, pp. 107).

Table 5 highlights just some of the ways that these best program practices have been incorporated into some of the leading weatherization programs featured in this review.

Table 5: Summary of Other Weatherization Program Best Practices

Other Weatherization Program Best Practices	Columbia Gas of Ohio	Clean Energy Works of Oregon	Mass Save
Provide multiple delivery options	✓	✓	✓
Establish robust contractor requirements	✓	✓	✓
Provide Strong Contractor Training	✓	✓	✓

Best Practices in Target Marketing

NSTAR & National Grid through its Community Mobilization Initiative Partners partnered with a multi-stakeholder group called the Green Justice Coalition to reach and mobilize local residents in ethnically diverse communities. In Chelsea, the utilities engaged the Chelsea Collaborative (CC to reach out to homeowners and tenants who live in one- to-four-family and multi-family buildings. (need source)

Home Energy Squad program was designed with three under-served customer segments in mind: savvy household managers (interested in saving money), busy professionals (interested in saving time), and people with the interest but not the skill to make energy efficient home improvements (interested in avoiding hassle) (Nowak, Kushler et al 2013pp. 112-117).

EnergyWise in Rhode Island supports multiple customer segments. Customers include single family (1 -4 units per building), market rate multi-family (five or more units per building) and income eligible multi-family (Nowak, Kushler et al 2013, pp. 109-112).

The primary focus for Columbia Gas' of Ohio's were to target customers with high usage (>100 Mcf per year) and customers already replacing an existing furnace. Customers who live in homes built before the implementation of Ohio residential building energy codes are considered primary targets for this program (Nowak, Kushler et al 2013, pp. 106-109).

Columbia Gas' WarmChoice Program targets high natural gas usage households and households that have accumulated high arrearages under Ohio's Percentage of Income Payment Plan (PIPP). (Nowak, Kushler et al 2013, pp. 106-109).

Some utilities have been successful using customer energy usage data to determine which customers are high energy users and thus target these high energy users for program outreach. Some utilities mentioned the potential to use programs such as O-Power to identify and target high energy users.

In its 2010 Annual Report, PG&E concluded that in the future, "only homes built prior to 1992 that are occupied by a qualified low-income customer will qualify to participate in the program in order to increase the energy savings yield per measure of the program." PG&E has concurrently developed an identification process to "target customers within each neighborhood based on energy usage." Similarly, an NV Energy's Annual Report stated, "To improve the cost-effectiveness of the program in light of decreased savings per measures . . . it will be necessary to refocus the program on low-income homes that will yield greater energy savings for the measures implemented."

Marketing/Outreach

Broad-based statewide marketing such as billboards and radio can drive recognition and participation in programs. (Leaders of the Pack ACEEE Report, pp. 169-172)

From a branding perspective our customers wanted simplicity so the utilities created a program name and logo that emphasized a team of helpful professionals and de- emphasized the complexities of the two-utility combined gas and electric delivery platform. innovation (Nowak, Kushler et al 2013, pp. 112-117)

From a marketing perspective the utilities learned that customers are changing from year to year, so they have adapted the messaging to stay relevant. At first traditional print marketing was effective at reaching customers interested in energy efficiency. Then the utilities shifted to direct engagement via telemarketing and door knocking to go after customers who were willing to participate but less pro-active. The utilities also created several online discount campaigns to entice customers who were interested in a good deal: innovation (Nowak, Kushler et al 2013, pp. 112-117).

In 2012, the Rhode Island's EnergyWise program introduced the GetHouseFit campaign. The campaign messaging communicates that an energy efficient home is a home that is fit. Similar to human fitness that takes continuous improvement, getting a house fit is not a one- time solution, but one step in a continuous process (Nowak, Kushler et al 2013, pp. 109-112).

