



GILL RAGON OWEN, P.A.
ATTORNEYS AT LAW
425 WEST CAPITOL AVENUE, SUITE 3800
LITTLE ROCK, ARKANSAS 72201
TELEPHONE 501.376.3800
FACSIMILE 501.372.3359
www.gill-law.com

LAWRENCE E. CHISENHALL, JR. | ATTORNEY
EMAIL: chisenhall@gill-law.com

May 1, 2023

Ms. Jennifer Ivory
Secretary of the Commission
1000 Center Street
Little Rock, AR 72223

Re: APSC Docket No. 07-075-TF

Dear Ms. Ivory:

Please find attached the 2022 Arkansas Energy Efficiency Program Portfolio Annual Report of Oklahoma Gas and Electric Company for filing in the above-referenced docket.

Should you have any questions regarding this matter, please do not hesitate to contact me.

Respectfully,

/s/ Lawrence E. Chisenhall, Jr.

Lawrence E. Chisenhall, Jr.



**OKLAHOMA GAS and ELECTRIC
COMPANY**

**2022 Arkansas Energy Efficiency Program Portfolio
Annual Report**

**Section 9: Annual Reporting Requirements, and Order No. 29 in Docket No. 06-004-R.
Version 3.0 May 20, 2014**

May 1, 2023

Table of Contents

1.0 Executive Summary	3
2.0 Portfolio Programs	12
2.1 Consistent Weatherization Approach.....	12
2.2 Home Energy Efficiency Program.....	15
2.3 Commercial Energy Efficiency Program.....	19
2.4 Energy Efficiency Arkansas Program.....	22
3.0 Supplemental Requirements	24
3.1 Staffing.....	24
3.2 Stakeholders Activities	25
3.3 Information provided to Customer to Promote EE	27
4.0 EM&V Contractor Reports	28
Attachment A: EM&V of OG&E Programs and Cost Benefit Analysis	
Attachment B: Samples of OG&E Promotional and Educational Materials	

1.0 Executive Summary

Oklahoma Gas and Electric Company (“OG&E” or “Company”) hereby submits its Energy Efficiency (“EE”) program portfolio Annual Report for Program Year (“PY”) 2022 to the Arkansas Public Service Commission (“APSC” or “Commission”) pursuant to Order No. 29 in Docket 06-004-R. This report is required to be filed annually by May 1, in accordance with Order No. 7 filed in Docket 13-002-U on May 20, 2014.

HISTORY:

OG&E began implementation of EE programs in Arkansas in December 2007 with its Quick Start program portfolio. The Quick Start Portfolio continued through December 31, 2009. That portfolio contained seven programs in total: five OG&E-administered programs and two state-administered programs. The OG&E-administered programs included the LivingWise[®] Student Energy Education program, the Residential Energy Audit program, the Commercial Lighting program, the Motor Replacement program, and the Compact Fluorescent Light (“CFL”) program. The two state-administered programs included were the Arkansas Weatherization Program (“AWP”), and the Energy Efficiency Arkansas (“EEA”) program. The CFL program was not launched with the other Quick Start programs and was ultimately discontinued. The Quick Start portfolio allowed OG&E to build a program delivery framework for its customers in the Arkansas jurisdiction.

The initial Comprehensive Energy Efficiency Program was approved on February 3, 2010 for an 18-month implementation period ending on June 30, 2011. The initial Portfolio included the continuation of the two statewide programs, AWP, and EEA, and three OG&E programs: LivingWise[®] Student Energy Education, Commercial Lighting, and Motor Replacement programs. The Residential Energy Audit program was renamed the Custom Energy Report (“CER”) program and the new OG&E Weatherization program was introduced. The OG&E Weatherization program was established to offer weatherization for residential customers who would not otherwise qualify for the AWP.

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

the C&I SOP, the Commercial Tune-up program was created to inspect and tune commercial HVAC systems.

In January 2013, the APSC opened Docket 13-002-U to resolve issues related to the development and implementation of the second three-year cycle of EE programs in Arkansas. In Order No. 2 of that same Docket, the APSC approved the request of the Parties Working Collaboratively (“PWC”) extending the filing date for the second three-year cycle of EE programs from June 1, 2013 to June 1, 2014. The Commission also directed that energy savings targets, budgets, and the incentive structure previously approved by the Commission shall also be used for PY 2014. The exception to this was if the Utilities sought Commission approval of proposed modifications to their EE portfolios.

OG&E reviewed its portfolio performance through 2013 and filed an application to modify its existing portfolio and enhance its ability to achieve Commission-approved targets for 2014. OG&E’s interim filing proposed to modify its portfolio by discontinuing three programs, adding one new program, increasing the budget for industrial programs, and aligning its rebate structure with Commission approved targets. The three programs that were discontinued were the Residential HVAC program, the Commercial and Industrial HVAC program, and the Window Unit AC program. The new program added was the Multi-Family Direct Install program. On March 17, 2014, the Commission approved OG&E’s modified portfolio.

In February 2014, the APSC issued Order No. 15, in Docket 13-002-U extending for a second year, the filing date for the second three-year cycle of programs to June 1, 2015. The extension allowed time to complete efforts to develop a collaborative weatherization program, core C&I programs, and complete a potential study. In addition, the Commission approved a target increase of 0.90 percent of 2013 kWh sales for PY 2015. To meet the increased target for 2015, OG&E filed an application to increase the budgets by 40 percent for 3 of its programs to enhance its ability to achieve the new target. On April 1, 2015, the APSC approved OG&E’s budget increases for PY 2015.

In August 2015, the APSC issued Order No. 67, in Docket 07-075-TF approving OG&E’s PY 2016 Portfolio of Programs. Modifications made from PY 2015 to PY 2016 include the discontinuation of the AWP program, additions to the measure mix, and resulting budget increase for the OG&E/AOG (Unified) Weatherization program.

On June 1, 2016, OG&E filed the next triennial 2017-2019 Portfolio Plan and was approved by the Commission on October 7, 2016 through Order No. 73 in docket 07-075-TF. The most significant change from the prior portfolio is the consolidation of programs into sector-specific umbrella programs offering multiple marketing channels to improve accessibility to incentive funds when one channel is performing in a more cost-effective manner than another. The Commercial Lighting and Standard Offer Programs were combined into one Commercial Energy Efficiency Program (“CEEP”) with multiple marketing channels such as Schools and Government, Large C&I, and Small Business Solutions. Multi-Family Direct Install and Schools Energy Education (LivingWise®) were both combined into a Home Energy Efficiency Program (“HEEP”) with additional channels such as Consumer Products, Residential Solutions, and HVAC Replacement and Tune-ups. The Consistent Weatherization Approach (“CWA”),

referred to as the OG&E/AOG (Unified) Weatherization Program (“UWP”) in Annual Reports previous to Order No. 22 of Docket No. 13-002-U, and the EEA Program remained unchanged as stand-alone programs.

On March 8, 2018, OG&E filed for the inclusion of the Continuous Energy Improvement (“CEI”) Pilot Program for 2018 and 2019 into the existing CEEP Program in the 2017-2019 Portfolio Plan and was approved on March 23, 2018 through Order No. 80, in Docket 07-075-TF.

On March 15, 2019, OG&E filed the next triennial 2020-2022 Portfolio Plan and was approved by the Commission on June 17, 2019 through Order No. 88 in docket 07-075-TF. To assist in addressing Act 1102 Low-Income and over age 65 customers, OG&E carved out five percent of the CWA Program funds and incorporated additional health and safety measures. A soft cap of \$3,800 per home was implemented. The HEEP Program placed more emphasis on in-home assessments with direct install measures to drive participation in HVAC tune-ups and replacements to offset the reduction in lighting kWh savings. It also targeted remaining cost-effective envelope measure opportunities as it begins to move away from lighting due to the anticipated EISA baseline changes. CEI and Retro-Commissioning (“RCx”) channels were added to the CEEP Program.

In October of 2021, the APSC issued Order No. 62, in Docket 13-002-U approving Program Year 2023 as a bridge year and adopted Program Years 2024-2026 as the next triennial period of EE programming. The Commission also directed that energy savings targets, budgets, and the incentive structure previously approved by the Commission for PY2022 shall also be used for PY2023. The Commission amended the current 10 percent budget flexibility provision for Program Years 2021, 2022, and 2023, allowing utilities the unilateral ability to shift up to 20 percent of any program budget, with the exception of Act 1102 pilots and programs, to another without notice, as well as reinstate the budget flexibility provision that allows utilities to increase their overall EE Portfolio budgets by up to 10 percent without formal notice, provided that the utilities reasonably anticipate that the overall Portfolio plans will remain cost effective with the 10 percent flexibility. A second EE Potential Study was also approved which will inform the 2027-2029 filing.

Table 1-1 below summarizes historical annual incremental EE savings achieved by OG&E’s previous efforts:

Table 1-1 Historical Annual Incremental EE Savings Achieved

Program Year	Energy (kWh)	% Increase from Prior Year	Demand (kW)	% Increase from Prior Year
2008	2,434,738		666	
2009	5,607,951	130%	921	38%
2010	4,143,096	-26%	1,317	43%
2011	4,985,328	20%	1,520	15%
2012	7,595,741	52%	1,840	21%
2013	13,410,729	77%	2,797	52%

2014	13,794,070	3%	2,883	3%
2015	20,543,040	49%	3,115	8%
2016	23,257,181	13%	3,434	10%
2017	21,130,663	-9%	3,396	-1%
2018	22,556,832	7%	3,974	17%
2019	26,071,158	16%	4,591	16%
2020	28,050,242	8%	4,878	6%
2021	28,540,540	2%	5,479	12%
2022	25,301,215	-11%	5,023	-8%

GOALS AND OBJECTIVES:

Order No. 15 in Docket 08-137-U established default energy savings target as percentage of 2010 energy sales. In 2020, the energy savings target increased to 1.20 percent of 2018 energy sales, adjusted for self-direct customers per Order No. 43 in Docket 13-002-U.

The annual energy savings targets as a percentage of baseline sales and the corresponding filed energy savings targets and goals are shown in Table 1-2 below.

Table 1-2 Annual Energy Savings Targets and Goals

Program Year	Baseline Sales Year	Percent of Sales	Energy Savings Targets (MWh)	Filed Energy Savings Goals (MWh)
2011	2010	0.25%	6,752	6,753
2012	2010	0.50%	11,364	11,364
2013	2010	0.75%	16,844	16,844
2014	2010	0.75%	16,288	16,288
2015	2013	0.90%	18,904	19,879
2016	2014	0.90%	18,623	19,328
2017	2015	0.90%	18,058	18,063
2018	2015	0.90%	18,058	18,063
2019	2015	1.00%	20,531	20,136
2020	2018	1.20%	25,909	24,675
2021	2018	1.20%	24,555	25,200
2022	2018	1.20%	24,499	25,301

OG&E's filed energy savings goal for 2022 was 25,301,215 kWh. After adjusting for self-direct customers from the baseline year, the baseline target was 24,498,943 kWh. The 2022 EE

portfolio actual achieved energy savings were 28,149,987 kWh.

MAJOR ACCOMPLISHMENTS:

OG&E continued its success in 2022 by exceeding both the targeted and filed energy savings goals, reaching 111% of the filed goal while spending 76% of the planned budget.

PROGRESS ACHIEVED:

The program portfolio has demonstrated continued success by consistently outperforming savings goals over the past six years. The historical annual energy savings to goal achievements is illustrated in Table 1-3 below. Table 1-4 below depicts the growth in year over year kWh achieved savings and improved cost per kWh success.

Table 1-3 Historical Annual Energy Savings to Goal Achievement

Program Year	Energy Savings Goal (kWh)	Energy Savings Achieved (kWh)	% of Goal Achieved
2011	6,752,758	4,985,328	74%
2012	11,363,560	7,595,741	67%
2013	16,843,560	13,410,729	80%
2014	16,287,689	13,794,070	85%
2015	19,879,081	20,543,040	103%
2016	19,328,413	23,257,180	120%
2017	18,062,811	21,130,663	117%
2018	18,062,811	22,556,832	125%
2019	20,136,187	26,071,158	129%
2020	24,675,000	28,050,242	114%
2021	25,200,145	28,540,540	113%
2022	25,301,215	28,149,987	111%

Table 1-4 Historic kWh savings and costs per kWh achievement

Program Year	Energy (kWh)	Demand (kW)	Total Portfolio Costs	\$/kWh	\$/kW
2011	4,985,328	1,520	\$2,071,159	\$0.42	\$1,363
2012	7,595,741	1,840	\$3,149,264	\$0.41	\$1,712
2013	13,410,729	2,797	\$3,714,378	\$0.28	\$1,328
2014	13,794,070	2,883	\$4,547,079	\$0.33	\$1,577
2015	20,543,040	3,115	\$6,075,144	\$0.30	\$1,950
2016	23,257,180	3,434	\$6,362,822	\$0.27	\$1,853
2017	21,130,663	3,396	\$6,404,252	\$0.30	\$1,886
2018	22,556,832	3,974	\$6,940,945	\$0.31	\$1,747
2019	26,071,158	4,591	\$7,184,464	\$0.28	\$1,565

2020	28,050,242	4,878	\$6,866,723	\$0.24	\$1,408
2021	28,540,540	5,479	\$6,480,491	\$0.23	\$1,183
2022	28,149,987	4,806	\$7,391,967	\$0.26	\$1,538

HIGH-LEVEL RECAP:

The 2022 portfolio produced 28,149,987 kWh exceeding OG&E's savings goal. These ongoing energy savings will accumulate over the life of the EE measures. The EE portfolio recoverable expenses of \$7,391,967 for 2022 were 76% of the approved annual budget of \$9,767,857. Customer incentives and rebates account for 51% of the total portfolio expenses.

HIGHLIGHTS OF WELL-PERFORMING PROGRAMS:

The Commercial & Industrial program offerings demonstrated continued success in 2022 under the CEEP umbrella, achieving 115% of the planned savings goal while spending 79% of the budget. This accounted for 70% of the total Portfolio energy savings.

There are four residential channel offerings under the HEEP umbrella. The combined channels achieved 110% of the HEEP savings goal while spending 99% of the planned budget. HEEP accounted for 44% of OG&E's residential portfolio energy savings and penetrates a hard-to-reach customer segment allowing for more customers to participate and be further educated in the energy management of their home.

WHAT'S WORKING AND WHAT'S NOT:

The residential portfolio of EE programs worked well in 2022. The HEEP Program portion of the residential portfolio achieved 110% of energy savings goals while spending 96% of the total HEEP residential filed budget. The current EM&V reports validate the impact and process success of OG&E's residential programs. The CWA achieved 98% of energy its energy savings goal while spending 65% of its budget. For the 2022 program year CLEAResult continued to implement the CWA channel. All four participating contractors returned and continued to implement weatherization measures for qualified customers. With the experience of the previous year's challenges and learning curves, their services greatly improved. Some of the participating contractors plan to add additional crews to support the territory. Significant improvements were made to provide additional benefits to low-income participants as well.

TRAINING ACHIEVEMENTS:

OG&E provided in person and virtual educational sessions with commercial and industrial customers on the benefits of energy efficiency.

EM&V ACTIVITIES:

ADM and Associates, Inc. was selected to perform the evaluation, measurement, and verification ("EM&V") for the entire EE program portfolio for PY 2022. EM&V activities were performed in

accordance with the Arkansas Technical Reference Manual (“TRM”) Version 9.0. The EM&V report details the findings and are included in Appendix A of this annual report.

LONG-TERM ENERGY SAVINGS:

The current program portfolio was developed to meet the energy efficiency targets established by the APSC in Order No.31 in Docket 13-002-U. The expected kW and kWh savings delivered by this portfolio, estimated kW and kWh savings from future portfolios, and the cumulative kW and kWh savings from previous portfolios are included in the Company’s load forecast. The Integrated Resource Plan incorporates this information in its planning report.

EE OVERVIEW:

The following three tables provide an overview of the EE portfolio results for PY2022:

Table 1-5 Portfolio Summary

2022 Portfolio Summary										
Net Energy Savings		Costs			Cost-Effectiveness			Goal Achievement		
Demand MW	Energy MWh	Actual Expenditures	LCFC	Performance Incentives	TRC Net Benefits (NPV)	TRC Ratio	PAC Ratio	Commission Established Target % of Baseline	Actual Savings Achieved % of Baseline	% of Target Achieved (%)
5	28,150	\$ 7,391,967	\$ (0)	\$ 732,589	\$ 13,112,270	2.33	2.19	1.20%	1.38%	115%

Table 1-6 Portfolio Costs by Program Summary

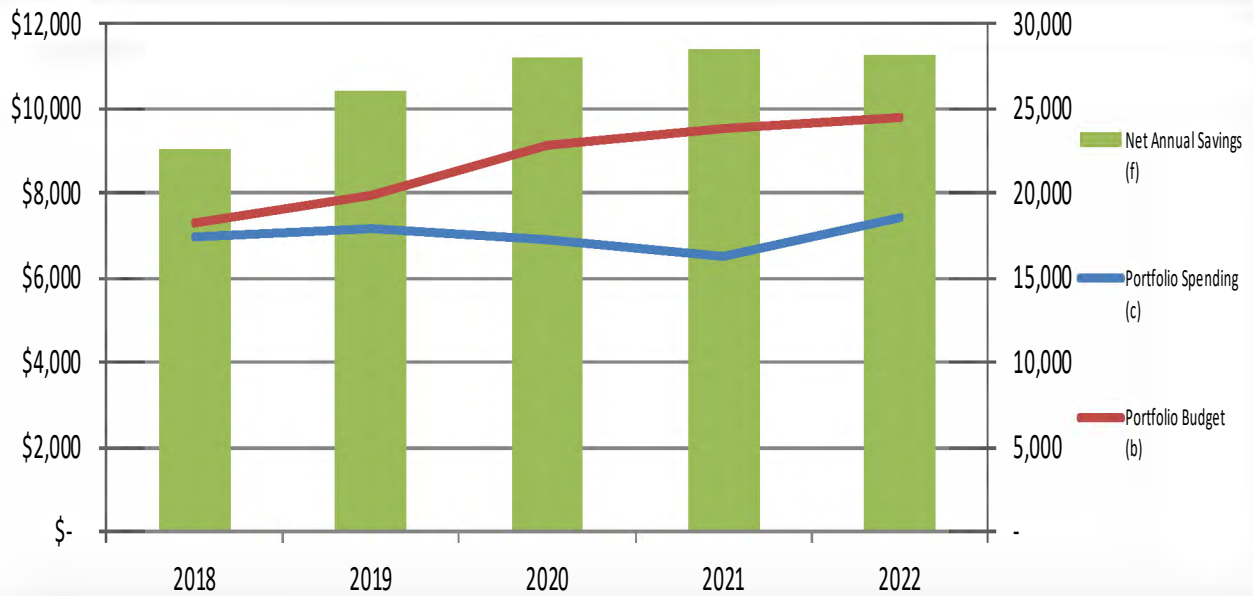
EE Portfolio Expenditures by Program					
Program Name	Target Sector	Program Type	2022		% of Budget
			Budget (\$)	Actual (\$)	
Consistent Weatherization Approach_CWA	Residential	Whole Home	3,472,695	2,248,115	65%
Home Energy Efficiency Program	Residential	Other	1,083,715	1,042,982	96%
Commercial Energy Efficiency Program	Small Business/C&I	Custom	5,134,343	4,078,666	79%
Energy Efficiency Arkansas	All Classes	Behavior/Education	22,104	22,205	100%
Planning	All Classes	Other	30,000	-	0%
Regulatory	-	-	25,000	-	0%
Total			9,767,857	7,391,967	76%

Table 1-7 Portfolio Costs by Type Summary

EE Portfolio Expenditure Summary by Cost Type				
Cost Type	2022 Total Expenditures			
	% of Total	Budget (\$)	Actual (\$)	% of Total
Planning / Design	0%	-	-	0%
Marketing & Delivery	35%	3,414,598	2,867,745	39%
Incentives / Direct Install Costs	53%	5,217,155	3,769,773	51%
EM&V	3%	295,000	312,035	4%
Administration	8%	816,104	442,415	6%
Regulatory	0%	25,000	-	0%
	100%	9,767,857	7,391,967	100%

Table 1-8 Company Statistics¹

Company Statistics										
Program Year	Revenue and Expenditures					Energy				
	Total Revenue (a) (\$000's)	Budget		Actual		Total Annual Energy Sales (d) (MWh)	Plan		Evaluated	
		Portfolio Budget (b) (\$000's)	% of Revenue (% = b/a)	Portfolio Spending (c) (\$000's)	% of Revenue (% = c/a)		Net Annual Savings (e) (MWh)	% of Energy Sales (% = e/d)	Net Annual Savings (f) (MWh)	% of Energy Sales (% = f/d)
2018	\$ 176,781	\$ 7,266	4.1%	\$ 6,941	3.9%	2,670,588	18,063	0.68%	22,557	0.84%
2019	\$ 166,642	\$ 7,949	4.8%	\$ 7,184	4.3%	2,566,880	20,136	0.78%	26,071	1.02%
2020	\$ 162,230	\$ 9,132	5.6%	\$ 6,867	4.2%	2,440,096	24,675	1.01%	28,050	1.15%
2021	\$ 190,420	\$ 9,521	5.0%	\$ 6,480	3.4%	2,561,095	25,200	0.98%	28,541	1.11%
2022	\$ 272,516	\$ 9,768	3.6%	\$ 7,392	2.7%	2,644,703	25,301	0.96%	28,150	1.06%



¹ Total annual energy sales include self-direct customer sales.

2.0 Portfolio Programs

2.1 Consistent Weatherization Approach

2.1.1 Program Description

This program in previous portfolios was referred to as the Unified Weatherization Program (UWP). It is designed to target residential customers and allow them to participate in the program with no out-of-pocket expense, and it also provides customers the opportunity to actively manage their energy costs. The program targets residential single-family homes which were built 10 or more years ago that are severely energy inefficient, or with an electricity cost per square foot of more than 10 cents. Homes that meet these criteria begin with an energy audit utilizing blower door technology on the structure to capitalize on specific weatherization techniques. The program is designed to upgrade and improve the thermal envelope of the dwelling.

OG&E serves more than 56,000 residential customers in its Arkansas service territory and has estimated there are as many as 30,000 homes in need of weatherization improvements. OG&E transitioned the management of the CWA program to CLEAResult for implementation in the 2021 program year. There are four qualified companies that participate in serving OG&E's customers in this Program. These companies include Custom Insulation, based in Hot Springs, AR, D&A Conservation established in Midlothian, TX, e3 Solutions based out of Conway, AR as well as Home Energy Xperts in Springdale, AR. Each contractor is Building Performance Institute (BPI) certified. CLEAResult personnel arrange training sessions to maintain consistent implementation practices across the CWA. Contractors and their crews attend the sessions and receive additional education on the weatherization of homes, both online and in classrooms, for improvement in proper home weatherization techniques. OG&E views the weatherization program as a key component in its EE portfolio and continues to support its success.

Energy-saving equipment or other in-home improvements include: replacement of glass and/or doors, LEDs, return air cavity sealing, CO detectors, smoke detectors, attic insulation, air infiltration, duct sealing, water heater pipe wrap, low flow shower heads, faucet aerators, water heater jackets, and advanced power strips. Utilizing blower door and duct blaster technology, the contractors can locate and seal larger areas of air infiltration in the homes.