The Collaborative spread the word bilingually and publicized the program at community meetings, open houses, and local holiday celebrations. Collaborative members used local access television to record two bi-lingual programs, sent out targeted mailings to hundreds of Chelsea residents, and emails to their own members. The group worked closely with City of Chelsea administrators, who supported the effort with email, program announcements in monthly water bills, and information on the programs to multi-family property owners specifically designed to meet their needs. As a result of these efforts, over 30 home energy assessments were scheduled within a four-week (Mass Save p. 7).

Nicor Gas used a campaign built around a "Staycation". This campaign encouraged residential customers to participate in the Nicor Gas Home Energy Efficiency Rebate Program during the off-season months, by

upgrading one or more pieces of HVAC or water heating equipment in their home. The campaign included five promotional offerings tied together with a cohesive marketing theme created to resonate with customers. Staycation delivered 250% of the forecasted energy savings. As an interesting tidbit, Nicor Gas included the campaign end date in all of its promotion. They believe this instilled a "sense of urgency" in the customers and contributed to the overall enrollment success of the campaign.

Columbia Gas' of Ohio's Home Performance Solutions Program specifically targets customers with high usage (>100 Mcf per year) and customers already replacing an existing furnace. Customers who live in homes built before the implementation of Ohio residential building energy codes are also primary targets for this program. (Nowak, Kushler et al 2013, pp. 106-109).

Idaho Power's WAQC Program also has developed some innovative promotional materials for this low-income program. These include providing a dedicated webpage with program information located at IPC's website.

IPC also provides customer educational materials to CAP agencies on ways to encourage customers to save energy through low cost/no cost strategies and simple energy tips. IPC did provide marketing materials for customer representatives to leave in low-income communities, such as mobile home parks, as a way to generate increased awareness about this program. (Johnson & Eisenberg a, 2013, p. 4)

IPC provides basic information about the Weatherization Solutions Program on its website and provides referrals to the four participating contractors which has been very effective (Johnson & Eisenberg b, 2013, p. 16)

IPC also developed several other marketing materials for the Weatherization Solutions Program including a brochure and a door hanger. In these materials, the income guidelines and measure descriptions are prominently displayed. These materials also allow for co-branding with the four weatherization contractors, which makes it easy for them to leave brochures behind at customers' homes when they are in the area. Overall, the marketing messages are clear, easy to understand and provide the most critical information and a clear call to action (Johnson & Eisenberg b, 2013, p. 16)

- Innovative marketing ideas to respond to the market needs, including the Neighborhood Home Performance program—an approach wherein entire communities can be qualified for the additional benefits based on the average median income of the community, not the individual—also represent the fluid nature of the program.
- The program boasts an impressive 54% conversion rate.
- A robust continuing education program now exists for the contractor network, including BPI Building Analyst and Whole House Air Leakage Control Installer training

Sell Something People Want

Recent research has concluded that success in motivating comprehensive home energy improvements will require program sponsors to find new ways to understand and appeal to the wants of specific customer segments (Zimring et al., 2011) and close coordination with capable program partners is necessary to craft effective messages and expedite productive services (Brown, 2011).

In order to increase the value of energy efficiency improvements in the eyes of homeowners, programs should highlight the benefits of the improvements that are most appealing to homeowners. A recent

process evaluation of Clean Energy Works Portland (the pilot program for CEWO) revealed that saving energy is a higher motivator for energy efficiency improvements than lowering heating bills or having a more comfortable home, and the lowest motivating factor is to increase the overall value of their home (Peters, 2011).

Promote messages that equate efficiency improvement with home improvement. Messages that appeal to homeowner desires to improve property value and home comfort have great potential to capture lost opportunities during remodeling or system upgrades. Thorne notes that homeowner spending on home improvements reached $104 billion in 1999 and is expected to match or even surpass spending on new construction Quantum Consulting Inc. R4-39 Best Practices -Residential Single-Family Comprehensive Programs by 2010 (Thorne 2003). Program managers should make every effort to align the interests of energy efficiency with broader home improvement activities (Quantum Consulting, 2004)

Meet Customer Needs

An important first step of program marketing is to segment customers into key groups to better address their needs. Potential energy financing program participants fall into two categories: those who are "proactively" seeking out home energy improvements and those who are "reactively" trying to make an emergency purchase to replace failing equipment.

Peter Krajsa, Chairman and CEO of AFC First Financial, administrator to the Keystone HELP program in Pennsylvania, contrasts the "twilight zone" dislocation that confronts the reactive consumer contemplating the fallout from putting a $5,000 emergency furnace replacement on his/her credit card with the thoughtful proactive consumer looking to maximize economic returns from a major home performance investment. The Keystone HELP program's tiered interest rate structure, secured and unsecured options, and incentive bundles are carefully geared to appeal in different ways to these two different motivations.

Some of the most successful programs offer different tracks to meet the needs of different customer groups. For example, Connecticut's Home Energy Solutions offers seven different program tracks that a designed to meet specific customer needs. This type of program flexibility goes a long way to providing specific services that customers want.

Avoid "Energy Jargon"

Another critical best practice is not to rely on "energy jargon" but rather use language that is constructive to earn trust and avoid turnoffs with customers.

When developing marketing materials, programs should consider that the language used to describe the program affects how participants react to the program offering. The language used should be easy to understand and carry positive connotations.

The Energy Upgrade California Program Team created a glossary of preferred words based on work they carried out. Examples include using "home improvements" instead of "home retrofit" or "home renovation." The term "home energy assessment" was preferred over "audit" as the latter was found to suggest scrutiny of the homeowner's worthiness. (Brown, 2011)

The suggested terms include the following:

- "Improvements," "home improvements," and "home efficiency improvements" are recommended while "retrofit" and "remodel" are discouraged because of their suggestion of a more extensive project consuming significant time and money.
- "Home energy assessment" suggests opportunity while "audit" foreshadows scrutiny of one's worth as a homeowner.
- "Home" is warmer than 'residence.'"

One Touch Is Not Enough"

Another marketing best practice for these types of programs is the notion that "One Touch Is Not Enough" but that marketing and outreach campaigns need to repeatedly "touch" potential participants. Programs should take steps to ensure customers receive consistent and/or coordinated messages, across the multiple touches, especially if there are multiple program messengers (Brown, 2011; Hayes, Nadel & Granda, 2011). In Oregon, the Clean Energy Works program has included a significant marketing effort, using utility mailers, targeted e-mails, and radio and print ads. Home owners are recruited through social marketing targeted to neighborhoods and include open houses, door hangers, and information tables at local events. These marketing efforts have been crucial to achieve participation goals and maintaining public interest (Hayes, Nadel & Granda, 2011).

Other programs use monthly energy consumption data comparing one house to its neighbors and utility averages. This type of campaign can create an awareness of the potential to save energy and costs thus motivating customers to participate in programs as they realize the magnitude of energy savings and that the potential real.

All of the Best Practice programs reviewed employed multiple channels to reach customers. These include utility marketing, installation contractors, CAP agencies, county assistance agencies, and other government entities to maintain the message and availability of the programs.

Many of the utilities studied are beginning to use social media as an additional channel to disseminate the program message. Although very general in nature, the messaging increases program awareness and participation as more people learn about the program and the benefits to participation. The utilities indicating the use of social were not able to quantify results as yet but were initiating marketing evaluations to determine the effectiveness of this approach.

Engage the Wider Community

Outreach and marketing to engage the community is another vital component of any successful energy efficiency retrofit program. It may be productive to coordinate with existing community structures such as Cooperative Extension Services county offices, local Weatherization Assistance Programs providers, and other community-based organizations. (Options for Clean Energy Financing, 2010). Examples of financing organizations using community-based marketing include: The Cook County Energy Savers program sponsors found that the most effective outreach strategies for multi-family property owners come in partnering with organizations including community-building groups, landlord associations, and associations of housing developers (Brown, 2011).