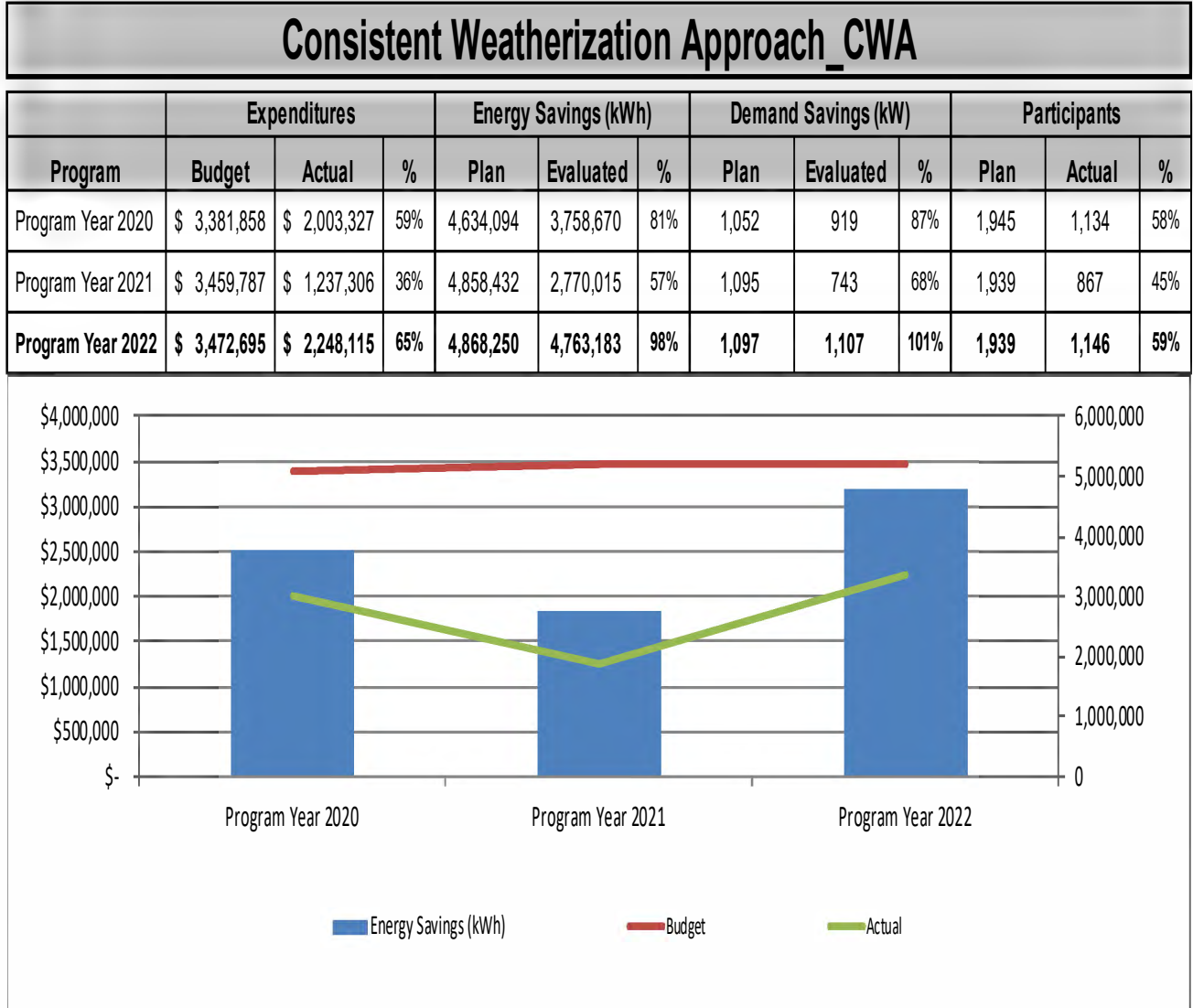
OG&E and AOG continue to work together with contractors to ensure program success. The partnership with AOG has proven to be a successful collaboration for the joint weatherization program. The ability to work together with other utilities is an ongoing effort to combine resources, as well as, to reach more customers in overlapping service territories.

2.1.2 Program Highlights

- OG&E weatherized 1,146 homes in 2022.
- The CWA meets the requirements for the Arkansas Consistent Weatherization Approach.

2.1.3 Program Budget, Savings, and Number of Measures

Table 2-1 Consistent Weatherization Approach



2.1.4 Description of Participants

Participants of this program must meet the following criteria:

- The home is 10 or more years old.
- Electricity cost exceeds 10 cents per square foot.

2.1.5 Challenges and Opportunities

- OG&E has maintained a steady pace in obtaining and qualifying customers' homes in a timely manner for weatherization.
- PY2022 had a greater focus on Health and Safety measures and has improved significantly. The participating contractors are continuing to seek opportunities to assist weatherization customers.
- As this program continues to mature long-term lead generation has been necessary for sustained success. There remains a concern moving forward, based on the state's requirements: if OG&E can continue to generate leads that fit the criteria as required by the state.

2.1.6 Planned or Proposed Changes to Program and Budget

- The CWA remains a standalone program in the triennial 2020-2022 portfolio as well as the 2023 Bridge Year. To comply with Act 1102, OG&E provides a low-income pilot program that is very similar to the Gas Utility proposal. To fund this pilot, 5% of the current CWA budget is carved out to address Act 1102. The participation goal was 80 homes. 436 homes qualified under Act 1102 in 2022. A soft cap will be used for installing measures with a maximum of \$3,800 per home.
- OG&E's budget for PY2023 is \$3,472,695.

2.2 Home Energy Efficiency Program

2.2.1 Program Description

HEEP identifies and serves single and multi-family property owners or managers who seek assistance in improving the efficiency of energy-consuming systems and components. The program provides energy-saving measures at reduced or no out-of-pocket cost for residential customers through several participation channels including Residential Solutions, Schools Outreach, HVAC Replacement and Tune-up, and Consumer Product Solutions. Upgrade measures include, but are not limited to: LED light bulbs, Advanced Power Strips (APS), low-flow showerheads, low-flow faucet aerators, duct sealing, air sealing, attic insulation, wall insulation, and ENERGY STAR[®] rated windows and pool pumps through residential channels. The Consumer Product Solutions offering includes reduced cost merchandise at the retail point of purchase on LED light bulbs, advanced power strips, energy efficient water dispensers, bathroom ventilation fans, room air purifiers, and window unit room air conditioners.

The LivingWise[®] Schools Outreach channel targeted sixth grade students and is designed to provide an educational opportunity to learn about energy-efficient prospects in their homes. This approach includes an established curriculum that teachers use to review and educate their students regarding activities that can help them save energy. The students are given an energy efficiency kit with easy-to-install measures (e.g., LEDs, aerators, and showerheads) that they take home to have their parents or guardians help them install.

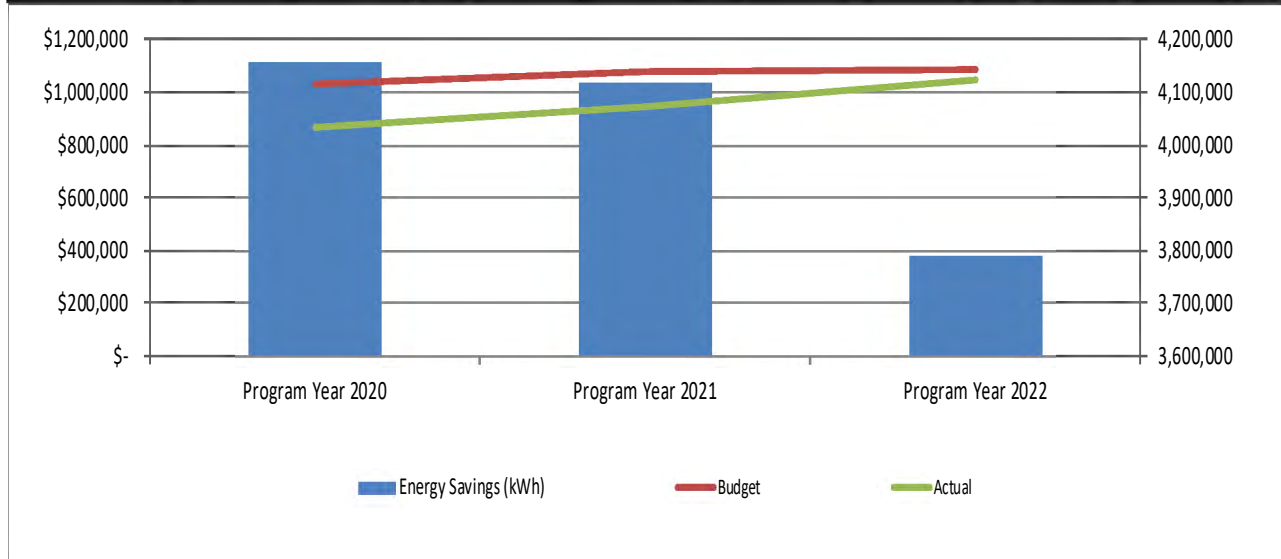
2.2.2 Program Highlights

- The PY2022 program achieved 110% of the energy savings goal.
- The program reached 213 new participants in the HVAC Replacement and Tune-up channel which accounted for 428,357 ex ante gross kWh savings. There were 3 multi-family complexes that participated in the A/C Tune-up channel in PY2022.
- There were 90 rebate applications submitted by residential customers in PY2022. These include 80 separate window, 2 attic insulation, and 8 pool pump rebates.
- In-home Energy Assessments enable the program to identify additional measures that participants with nontraditional dwellings qualify for that complement the CWA program. The coordinated effort between HEEP and CWA continues to allow for implementation of those identified measures.

2.2.3 Program Budget, Savings and Number of Measures

Table 2-2 Home Energy Efficiency Program Summary

Home Energy Efficiency Program												
Program	Expenditures			Energy Savings (kWh)			Demand Savings (kW)			Participants		
	Budget	Actual	%	Plan	Evaluated	%	Plan	Evaluated	%	Plan	Actual	%
Program Year 2020	\$ 1,034,342	\$ 864,631	84%	3,322,845	4,156,673	125%	590	714	121%	3,509	6,927	197%
Program Year 2021	\$ 1,075,755	\$ 946,912	88%	3,401,317	4,118,059	121%	604	744	123%	3,676	4,379	119%
Program Year 2022	\$ 1,083,715	\$ 1,042,982	96%	3,458,718	3,789,237	110%	614	596	97%	3,676	5,829	159%



2.2.4 Description of Participants

- Participants within the HEEP Program include:
 - Multi-family residence – two or more storied structures where multiple families reside in multiple units under a single, contiguous roof most often described as apartments, duplexes, triplexes, condominiums, or townhomes.
 - Participants residing in apartment complexes or other multi-family units typically rent rather than own their housing. This arrangement requires OG&E to receive permission from the owner of the properties before EE measures are installed. Because of this arrangement, multi-family customers may be considered hard-to-reach when providing education and opportunities for managing energy use.

- Single-family residence – one story structures where a single-family group resides in a standalone structure under a single contiguous roof.
 - This channel includes structures traditionally “stick-built” or with wooden framing.
- LivingWise[®] Student Energy Education - this channel focuses on sixth grade students in the public-school system. The kit provides several easily installed EE products for the home, allowing students and parents or guardians to have conversations about using energy efficiently. This program promotes EE education to the future homeowners, so they will understand the impacts of energy conservation and adopt a culture of energy efficiency.

2.2.5 Challenges and Opportunities

- The HVAC Replacement and Tune-up channel included a bill insert and a social media campaign promoting a no-cost A/C system tune-up for eligible customers. This channel saw great success this year as the program team worked with a participating contractor to provide A/C Tune-Ups in single-family homes and apartment complexes located in Fort Smith.
- The program team continues to recruit additional contractors to participate in the A/C Tune-up measures. By expanding this base, additional residential customers could be reached.
- A challenge for PY2023 is the extremely high demand from customers wanting to participate in this offering. A contributing factor impacting the increased demand could be the economy and the increased cost of living.
- The Consumer Products offering includes instant rebates for customers in select retail establishments that purchased qualified bathroom vent fans, room air purifiers, and water dispensers. While the instant rebates were still offered on LEDs, the window A/C units offering resulted in 144 additional customers reached resulting in 13,255 ex ante gross kWh savings. This channel also offered instant rebates on advanced power strips (APS) in select retail locations which were well received by consumers. The rebate resulted in 2,895 APS installations in homes and saved a combined 484,624 kWh. Customers took advantage of the instant rebates on 66 room air purifiers (77,154 kWh), 57 water dispensers (27,463 kWh) and 402 bathroom ventilation fans (11,083 kWh).

2.2.6 Planned or Proposed Changes to Program and Budget

- In 2023, the Consumer Products channel will expand its reach by adding additional non-lighting measures to the program. Adding select retail locations to promote all instant rebate opportunities available to OG&E's residential customers and specifically targeting a low to moderate income, hard-to-reach customer base. At the same time, deactivating big-box retail locations mid-year as EISA lighting backstop legislation goes into effect and lighting savings calculations are updated.
- OG&E's proposed budget for PY2023 is \$1,083,715.

2.3 Commercial Energy Efficiency Program

2.3.1 CEEP Program Description

CEEP provides incentives to OG&E commercial customers in the Arkansas service territory, encouraging the installation or upgrade of more efficient equipment in energy consuming systems. The program is aligned toward commercial, industrial, public authority, schools, and small business facilities of all sizes. CEEP measures include but are not limited to; LED lighting and fixtures, compressors, variable speed fans, HVAC upgrades, weather stripping, occupancy-based technology, gaskets, strip curtains, refrigeration upgrades, and pre-rinse spray valves.

CEEP recruits and educates customers on the advantages of upgrading their energy systems through direct outreach, educational contacts, and booth displays at local vendor open houses. Many different avenues and strategies are used to encourage customers to upgrade energy consuming systems in each facility. CEEP works with lighting manufacturer representatives, conducting walkthrough audits and performing detailed, custom audits unique to the facilities. Commercial customers benefit from financial incentives, bill savings, and the energy management education the program provides.

2.3.2 Program Highlights

- The CEEP program successfully reached business customers across the service territory. 317 projects were completed in 2022.
- In PY2022 the Large Commercial and Industrial channel alone completed 62 projects for a combined 11,280,637 kWh and accounted for 53% of CEEP ex ante savings. Some of the participants in this channel were Encompass Health and Platinum Building Group with LED retrofits, Injection Molding Machines for Quantum Plastics, and Hiland Dairy installed a new Ammonia Refrigeration System.
- CEI finished 2022 achieving 4,106,034 annual ex ante kWh savings combined through cohort participation. Southwest Diecast was the largest contributor in PY2022 with 1,812,383 kWh savings and Pernod Ricard with 1,511,227 kWh savings as well. PY2022 marked the highest CEI savings since the offering began.

2.3.3 Program Budget, Savings and Number of Measures

Table 2-3 – CEEP Program Summary

Commercial Energy Efficiency Program												
Program	Expenditures			Energy Savings (kWh)			Demand Savings (kW)			Participants		
	Budget	Actual	%	Plan	Evaluated	%	Plan	Evaluated	%	Plan	Actual	%
Program Year 2020	\$ 4,668,575	\$ 3,976,594	85%	16,718,061	20,134,899	120%	3,278	3,245	99%	503	245	49%
Program Year 2021	\$ 4,869,415	\$ 4,291,068	88%	16,940,396	21,652,466	128%	3,311	3,993	121%	486	237	49%
Program Year 2022	\$ 5,134,343	\$ 4,078,666	79%	16,974,247	19,597,567	115%	3,312	3,103	94%	486	317	65%

2.3.4 Description of Participants

Participants in the program included large commercial, industrial, medical facilities, small business, schools, government, and lighting distributor customers.

2.3.5 Challenges and Opportunities

- The Small Business contractors performed very well in PY2022. Collectively there were 197 projects completed for small businesses and achieved 3,003,798 annual ex ante kWh savings. This was the third largest channel offered through CEEP and accounted for 14% of the program ex ante savings. In PY2023 the challenge will be to maintain the

momentum gained in PY2022. While the program has been trending successfully, there is still the opportunity to engage additional contractors in serving small businesses.

- A Fort Smith governmental organization completed a master energy plan with the intent of working on the proposed improvements. They will be participating in CEI, with plans to begin work on several of the recommended capital improvements as well. This is a tremendous opportunity but will be closely monitored to ensure that kWh savings are counted appropriately.

2.3.6 Planned or Proposed Changes to Program and Budget

- In PY2023 the program team will work closely with the Small Business Solutions (SBS) participating contractors in hopes of carrying their momentum from PY2022 into PY2023. They experienced a very productive year, and the program team will work to maintain success.
- OG&E's proposed budget for PY2023 is \$5,134,343.

2.4 Energy Efficiency Arkansas Program

2.4.1 Program Description

The EEA Program provides information to all customers, of all classes, allowing them to make informed decisions about how they use energy and to consider alternatives to reduce their consumption rates, thereby decreasing demand and energy usage.

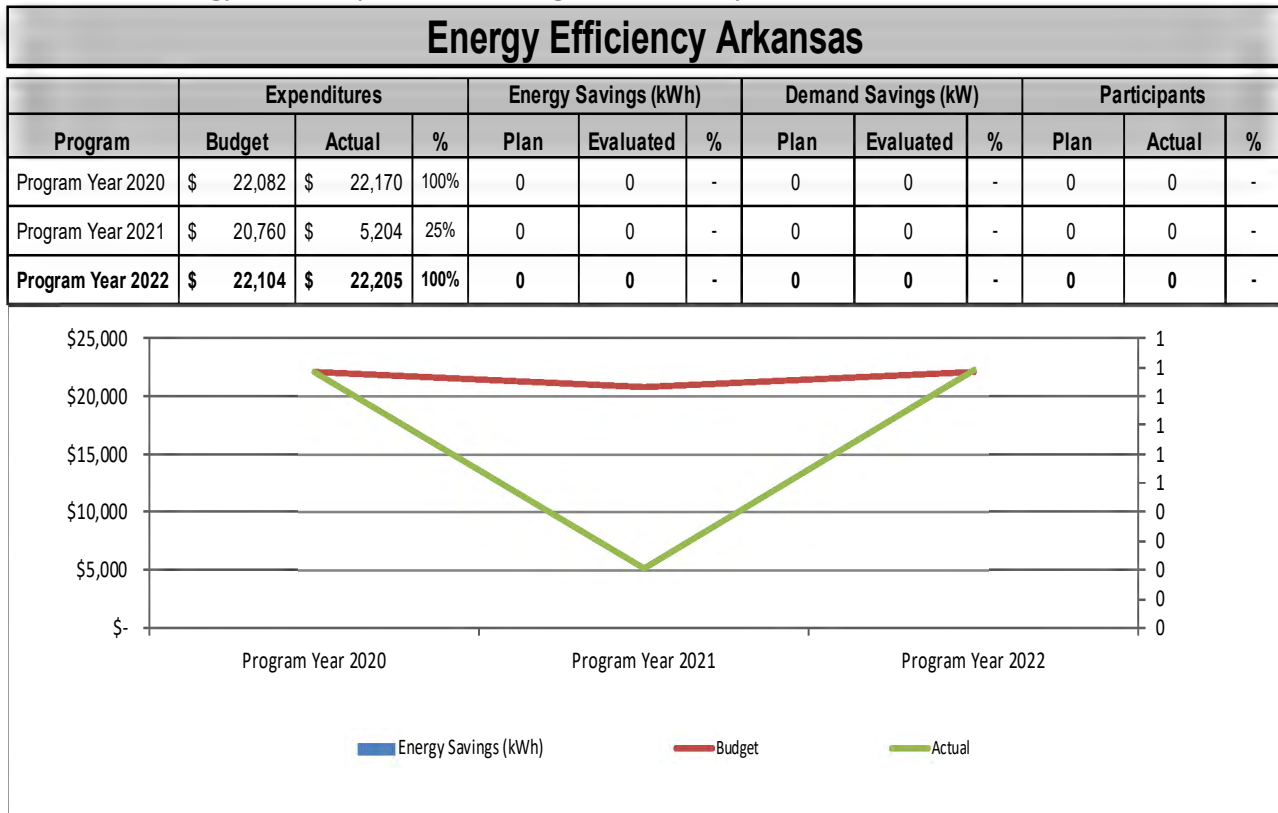
OG&E has continued its support of the EEA Comprehensive plan, provided by the Arkansas Energy Office (“AEO”), through three components: (1) residential education and information outreach, (2) media promotion, and (3) commercial and industrial education and outreach.

2.4.2 Program Highlights

EEA outreach events and training in the OG&E service territory included: Benchmark Focused Survey and Analysis, Certified Measurement & Verification Professional (CMVP), 78 community and grassroots residential EEA outreach events, and the Building Science Principles course.

2.4.3 Program Budget, Savings and Participants

Table 2-4 –Energy Efficiency Arkansas Program Summary



2.4.4 Description of Participants

- Residential and C&I customers in Arkansas.

2.4.5 Challenges and Opportunities

- OG&E, along with the EEA, has continued to provide updated material to all classifications of consumers throughout the OG&E Arkansas service territory. Cost-effective measures should be implemented in a timely manner to lower utility costs. Educating the customer is essential in stressing the importance of EE in all applications.

2.4.6 Planned or Proposed Changes to Program and Budget

- OG&E will continue its support of the EEA Program throughout the 2023 Bridge Year.
- OG&E’s proposed budget for PY2023 is \$22,104.

3.0 Supplemental Requirements

3.1 Staffing

In 2022, OG&E had a total of 2 Full-Time Equivalents (“FTEs”); 1 FTE managing its EE programs, and EM&V and Administrative support make up the remaining FTE.

3.2 Stakeholders Activities

During 2022, the PWC members continued to be active and engaged participants in matters pertaining to energy efficiency program evaluation and related issues, as directed by Staff. In 2022, the PWC mainly discussed the proposed Potential Study as well as updates to the Technical Reference Manual (“TRM”). Topics included Injection Molding Machines, Electric Vehicle Charging Stations, and the proposed expansion of NEBs for Low-Income Programs.

The Parties Working Collaboratively met a total of 17 times in 2022. All but one of these meetings were online; the Technical Forum, held August 9, 2022, in Little Rock was in-person.

Table 1: Summary of PWC Activities in 2022

Meeting Topic	Number of PWC Meetings
PWC Meetings including planning and target setting	6
Potential Study RFP Discussions	2
AMI EM&V Discussion	2
Low Income Working Group	1
TRM Updates and Technical Forum	6
Total	17

These meetings addressed the following issues:

1. Potential Study Best Practices and Proposed Strawman Potential Study Outline
2. Income Working Group Meeting
3. IOU Targets for Next Program Cycle (Savings Targets vs. Goals)
4. Impact of EISA Rollback
5. Update on AEO Motion to Withdraw from the PWC
6. TRM 9.1 Edits to Volumes 1 and 2 1.
7. Discussion of SEM Programs/Timing/Evaluation Activities

During PY2022, the APSC issued the following orders regarding the PWC activities:

- Docket 10-100-R:
 - ORDER NO. 40: The Commission hereby approves TRM 9.1 for use in computing and evaluating PY2023 energy efficiency program. Dated 10-20-2022.

- Docket 13-002-U:
 - ORDER NO. 64: Based on the filing by the PWC, the Commission approves the (Potential Study) RFP and the IEMs proposed work scope. Dated 07-11-2022.
 - ORDER NO. 65 (COMMISSION) Based on the representations by Staff in its Motion and the lack of opposition of the PWC, the Commission grants the Motion and AEO's request to terminate the EEA Comprehensive Program no later than December 31, 2023. Dated 07-11-2022.
 - ORDER NO.66 (COMMISSION) The Commission hereby approves TRM 9.1 for use in computing and evaluating PY 2023 energy efficiency program results beginning January 1, 2023. Dated: 10-20-2022.

3.3 Information provided to Customer to Promote EE

Please see Appendix B for samples of promotional and educational materials used in the program year.

Appendices to be added in pdf format.

4.0 EM&V Contractor Reports

ADM & Associates, Inc. provided outcomes for the EM&V results and Cost Benefit Analysis for OG&E's PY 2022 Portfolio. OG&E is providing the report in the attached exhibits.

Attachments:

- Attachment A) contains ADM's Evaluation of OG&E's Energy Efficiency Programs and Cost Benefit Analysis

Attachment A: Evaluation of OG&E's Energy Efficiency Programs and Cost Benefit Analysis

EVALUATION, MEASUREMENT AND VERIFICATION REPORT FOR THE 2022 ARKANSAS ENERGY EFFICIENCY PORTFOLIO

SUBMITTED TO: OKLAHOMA GAS & ELECTRIC

SUBMITTED ON: APRIL 5, 2023

SUBMITTED BY: ADM ASSOCIATES, INC.