In 2012, the EnergyWise program introduced some innovative program enhancements. First, the

GetHouseFit campaign was introduced. The messaging behind the campaign communicates that an energy efficient home is a home that is fit. Similar to human fitness that takes continuous improvement, getting a house fit is not a one- time solution, but one step in a continuous process.

The next program enhancement was to move from a single-vendor implementation model to one where qualified independent insulation contractors were used to provide weatherization and air sealing. This change allowed more contractors to participate in state- funded programs, enhanced education and outreach to the contractors, and the change also positions the program for future growth (Nowak, Kushler et al 2013, pp. 109-112)

From a branding perspective our customers wanted simplicity so the utilities created a program name and logo that emphasized a team of helpful professionals and de- emphasized the complexities of the two-utility combined gas and electric delivery platform.

From a marketing perspective the utilities learned that customers are changing from year to year, so they have adapted the messaging to stay relevant. At first traditional print marketing was effective at reaching customers interested in energy efficiency. Then the utilities shifted to direct engagement via telemarketing and door knocking to go after customers who were willing to participate but less pro-active. The utilities also created several online discount campaigns to entice customers who were interested in a good deal.

From a program design perspective the utilities learned to use the flexibility of the delivery platform to accommodate different energy saving measures and changing customer demand. In 2011 window weather-stripping was phased out to improve the cost effectiveness of the program. In 2012 water heater temperature setback services were added to capture additional energy savings. Finally, in 2013 the utilities are adding an optional blower-door test component to entice customers who value the direct-install piece but also want more advanced diagnostics. (Nowak, Kushler et al 2013, pp. 112-117)

Customer Follow up

Perhaps one of the most effective examples of customer follow up is demonstrated in CT's Home Solutions Program. A critical part of this program is the "kitchen table wrap-up" which provides customers with a road map of opportunities and options including rebates, tax credits, on bill financing and next steps.

In 2012, a mobile application was developed to streamline data collection and generate custom reports for the customer to enhance the kitchen table wrap up experience. As the program has grown, the vendor base has been successfully managed using a report card that evaluates contractor performance based on energy savings achieved in each home, field inspection results, customer surveys, and compliance with program rules. In addition, contractors are required to follow up with customers concerning implementation next steps (Nowak, Kushler et al 2013, pp. 123-126)

The City of Houston targets a neighborhood and sends a letter to every household; this effort results in an approximate sign-up rate of 10% of the residents. Then the city connects with community leaders, the city council member from the community, church groups, neighborhood associations, and others to get the word out. They follow that with a block party featuring food and music to attract more participants. These techniques are relatively inexpensive because they rely on volunteer support, but they have resulted in 40

to 80 percent participation rates, depending on the neighborhood (Fuller, 2009)

This program bundles multiple energy upgrades into a one-time, one-stop home energy remodel and equips homeowners with expert guidance from start to finish. (Going Beyond Green: Spring 2011 Newsletter)

Midwest Energy goes a step further by creating a "conservation plan" as part of the audit, which is essentially the work scope that contractors must follow in order for participants to receive funding. This approach ensures that only the most cost-effective measures are completed, while also simplifying the decision-making process for customers (Fuller, 2009).

Similarly, the EnergyWise Program provides An Action Plan detailing additional weatherization and air sealing recommendations is provided at the completion of the assessment. If a customer proceeds with additional work, a contractor is scheduled by the implementer to perform the follow-on work (National Grid's EnergyWise Program, Rhode Island**,** and Nowak, Kushler et al 2013, pp. 109-112).

Educational Materials

Another key area to focus on for energy efficiency weatherization programs is to provide educational materials that both engage and encourage future action by program participants.

PECO's LEEP program combines customer education with the installation of energy efficiency measures and improvements, as part of its holistic delivery method. The customer findings overwhelming indicate that the educational materials are useful and effective, (PECO LEEP Evaluation Research, 2011, pp. 5-6).

One of the most effective strategies has been to provide program participants with an energy savings calendar that includes low-cost/no-cost savings ideas with seasonal tips. Since it is a calendar, it serves to reinforce program messages throughout the year.