ADM Associates, Inc
3239 Ramos Circle
Sacramento, CA 95827
916-363-8383

Oklahoma Gas & Electric



OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table of Contents

- 1 INTRODUCTION 13**
 - 1.1 ACKNOWLEDGEMENTS13
 - 1.2 ACRONYMS AND ABBREVIATIONS14
 - 1.3 SAVINGS TYPES16
- 2 EXECUTIVE SUMMARY 17**
 - 2.1 INTRODUCTION17
 - 2.2 SUMMARY OF OG&E’S ENERGY EFFICIENCY PORTFOLIO17
 - 2.3 OVERVIEW OF PROGRAM OFFERINGS18
 - 2.3.1 RESIDENTIAL PROGRAMS18
 - 2.3.2 COMMERCIAL AND INDUSTRIAL (C&I) PROGRAMS20
 - 2.4 EVALUATION OBJECTIVES21
 - 2.5 EVALUATION FINDINGS22
 - 2.6 PROGRAM-LEVEL EVALUATION FINDINGS27
 - 2.6.1 HEEP28
 - 2.6.2 CWA28
 - 2.6.3 CEEP29
 - 2.7 PROGRESS ON PREVIOUS RECOMMENDATIONS29
 - 2.8 STRUCTURE OF THE REPORT30
- 3 GENERAL METHODOLOGY 31**
 - 3.1 INTRODUCTION31
 - 3.2 GLOSSARY OF TERMINOLOGY31
 - 3.3 OVERVIEW OF METHODS32
 - 3.4 SAMPLING32
 - 3.4.1 CENSUS33
 - 3.4.2 FIELD VERIFICATION RATE33
 - 3.4.3 SIMPLE RANDOM SAMPLING33
 - 3.4.4 STRATIFIED SAMPLING33
 - 3.5 IMPACT EVALUATION ACTIVITIES BY PROGRAM34
 - 3.6 ESTIMATION OF NET SAVINGS35
 - 3.6.1 RESIDENTIAL PROGRAMS NET SAVINGS ESTIMATION METHODOLOGY35
 - 3.6.2 ECONOMETRIC MODELING APPROACH FOR HEEP CPS CHANNEL36
 - 3.6.3 COMMERCIAL & INDUSTRIAL (C&I) PROGRAMS37
 - 3.6.4 FREE-RIDERSHIP APPROACH37
 - 3.7 DEVIATIONS FROM THE AR TRM V9.040
 - 3.8 COST-EFFECTIVENESS APPROACH40
 - 3.9 NON-ENERGY BENEFIT (NEB) APPROACH41
 - 3.9.1 NON-ENERGY BENEFIT (NEB) PROTOCOLS42
 - 3.10 OVERVIEW OF PROCESS EVALUATION42
 - 3.11 GENERAL APPROACH42

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

3.12 JUSTIFICATION FOR PY2022 PROCESS EVALUATION APPROACH42

4 EVALUATION FINDINGS 45

4.1 SUMMARY OF EVALUATION EFFORT45

4.2 SUMMARY OF COST-EFFECTIVENESS RESULTS.....46

4.2.1 COST-EFFECTIVENESS METHODOLOGY47

4.2.2 NON-ENERGY BENEFITS (NEBs).....47

4.2.3 NEBS IMPACT.....49

4.3 TESTS OF PORTFOLIO COMPREHENSIVENESS51

4.3.1 FACTOR ONE: EDUCATION, TRAINING, MARKETING, AND OUTREACH51

4.3.2 FACTOR TWO: BUDGETARY, MANAGEMENT, AND PROGRAM DELIVERY RESOURCES53

4.3.3 FACTOR THREE: MAJOR END-USES ADDRESSED55

4.3.4 FACTOR FOUR: COMPREHENSIVELY ADDRESS CUSTOMER NEEDS56

4.3.5 FACTOR FIVE: TARGETING MARKET SECTORS & LEVERAGING OPPORTUNITIES57

4.3.6 FACTOR SIX: COST-EFFECTIVENESS58

4.3.7 FACTOR SEVEN: EM&V PROCEDURES59

5 HOME ENERGY EFFICIENCY PROGRAM (HEEP) 62

5.1 OVERVIEW OF EVALUATION FINDINGS62

5.2 PROGRAM OVERVIEW66

5.2.1 RESIDENTIAL SOLUTIONS66

5.2.2 LIVINGWISE® SCHOOLS OUTREACH.....66

5.2.3 HVAC REPLACEMENT & TUNE-UP CHANNEL (HVAC)67

5.2.4 CONSUMER PRODUCTS SOLUTIONS67

5.3 GROSS IMPACT EVALUATION APPROACH.....70

5.3.1 ENERGY SAVINGS CALCULATIONS.....70

5.4 TRACKING SYSTEM REVIEW71

5.5 LIVINGWISE® SCHOOLS OUTREACH71

5.6 HVAC REPLACEMENT AND TUNE-UP72

5.6.1 HVAC REPLACEMENT AND TUNE-UP: HVAC REPLACEMENTS72

5.6.2 HVAC REPLACEMENT AND TUNE-UP: AC TUNE-UPS72

5.7 CONSUMER PRODUCTS SOLUTIONS (CPS).....73

5.7.1 LEAKAGE73

5.8 RESIDENTIAL SOLUTIONS (RSOL)77

5.9 VERIFIED SAVINGS BY MEASURE77

5.9.1 RESIDENTIAL SOLUTIONS (RSOL)77

5.9.2 RSOL: ADVANCED POWER STRIPS78

5.9.3 RSOL: ENERGY STAR® WINDOWS78

5.9.4 RSOL: DUCT SEALING78

5.9.5 RSOL SAVINGS SUMMARY81

5.9.6 LIVINGWISE® SCHOOLS OUTREACH.....82

5.9.7 LIVINGWISE® SCHOOLS OUTREACH SAVINGS SUMMARY84

5.9.8 HVAC REPLACEMENT AND TUNE-UP.....84

5.9.9 CONSUMER PRODUCTS.....86

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5.9.10	CPS SAVINGS SUMMARY.....	89
5.10	NET IMPACT EVALUATION APPROACH	89
5.10.1	LITERATURE REVIEW RESULTS.....	91
5.10.2	RESIDENTIAL SOLUTIONS	92
5.10.3	CONSUMER PRODUCTS	93
5.10.4	LIVINGWISE® SCHOOLS OUTREACH.....	94
5.10.5	ECONOMETRIC MODELING APPROACH FOR HEEP CPS CHANNEL.....	95
5.11	NET IMPACT EVALUATION SUMMARY AND FINDINGS.....	96
5.11.1	RESIDENTIAL SOLUTIONS NET SAVINGS RESULTS	96
5.11.2	LIVINGWISE® SCHOOLS OUTREACH NET SAVINGS RESULTS.....	97
5.11.3	HVAC REPLACEMENT AND TUNE-UP NET SAVINGS RESULTS.....	98
5.11.4	CONSUMER PRODUCTS NET SAVINGS RESULTS	99
5.12	NON-ENERGY BENEFITS (NEBs).....	102
5.12.1	NATURAL GAS ENERGY SAVINGS.....	103
5.12.2	PROPANE SAVINGS.....	104
5.12.3	WATER SAVINGS	104
5.12.4	AVOIDED AND DEFERRED REPLACEMENT COSTS.....	105
5.12.5	NEBs SUMMARY	106
5.13	PROCESS EVALUATION REASONING	106
5.14	PROCESS EVALUATION APPROACH AND FINDINGS	107
5.14.1	DATA COLLECTION ACTIVITIES	107
5.14.2	OG&E AND CLEARRESULT STAFF INTERVIEW FINDINGS	109
5.14.3	HOME ENERGY EFFICIENCY PROGRAMMING (HEEP) SURVEY	110
5.15	PROGRESS ON PY2021 EVALUATION RECOMMENDATIONS	113
5.16	PLANNED PROGRAM CHANGES	114
5.16.1	CONCLUSIONS.....	114
5.16.2	RECOMMENDATIONS.....	115
6	CONSISTENT WEATHERIZATION APPROACH (CWA) PROGRAM	116
6.1	OVERVIEW OF EVALUATION FINDINGS	116
6.2	PROGRAM OVERVIEW	125
6.2.1	CONSISTENT WEATHERIZATION APPROACH METRICS.....	128
6.2.2	ACT 1102 PILOT EVALUATION METRICS	128
6.3	GROSS IMPACT EVALUATION APPROACH.....	130
6.4	FIELD VERIFICATION RATES AND SURVEY PROCEDURES AND FINDINGS	131
6.4.1	DUCT SEALING	131
6.4.2	AIR INFILTRATION	132
6.4.3	OTHER INSTALL MEASURES	132
6.5	NET IMPACT EVALUATION APPROACH	132
6.5.1	MAJOR-MEASURE FREE-RIDERSHIP	132
6.5.2	DIRECT INSTALL MEASURES FREE-RIDERSHIP.....	135
6.5.3	LOW INCOME NET-TO-GROSS.....	135
6.5.4	NTG RESULTS.....	136
6.6	GROSS EVALUATION SUMMARY AND FINDINGS	136

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

6.7	NET IMPACT EVALUATION SUMMARY AND FINDINGS.....	138
6.8	NON-ENERGY BENEFITS (NEBs)	139
6.8.1	NATURAL GAS AND LIQUID PROPANE ENERGY SAVINGS	139
6.8.2	AVOIDED AND DEFERRED REPLACEMENT COST	140
6.8.3	WATER SAVINGS	141
6.8.4	NEBs SUMMARY.....	142
6.9	PROCESS EVALUATION SUMMARY AND FINDINGS	142
6.9.1	DATA COLLECTION ACTIVITIES.....	144
6.9.2	PROCESS RESULTS AND FINDINGS	145
6.9.3	PROGRAM DELIVERY	145
6.9.4	OG&E PROGRAM STAFF INTERVIEW.....	145
6.9.5	PARTICIPANT SURVEY	146
6.9.6	ADHERENCE TO PROTOCOL A.....	152
6.9.7	CUSTOMER, PREMISE, COST, AND VENDOR INFORMATION	152
6.9.8	MEASURE SPECIFIC INFORMATION	152
6.9.9	TRADE ALLY PERFORMANCE.....	153
6.9.10	HEALTH AND SAFETY MEASURES.....	154
6.9.11	PROGRESS ON PY2021 EVALUATION RECOMMENDATIONS	154
6.10	CONCLUSIONS.....	156
6.11	RECOMMENDATIONS.....	156
7	COMMERCIAL ENERGY EFFICIENCY PROGRAM (CEEP)	157
7.1	EVALUATION FINDINGS OVERVIEW	157
7.2	PROGRAM OVERVIEW	159
7.3	GROSS IMPACT EVALUATION APPROACH.....	163
7.3.1	MIDSTREAM IMPACT EVALUATION ACTIVITIES.....	164
7.4	IMPACT EVALUATION DATA COLLECTION ACTIVITIES	166
7.5	GROSS IMPACT EVALUATION FINDINGS.....	168
7.5.1	C&I SOLUTIONS GROSS IMPACT FINDINGS	168
7.5.2	SMALL BUSINESS SOLUTIONS GROSS IMPACT FINDINGS	169
7.5.3	SAGE GROSS IMPACT FINDINGS.....	169
7.5.4	MIDSTREAM GROSS IMPACT FINDINGS	169
7.5.5	CONTINUOUS ENERGY IMPROVEMENT GROSS IMPACT FINDINGS	170
7.5.6	RETRO COMMISSIONING (RCx) GROSS IMPACT FINDINGS	170
7.6	NET IMPACT EVALUATION APPROACH	170
7.7	NET IMPACT EVALUATION FINDINGS	170
7.7.1	C&I SOLUTIONS	170
7.7.2	SBS	171
7.7.3	SAGE	171
7.7.4	MIDSTREAM	172
7.7.5	CONTINUOUS ENERGY IMPROVEMENT	172
7.7.6	RETRO-COMMISSIONING (RCx)	173
7.7.7	SUMMARY OF NET SAVINGS RESULTS	173
7.8	NON-ENERGY BENEFITS (NEBs)	174

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.8.1	NATURAL GAS ENERGY SAVINGS	174
7.8.2	PROPANE SAVINGS	176
7.8.3	WATER SAVINGS	176
7.8.4	AVOIDED AND DEFERRED REPLACEMENT COSTS.....	176
7.8.5	NEBS SUMMARY.....	177
7.9	PROCESS EVALUATION.....	179
7.9.1	PROGRAM AND CLEARRESULT STAFF INTERVIEWS.....	180
7.9.2	OG&E CEEP PROGRAM PARTICIPANT SURVEYS AND INTERVIEWS	181
7.10	DEVIATIONS FROM THE AR TRM V9.0.....	190
7.10.1	ADHERENCE TO PROTOCOL A	191
7.10.2	PROGRESS ON PY2021 EVALUATION RECOMMENDATIONS	191
7.11	CONCLUSIONS.....	193
7.12	RECOMMENDATIONS.....	193
APPENDIX A. PORTFOLIO COST-EFFECTIVENESS.....		194
	OVERVIEW.....	194
	APPROACH	194
	NON-ENERGY BENEFITS	197
	ECONOMIC INPUTS FOR COST EFFECTIVENESS ANALYSIS	199
	RESULTS.....	199
APPENDIX B. CEEP CUSTOM PROJECT SITE REPORTS.....		201
7.13	PROJECT DESCRIPTION.....	213
APPENDIX C. NET-TO-GROSS SURVEY OUTCOMES		224
	CONSISTENT WEATHERIZATION APPROACH SURVEY.....	224
	MAJOR MEASURES	224
	DIRECT INSTALL MEASURES	226
	CEEP SURVEY	227
APPENDIX D. COST-EFFECTIVENESS INPUTS		230

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table of Tables

TABLE 1-1 COMMONLY USED ACRONYMS AND ABBREVIATIONS	14
TABLE 1-2 COMMONLY USED SAVINGS TYPES.....	16
TABLE 2-1 PY2022 OG&E ENERGY EFFICIENCY PORTFOLIO OVERVIEW	18
TABLE 2-2 OG&E PY2022 ENERGY EFFICIENCY PORTFOLIO SECTORS SERVED BY PROGRAM.....	21
TABLE 2-3 PY2022 OG&E PORTFOLIO EVALUATION IMPACTS.....	23
TABLE 2-4 OG&E PY2022 PERFORMANCE AGAINST ENERGY SAVINGS (KWH) GOALS	27
TABLE 2-5 SUMMARY OF BUDGETS AND ACTUAL SPEND IN PY2022	27
TABLE 3-1 PY2022 IMPACT EVALUATION ACTIVITIES BY PROGRAM.....	34
TABLE 3-2 PY2022 <i>Ex POST</i> NET SAVINGS APPROACH.....	35
TABLE 3-3 TRM V9.0 VOLUME 1 PROTOCOL C: PROCESS EVALUATION GUIDANCE.....	43
TABLE 3-4 DETERMINATION OF PY2022 PROCESS EVALUATION STRUCTURE AND TIMING	44
TABLE 4-1 OG&E PORTFOLIO PY2022 EM&V EXPENDITURES.....	45
TABLE 4-2 SUMMARY OF PY2022 DATA COLLECTION EFFORTS	45
TABLE 4-3 COST-EFFECTIVENESS BY PROGRAM, PY2022.....	46
TABLE 4-4 COST EFFECTIVENESS ANALYSIS: ECONOMIC INPUT COMPARISON	47
TABLE 4-5 PY2022 RESIDENTIAL NEBS BY MEASURE	48
TABLE 4-6 PY2022 C&I NEBS BY MEASURE	49
TABLE 4-7 ASSESSMENT OF CUSTOMER EDUCATION BY PROGRAM.....	52
TABLE 4-8 ASSESSMENT OF TRADE ALLY TRAINING	52
TABLE 4-9 ASSESSMENT OF MARKETING & OUTREACH BY PROGRAM.....	53
TABLE 4-10 PY2022 BUDGET ALLOCATION AND PROGRAM GOAL ATTAINMENT.....	54
TABLE 4-11 ASSESSMENT OF BUDGETARY, MANAGEMENT, AND DELIVERY RESOURCES	55
TABLE 4-12 ASSESSMENT OF END-USES ADDRESSED BY PROGRAM	55
TABLE 4-13 ASSESSMENT OF PROJECT COMPREHENSIVENESS BY PROGRAM.....	57
TABLE 4-14 ASSESSMENT OF TARGETED CUSTOMER SECTORS BY PROGRAM.....	58
TABLE 4-15 PORTFOLIO NTG AND COST EFFECTIVENESS RESULTS	59
TABLE 4-16 ASSESSMENT OF COST EFFECTIVENESS	59
TABLE 4-17 ASSESSMENT OF DATA & QA/QC PROCEDURES BY PROGRAM.....	61
TABLE 4-18 PY2022 OG&E NEB FINDINGS SUMMARY	61
TABLE 5-1 PY2022 HEEP ENERGY SAVINGS SUMMARY.....	62
TABLE 5-2 PY2022 HEEP DEMAND REDUCTION SUMMARY.....	63
TABLE 5-3 PY2022 HEEP LIFETIME SAVINGS SUMMARY	64
TABLE 5-4 <i>Ex POST</i> NET NON-ENERGY BENEFIT (NEB) ESTIMATES FOR HEEP.....	65
TABLE 5-5 PY2022 HEEP PARTICIPATION SUMMARY BY CHANNEL.....	68
TABLE 5-6 PY2022 PARTICIPATION FOR HEEP BY MEASURE	69
TABLE 5-7 AR TRM V9.0 SECTIONS BY MEASURE TYPE	71
TABLE 5-8 DRIVETIME ESTIMATES BY CHANNEL.....	76
TABLE 5-9 PY2022 LEAKAGE ESTIMATES	76
TABLE 5-10 HEEP RSOL SINGLE FAMILY FVR RESULTS	77
TABLE 5-11 ADVANCED POWER STRIP SAVINGS SUMMARY	78
TABLE 5-12 ENERGY STAR® WINDOW SAVINGS SUMMARY	78
TABLE 5-13 DUCT SEALING SAVINGS SUMMARY	78

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

TABLE 5-14 AIR INFILTRATION SAVINGS SUMMARY 79

TABLE 5-15 CEILING INSULATION SAVINGS SUMMARY 80

TABLE 5-16 ENERGY STAR® POOL PUMP SAVINGS SUMMARY 80

TABLE 5-17 FAUCET AERATOR SAVINGS SUMMARY 80

TABLE 5-18 SHOWERHEAD SAVINGS SUMMARY 81

TABLE 5-19 LEDS SAVINGS SUMMARY 81

TABLE 5-20 RESIDENTIAL SOLUTIONS SAVINGS SUMMARY FOR PY2022 81

TABLE 5-21 RESIDENTIAL SOLUTIONS LIFETIME SAVINGS SUMMARY FOR PY2022 82

TABLE 5-22 LOW FLOW DEVICE SAVINGS SUMMARY 83

TABLE 5-23 ADVANCED POWER STRIP SAVINGS SUMMARY 83

TABLE 5-24 PY2022 LIVINGWISE® SCHOOLS OUTREACH SAVINGS SUMMARY 84

TABLE 5-25 PY2022 LIVINGWISE® SCHOOLS OUTREACH LIFETIME SAVINGS BY MEASURE 84

TABLE 5-26 HVAC REPLACEMENT SAVINGS SUMMARY 85

TABLE 5-27 CENTRAL AC TUNE-UP SAVINGS SUMMARY 86

TABLE 5-28 CENTRAL HEAT PUMP TUNE-UP SAVINGS SUMMARY 86

TABLE 5-29 PY2022 HVAC REPLACEMENT & TUNE-UP LIFETIME SAVINGS SUMMARY 86

TABLE 5-30 GROSS SUMMARY FOR CONSUMER PRODUCTS 87

TABLE 5-31 CPS LED COMMERCIAL PARAMETERS 87

TABLE 5-32 PY2022 CPS LIFETIME SAVINGS SUMMARY 89

TABLE 5-33 PY2022 NTG SUMMARY FOR HEEP 90

TABLE 5-34 PY2020 LITERATURE REVIEW RESULTS FOR RSOL APS (DIRECT INSTALL) 92

TABLE 5-35 PY2020 LITERATURE REVIEW RESULTS FOR RSOL ENERGY STAR® WINDOWS 92

TABLE 5-36 PY2020 LITERATURE REVIEW RESULTS FOR RSOL LED LAMPS (DIRECT INSTALL) 93

TABLE 5-37 PY2020 LITERATURE REVIEW RESULTS FOR RSOL SHOWERHEADS (DIRECT INSTALL) 93

TABLE 5-38 PY2020 LITERATURE REVIEW RESULTS FOR LED LAMPS (UPSTREAM) 93

TABLE 5-39 PY2021 LITERATURE REVIEW RESULTS FOR APPLIANCES (UPSTREAM) 94

TABLE 5-40 PY2020 SCHOOL KITS LITERATURE REVIEW SOURCES 94

TABLE 5-41 PY2022 SCHOOL KITS NTG BY MEASURE 95

TABLE 5-42 PY2022 NTG BY CHANNEL FOR HEEP 96

TABLE 5-43 PY2022 NET SAVINGS FOR HEEP RESIDENTIAL SOLUTIONS 97

TABLE 5-44 PY2022 HEEP RSOL NET LIFETIME SAVINGS SUMMARY 97

TABLE 5-45 PY2022 NET ENERGY (KWH) SAVINGS FOR HEEP LIVINGWISE® SCHOOLS OUTREACH 98

TABLE 5-46 LIVINGWISE® SCHOOLS OUTREACH NET LIFETIME SAVINGS SUMMARY 98

TABLE 5-47 PY2022 NTG RESULTS FOR THE HVAC CHANNEL 98

TABLE 5-48 PY2022 NET SAVINGS SUMMARY FOR HVAC CHANNEL 99

TABLE 5-49 NET LIFETIME ENERGY SAVINGS FOR HVAC CHANNEL 99

TABLE 5-50 PRICE RESPONSE MODEL RESULTS, SPECIALTY LEDS 100

TABLE 5-51 PRICE RESPONSE MODEL RESULTS, STANDARD LEDS 101

TABLE 5-52 NET KWH SAVINGS FOR HEEP CONSUMER PRODUCTS 101

TABLE 5-53 NET kW PEAK DEMAND REDUCTIONS FOR HEEP CONSUMER PRODUCTS 102

TABLE 5-54 NET LIFETIME SAVINGS SUMMARY FOR CONSUMER PRODUCTS CHANNEL 102

TABLE 5-55 NATURAL GAS SAVINGS (NGS) BY MEASURE, FOR HEEP IN PY2022 103

TABLE 5-56 PROPANE SAVINGS BY MEASURE, FOR HEEP IN PY2022 104

TABLE 5-57 TOTAL MARGINAL WATER RATES 104

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

TABLE 5-58 WATER SAVINGS BY MEASURE TYPE FOR HEEP IN PY2022	105
TABLE 5-59 AVOIDED REPLACEMENT COSTS (ARCs) BY MEASURE, FOR HEEP IN PY2022	106
TABLE 5-60 PY2022 HEEP NON-ENERGY BENEFITS (NEBs) SUMMARY.....	106
TABLE 5-61 DETERMINING PROCESS EVALUATION TIMING	107
TABLE 5-62 DETERMINING PROCESS EVALUATION CONDITIONS	107
TABLE 5-63 INTERVIEW AND SURVEY DATA COLLECTION SUMMARY	108
TABLE 5-64 STATUS OF RECOMMENDATIONS FROM PY2021 EVALUATION	114
TABLE 6-1 PY2022 GROSS ELECTRIC ENERGY SAVINGS SUMMARY BY MEASURE – CWA	116
TABLE 6-2 PY2022 GROSS ELECTRIC ENERGY SAVINGS SUMMARY BY MEASURE – LOW INCOME.....	116
TABLE 6-3 PY2022 GROSS ELECTRIC DEMAND SAVINGS SUMMARY BY MEASURE – CWA	117
TABLE 6-4 GROSS ELECTRIC DEMAND SAVINGS SUMMARY BY MEASURE – LOW INCOME.....	117
TABLE 6-5 PY2022 GROSS THERMS SAVINGS SUMMARY BY MEASURE – CWA.....	118
TABLE 6-6 PY2022 GROSS THERMS SAVINGS SUMMARY BY MEASURE – LOW INCOME	119
TABLE 6-7 PY2022 GROSS LIFETIME SAVINGS SUMMARY BY MEASURE – CWA	119
TABLE 6-8 PY2022 GROSS LIFETIME SAVINGS SUMMARY BY MEASURE – LOW INCOME	120
TABLE 6-9 Ex POST NET SAVINGS SUMMARY	120
TABLE 6-10 MEASURES AND INCENTIVES SUMMARY - CWA	125
TABLE 6-11 MEASURES AND INCENTIVES SUMMARY – LOW INCOME	125
TABLE 6-12 CWA METRICS FOR THE PY2022 EVALUATION.....	128
TABLE 6-13 CWA METRICS FOR THE PY2022 EVALUATION – LOW INCOME PILOT	128
TABLE 6-14 ACT 1102 METRICS	129
TABLE 6-15 AR TRM V9.0 SECTIONS BY MEASURE	130
TABLE 6-16 <i>Ex POST</i> GROSS ENERGY SAVINGS	136
TABLE 6-17 <i>Ex POST</i> GROSS SAVINGS BY MEASURE - CWA	137
TABLE 6-18 <i>Ex POST</i> GROSS SAVINGS BY MEASURE – LOW INCOME	137
TABLE 6-19 <i>Ex POST</i> NET SAVINGS BY MEASURE - CWA.....	138
TABLE 6-20 <i>Ex POST</i> NET SAVINGS BY MEASURE – LOW INCOME.....	138
TABLE 6-21 NATURAL GAS (THERMS) NEBS - CWA.....	139
TABLE 6-22 NATURAL GAS (THERMS) NEBS – LOW INCOME	140
TABLE 6-23 PROPANE (GALLONS) SAVINGS - CWA	140
TABLE 6-24 PROPANE (GALLONS) SAVINGS – LOW INCOME	140
TABLE 6-25 AVOIDED REPLACEMENT COSTS.....	141
TABLE 6-26 PY2022 WATER (GALLONS) SAVINGS BY MEASURE - CWA	141
TABLE 6-27 PY2022 WATER (GALLONS) SAVINGS BY MEASURE – LOW INCOME	142
TABLE 6-28 NON-ENERGY BENEFITS (NEBs) SUMMARY.....	142
TABLE 6-29 DETERMINING PROCESS EVALUATION TIMING	143
TABLE 6-30 DETERMINING PROCESS EVALUATION CONDITIONS	143
TABLE 6-31 INTERVIEW AND SURVEY DATA COLLECTION SUMMARY	145
TABLE 6-32 STATUS OF RECOMMENDATIONS FROM PY2021 EVALUATION	155
TABLE 7-1 <i>Ex ANTE</i> AND <i>Ex POST</i> GROSS kWh SAVINGS BY SAMPLING STRATUM	157
TABLE 7-2 CEEP NET kWh SAVINGS SUMMARY	158
TABLE 7-3 CEEP NET kW SAVINGS SUMMARY	158
TABLE 7-4 CEEP GROSS AND NET LIFETIME SAVINGS BY CHANNEL	158
TABLE 7-5 OG&E’s PY2022 CEEP PROGRAM SUMMARY	161

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

TABLE 7-6 CONTRIBUTION TO EX ANTE SAVINGS BY MEASURE TYPE BY CHANNEL.....162

TABLE 7-7 CEEP SAMPLE DESIGN167

TABLE 7-8 SAMPLE SIZES FOR DATA COLLECTION EFFORTS167

TABLE 7-9 SUMMARY OF NET ANNUAL ENERGY SAVINGS (KWH) – C&I SOLUTIONS171

TABLE 7-10 SUMMARY OF NET PEAK DEMAND REDUCTIONS (KW) – C&I SOLUTIONS171

TABLE 7-11 SUMMARY OF NET ANNUAL ENERGY SAVINGS (KWH) – SBS171

TABLE 7-12 SUMMARY OF NET PEAK DEMAND REDUCTIONS (KW) – SBS171

TABLE 7-13 SUMMARY OF NET ANNUAL ENERGY SAVINGS (KWH) – SAGE171

TABLE 7-14 SUMMARY OF NET PEAK DEMAND REDUCTIONS (KW) – SAGE172

TABLE 7-15 SUMMARY OF NET ANNUAL ENERGY SAVINGS (KWH) – MIDSTREAM LIGHTING172

TABLE 7-16 SUMMARY OF NET PEAK DEMAND REDUCTIONS (KW) – MIDSTREAM LIGHTING172

TABLE 7-17 SUMMARY OF NET ANNUAL ENERGY SAVINGS (KWH) – CEI.....172

TABLE 7-18 SUMMARY OF NET DEMAND REDUCTIONS (KW) – CEI.....172

TABLE 7-19 SUMMARY OF NET DEMAND REDUCTIONS (KWH) – RCX.....173

TABLE 7-20 SUMMARY OF NET DEMAND REDUCTIONS (KW) – RCX.....173

TABLE 7-21 SUMMARY OF CEEP NET ANNUAL ENERGY SAVINGS (KWH)173

TABLE 7-22 SUMMARY OF CEEP NET PEAK DEMAND REDUCTIONS (KW).....174

TABLE 7-23 PY2022 CEEP NATURAL GAS (NGS) SAVINGS BY MEASURE,175

TABLE 7-24 PY2022 CEEP AVOIDED REPLACEMENT COSTS (ARCS) BY MEASURE.....177

TABLE 7-25 PY2022 CEEP NON-ENERGY BENEFITS (NEBs) SUMMARY178

TABLE 7-26 DETERMINING PROCESS EVALUATION TIMING179

TABLE 7-27 DETERMINING PROCESS EVALUATION CONDITIONS179

TABLE 7-28 CEEP PROCESS EVALUATION INTERVIEW AND SURVEY DATA COLLECTION SUMMARY180

TABLE 7-29 ENERGY EFFICIENCY CHALLENGES (N=9)184

TABLE 7-30 STATUS OF RECOMMENDATIONS FROM PY2021 EVALUATION.....192

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

TABLES OF FIGURES

FIGURE 2-1 PY2022 CONTRIBUTION TO PORTFOLIO NET ENERGY (kWh) SAVINGS 23

FIGURE 2-2 PY2022 PERCENTAGE OF *EX POST* NET ENERGY SAVINGS (kWh) BY END-USE F 24

FIGURE 2-3 *EX POST* ENERGY SAVINGS (kWh), BY MEASURE - RESIDENTIAL SECTOR..... 25

FIGURE 2-4 *EX POST* ENERGY SAVINGS (kWh), BY MEASURE - C&I SECTOR..... 26

FIGURE 2-5 STATUS OF PY2021 RECOMMENDATIONS (N=9) 30

FIGURE 3-1 NON-RESIDENTIAL FREE-RIDERSHIP SCORING FLOW CHART 39

FIGURE 4-1 NEBS TRC IMPACT BY PROGRAM 50

FIGURE 5-1 DISCOUNT RETAILER LOCATIONS 75

FIGURE 5-2 DISCOUNT RETAILER DRIVE TIMES..... 75

FIGURE 5-3 RELATIONSHIP BETWEEN HEATING CAPACITY REALIZATION & SAVINGS REALIZATION 85

FIGURE 5-4 PROGRAM AWARENESS (N=48)..... 111

FIGURE 5-5 PARTICIPATION MOTIVATION (N=54) 111

FIGURE 5-6 MOTIVATION FOR APPLIANCE PURCHASE (N=36)..... 112

FIGURE 5-7 PROGRAM SATISFACTION (N=54) 113

FIGURE 6-1 CWA ENERGY SAVINGS (kWh) SUMMARY 121

FIGURE 6-2 LOW INCOME ENERGY SAVINGS (kWh) SUMMARY 122

FIGURE 6-3 CWA DEMAND REDUCTION (kW) SUMMARY 123

FIGURE 6-4 LOW INCOME DEMAND REDUCTION (kW) SUMMARY..... 124

FIGURE 6-5 PARTICIPANT HOMES BY CHANNEL AND HEATING FUEL TYPE..... 127

FIGURE 6-7 PY2022 LOW INCOME PARTICIPANTS ACT 1102 QUALIFICATION CRITERIA 130

FIGURE 6-7 DUCT SEALING FIELD DATA COLLECTION RESULTS (N=27) 131

FIGURE 6-8 AIR INFILTRATION FIELD DATA COLLECTION RESULTS (N=21) 132

FIGURE 6-9 MAJOR MEASURE FREE-RIDERSHIP..... 133

FIGURE 6-10 DIRECT INSTALL FREE-RIDERSHIP 135

FIGURE 6-11 PROGRAM AWARENESS (N=48)..... 147

FIGURE 6-12 PARTICIPATION MOTIVATION (N=48) 148

FIGURE 6-13 HOME IMPROVEMENT MOTIVATIONS (N=48) 148

FIGURE 6-14 HOME ENERGY ASSESSMENT MOTIVATION (N=48)..... 149

FIGURE 6-15 HOME ENERGY ASSESSMENT SATISFACTION (N=47) 149

FIGURE 6-16 HOME ENERGY ASSESSMENT USEFULNESS (N=47) 150

FIGURE 6-17 CONNECTED WITH CONTRACTOR (N=48)..... 150

FIGURE 6-18 CHANGES IN ENERGY BILL (N=48)..... 151

FIGURE 6-19 PROGRAM SATISFACTION (N=48) 151

FIGURE 6-20 PERCENT OF PROJECTS WITH KEY MEASURES BY TRADE ALLY – PY2022 153

FIGURE 6-21 PERCENT OF PROJECTS WITH KEY MEASURES– PY2020-PY2022..... 153

FIGURE 7-1 CONTRIBUTION TO SAVINGS BY MEASURE..... 162

FIGURE 7-2 *EX ANTE* LIGHTING SAVINGS BY FACILITY TYPE 163

FIGURE 7-4 SOURCE OF PROGRAM AWARENESS (N=9)..... 182

FIGURE 7-4 IMPORTANCE OF VARIOUS FACTORS IN DECIDING TO UPGRADE (N=9) 183

FIGURE 7-5 PROGRAM SATISFACTION (N=7) 184

FIGURE 7-6 SOURCE OF PROGRAM AWARENESS (N=34)..... 185

FIGURE 7-7 MOTIVATION FOR PARTICIPATION (N=34) 186

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

FIGURE 7-8 IMPORTANCE OF VARIOUS FACTORS IN DECIDING TO UPGRADE (N=26)	186
FIGURE 7-9 USEFULNESS OF ENERGY ASSESSMENT (N=14)	187
FIGURE 7-10 CHANGE IN ENERGY BILL (N=28)	187
FIGURE 7-11 BARRIERS TO MAKING ENERGY EFFICIENT EQUIPMENT UPGRADES (N=26)	188
FIGURE 7-12 PROGRAM SATISFACTION (N VARIES)	189

1 Introduction

1.1 Acknowledgements

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Oklahoma Gas and Electric (OG&E) staff participated in ongoing evaluation deliverable reviews and discussions, attended regular meetings, and responded to follow-up questions, data requests and document requests. They are an ongoing partner in our evaluation efforts.

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Additionally, the following evaluation staff supported the creation of this report.

ADM Staff

Sedge Lucas | Analyst I

Will Meyer | Analyst II

John Coleman | Engineer I

Heather Polonsky | Project Manager

Joe Marquez | Project Manager

Chris Johnson | Senior Analyst

Michael Nicholson | Engineer II

Melissa Culbertson | Director

Adam Thomas, PMP | Principal

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

1.2 Acronyms and Abbreviations

Table 1-1 Commonly Used Acronyms and Abbreviations

Acronym	Term
AC	Air conditioner
AOH	Annual Operating Hours
APS	Advanced Power Strip
APSC	Arkansas Public Service Commission
SBS	Small Business Solutions
CEEP	Commercial Energy Efficiency Program
CWA	Consistent Weatherization Approach
C&EE	Conservation and Energy Efficiency
C&I	Commercial and Industrial
CEE	Consortium for Energy Efficiency
CF	Coincidence Factor
CFL	Compact Fluorescent Lamp (bulb)
CFM	Cubic feet per minute
DI	Direct Install
DLC	Design Lights Consortium
EEA	Energy Efficiency Arkansas
EER	Energy efficiency ratio
EFLH	Equivalent full-load hours
EISA	Energy Independence and Security Act
EL	Efficiency loss
EM&V	Evaluation, Measurement, and Verification
EPP	Efficient Products Pathway
EUL	Estimated Useful Life
ES	ENERGY STAR®
FR	Free-rider
FVR	Field Verification Rate
GPM	Gallons per minute
HDD	Heating Degree Days
HEEP	Home Energy Efficiency Program
HID	High intensity discharge
HOU	Hours of Use
HP	Heat pump
HSP	Home Solutions Program
HSPF	Heating seasonal performance factor
HVAC	Heating, Ventilation, and Air Conditioning
IEF	Interactive effects factor
IEM	Independent Evaluation Monitor
IEER	Integrated Energy Efficiency Ratio
IPLV	Integrated Part Load Value

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Acronym	Term
IQ	Income Qualified
ISR	In-service rate
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light Emitting Diode
M&V	Measurement and verification
NC	New construction
NEB	Non-energy Benefit
MW	Megawatt
MWh	Megawatt-hour
NTG	Net-to-Gross
PCT	Participant Cost Test
PY	Program year
QA	Quality assurance
QC	Quality control
RCA	Refrigerant charge adjustment
RIM	Ratepayer impact measure
ROB	Replace on Burnout
SEER	Seasonal Energy Efficiency Ratio
SO	Spillover
TRM	Technical Reference Manual
TU	Tune-up
UCT	Utility Cost Test
UWP	OG&E and AOG Unified Weatherization Program (Prior to 2020)
VFD	Variable Frequency Drive

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

1.3 Savings Types

Table 1-2 Commonly Used Savings Types

Term	Definition
Energy Savings (kWh) ¹	The change in energy (kWh) consumption that results directly from program-related actions taken by participants in a program.
Demand Reductions (kW)	The time rate of energy flow. Demand usually refers to electric power measured in kW (equals kWh/h) but can also refer to natural gas, usually as Btu/hr., kBtu/hr., therms/day, etc.
Other Fuels (Natural Gas & Propane)	Other fuel savings, such as propane and natural gas, which are estimated based on dual-fuel savings that are not incentivized by both of the utilities that participated in the project.
Water (Gallons)	Water savings that are reported in association with the installation of water saving devices.
<i>Ex ante</i> Gross	The change in energy consumption and/or peak demand that results directly from program-related actions taken by participants in a program, regardless of why they participated.
<i>Ex post</i> Gross	Latin for “from something done afterward” gross savings. The energy and peak demand savings estimates reported by the evaluators after the gross impact evaluation and associated M&V efforts have been completed.
<i>Ex post</i> Net	The energy and peak demand savings estimates reported by the evaluators after application of the results of the net impact evaluation. Typically calculated by multiplying the <i>ex post</i> gross savings by a NTG ratio.
Annual Savings	Energy and demand savings expressed on an annual basis, or the amount of energy and/or peak demand a measure or program can be expected to save over the course of a typical year. The AR TRM V9.0 provides algorithms and assumptions to calculate annual savings and are based on the sum of the annual savings estimates of installed measures or behavior change.
Lifetime Savings	Energy savings expressed in terms of the total expected savings over the useful life of the measure. Typically calculated by multiplying the annual savings of a measure by its EUL. The TRC test uses savings from the full lifetime of a measure to calculate the cost-effectiveness of programs.

¹ Definitions are from the Glossary in AR TRM V9.0, page 98.

2 Executive Summary

2.1 Introduction

On March 15, 2019 OG&E filed its triennial plan for Program Years 2020 to 2022 (PY2020 to PY2022) in compliance with Order No. 41 Docket No. 13-002-U, which set the time for the next three-year Portfolio to be filed, and Order No. 43 of Docket No. 13-002-U, which set the targets requiring electric investor-owned utilities (IOU) to capture energy savings in the amount of 1.2% of their 2018 sales. OG&E's Portfolio was approved by the Arkansas Public Service Commission (APSC) on June 17, 2019, with Order No. 88.

OG&E's 2022 budgets, energy savings and demand reduction goals serve as the basis against which its portfolio of programs were evaluated in 2022.

OG&E's 2020 to 2022 Plan includes a portfolio of programs designed to facilitate reductions in electric energy (kWh) and peak demand (KW) in every customer class. OG&E offers retail electric service in Oklahoma and Arkansas, servicing approximately 68,000 customers in Arkansas. OG&E's Arkansas service territory encompasses the City of Fort Smith and several nearby municipalities.

In accordance with APSC Rules for Conservation and Energy Efficiency Programs (C&EE Rules), OG&E engaged ADM Associates, Inc., (ADM) to conduct the evaluation, measurement, and verification (EM&V) of its portfolio. The ADM staff, collectively referred to as the Evaluators, evaluated the OG&E portfolio.

2.2 Summary of OG&E's Energy Efficiency Portfolio

In 2022, OG&E offered a portfolio of three energy efficiency programs, which provided a comprehensive range of customer options focused on energy efficiency and educational options. At a high-level, OG&E designed its programs to achieve the following objectives:

- PY2022 net energy-savings goal² of 25,301,215 kWh and demand reduction target of 5,022 kW;³
- Significant energy-savings opportunities for all customers and market segments;
- Broad ratepayer benefits; and

² This value was based on the Commission approved target of 1.20% of 2018 sales as set forth by the APSC and includes a reduction from target to account for commercial and industrial customers opting to self-direct.

³ These targets represent first-year net energy and demand savings at the meter.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- Comprehensiveness in seven areas (i.e., comprehensiveness factors) defined by the APSC.⁴

In PY2022, two residential programs and one commercial and industrial (C&I) program were evaluated. The Home Energy Efficiency Program (HEEP), the Consistent Weatherization Approach (CWA) Program, and the Commercial Energy Efficiency Program (CEEP) were all existing programs at the onset of PY2022.

Table 2-1 PY2022 OG&E Energy Efficiency Portfolio Overview

Program	Channel	Sector	PY2022 Net kWh Target ⁵	PY2022 Net kW Target
Home Energy Efficiency Program (“HEEP”)	Residential Solutions (RSOL)	Residential	3,458,718	614
	LivingWise® Schools Outreach			
	HVAC Replacement & Tune-up (HVAC)			
	Consumer Product Solutions (CPS)			
Consistent Weatherization Approach (CWA)	Consistent Weatherization Approach	Residential	4,868,250	1,097
	Low Income Pilot			
Commercial Energy Efficiency Program (“CEEP”)	Commercial and Industrial (C&I) Solutions	C&I	16,974,247	3,312
	Small Business Solutions (SBS)			
	Schools and Government Entities (SAGE)			
	Midstream Lighting			
	Continuous Energy Improvement (CEI)			
	Retro-commissioning Solutions (RCx)			
Total			25,301,215	5,022
Sums may differ due to rounding.				

2.3 Overview of Program Offerings

2.3.1 Residential Programs

- Home Energy Efficiency Program (HEEP):** This program is a multipronged residential offering designed to incentivize OG&E’s Arkansas customers to reduce their energy consumption by performing energy efficient upgrades to their homes. Designed to provide homeowners with multiple options, the proposed program combines Residential Solutions, Heating, Ventilation, and Air Conditioning (HVAC), and Consumer Products components. Providing homeowners with increased choices to

⁴ As defined by the APSC in the C&EE Rules of Order No. 17 in Docket 08-144-U.

⁵ Goal information is from the Docket 01-075-TF Doc 393, *Oklahoma Gas & Electric Company: 2020-2022 Energy Efficiency Portfolio Plan for Arkansas*, in Alek Antczak’s Direct Exhibit ABA-3, in table 2 on page 22 of the PDF.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

participate is expected to result in increased customer engagement, greater measure adoption, and increased program savings.

- Residential Solutions (RSOL): The Residential Solutions component of the HEEP program is a market-driven approach that promotes energy efficiency by providing homeowners with low-cost in-home assessments, direct install measures, community educational outreach, and incentives on home retrofits. Incentives are provided to encourage participation and decrease the upfront costs of energy efficient upgrades.
- LivingWise® Schools Outreach provides 6th grade students an educational opportunity to learn about how they can affect the energy efficiency of their home. Teachers will work directly with the program team to obtain materials.
- HVAC Replacement & Tune-up (HVAC): The air conditioner (A/C) tune-up and HVAC replacement component of HEEP focuses on improving the EE of the HVAC systems of residences. It provides incentives to improve operating efficiency of the existing HVAC unit or to replace it with a higher efficiency unit, through a program-approved Trade Ally network.
- Consumer Product Solutions (CPS): The lighting and appliances component promotes the purchase of energy efficient lighting and products including, but not limited to, LED lighting. There is also a food bank component to this channel, which gives LED lighting to food banks for inclusion in their food boxes to income qualified (IQ) customers. To help customers offset a portion of the incremental cost associated with higher efficiency appliances and products, the program uses upstream, midstream, and downstream incentives.
- **Consistent Weatherization Approach (CWA)**: This program aligns with the statewide Consistent Weatherization Approach (CWA) and will be delivered through approved OG&E contractors. Participation is available to all OG&E residential customers who live in single family (SF) or individually metered multi-family (MF) homes that are 10 years or older or meet the \$0.10 per square foot criteria. The program focuses on educating the customer on the efficiency of their home and developing an implementation plan to provide energy upgrades that align with the customer's needs and available program offerings. Where possible, the program will align measure offerings and incentive packages with Arkansas Oklahoma Gas (AOG) Weatherization Program, for dual fuel customers.
- Low Income Pilot: In PY2020, the low-income pilot was added to the program.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

2.3.2 Commercial and Industrial (C&I) Programs

- **The Commercial Energy Efficiency Program (CEEP):** This is a portfolio-style program approach designed to address the needs of OG&E’s commercial and industrial (C&I) customer base. Specifically, the program provides an umbrella for all C&I customers to participate through either prescriptive or custom channels, each specialized for a particular market segment or delivery channel.
 - Commercial and Industrial Solutions (C&I Solutions): C&I Solutions will offer direct installation of low-cost measures and performance and custom participation paths for customers to perform energy upgrades. Technical support will also be provided to assist in project identification and development.
 - *Prescriptive:* This path provides per-unit incentives for deemed savings measures installed by qualified contractors as defined by the current TRM.
 - *Custom:* This path gives participants an opportunity to achieve their specific EE goals by proposing measures that may be outside of the scope of the current TRM. Proposed measures are evaluated for savings and costs, and an appropriate incentive amount is approved if the project is deemed cost-effective.
 - Schools & Governmental Entities (SAGE): This channel assists institutional customer segments in overcoming barriers to energy efficiency that are unique to their market segment, such as conflicting organizational goals, outdated specifications, limited technical knowledge, and counterproductive energy budgeting. The program also provides benchmarking services to qualifying customers.
 - Small Business Solutions (SBS): Small Business Solutions offers direct installation of low-cost EE measures, facility walk-throughs and incentives for a suite of EE measures. This offer is targeted at business customers with peak demand less than 150kW. Direct install measures include LEDs and other low-cost lighting, low flow devices for electric water heating, HVAC upgrades, vending misers and low-cost refrigeration measures. This targeted channel is also eligible to participate in the larger C&I Solutions custom offering if the customer’s needs are beyond the scope of services outlined within this outreach approach.
 - Midstream: This channel encourages customers to participate by providing point of sale (POS) discounts on selected products through local lighting distributors. The financial incentives are paid to the lighting distributors to allow reduced costs for the end customer.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- **Continuous Energy Improvement (CEI):** The CEI channel provides energy conservation training to all levels of employees within a customer’s organization with a focus on low or no cost savings opportunities. This channel also offers a facility-wide assessment of energy usage and provides customers with continuous energy usage monitoring and feedback.
- **Retro-commissioning (RCx):** The RCx channel provides a non-capital-intensive approach to energy efficiency engagement. Additionally, capital projects that are identified through the retro-commissioning process, can be rebated through other programs channels.