Consumers Energy's Building Blocks Program: This pilot program took an innovative approach to reach traditional lower income households by combining traditional marketing and outreach activities with educational workshops. The pilot, introduced in 2013, focused on a four-stage approach to engage low-income customers, using the motto of "teaching a man to fish."

Program participants were recruited at energy outreach meetings to participate in the initial program intake process. Then, they completed a series of educational workshops that taught them how to self-install a variety of weatherization measures including caulking and insulation, in addition to low flow showerheads and faucet aerators.

Figure 1: Building Blocks Program Lifecycle

One innovative feature of this program is that it directly rewards customers for positive actions that improve energy efficiency in their homes, and that those actions are self-driven. Throughout the program lifecycle each participant receives, or has the possibility of receiving, a variety of cash and non-cash incentives for their participation in the program such as:

- Receive a variety of incentives, including a $25 bill voucher for each workshop attendance
- Prize opportunities, including a prize ticket for each completed do-it-yourself task
- Weekly drawings for replacement front door
- Grand prize including a “whole home” weatherization

This program demonstrates the importance of engaging customers by providing them with not just general education awareness, but also specific recommendations that they can do on their own to achieve energy savings.

Table 6 highlights the ways in which these marketing and outreach best practices are used by some of the programs featured in this literature review.

Table 6: Summary of Marketing/Outreach Best Practices

Other Weatherization Program Best Practices	Rhode Island's EnergyWise Program	Consumers Energy Building Blocks Program	Clean Energy Works Oregon	PECO's LEEP Program
Use multiple marketing outreach delivery strategies	✓	✓	✓	✓
Sell something people want	✓	✓	✓	
Meet customer needs	✓	✓	✓	✓
Avoid energy jargon	✓	✓	✓	✓
One touch is not enough	✓	✓	✓	✓
Engage the wider community		✓	✓	✓
Encourage customer follow up	✓	✓	✓	✓
Provide customer educational materials	✓	✓		✓

Cost Effectiveness

The cost-effectiveness criteria for weatherization programs are largely driven by the type of program or market segment. Generally, programs targeting the hard-to-reach market segment tend to not be cost-effective, with a few exceptions. PECO's LEEP program cost-effectiveness ratio is above 2.0 because the program provides an extensive suite of weatherization measures, including CFLs.

However other weatherization programs may have lower cost-effectiveness results. But the review of weatherization best practices revealed that the most cost-effective programs are those that leverage measures with high benefit-cost ratios with measures with lower cost-benefit ratios as a way to provide both flexibility and program comprehensiveness. This strategy was successfully used by the Home Energy Solutions Program in Connecticut (Nowak, Kushler et al 2013, pp. 123-126).

In addition, PSE&G Residential Multi-family Housing Program is also cost-effective with a TRC result of 1.39 (Nowak, Kushler et al 2013, pp. 197-201)

Conclusions and Recommendations

This literature review provided a wealth of information on ways in which utilities, energy organizations, and stakeholders are successfully implementing weatherization programs. While each section offered insight regarding specific program tactics, the key findings from this review highlighted the following conclusions:

- **A successful weatherization program needs to be flexible to adapt to market needs.** Therefore, any program developed in Arkansas will need to be monitored, reviewed and revised on an ongoing basis to ensure it remains relevant to current market conditions, includes new technologies and addresses customer market segments successfully.
- **There are proven program strategies that can be adapted to meet the specific needs for Arkansas' investor-owned utilities.** Rather than starting from scratch, this literature review, coupled with the Summary of Current Weatherization Programs and the Gap Analysis, identified several areas in which Arkansas has already developed key program features. By incorporating the features of the weatherization programs profiled in this review, the Arkansas PWC has a strong foundation on which to build a unified statewide approach.
- **The Commission goals for this statewide weatherization approach are consistent with industry best practices.** The literature review provides the PWC members with additional ideas on the way to include these program tactics in future program plans or modifications of existing program designs.

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