Through its energy efficiency portfolio, OG&E also seeks to provide customers with easy program entry points, flexible options for saving energy, and ongoing support for those who want to pursue deeper energy savings or demand reduction. Refer to Table 2-2 for a list of the OG&E programs and targeted customer segments.

Table 2-2 OG&E PY2022 Energy Efficiency Portfolio Sectors Served by Program

Program	Residential	Multi-family ⁶	Small Business	C&I	Institutional & Municipal	Agricultural
HEEP	X	X				
CWA	X					
CEEP			X	X	X	X

This report presents the results of the evaluation of these programs.

2.4 Evaluation Objectives

The following activities were performed through the PY2022 EM&V effort:

- Verify program tracking data and correctly apply the Arkansas Technical Reference Manual Version 9.0 (AR TRM V9.0)⁷ to calculate savings and estimate PY2022 gross and net energy (kWh) and demand (kW) impacts at the high impact measure, program, and portfolio levels;
- Adjust *ex ante* gross savings using the results of evaluation research, relying primarily on tracking system and engineering desk reviews/metered data analysis and achieve a minimum precision of $\pm 10\%$ of the gross realized savings estimate at 90% confidence;

⁶All multifamily are duplexes that are single-metered, with more than four (4) units.

⁷ AR TRM V9.0 can be found here: <http://www.apscservices.info/EEInfo/TRMV9.0.pdf>

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- In consultation with the IEM, ADM estimated net-to-gross (NTG) values, which were calculated following AR TRM V9.0 Volume 1 Protocol H⁸ and provided complete documentation and transparency of all evaluated savings estimates;
- Provide ongoing technical reviews and guidance to implementers and OG&E throughout the evaluation cycle and review tracking system data to assess data captured for new measure offerings following AR TRM V9.0 Volume 1 Protocol A;
- Support the calculation of portfolio Non-energy Benefits (NEBs) in accordance with AR TRM V9.0 Volume 1 Protocol L;
- Conduct EM&V research to support possible updates for the next version of the TRM, which may include information on commercial and residential envelope measures, business type lighting hours of use, etc.
- Gain an understanding of program operations, challenges and evaluation needs through OG&E and implementation contractor key staff interviews, complemented with program documentation review and monthly status meetings.
- Conduct a full process evaluation for every program once over the three-year 2020–2022 program cycle and assess other process evaluation needs annually, document progress in incorporating recommendations identified during the prior year evaluation; and
- Update the assessment of OG&E’s success in achieving the goals and objectives established in the Commissions Comprehensiveness Checklist.⁹

2.5 Evaluation Findings

OG&E’s portfolio achieved 111% of planned net energy savings (kWh) and 96% of planned net demand reduction (kW) in PY2022. In addition to verifying the savings reported by OG&E, the Evaluators calculated lifetime impacts for the programs and measures. As part of this process, in the body of the report we refer to the impacts (energy savings or peak demand reduction) accrued during the program year being evaluated (PY2022) as “first year” impacts.

Table 2-3 shows the OG&E goals, reported gross impacts, evaluated first year *ex post* gross energy savings (31,248,214 kWh) and demand reductions (5,375 kW), gross realization rates (101% for kWh, 100% for kW), net impacts (28,149,987 kWh and 4,806 kW), NTG (90% for kWh, 89% for kW), and *ex post* net lifetime impacts (354,539,652 kWh).¹⁰ The levelized cost of energy savings (kWh) for the PY2022 portfolio is \$ \$0.038 (\$/kWh).

⁸ See additional details in each program chapter, as well as Appendix C. Net-to-Gross Approaches and Outcomes.

⁹ As defined by the APSC in the C&EE Rules of Order No. 17 in Docket 08-144-U.

¹⁰ Lifetime impacts are the sum of energy savings over the course of the measure’s estimated useful life (EUL) and the weighted average demand reduction across the lifetime of the measure divided by the EUL (in years).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 2-3 PY2022 OG&E Portfolio Evaluation Impacts

Impact	Metric	HEEP	CWA	CEEP	Total
Energy Savings (kWh)	Goals (Net)	3,458,718	4,868,250	16,974,247	25,301,215
	<i>Ex ante</i> (Gross)	4,538,210	5,155,338	21,144,350	30,837,898
	<i>Ex post</i> (Gross)	5,168,098	5,102,452	20,977,664	31,248,214
	Realization Rate	114%	99%	99%	101%
	<i>Ex post</i> (Net)	3,789,237	4,763,183	19,597,567	28,149,987
	NTG Ratio	73%	93%	93%	90%
	% of Goal (Net)	110%	98%	115%	111%
	Lifetime (Net)	46,697,808	81,493,056	226,348,788	354,539,652
Annual Demand Reduction (kW)	Goals (Net)	614	1,097	3,312	5,022
	<i>Ex ante</i> (Gross)	744	1,208	3,419	5,371
	<i>Ex post</i> (Gross)	840	1,184	3,351	5,375
	Realization Rate	113%	98%	98%	100%
	<i>Ex post</i> (Net)	596	1,107	3,103	4,806
	NTG Ratio	71%	94%	93%	89%
	% of Goal (Net)	97%	101%	94%	96%

The contribution to portfolio energy (kWh) savings by program is summarized in

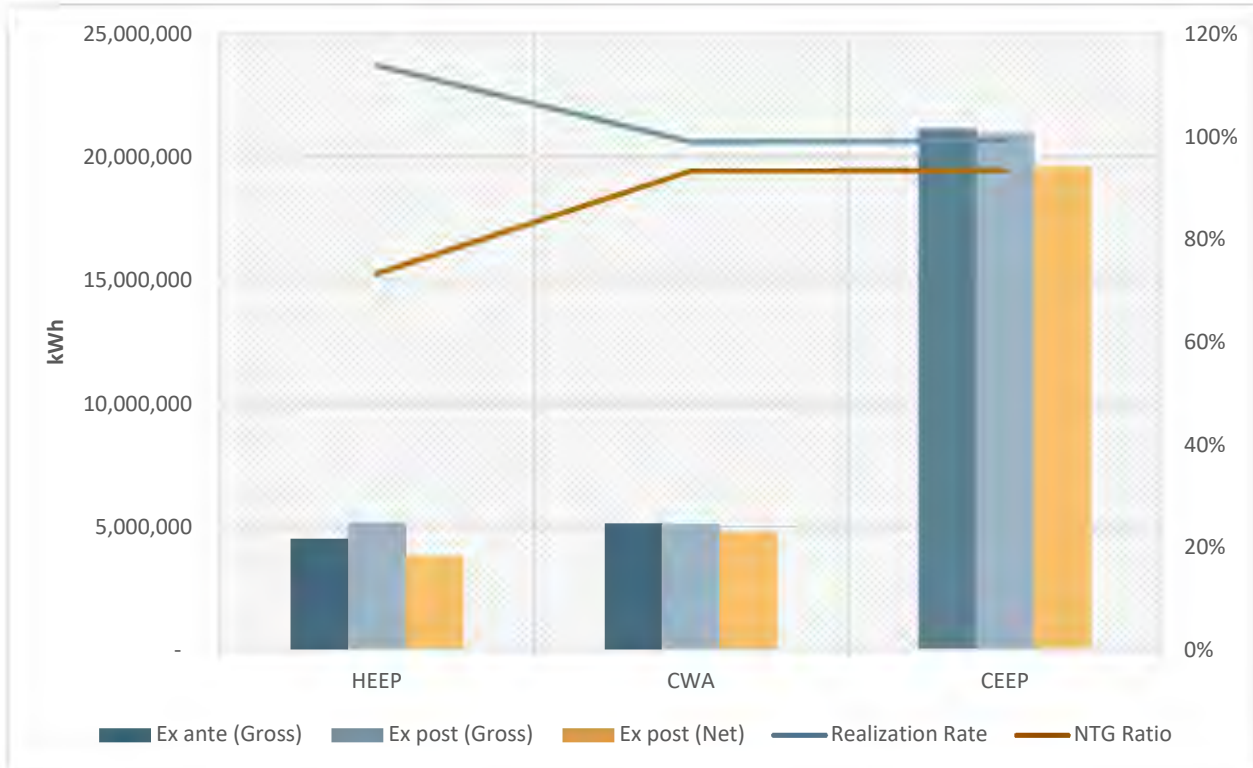
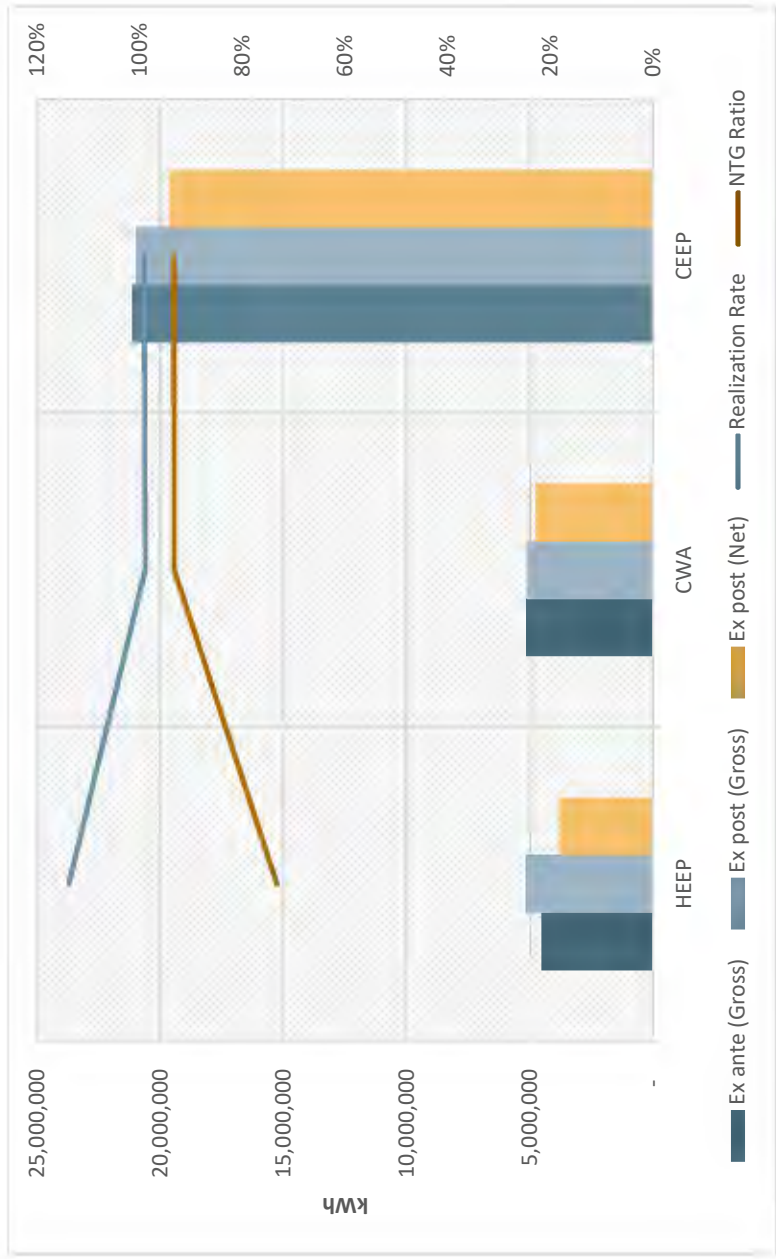


Figure 2-1.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report



23

Figure 2-1 PY2022 Contribution to Portfolio Net Energy (kWh) Savings

Figure 2-2 below represents ex post net energy savings (kWh), by end use and sector, in the PY2022 OG&E portfolio.

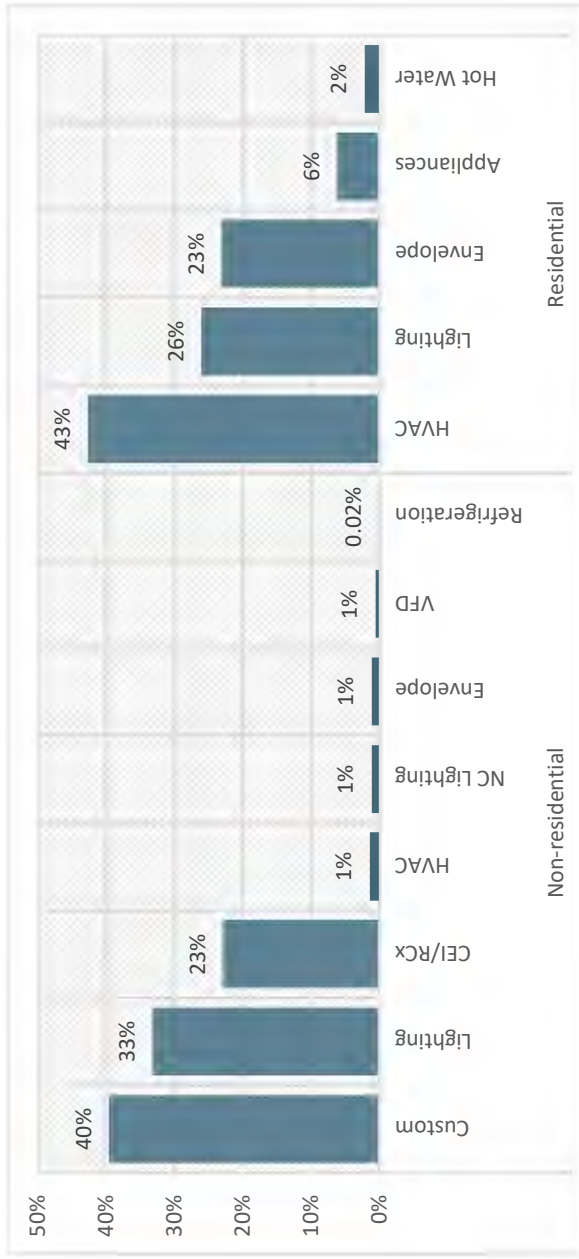


Figure 2-2 PY2022 Percentage of Ex Post Net Energy Savings (kWh) by End-Use f

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Each bar in Figure 2-3 shows the percentage of savings for each measure type, for each program in the residential sector. Aggregated across both HEEP and CWA, Duct sealing (38%), LEDs (26%), ceiling insulation (11%), air infiltration (11%), and advanced power strips (5%) are HIMs¹¹, accounting for 92% of residential portfolio *ex post* net kWh savings.

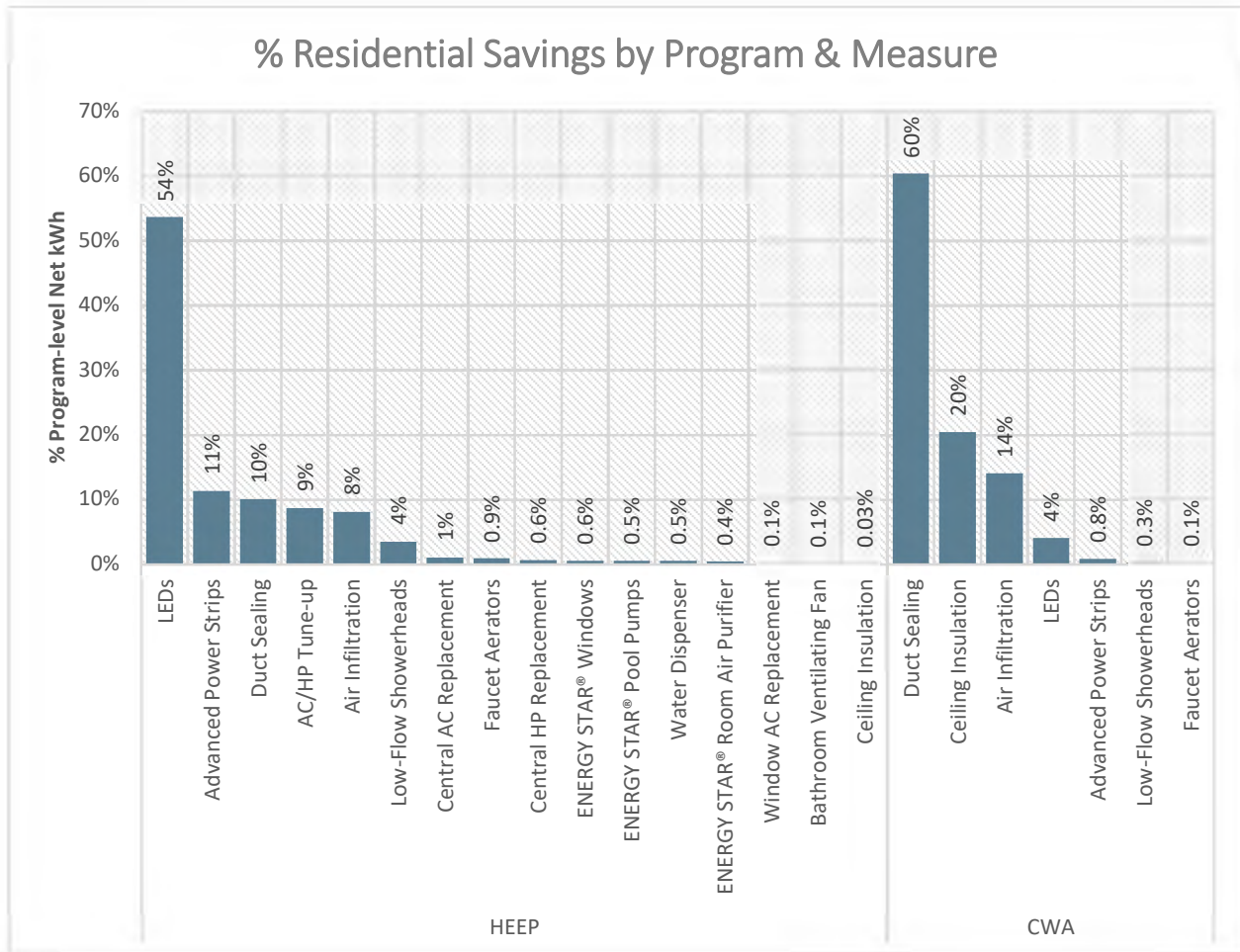


Figure 2-3 *Ex Post* Energy Savings (kWh), by Measure - Residential Sector

Each bar in Figure 2-4 below shows the contributions to *ex ante* gross energy savings (kWh) for each measure in the commercial and industrial sectors. Custom VFD, continuous energy improvement, interior LEDs, and LED troffers, were the HIMs for the commercial sector, and equal to 84% of portfolio *ex post* net energy savings (kWh). Custom projects included lighting, refrigeration, refrigeration gasket, and HVAC.

¹¹ A High Impact Measure (HIM) is an energy efficiency measure that accounts for at least 5% of total portfolio gross kilowatt hour, kilowatt, and/or therm savings in one or more of the utility’s energy efficiency programs. This is per Protocol E1 of the AR TRM V9.0, page 46.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

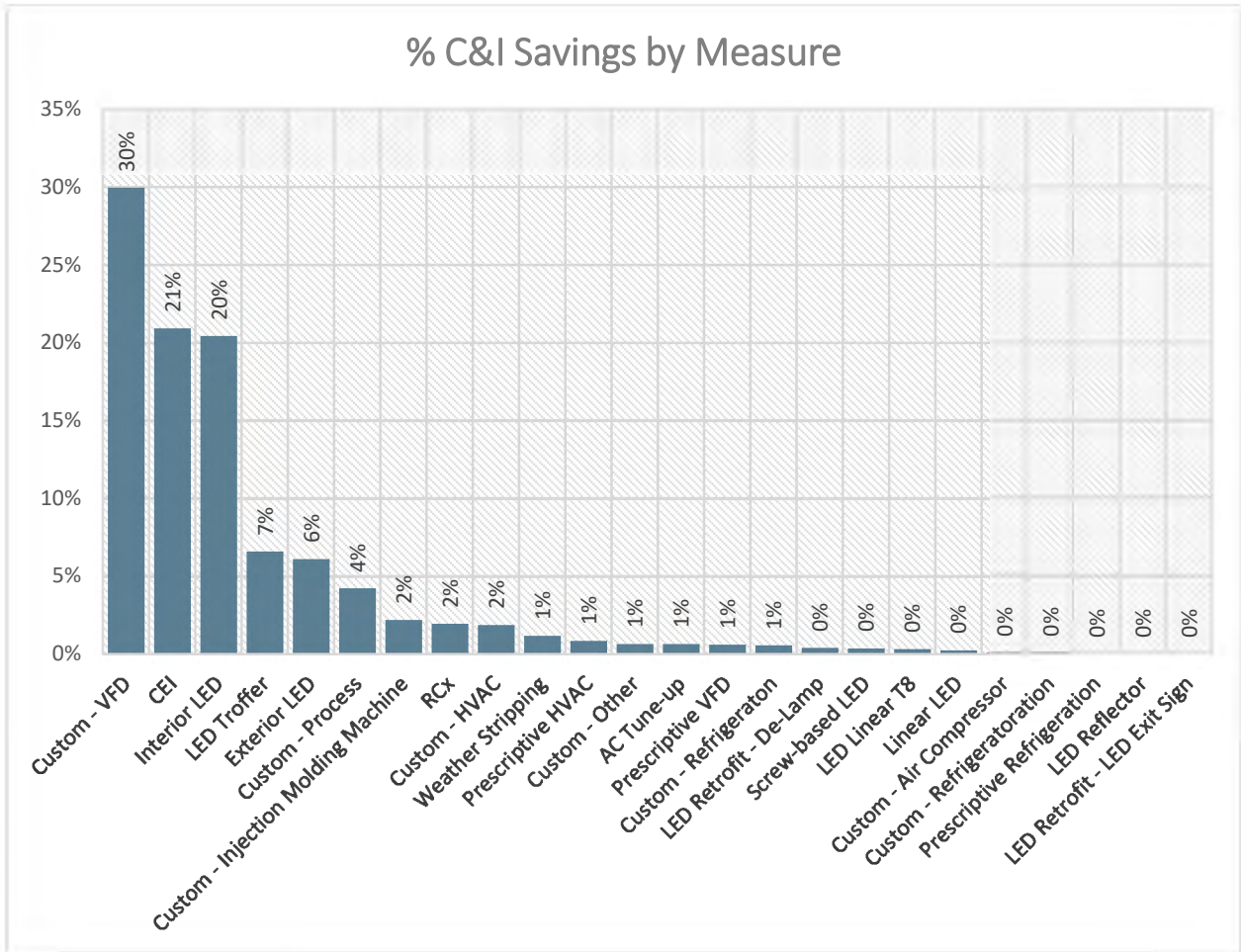


Figure 2-4 Ex Post Energy Savings (kWh), by Measure - C&I Sector

Further, the Evaluators put the net savings into the context of OG&E’s PY2022 goal¹². Table 2-4 summarizes the performance against goals of programs evaluated in this report.

¹² 2020-2022 Plan found here: http://www.apscservices.info/pdf/07/07-075-tf_393_1.pdf

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 2-4 OG&E PY2022 Performance Against Energy Savings (kWh) Goals

Program	PY2022 Net Energy (kWh) Savings Goal	PY2022 <i>Ex post</i> Net Energy (kWh) Savings	% of Goal Attained
HEEP	3,458,718	3,789,237	110%
CWA	4,868,250	4,763,183	98%
CEEP	16,974,247	19,597,567	115%
Total	25,301,215	28,149,987	111%
Sums may differ due to rounding.			

The PY2022 budgets and actual spend are summarized in Table 2-5 below.

Table 2-5 Summary of Budgets and Actual Spend in PY2022

Program	PY2022 Budgeted Expenditures ¹³	PY2022 Actual Expenditures	Percent of Budget Expended
HEEP	\$ 1,073,493	\$ 1,058,494	99%
CWA	\$ 3,483,095	\$ 2,248,114	65%
CEEP	\$ 5,134,344	\$ 4,078,666	79%
EEA	\$ 22,104	\$ 22,205	100%
Regulatory	\$ 25,000	\$ -	0%
Planning	\$ 30,000	\$ -	0%
Total	\$ 9,768,036	\$ 7,407,480¹⁴	76%
Sums may differ due to rounding.			

2.6 Program-level Evaluation Findings

Following a review of present program offerings and interviews with utility and third-party implementation (TPI) staff, the Evaluators found the following.

¹³ Ibid.

¹⁴ This total differs from the SARP workbook due to a 2022 LivingWise invoice that was paid in 2023.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

2.6.1 HEEP

Overall HEEP Performance in PY2022

The program performed relatively well in PY2022. Savings declined by 8%, but this has been driven largely by a reduction in emphasis on LEDs in advance of EISA Phase II standards.

Overall program NTG remained consistent at 73%.

Overall program realization was high, at 114% for kWh savings.

Some new measures had low realization rates as a result of AR TRM V9.0 updates. The Evaluators found low realization for bathroom ventilation fans and Energy Star air purifiers.

The Evaluators identified discrepancies in heating savings calculations for central heat pump replacements.

2.6.2 CWA

Progress has been made in meeting savings and H&S goals.

Net savings have increased by 72% (from 2,770,015 to 4,763,183).

H&S spending has increased from \$4 per home to \$97 per home for Low Income customers.

Satisfaction is improved from PY2021

In PY2021, 81% indicated being “Satisfied” or “Very Satisfied”, down from 97% in PY2020. In PY2022, this increased to 92%.

Program tracking data was mostly complete.

82% of projects had contact information available, down from 97% in PY2021.

Progress has been made on project comprehensiveness.

The program installed 2.73 measures per home at \$1,183 per home, increased from 2.47 measures at \$1,027 per home in PY2021.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

2.6.3 CEEP

Continuous Energy Improvement and Retrocommissioning have significantly increased their contribution to program-level savings

In PY2020, CEI and RCx totaled 245,803 gross kWh savings (less than 1% of total CEEP gross kWh). In PY2021, this has increased to 1,151,862 gross kWh (11% of total CEEP gross kWh). This increased again in PY2022, where CEI and RC totaled 4,472,160 kWh (21% of total gross kWh).

Custom projects are the large drivers of program savings.

Including RCx, CEI, and custom projects within Large C&I and SAGE, custom projects comprised 61% of CEEP PY2022 gross kWh savings. In PY2022, only 38% of CEEP net savings were from lighting projects. This marks significant progress for the program in diversification of end-uses reached.

Cost-effectiveness has declined.

The program TRC has declined from 3.02 to 1.56. This is attributable to increased project costs, as a greater share of the program impacts are coming from custom and non-lighting measures.

2.7 Progress on Previous Recommendations

In PY2021, nine program or portfolio level recommendations were provided to OG&E as part of the EM&V of their portfolio.

The Evaluators reviewed OG&E’s response to recommendations from the PY2021 EM&V report and categorized them as follows:

- 1) **Completed.** The recommendation has been fully implemented.
- 2) **Continuing.** The recommendation has been fully implemented. However, due to the nature of the recommendation, this will be monitored throughout the next program year.
- 3) **In progress.** The recommendation has been accepted and will be adopted before the next program year.
- 4) **Under consideration.** The recommendation is still under review by program staff or implementers and no decision has been made.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- 5) **Reviewed and rejected.** The recommendation has been considered and subsequently rejected. This also applies to recommendations that are no longer applicable due to changes in program design or operations.

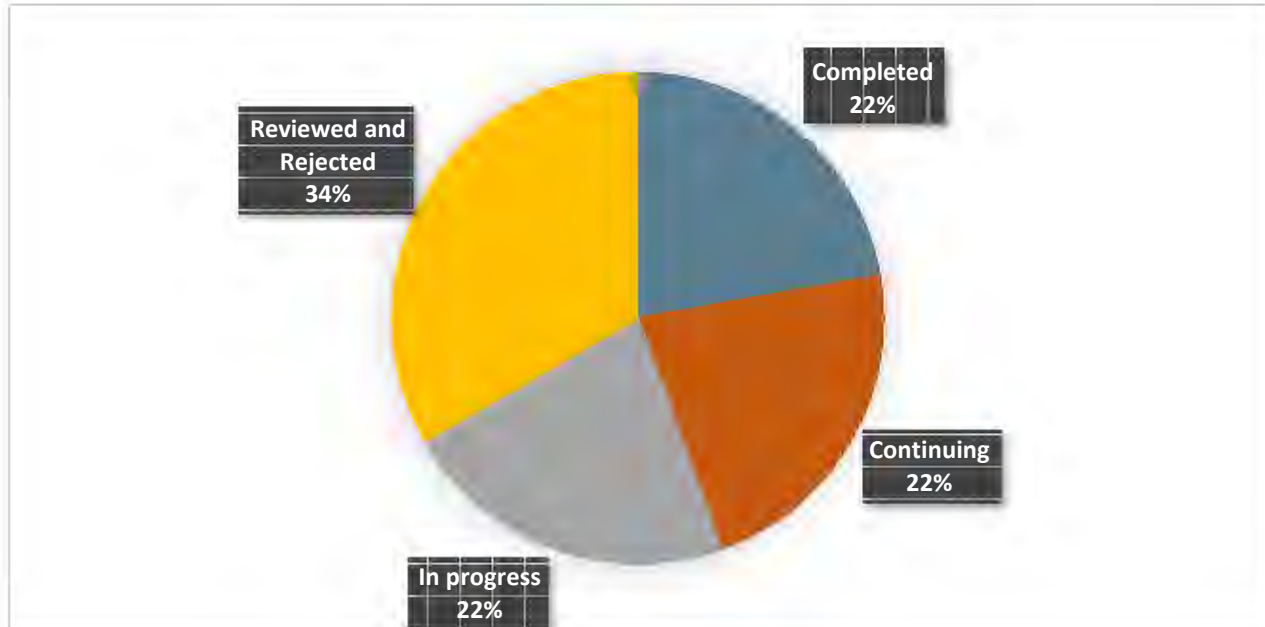


Figure 2-5 Status of PY2021 Recommendations (N=9)

2.8 Structure of the Report

This report is structured as shown below:

- Section 1 Introduction;
- Section 2 Executive Summary;
- Section 3 General Methodology;
- Section 4 Evaluation Findings;
- Section 5 HEEP Findings;
- Section 6 CWA Findings;
- Section 7 CEEP Findings;
- Appendix A – Portfolio Cost-Effectiveness;
- Appendix B – CEEP Custom Project Site-level Reports; and
- Appendix C – Net-to-Gross Approach and Outcomes.

3 General Methodology

3.1 Introduction

This section details general impact evaluation methods by program-type as well as data collection methods.

This section will present full descriptions of the following:

- Gross Savings Estimation;
- Sampling Methodologies;
- Free-Ridership and Spillover Determination;
- Process Evaluation Methodologies; and
- Data Collection Procedures.

The Evaluators would like to note that in several cases in this report, the summation of total savings, expenditures and other tracked metrics may be off by one due to rounding.

3.2 Glossary of Terminology

As a first step to detailing the evaluation methodologies, the Evaluators have provided a glossary of terms¹⁵ to follow:

- **Deemed Savings** – An estimate of an energy savings or energy demand savings outcome (gross savings) for a single unit of an installed energy efficiency measure. This estimate (a) has been developed from data sources and analytical methods that are widely accepted for the measure and purpose and (b) is applicable to the situation being evaluated.
- **Free-rider** – A program participant who would have implemented the program measure or practice in the absence of the program. Free-riders can be total, partial, or deferred. However, per the Arkansas TRM V9.0 Protocol F, “participants who would have installed the equipment within one year will be considered full free riders; participants who would have installed the equipment later than one year will not be considered to be free riders (thus no partial free riders will be allowed).”
- **Gross Realization Rate** – The ratio of *Ex post* Gross Savings and *Ex ante* Gross Savings.
- **Participant** – A consumer who received a service offered through the subject efficiency program in each program year.

¹⁵ This is in addition to sections 1.2 Acronyms and Abbreviations and 1.3 Savings Types.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- **Net-to-Gross (NTG)** – A factor representing net program savings divided by gross program savings that is applied to gross program impacts, converting them into net program load impacts after adjustments for free ridership and spillover. $(1 - \text{Free-ridership \%} + \text{Spillover \%})$.
- **Spillover** – Reductions in energy consumption and/or demand caused by the presence of the energy efficiency program that exceeded the program-related gross savings of the participants. There can be participant and/or non-participant spillover rates depending on the rate at which participants (and non-participants) adopt energy efficiency measures or take other types of efficiency actions on their own (i.e., without an incentive being offered).
- **Stipulated Values** – See “deemed savings.”

This glossary was drawn from several evaluation reference documents, such as the 2007 International Performance Measurement & Verification Protocol (IPMVP),¹⁶ 2004 California Evaluation Framework,¹⁷ 2006 Department of Energy (DOE) Energy Efficiency and Renewable Energy (EERE) Guide for Managing General Program Evaluation Studies¹⁸ and the AR TRM V9.0.

3.3 Overview of Methods

The evaluation of the PY2022 OG&E portfolio is intended to provide:

- Net impact results;
- Gross impact results; and
- Program feedback and recommendations via a process evaluation.

In doing so, this evaluation provides verified gross savings results, recommendations for program improvement, and ensures cost-effective use of ratepayer funds. Leveraging experience and lessons learned from this impact evaluation can provide guidance to improve both the programs and portfolio in the future.

3.4 Sampling

Sampling is necessary to evaluate savings for the portfolio inasmuch as verification of a census of program participants is typically cost-prohibitive. As per evaluation requirements set forth by the Independent Evaluation Monitor (IEM), samples were drawn to ensure +/- 10% precision at 90% confidence.

¹⁶ <https://www.nrel.gov/docs/fy02osti/31505.pdf>

¹⁷ http://www.calmac.org/publications/California_Evaluation_Framework_June_2004.pdf

¹⁸ http://energy.gov/sites/prod/files/2013/11/f4/pmguidance_chapter_7.pdf

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Programs were evaluated on one of three bases:

- Census of all participants;
- Simple random sample; or
- Stratified random sample.

3.4.1 Census

A census of participant data was used for the HEEP CPS channel where such review was feasible. All program measures were evaluated.

3.4.2 Field Verification Rate

The Evaluators conducted field data collection to assess the verification rate for duct sealing, air infiltration, and ceiling insulation for the CWA.

3.4.3 Simple Random Sampling

For programs with relatively homogenous measures, the Evaluators conducted a simple random sample when surveying program participants. In PY2022 this applied to the CWA. The sample size for verification surveys was calculated to meet $\pm 10\%$ precision at 90% confidence (90/10). The sample size to meet 90/10 requirement was calculated based on the coefficient of variation of savings for program participants, defined as:

$$CV = \frac{\text{Standard Deviation}_x}{\text{Mean}_x}$$

Where x is the average kWh savings per participant. Without data to use as a basis for a higher value, it is typical to apply a CV of 0.5 in residential program evaluations. The resulting sample size is estimated with the following:

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

Where:

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

CV = Coefficient of Variation

RP = Required Precision, 10% in this evaluation

3.4.4 Stratified Sampling

For the CEEP, Simple Random Sampling was not an effective sampling strategy. The CV values observed in business programs are typically very high because the distributions of savings are

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

generally positively skewed. Often, a relatively small number of projects account for a high percentage of the estimated savings for the program.

Instead, we used a sample approach designed to select projects for the M&V sample that considers skewed data. With this approach, we selected several sites with large savings for the sample with certainty and then took a systematic random sample of the remaining sites. Once the certainty sites had been selected, the remaining sites were ordered according to the magnitude of their savings and then systematically random sampled. This ensured that any sample selected had some units with high savings, some with moderate savings, and some with low savings.

3.5 Impact Evaluation Activities by Program

The Evaluators used established, industry-standard approaches to estimate energy savings and demand reductions at the measure, program, and portfolio levels. The Evaluators followed all applicable measure- and program-level guidelines and protocols from the AR TRM V9.0.

To evaluate gross program impacts, the Evaluators adjusted program-reported gross savings using the results of our research, relying primarily on engineering desk reviews, AR TRM V9.0 deemed savings calculation and on-site verification and metering for applicable programs. To calculate deemed savings, we verified the appropriateness of savings algorithms and values in program tracking data as compared to guidelines in the AR TRM V9.0. Where sampling was used (for surveys and site visits), we designed a sampling plan to achieve a minimum precision of $\pm 10\%$ at 90% confidence.

For each program and measure category, the Evaluators estimated energy savings and demand reduction by applying a verified gross savings adjustment to program-reported savings. Table 3-1 lists the impact analysis activities the Evaluators performed for the PY2022 EM&V.

Table 3-1 PY2022 Impact Evaluation Activities by Program

Program	CEEP	CWA	HEEP
Database and Document Review	X	X	X
Engineering Desk Review	X	X	X
Deemed Savings Review per the AR TRM	X	X	X
Leakage Analysis			X
Modeling	X		X
Load Data Analysis & Baseline Estimation	X		

Where applicable, more detailed engineering and econometric approaches are provided in the program chapter.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

3.6 Estimation of Net Savings

Table 3-2 below summarizes the *ex post* net savings approach used in the PY2022 evaluations. Additional details and the reasons for taking the stated approach, survey administration procedures, and weighting approaches used for developing program-level net savings impacts are discussed in the program chapters.

Table 3-2 PY2022 *Ex post* Net Savings Approach

Program	Literature Reviews	Self-Report Surveys	Citation of Prior Program Year Surveys	Econometric Model	Not Applicable
HEEP	X		X	X	
CWA	X	X			
CEEP		X	X		

3.6.1 Residential Programs Net Savings Estimation Methodology

The Evaluators developed new NTG ratios for the following program offering:

- CWA:
 - The core weatherization program offering had NTG updated via participant surveying.
 - The Low-Income channel had assignment of 100% NTG validated by desk review.
- HEEP:
 - The retail lighting portion of the Consumer Products channel had NTG updated via econometric modeling.
 - Other channels and measures had NTGs that were based on either (1) NTG ratios develop for HEEP in PY2019-PY2020 evaluations or (2) developed based on literature reviews completed in PY2020 or PY2021.
- CEEP:
 - Large C&I Solutions and Small Business Solutions had NTG ratios updated via participant surveying.
 - Other channels used prior-year NTG ratios.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

3.6.2 Econometric Modeling Approach for HEEP CPS Channel

This method of free ridership was developed through the estimation of a price response model which will be used to predict sales levels in the absence of the program.

The premise of the price response model is that the quantity of the subsidized product will vary based on the price of the product and how well they are promoted. The program tracking data includes sales for each retailer, by model number and week. For each retailer and model number combination, original retail price and program price data will be available. As program price discounts and/or retailer original pricing change throughout the year, the tracking data is updated, allowing for the comparison of same-model sales under slightly different pricing conditions. Price effects are the main program tool for encouraging the purchase of high efficiency lighting choices. Due to the inability to observe price effects for other program offerings, this approach will be used only for the lighting portion of the program.

The final price response model is used to estimate a free ridership as described in the equation below:

$$\text{Free ridership ratio} = \frac{\sum_i^n (E[\text{Product}_{NoProgram_i}] * kWh_i)}{\sum_i^n (E[\text{Product}_{Program_i}] * kWh_i)}$$

Where:

$E[\text{Product}_{NoProgram_i}]$ = the expected number of products, i, purchased given original retail pricing (as predicted by the model).

$E[\text{Product}_{Program_i}]$ = the expected number of products, i, given program discounted pricing (as predicted by the model).

kWh_i = the average kWh savings for product, i.

The price response modeling approach is advantageous in that it is built upon actual sales data from participating retailers (as opposed to relying solely on consumer self-report surveys). There are, however, many limitations for the approach. Most importantly, non-program sales data is not available for inclusion in the model. As a result, the modeling of price impacts fits program sales data well, but it is uncertain whether those price effects apply well to prices outside of program ranges. Additionally, the lack of non-program sales data means that for many product types and time ranges, the available sales data lists zero sales. These “zeroes” in most cases do not actually represent zero sales, but rather a lack of information because program pricing is not in effect for a given product during a given week, presenting a challenge in modeling the sales data using typical time-series or panel data methods. Finally, there are likely variables that affect sales levels for products that are not captured by the program

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

tracking data; thus, there is a risk of omitted variable bias in addition to the inherent amount of error from statistical modeling.

3.6.3 Commercial & Industrial (C&I) Programs

The Evaluators conducted primary research in the form of participant self-report to estimate the *ex post* net impacts of the CEEP downstream channels and applied the applied downstream NTG ratio to the midstream channel.

3.6.4 Free-ridership Approach

The net savings approach used in PY2022 applied several criteria to determine which portion of a participant's savings should be attributed to free ridership. The first criterion comes from the response to the following questions:

- “Would you have been financially able to install the equipment or measures without the financial incentive from the Program?”
- “To confirm, your organization would NOT have allocated the funds to complete a similar energy saving project if the program incentive was not available. Is that correct?”

If a customer answered “No” to the first question and confirms the response by saying yes to the second question, a free ridership score of 0 was assigned to the project. That is, if a customer required financial assistance from the program to undertake a project, that customer was not deemed a free rider.

For decision-makers who indicated they could undertake energy efficiency projects without financial assistance from the program, three additional factors determine what percentage of savings is attributable to free ridership. The three factors were:

- Plans and intentions of the firm to install a measure even without support from the program;
- Influence that the program had on the decision to install a measure; and
- A firm's previous experience with a measure installed under the program.

For each of these factors, rules were applied to the decision-maker survey responses to develop binary variables indicating whether a participant showed free ridership behavior. The first required step is to determine if a participant stated that his or her intention was to install an energy efficiency measure without program assistance by applying a set of rules to the decision-makers survey response. Two binary variables were constructed to account for customer plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The first, more restrictive criteria (Definition 1) indicating customer plans and intentions that likely signify free ridership were as follows:

- The respondent answered “yes” to the following two questions: “Did you have plans to install the measure before participating in the program?” and “Would you have gone ahead with this planned installation of the measure even if you had not participated in the program?”
- The respondent answered, “definitely would have installed” to the following question: “If the financial incentive from the program had not been available, how likely is it that you would have installed [Equipment/Measure] anyway?”
- The respondent answered “no, the program did not affect level of efficiency that we chose for equipment” in response to the following question: “How did the availability of information and financial incentives through the program affect the level of energy efficiency you chose for [Equipment/Measure]?”

The second, less restrictive criteria (Definition 2) indicating customer plans and intentions that likely signify free ridership were as follows:

- The respondent answered “yes” to the following two questions: “Did you have plans to install the measure before participating in the program?” and “Would you have gone ahead with this planned installation of the measure even if you had not participated in the program?”
- Either the respondent answered, “definitely would have installed” or “probably would have installed” to the following question: “Would you have completed the [Equipment/Measure] project even if you had not participated in the program?”
- The respondent answered “no, the program did not affect level of efficiency that we chose for equipment” in response to the following question: “How did the availability of information and financial incentives through the program affect the level of energy efficiency you chose for [Equipment/Measure]?”

The second required factor is determining if a customer reported that a recommendation from a program representative or experience with the program was influential in the decision to install a piece of equipment or measure. This criterion indicates that the program’s influence may lower the likelihood of free ridership when either of the following conditions were true:

- The respondent answered, “very important” to the following question: “How important was previous experience with the program in making your decision to install [Equipment/Measure]?”
- The respondent answered, “definitely not would have” or “probably not would have” to the following question: “If the program representative had not recommended

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

implementing the [Equipment/Measure], how likely is it that you would have implemented it anyway?”

- The third required factor is determining if a participant in the program indicated that he or she had previously installed an energy efficiency measure similar to one that they installed under the program without an energy efficiency program incentive during the last three years. A participant indicating that he or she had installed a similar measure is considered to have a higher likelihood of free ridership. The criteria indicating that previous experience may signify a higher likelihood of free ridership were as follows:
 - The respondent answered “yes” to the following question: “Not including the project that your organization received an incentive for in [PROGRAM YEAR], has your organization completed any significant energy efficiency projects in the last three years?” and the respondent states that they completed some of those projects without a program incentive.
 - The respondent answered “yes” to the following question: “Thinking about all of the projects you completed in the last three years, did you implement any energy efficient equipment or projects similar to the [Equipment/Measure] that you implemented at your facility located at [LOCATION] as part of any of those projects?”

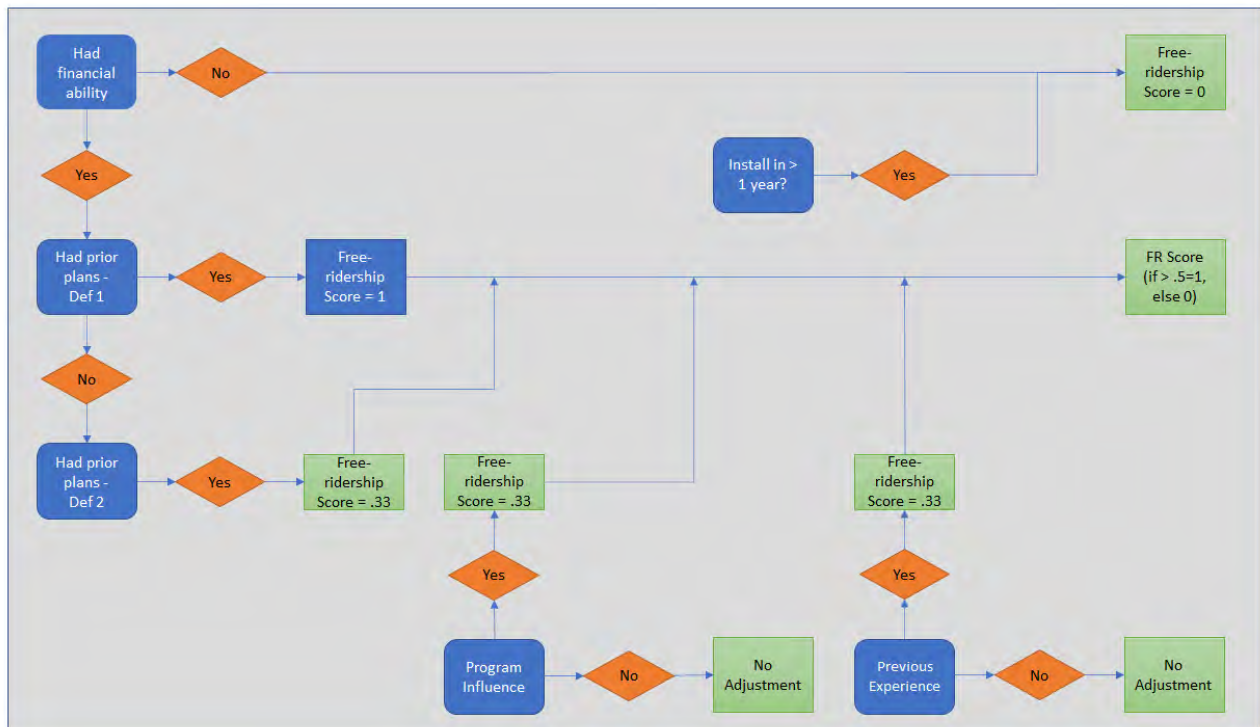


Figure 3-1 Non-residential Free-ridership Scoring Flow Chart

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Participant Spillover Approach

To assess participant spillover savings, survey respondents were asked whether they implemented any additional energy saving measures for which they did not receive a program incentive. Respondents were also asked to provide information on the measures implemented for use in estimating the associated energy savings.

To determine if the savings from the reported measures were attributable to the program, survey respondents are asked questions about the degree to which their experience with the program influenced them to implement the measures and the likelihood of implementing the measures in the absence of the program.

Specifically, respondents were asked the following questions:

- SO1: How important was your experience with the [PROGRAM] in your decision to install this equipment?
- SO2: If you had NOT participated in the [PROGRAM], how likely is it that your organization would still have installed this equipment?

The responses to these questions were used to develop a spillover score as follows: Spillover = Average (SO1, 10 – SO2)

Savings from measures associated with a spillover score of 7 or greater were considered attributable to the program.

The final NTG estimate for the program is calculated as: $NTG = 1 - \text{free ridership} + \text{participant spillover}$.

3.7 Deviations from the AR TRM V9.0

The sections below outline where the Evaluators deviated from the AR TRM V9.0 in PY2022:

- CEEP: CoolSaver, the CLEAResult Work Paper¹⁹ was used for these projects.
- HEEP: CoolSaver, the CLEAResult Work Paper was used for these projects.
- HEEP: Water Dispensers/Coolers, this measure is not in the TRM V9.0, the Evaluators cited the New Orleans TRM V4.0²⁰.

3.8 Cost-Effectiveness Approach

The cost-effectiveness of OG&E's programs was calculated based on reported total spending, energy savings (kWh), and demand reduction (kW) for each of the energy efficiency programs.

¹⁹ The CLEAResult CoolSaver work paper is updated annually and provided to the Evaluator by the Implementer.

²⁰ https://cdn.energy-neworleans.com/userfiles/content/energy_smart/New_Orleans_TRM/New_Orleans_TRM_Version_4.pdf

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

All spending estimates were provided by OG&E. The methods used to calculate cost-effectiveness are informed by the California Standard Practice Manual.²¹

Additional information can be found in Appendix A: Portfolio Cost-Effectiveness.

3.9 Non-Energy Benefit (NEB) Approach

Electric energy efficiency programs claimed primary fuel savings after the installation of measures that achieve energy (kWh) savings and demand (kW) reductions. Savings are monetized with the avoided costs. In Arkansas, the IEM, in coordination with investor-owned utilities (IOUs) and other stakeholders through the Parties Working Collaboratively (PWC), has also acknowledged that other NEBs are associated with the implementation of these measures. These other benefits can include reductions in water usage, fossil fuel consumption, and avoided and deferred replacement costs.

These NEBs are an addition to Arkansas programs under the authorization of Arkansas TRM V9.0. Volume 1 - Protocol L. After reviewing the guidance from the PWC, the Arkansas Public Service Commission (Commission) issued Order No. 30 on December 10, 2015, which provided direction and guidance regarding the inclusion of Non-Energy Benefits (“NEBs”) in the Technical Reference Forum (p. 21 of 21):²²

“The Commission therefore directs that the IEM be requested to recommend an approach for quantification of deferred equipment replacement NEBs in individual instances when they are material and quantifiable. Approval of deferred customer equipment NEBs, however, is conditioned as follows: The Commission directs that each recommended approach for customer deferred equipment replacement NEB quantification shall be included within the annual TRM update filing, and that its reasonableness shall be addressed in testimony by the IEM and/or Staff, and may be addressed by other parties, so that the Commission may approve or disapprove such proposed NEB quantifications.

The Commission therefore orders and directs that the following three categories of NEBs be consistently and transparently accounted for in all applications of the TRC test, as it is applied to measures, programs, and portfolios:

- o benefits of electricity, natural gas, and liquid propane energy savings (i.e., other fuels);*

²¹ California Standard Practice Manual: Economic Analysis of Demand Side Management Programs, October 2001. Available at: http://www.cpuc.ca.gov/NR/rdonlyres/004ABF9D-027C-4BE1-9AE1-CE56ADF8DADC/0/CPUC_STANDARD_PRACTICE_MANUAL.pdf

²² Arkansas TRM V9.0, Protocol L.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- o benefits of public water and wastewater savings;*
- o benefits of avoided and deferred equipment replacement costs as conditioned herein.”*

Per this Protocol²³ the recommended approach to quantify the NEBs will fall within these three categories.

3.9.1 Non-Energy Benefit (NEB) Protocols

Per Commission orders, NEBs are concentrated on other fuels, water, and deferred equipment costs. In response to the Commission Order for NEBs, a recent protocol addition is Protocol L, which encompasses NEBs:

- Protocol L1: Non-Energy Benefits for Electricity, Natural gas, and Liquid Propane (“other fuels”);
- Protocol L2: Non-Energy Benefits for Water Savings; and
- Protocol L3: Non-Energy Benefits of Avoided and Deferred Equipment Replacement Costs.

OG&E’s tracking system captures inputs needed for NEB calculations based on the AR TRM V9.0 algorithm. The Evaluators review included assessing the consistency of inputs for all assumptions for each measure.

3.10 Overview of Process Evaluation

The Evaluators took the following steps to determine the scope of the process evaluation for the PY2022 programs in OG&E’s portfolio.

3.11 General Approach

The Evaluators completed a limited process evaluation for HEEP and CEEP. For CWA, a process evaluation was conducted targeting issues pertaining to participation and savings shortfalls, attaining health and safety goals, and addressing participant dissatisfaction.

3.12 Justification for PY2022 Process Evaluation Approach

Process evaluations in general assess organizational and procedural aspects of programs to provide feedback on aspects of programs that are functioning well and contribute recommendations when areas of improvement are identified. The Evaluators have consulted and followed TRM V9.0 Volume 1 Protocol C, to determine whether conducting a process

²³ Protocol L of the Arkansas TRM V9.0.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

evaluation is appropriate for a specific program in the portfolio, as well as the appropriate timing for the process evaluation.

Protocol C defines the criteria that require a process evaluation be undertaken as well as criteria justifying conducting a process evaluation. Table 3-3 provides details on specific criteria that must be met prior to proceeding with a process evaluation.

Table 3-3 TRM V9.0 Volume 1 Protocol C: Process Evaluation Guidance

Criteria for Process Evaluations
<p>Process evaluation required if...</p> <ul style="list-style-type: none"> ■ Program is new/modified ■ No process evaluation has been undertaken during current funding cycle ■ A change in program implementation occurred.
<p>Process evaluation potentially needed if...</p> <ul style="list-style-type: none"> ■ Program impacts are lower than expected ■ Goals (both informational and educational) are not being achieved ■ Rates of participation are lower/slower than expected ■ Program’s operational system is slow to get up and running ■ Cost effectiveness of the program is less than expected ■ Participants (customers & market actors) report problems/low rates of satisfaction with program

After reviewing implementation of programs and process evaluation activities already completed in PY2022, including information provided by implementation contractors at the project kick-off meeting, the Evaluators identified the content in Table 3-4 below.

The table shows the criteria that would indicate that the conditions were appropriate to complete a process evaluation in PY2022.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 3-4 Determination of PY2022 Process Evaluation Structure and Timing

Criterion	HEEP	CWA	CEEP
New and innovative components	Yes	Yes	Yes
Process evaluation completed during funding cycle	Yes	Yes	No
New vendor or implementation Trade Ally	No	Yes	No
Impact problems	No	Yes	No
Information/educational objectives not met	No	Yes	No
Participation problems	No	No	No
Operational challenges	No	No	No
Program is cost effective	Yes	Yes	Yes
Negative feedback	No	Yes	No
Problems with program or low satisfaction	No	Yes	No
Level of Effort in PY2022	Limited	Targeted	Limited

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

4 Evaluation Findings

This chapter provides a summary of the findings and any cross-cutting evaluation activities that occurred over the course of the PY2022 EM&V effort. Specifically, this chapter includes: a summary of program and portfolio performance in PY2022; a summary of EM&V activities and expenditures in PY2022; and high-level findings that cut across programs.

4.1 Summary of Evaluation Effort

Table 4-1 summarizes the EM&V expenditures by the Evaluators, total EM&V expenditures by all parties, and total program budgets.

Table 4-1 OG&E Portfolio PY2022 EM&V Expenditures

PY2022 EM&V Expenditures	PY2022 Portfolio Expenditures	EM&V as % of Expenditures
\$ 312,035	\$ 7,407,480	4.2%
Sums may differ due to rounding.		

To facilitate a thorough evaluation, the Evaluators conducted several primary research and data collection activities, including interviews with program and implementer staff, customer surveys, property manager interviews, and Trade Ally interviews. Specific PY2022 activities by program are listed in Table 4-2.

Table 4-2 Summary of PY2022 Data Collection Efforts

Program	Channel	# Site Visits	# Surveys	# Interviews ²⁴	# Staff Interviews	# Lit. Reviews
HEEP	CPS	0	0	0	7 ²⁵	1
	HVAC	0	18	0		0
	RSOL	0	18	0		6
	LivingWise®	0	807	0		1
CWA	N/A	56	62	0		1
CEEP	C&I Solutions	3	9	0		0
	SBS	1	34	0		0
	Midstream	0	0	3		0
	SAGE	1	2	0		0
	RCx	0	0	0		0
	CEI	0	0	0	0	
Total		61	950	3	7	9

²⁴ These interviews were performed with property managers, Trade Allies and other market actors, such as builders.

²⁵ Interviews were conducted with 4 OG&E and 3 CLEAResult staff. Several staff members participate in more than one program/channel.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

4.2 Summary of Cost-effectiveness Results

Table 4-3 below outlines the results from the cost-effectiveness analysis performed on the PY2022 portfolio, by program, along with the net benefits for the total resource cost (TRC) test.

Table 4-3 Cost-Effectiveness by Program, PY2022

Program	TRC	UCT	RIM	PCT	TRC Net Benefits
HEEP	2.42	2.04	0.46	9.20	\$ 1,464,331
CWA	4.65	1.79	0.52	10.47	\$ 7,969,374
CEEP	1.56	2.47	0.50	3.90	\$ 3,700,770
EEA	0.00	0.00	0.00	0.00	\$ (22,205)
Total	2.33	2.19	0.50	5.56	\$ 13,112,270
Sums may differ due to rounding.					

The incorporation of NEBs into cost-effectiveness testing in Arkansas at times leads to what could historically be thought of as atypical results. For example, the HEEP and the CWA have a higher TRC than UCT. Under a narrower approach to TRC (without NEBs), the TRC would always be lower than the UCT under the assumption that incentives are less than or equal to incremental cost. However, with NEBs included the TRC score for these programs is greater than the UCT score because the aggregate impact of the NEBs and the penalty to benefits from the negative gas interaction is still a benefit of greater magnitude than the difference between measure incremental costs and incentive levels.

The TRC in PY2022 is lower than it was in PY2021 (3.22). The Evaluators attribute this largely to:

- 1) Declining savings from LEDs as they are deprioritized in the OG&E portfolio with the onset of EISA Phase II standards; and
- 2) Increased project costs found in custom projects in CEEP.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 4-4 Cost Effectiveness Analysis: Economic Input Comparison

Discount Rates	PY2021	PY2022
Utility (TRC)	5.42%	5.42%
Utility (UCT)	5.42%	5.42%
Utility (RIM)	5.42%	5.42%
Societal (SCT)	1.29%	1.29%
Participant (PCT)	6.04%	6.04%
Line Losses		
Line Losses (demand)	7.83%	7.83%
Line Losses (energy)	7.25%	7.25%
Line Losses (therm)	2.67%	2.67%
Escalation rate	2.20%	2.20%
Avoided Costs		
Avoided Energy (\$/kWh)	\$ 0.03	\$ 0.03
Avoided Demand (\$/kW)	\$ 95	\$ 97
Avoided Natural Gas (\$/therm)	\$ 0.517	\$ 0.530
Avoided Water (\$/gallon)	\$ 0.0077	\$ 0.0077
Avoided Propane (\$/gallon)	\$ 2.38	\$ 2.42

4.2.1 Cost-effectiveness Methodology

See Appendix A: Portfolio Cost-Effectiveness of this report for additional details on the Evaluators approach.

Avoided Costs and Real Economic Carrying Charge (RECC)

The Evaluators used the economic inputs provided by OG&E for the cost benefit analysis, this included avoided costs that were estimated using the Real Economic Carrying Charge (RECC) approach.

Marginal Line Losses

The Evaluators used marginal line loss inputs provided by OG&E for the cost benefit analysis.

4.2.2 Non-Energy Benefits (NEBs)

Below is a summary of the Non-Energy Benefits (NEBs) that were calculated in each program in PY2022.

- **HEEP:** this program captured propane (LivingWise® Schools Outreach), natural gas (Residential Solutions, Consumer Products and LivingWise® Schools Outreach), water

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

(Residential Solutions and LivingWise® Schools Outreach) and ARCs (Residential Solutions, Consumer Products and LivingWise® Schools Outreach).

- **CWA and LI pilot:** this program captured natural gas savings, propane savings, water savings and ARCs.
- **CEEP:** this program captured natural gas (C&I Solutions, SAGE, Midstream and Small Business Solutions) and ARCs (C&I Solutions, SAGE, Midstream and Small Business Solutions).

The tables below outline the potential NEBs for the PY2022 OG&E energy efficiency portfolio.

Table 4-5 PY2022 Residential NEBs by Measure²⁶

Measure	Water	Other Fuel	ARCs/ DRCs	AR TRM V9.0 Section
Air infiltration		X		2.2.9
Ceiling insulation		X		2.2.2
Duct sealing		X		2.1.11
ENERGY STAR® LEDs		X	X	2.5.1
ENERGY STAR® pool pumps				2.4.5
Faucet aerators	X	X		2.3.4
LED fixtures		X	X	2.5.1
Heat pump or AC Replacements				2.1.5
Low-flow showerheads	X	X		2.3.5

²⁶ This tables represents potential NEBs for each measure. In some cases, there is either not enough data available to calculate those NEBs, or that NEB was not applicable in that application.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 4-6 PY2022 C&I NEBs by Measure

Measure	Water	Other Fuel	ARCs/ DRCs	AR TRM V9.0 Section
Commercial door air infiltration		X		3.2.11
Commercial showerheads	X			3.3.5
Faucet aerators	X			3.3.2
High efficiency battery chargers		X	X	3.7.14
High intensity discharge (HID) lamps		X	X	3.6.3
Integrated ballast CFL lamps		X	X	3.6.3
Integrated ballast LED lamps		X	X	3.6.3
LEDs		X	X	3.6.3
Lighting controls		X	X	3.6.2
Low-flow pre-rinse spray valves	X		X	3.8.11
Magnetic ballast T5 or premium T8 retrofit of T12		X	X	3.6.3
Midstream: exterior fixtures		X	X	3.6.3
Midstream: interior fixtures		X	X	3.6.3
Midstream: interior lamps		X	X	3.6.3
Modular CFLs and CCFLs		X	X	3.6.3
Other linear fluorescents		X	X	3.6.3
Smart thermostats		X		N/A

NEB estimates are found in each of the program chapters within this report. There are no deferred replacement costs (DRC) estimated for the PY2022 portfolio.

4.2.3 NEBs Impact

The figure below summarizes total TRC benefits by program and by category. HEEP had a lower percent of net benefits from NEBs (declining from 22% to 16%) which the Evaluators attribute to the declining savings participation from LEDs and the subsequent reduction in ARC benefits.

The CWA had a significant increase in the percent of benefits from NEBs (from 36% in PY2021 to 60% in PY2022). The Evaluators found that the percent of homes with propane service markedly increased in PY2022. This reduced the opportunity for cross-utility coordination between OG&E and AOG. Further, the ratio of “\$NEB per BTU” for propane is significantly greater than that for natural gas because:

- 1) In Arkansas (as well as most states), as a delivered fuel propane is significantly costlier than natural gas; and

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- In the TRC test, propane is monetized at its retail rate rather than at an avoided commodity cost, as propane is not delivered by a regulated utility with Arkansas' energy efficiency framework.

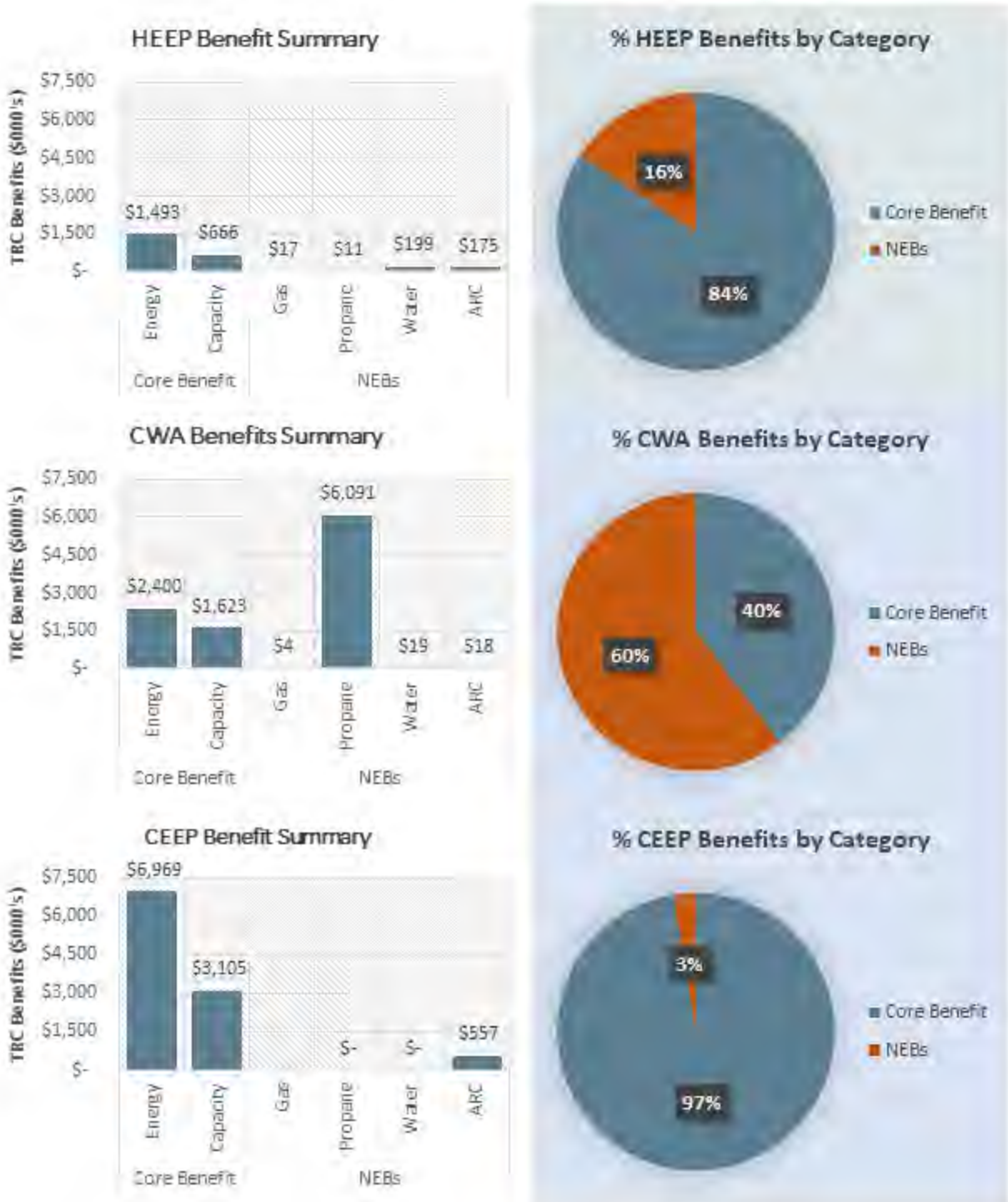


Figure 4-1 NEBs TRC Impact by Program

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

4.3 Tests of Portfolio Comprehensiveness

This section outlines how the OG&E portfolio performed against the seven factors developed by the IEM and the Parties Working Collaboratively (PWC).²⁷

The Evaluators reviewed the OG&E programs and portfolio to assess whether it complied with the APSC Comprehensiveness Goals. In assessing these metrics, the Evaluators score them on numerous subcomponents.

The scoring methodology is as follows:

- : Meets all requirements and is in full compliance with this performance indicator;
- ◐: Meets some requirements and is in partial compliance with this performance indicator;
- : Is not in compliance with this performance indicator; and
- NA: Performance indicator is not applicable to this program.

This section will reflect the results for all programs in PY2022.

4.3.1 Factor One: Education, Training, Marketing, and Outreach

Whether the programs or portfolio provide, directly or through identification and coordination, the education, training, marketing, or outreach needed to address market barriers to the adoption of cost-effective energy efficiency measures.

The Evaluators reviewed Factor 1 as three separate components: 1) education, 2) training, and 3) marketing and outreach. Each component is addressed below.

The Evaluators determined that OG&E met the objectives of Factor 1.

OG&E has consistently approached customer education in a comprehensive manner.

- OG&E's programs used a range of channels to provide educational materials to their programs' target markets. The educational materials included brochures, case studies, and presentations to trade & industry groups.
- OG&E's program staff conducts outreach and education through a wide range of potential program partners, including contractors, retailers, home builders, and local governments.

²⁷ Docket No. 08-144-U, "Order defining "comprehensive" in the planning, approval and implementation of essential energy efficiency services," found here: http://www.apscservices.info/pdf/07/07-085-tf_183_1.pdf

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- Thirty-two percent of CWA respondents stated they learned about the program from bill inserts or marketing mailers sent by the program. Twenty-one percent learned about the program by word-of-mouth from friends and relatives.

The scoring for customer education is in Table 4-7.

Table 4-7 Assessment of Customer Education by Program

Program	Provides Educational Materials	Outreach Through Multiple Channels	Education Targeted to Specific Market Barriers	Coordination of Education by Multiple Entities
HEEP	●	●	●	●
CWA	●	●	●	N/A
CEEP	●	●	●	●

OG&E has consistently approached training in a comprehensive manner.

The scoring for Trade Ally training is in the table below. The Evaluators reviewed each OG&E program to assess whether:

- The program is Trade Ally driven;
- If not, is it a program that could or should be Trade Ally driven;
- The program provides training classes to support their program offerings; and
- Whether the programs need Trade Ally certification.

All OG&E programs have components that are trade-ally driven. In past evaluations, all interviewed Trade Allies indicated satisfaction with the residential programs.

In PY2021, it was found that new Trade Allies in the CWA were not installing health and safety measures (with fewer than 5% of participants received any health and safety spending). This has increased to 29% in PY2022 and this progress is notable, though further improvement is still needed.

Table 4-8 Assessment of Trade Ally Training

Program	Trade Ally Training Offered	Training Requirements Adhere to Best Practices	Trade Allies Participate in Training
HEEP	●	●	●
CWA	●	◐	●
CEEP	●	●	●

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

OG&E consistently approached marketing and outreach in a comprehensive manner.

The Evaluators reviewed the marketing and outreach strategies associated with each of the OG&E programs. These strategies were reviewed to assess whether they adequately addressed the relevant participant barriers, the extent to which Trade Allies were actively marketing the program (where appropriate), and whether the materials were correctly targeted in marketing a comprehensive approach to energy efficiency.

The scoring for marketing and outreach is in Table 4-9.

Table 4-9 Assessment of Marketing & Outreach by Program

Program	Marketing Addresses Specific Barriers	Trade Allies Promote Program	Marketing Support Provided to Trade Allies	Marketing Performed Through Diverse Channels
HEEP	●	●	●	●
CWA	●	●	●	●
CEEP	●	●	●	●

After reviewing the marketing and outreach materials, the Evaluators concluded that:

- OG&E programs have marketing materials that address specific barriers associated with the targeted segments or technologies.
- The OG&E programs are marketed through a diverse range of channels, including mass-media advertising, online advertising, and meetings and training sessions with professional organizations and trade groups.
- Trade Allies market the programs through neighborhood canvassing, road signs, and flyers.

4.3.2 Factor Two: Budgetary, Management, and Program Delivery Resources

Whether the program and/or portfolio have adequate budgetary, management, and program delivery resources to plan, design, implement, oversee, and evaluate energy efficiency programs.

To evaluate budget and resource sufficiency, the Evaluators assessed performance indicators associated with the adequacy of budget allocations, the cost per kWh saved, and whether program staff and Trade Ally support was sufficient to support program goals.

The Evaluators determined that OG&E achieved the Factor 2 objectives for all programs.

Program budgets were sufficient to implement the programs.

In PY2022, at a portfolio level, OG&E achieved 111% of its energy savings (kWh) target and 96%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

of its demand reduction (kW) targets while spending 76% of its allocated budget²⁸, and at an overall levelized cost of \$0.039/kWh. HEEP met 110% of its net energy savings goal while spending 99% of its budget. CEEP achieved 115% of the energy savings goal while spending 79% of its allocated budget. In PY2021, the CWA only met 57% of its net savings goal while spending 36% of its budget. This improved markedly in PY2022, meeting 98% of its energy savings goal while spending 65% of its budget.

OG&E's energy resource acquisition cost at a portfolio level is in line with averages for utilities across the country with programs that have been run for several years.²⁹ The levelized acquisition cost increased to \$.039 per kWh in PY2022, but this was an expected outcome with the declining prevalence of LEDs as a result of the EISA Phase II standards.

Program and implementation staff reported that, overall, they had sufficient budget to cover program implementation in PY2022. Table 4-10 shows the spending and energy savings percentages for each program, along with the cost per kWh of savings.

Table 4-10 PY2022 Budget Allocation and Program Goal Attainment

Program	Spending (Percentage of Budget)	Energy Savings (Percentage of Goal)	Levelized (\$ per kWh)
HEEP	99%	110%	\$ 0.033
CWA	65%	98%	\$ 0.042
CEEP	79%	115%	\$ 0.038
Total³⁰	76%	111%	\$ 0.039

The scoring for Factor Two is in Table 4-11.

²⁸ This factors out EEA budgets (total budget of \$22,104, total spend of \$22,205) and regulatory budgets (\$0 out of \$25,000). Though If those budgets are included in this analysis, OG&E expenditures are still 76% of planned budget.

²⁹ EPA estimates that energy efficiency programs will cost program administrators \$0.58 cents up front per kWh saved in the first year for low savings levels, with costs declining to \$0.46 and then \$0.35 cents as programs ramp up. Source: <http://aceee.org/sites/default/files/cost-of-ee.pdf>

³⁰ Total is the percent of program-specific spend compared to program-specific budgets. This excludes EEA.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 4-11 Assessment of Budgetary, Management, and Delivery Resources

Program	Budget is Sufficient to Support Program Goals	Cost per-kWh Aligns with Program Plan	Program Has Sufficient Staffing	Program Has Sufficient Trade Ally Support
HEEP	●	●	●	●
CWA	●	●	●	●
CEEP	●	●	●	●

4.3.3 Factor Three: Major End-Uses Addressed

Whether the programs and/or portfolio reasonably address all major end-uses of electricity or natural gas, or electricity and natural gas, as appropriate.

To assess Comprehensiveness Checklist Factor 3, the Evaluators identified the end-uses addressed by each program. OG&E designed programs to offer customers a range of choices. While some programs are focused on single end-use measures, OG&E offers other programs that encourage participants to capture deeper energy savings through comprehensive projects. The Evaluators determined that OG&E continued to meet the objectives of Factor 3 in PY2022.

OG&E's targeted programs serve a wide range of customer sectors and end-use measure categories.

- All major end uses in the AR TRM V9.0 were utilized by the residential programs.
- All major end uses are targeted in the C&I programs, and the most significant HIM was custom VFDs. CEEP is notable in having 66% of net savings from non-lighting measures.

The scoring for this factor is in Table 4-12.

Table 4-12 Assessment of End-uses Addressed by Program

Program	HVAC	Lighting	Weatherization	Industrial Process	Behavioral
HEEP	●	●	●	N/A	N/A
CWA	●	●	●	N/A	N/A
CEEP	●	●	N/A	●	●

Presently, the OG&E portfolio covers almost all end-uses. The Evaluators found that sectors where the program offerings were not providing sufficient outreach and market transformation included:

- **Behavioral.** The residential portion of the portfolio does not include any behavioral-based programs. This is under consideration for the next triennial cycle as a means to

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

meet savings goals as the savings potential from lighting is significantly reduced as a result of EISA Phase II standards.

- **Smart thermostats.** OG&E opted to remove smart thermostats from HEEP. This measure has been cost-effective in other AR utility portfolios and should be reconsidered for inclusion.

4.3.4 Factor Four: Comprehensively Address Customer Needs

Whether the programs and/or portfolio, to the maximum extent reasonable, comprehensively address the needs of customers at one time, to avoid cream-skimming and lost opportunities.

In assessing Factor 4, the Evaluators reviewed the extent to which OG&E offers technical support to educate customers on cost-effective, comprehensive projects and/or whether it provides incentives that encourage participants to install multiple measures and/or those with higher efficiency levels that increase project comprehensiveness.

The Evaluators found that OG&E met the Factor 4 objectives in most respects in PY2022.

OG&E provides technical support to educate customers and encourage them to install comprehensive projects.

The OG&E portfolio has programs that bundle on-site technical assistance with direct installation. The range of technical assistance varies by program. The programs have procedures for following up with customers after their participation, which includes thank-you calls or emails, and verification inspection. Marketing materials typically make attempts at cross-promotion of programs.

The majority of OG&E's programs are designed to facilitate multi-measure installations.

The OG&E portfolio has no specific requirements for installation of multiple measures. Customers are able participate to an extent of their choice. This is a program best-practice in enabling customers to engage in energy efficiency in a manner in accordance with their budget constraints. However, there is no specific encouragement in place to incentivize comprehensive projects, as seen elsewhere in Arkansas.

The OG&E portfolio has no tiered or bundled incentives for premium efficiency measures at this time.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The CWA moved to a per-kWh payment structure for Trade Allies, and in PY2021 the Evaluators note a decline in project comprehensiveness compared to prior program years. Comprehensiveness has improved in PY2022 but is still below PY2020 levels.

Table 4-13 provides an overview of the scoring for this Factor.

Table 4-13 Assessment of Project Comprehensiveness by Program

Program	Technical Assistance and/or Audits	Information Provided Comprehensive for Efficiency	Bundled Incentives for Multiple Measures	Tiered Incentives for Premium Efficiency	Trade Ally Incentives for Premium Efficiency
HEEP	●	●	○	●	●
CWA	●	●	○	●	●
CEEP	●	●	○	●	●

4.3.5 Factor Five: Targeting Market Sectors & Leveraging Opportunities

Whether such programs take advantage of opportunities to address the comprehensive needs of targeted customer sectors or to leverage non-utility program resources.

The Evaluators assessed the portfolio's ability to address customers' comprehensive needs in Factor 4, the Evaluators assessed Factor 5 by focusing specifically on OG&E's efforts to customize its approach for targeted customer sectors. The Evaluators also assessed OG&E's use of external resources to promote the program and/or to improve customers' project returns.

The Evaluators found that OG&E met the Factor 5 objectives in PY2022.

OG&E has taken a collaborative and comprehensive approach to leveraging internal and external resources and targeting customer sectors most likely to benefit from its programs.

The CWA program is jointly implemented with OG&E and AOG and is a very successful example of cross-fuel coordination. The costs are split when a home is an OG&E and AOG customer and paid in full by OG&E if they are served by another gas utility (such as a municipal or a rural co-op). AOG pays in full if the home is served by an electric utility other than OG&E.

The Evaluators also found that OG&E's programs are marketed through industry partners including professional organizations, trade groups, universities, and homeowner's associations.

The program targeted residence that are at least 10 years old or have had an electric utility bill in the past 12 months equal to or greater than \$0.10 per square foot. Table 4-14 summarizes the comprehensiveness of offerings for each program.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 4-14 Assessment of Targeted Customer Sectors by Program

Program	Residential	Multifamily	Mobile Home	Small Commercial	Large Commercial	Industrial	Agricultural	Public Sector
HEEP	●	●	◐	N/A	N/A	N/A	N/A	N/A
CWA	●	N/A	●	N/A	N/A	N/A	N/A	N/A
CEEP	N/A	N/A	N/A	●	●	●	●	●

4.3.6 Factor Six: Cost-effectiveness

Whether the programs and/or portfolio enable the delivery of all achievable, cost-effective energy efficiency within a reasonable period of time and maximize net benefits to customers and the utility system.

To evaluate Factor 6 in PY2022, the Evaluators assessed three key performance indicators: 1) whether programs achieved their Plan goals, 2) NTG values, and 3) program cost-effectiveness.

Goal Achievement

In PY2022, the CWA met 98% of its savings target and HEEP and CEEP both exceeded their savings targets. The portfolio overall met 111% of its kWh target and 96% of its kW target.

Cost-Effectiveness Results and NTG

OG&E's portfolio is cost effective, as demonstrated with Total Resource Cost (TRC), Utility Cost Test³¹ (UCT), and Participant Cost (PCT) test ratios greater than 1.0. The portfolio-level TRC test ratio is 2.34 and all programs achieved TRC ratios above 1.0. The portfolio achieved UCT ratio of 2.21, which looks at cost effectiveness from the utility perspective. The portfolio-level PCT is 5.56.

Table 4-15 presents program- and portfolio-level NTG and benefit/cost ratios for each perspective. The UCT and PCT results are particularly relevant to Comprehensiveness Factor 6, as these test results indicate that portfolio benefits exceeded its costs from the utility and customers' perspectives, respectively.

³¹ The UCT is, in some cases, referred to as the Program Administrator Cost Test (PACT).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 4-15 Portfolio NTG and Cost Effectiveness Results

Program	Verified Net Savings (kWh)	NTG	TRC	UCT	RIM	PCT
HEEP	3,789,237	73%	2.42	2.04	0.46	9.20
CWA	4,763,183	93%	4.65	1.79	0.52	10.47
CEEP	19,597,567	93%	1.56	2.47	0.50	3.90
Portfolio	28,149,987	90%	2.33	2.19	0.50	5.56

Table 4-16 outlines the scoring for Factor Six.

Table 4-16 Assessment of Cost Effectiveness

Program	NTG Ratio	NTG Ratio Within Industry Norms	Met Net Savings Goal	Program TRC
HEEP	73%	●	●	2.42
CWA	93%	●	●	4.65
CEEP	93%	●	●	1.56

4.3.7 Factor Seven: EM&V Procedures

Whether the programs and/or portfolio have EM&V procedures adequate to support program management and improvement; the calculation of energy, demand, and revenue impacts; and resource planning decisions.

To assess Factor 7, the Evaluators reviewed performance indicators, including: 1) whether the EM&V Plan conforms to the TRM V9.0³², 2) whether the Plan achieved IEM approval, 3) whether the EM&V implementer followed an articulated plan, and 4) the extent to which OG&E provided high quality and timely data and other support necessary to conduct EM&V.

Below we summarize the PY2022 EM&V procedures' compliance with each of these evaluation metrics.

The EM&V Plan conformed to the TRM V9.0.

The Evaluators drew extensively on the AR TRM V9.0 to calculate deemed savings. Any deviation from the TRM has been explained in corresponding sections of the program.

The EM&V Plan was approved by the IEM.

³² At the time of developing the EM&V Plans, Arkansas TRM V9.0 had not been filed. The plan was checked against V9.0 after this version was released to ensure there were no conflicts as a result of the TRM update, and the plan was found to be compliant with V9.0 Protocols as well.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The Evaluators prepared a comprehensive EM&V Plan for PY2022 and submitted it to OG&E and the IEM for review. The Evaluators received several comments from the IEM regarding areas for refinement or additional detail. In most cases, the IEM requested greater detail in the description of EM&V activities, and wherever possible, the Evaluators addressed these.

During the course of the Evaluation, if there were instances where the Evaluators needed to deviate from the original EM&V Plans, the Evaluators communicated the change to the IEM for their feedback and approval.

OG&E provided timely/high quality data and support for the EM&V process.

OG&E and its implementers were very responsive to the Evaluators' data requests and accessing data through CLEAResult's DSMT database was straightforward and productive.

Specific examples of collaboration provided by OG&E and its implementation contractors to support the EM&V process include:

- **Custom M&V Plans:** For custom projects implemented through the C&I programs, the implementer provided M&V plans that were reviewed by the Evaluator prior to project implementation. The early collaboration on M&V plans and data collection activities allow both implementer and Evaluators the opportunity to agree on data requirements and calculation approaches to custom projects. This collaboration reduces risk associated with differences in *ex ante* and *ex post* savings for these projects.
- **Data Transfer and Data Quality:** The Evaluators found that prior data integrity issues had been thoroughly and thoughtfully addressed, and that tracking data supported evaluation needs.
- **Some new measures in HEEP had low realization rates due to use of default capacity and efficiency values.** The Evaluators found low realization rates for bathroom ventilation fans and air purifiers, due mostly to the use of a default size and efficiency value. Savings were adjusted after accounting for differences across units.

The Evaluators reviewed the quality of program tracking data to assess whether the data allowed for complete evaluation. Further, the Evaluators reviewed the extent to which individual savings calculations were performed using facility-specific inputs into the AR TRM V9.0 algorithms versus the use of simplifying assumptions.

The scoring for Factor Seven is found in Table 4-17.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 4-17 Assessment of Data & QA/QC Procedures by Program

Program	Tracking Contains Necessary Fields	Savings Calculations Performed and Reported	Savings Calculations Based on Facility Data	QA/QC Inspections by Program Staff
HEEP	●	●	◐	●
CWA	●	●	●	●
CEEP	●	●	●	●

In PY2022, CWA staff perform QA/QC inspections on 10% of all sites in the program.

The table below is a summary of the net present value (NPV) of all NEBs in the PY2022 OG&E portfolio.

Table 4-18 PY2022 OG&E NEB Findings Summary

Program	NPV NGS (\$)	NPV LPGS (\$)	NPV of Water/WW (\$)	NPV ARC (\$)	Total NPV of NEBs (\$)
HEEP	\$ (48,793)	\$ 10,893	\$ 199,318	\$ 174,848	\$ 336,267
CWA	\$ 3,502	\$ 6,091,008	\$ 18,635	\$ 17,874	\$ 6,131,019
CEEP	\$ (289,219)	\$ -	\$ -	\$ 556,904	\$ 267,686
Total	\$ (334,509)	\$ 6,101,901	\$ 217,953	\$ 749,627	\$ 6,734,971

Sums may differ due to rounding.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5 Home Energy Efficiency Program (HEEP)

5.1 Overview of Evaluation Findings

Table 5-1 PY2022 HEEP Energy Savings Summary

Channel / Measure	<i>Ex ante</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	NTG (kWh)	<i>Ex post</i> Net Energy Savings (kWh)
Consumer Products	3,070,284	115%	3,516,442	66%	2,275,375
Advanced Power Strips	484,623	100%	484,623	52%	252,004
LEDs (Food Bank)	761,890	100%	761,890	100%	761,890
LEDs (Specialty)	563,805	129%	724,655	55%	400,155
LEDs (Standard)	1,131,013	131%	1,480,743	55%	817,666
Room Air Purifiers	77,154	27%	20,488	73%	15,024
Ventilation Fans	11,082	37%	4,101	73%	3,007
Water Coolers	27,463	100%	27,463	73%	20,138
Window AC Replacement	13,255	90%	12,480	44%	5,491
HVAC Replacement & Tune-up	428,357	98%	421,200	93%	391,173
Central AC Replacement	47,934	100%	47,998	81%	38,879
Central AC Tune-up: Modeled	51,609	100%	51,616	75%	38,712
Central HP Replacement	38,041	81%	30,783	74%	22,779
Central HP Tune-up: M&V	4,342	100%	4,341	100%	4,341
Central HP Tune-up: Modeled	286,431	100%	286,462	100%	286,462
Residential Solutions	678,564	131%	888,976	131%	830,124
Advanced Power Strips	59,684	59%	35,327	78%	27,555
Air Infiltration	221,946	138%	306,244	100%	306,244
Ceiling Insulation	1,201	100%	1,201	100%	1,201
Duct Sealing	220,945	171%	378,465	100%	378,465
ES Pool Pumps	22,836	100%	22,836	90%	20,552
ES Windows	48,717	100%	48,717	44%	21,435
Faucet Aerators	4,781	98%	4,701	87%	4,090
LEDs	72,193	94%	67,469	74%	49,927
Low-Flow Showerheads	26,260	92%	24,016	86%	20,653
LivingWise® Schools Outreach	361,006	95%	341,480	87%	292,565
Advanced Power Strips	203,536	95%	192,683	78%	150,293
Bathroom Aerators (1.0 GPM)	33,095	55%	19,062	98%	18,681
Kitchen Aerators (1.5 GPM)	12,905	89%	11,458	98%	11,228
Showerheads (1.5 GPM)	111,470	106%	118,277	95%	112,363
HEEP Total	4,538,210	115%	5,168,098	73%	3,789,237

Sums may differ due to rounding.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-2 PY2022 HEEP Demand Reduction Summary

Channel / Measure	<i>Ex ante</i> Gross Demand Reductions (kW)	Realization Rate (kW)	<i>Ex post</i> Gross Demand Reductions (kW)	NTG (kW)	<i>Ex post</i> Net Demand Reductions (kW)
Consumer Products	476	121%	577	64%	372
Advanced Power Strips	55	100%	55	52%	29
LEDs (Food Bank)	124	100%	124	100%	124
LEDs (Specialty)	92	135%	124	55%	68
LEDs (Standard)	184	138%	253	55%	140
Room Air Purifiers	9	22%	2	73%	2
Ventilation Fans	1	52%	0.52	73%	0.38
Water Coolers	3	100%	3	73%	2
Window AC Replacement	8	188%	15	44%	7
HVAC Replacement & Tune-up	117	99%	116	90%	104
Central AC Replacement	17	92%	16	81%	13
Central AC Tune-up: Modeled	31	100%	31	75%	24
Central HP Replacement	4	100%	4	75%	3
Central HP Tune-up: M&V	.93	100%	.93	100%	0.93
Central HP Tune-up: Modeled	64	100%	64	100%	64
Residential Solutions	111	99%	110	80%	88
Advanced Power Strips	7	57%	4	78%	3
Air Infiltration	19	111%	21	100%	21
Ceiling Insulation	.47	100%	.47	100%	0.47
Duct Sealing	34	100%	34	100%	34
ES Pool Pumps	5	100%	5	90%	5
ES Windows	30	100%	30	44%	13
Faucet Aerators	.49	100%	.49	87%	0.43
LEDs	12	100%	12	74%	9
Low-Flow Showerheads	3	100%	3	86%	2
LivingWise® Schools Outreach	40	95%	38	84%	32
Advanced Power Strips	23	96%	22	78%	17
Bathroom Aerators (1.0 GPM)	4	50%	2	98%	2
Kitchen Aerators (1.5 GPM)	1	100%	1	98%	1
Showerheads (1.5 GPM)	12	100%	12	95%	12
HEEP Total	744	113%	840	71%	596
Sums may differ due to rounding.					

Table 5-3 outlines the PY2022 HEEP *ex post* gross, and net lifetime energy (kWh) savings.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-3 PY2022 HEEP Lifetime Savings Summary

Channel / Measure	EUL ³³	<i>Ex post</i> Gross Lifetime Energy Savings (kWh)	<i>Ex post</i> Net Lifetime Energy Savings (kWh)
Consumer Products	12	42,605,297	27,717,809
Advanced Power Strips	10	4,846,230	2,520,040
LEDs (Food Bank)	12.5	9,523,620	9,523,620
LEDs (Specialty)	12.5	9,058,192	5,001,934
LEDs (Standard)	12.5	18,509,282	10,220,826
Room Air Purifiers	9	184,392	135,215
Ventilation Fans	19	77,914	57,134
Water Coolers	10	274,626	201,383
Window AC Replacement	11	131,041	57,658
HVAC Replacement & Tune-up	10	4,477,562	4,067,960
Central AC Replacement	19	911,970	738,696
Central AC Tune-up: Modeled	8	433,084	324,813
Central HP Replacement	16	492,527	364,470
Central HP Tune-up: M&V	7	32,002	32,002
Central HP Tune-up: Modeled	9	2,607,979	2,607,979
Residential Solutions	14	12,891,578	11,986,387
Advanced Power Strips	10	353,272	275,552
Air Infiltration	11	3,368,688	3,368,688
Ceiling Insulation	20	24,029	24,029
Duct Sealing	18	6,812,370	6,812,370
ES Pool Pumps	10	228,360	205,524
ES Windows	20	974,341	428,710
Faucet Aerators	10	47,006	40,896
LEDs	12.5	843,357	624,084
Low-Flow Showerheads	10	240,155	206,533
LivingWise® Schools Outreach	10	3,414,798	2,925,653
Advanced Power Strips	10	1,926,830	1,502,927
Bathroom Aerators (1.0 GPM)	10	190,621	186,808
Kitchen Aerators (1.5 GPM)	10	114,576	112,285
Showerheads (1.5 GPM)	10	1,182,771	1,123,633
HEEP Total	17	63,389,235	46,697,808
Sums may differ due to rounding.			

Table 5-4 outlines the NEB estimates for the PY2022 HEEP.

³³ EULs for tune-up measures sourced from CLEAResult CoolSaver workpaper.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-4 *Ex post* Net Non-Energy Benefit (NEB) Estimates for HEEP

Channel / Measure	<i>Ex post</i> Net ARCs (\$)	<i>Ex post</i> Net Propane Savings (gallons)	<i>Ex post</i> Net Natural Gas Savings (therms)	<i>Ex post</i> Net Water Savings (gallons)
Consumer Products	\$ 169,287	0	(11,047)	0
Advanced Power Strips	N/A	0	0	0
Bathroom Ventilation Fan	N/A	0	0	0
ES Room Air Purifier	N/A	0	0	0
LEDs (Food Bank)	\$ 78,683	0	(4,948)	0
LEDs (Specialty)	\$ 27,802	0	(2,004)	0
LEDs (Standard)	\$ 62,803	0	(4,095)	0
Water Dispenser	N/A	0	0	0
Window AC Replacement	N/A	0	0	0
HVAC Replacement & Tune-up	\$ -	0	0	0
Central AC Replacement	N/A	0	0	0
Central AC Tune-up: Modeled	N/A	0	0	0
Central HP Tune-up: M&V	N/A	0	0	0
Central HP Tune-up: Modeled	N/A	0	0	0
Central HP Replacement	N/A	0	0	0
Residential Solutions	\$ 5,561	0	579	245,912
Advanced Power Strips	N/A	0	0	0
Air Infiltration	N/A	0	0	0
Ceiling Insulation	N/A	0	81	0
Duct Sealing	N/A	0	0	0
ES Pool Pumps	N/A	0	0	0
ES Windows	N/A	0	709	0
Faucet Aerators	N/A	0	0	42,419
LEDs (Standard)	\$ 5,561	0	(211)	0
Low-Flow Showerheads	N/A	0	0	203,493
Wall Insulation	N/A	0	0	0
LivingWise® Schools Outreach	\$ -	475	3,155	2,483,262
Advanced Power Strips	\$ -	0	0	0
Bathroom Aerators (1.0 GPM)	\$ -	62	414	326,060
Kitchen Aerators (1.5 GPM)	\$ -	37	249	195,985
Showerheads (1.5 GPM)	\$ -	375	2,492	1,961,217
HEEP Total	\$ 174,848	504	(7,313)	2,729,174
Sums may differ due to rounding.				

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5.2 Program Overview

The HEEP program offering in PY2022 was a multipronged approach that is designed to incentivize residential customers to reduce the energy consumption of their homes. It provides the customer multiple avenues for participation, including Residential Solutions, LivingWise® Schools Outreach, HVAC Replacement and Tune-up, and Consumer Product Solutions channels.

5.2.1 Residential Solutions

The RSOL channel is designed to provide direct install measures to residential customers. The program promotes energy efficiency by offering home assessments to both detached single-family and individually metered multi-family residential customers.

The program helped residents achieve electric savings by consulting with a contractor or OG&E representative, who helped analyze their energy use, identify energy efficiency improvement projects, and install low-cost energy saving measures at participant homes.

Key elements of the Residential Solutions offering include:

- **Customer engagement:** A variety of customer intake channels are made available through this program including phone, email and web.
- **Contractors or OG&E representatives:** These individuals are available to participants and potential participants in the program to provide information on the benefits and costs of energy efficient projects. They have the knowledge to discuss the potential options customers have and assist in defining the best path for them to take based on their individual situation.
- **Incentive application:** Applications are developed for customers to submit to the program for installed eligible measures. The program will conduct a QA/QC review of all applications to ensure that all required information and documentation has been provided.
- **Incentive payment:** Trade Allies receive payment checks directly from the program for approved applications of installed eligible equipment and measures. Customers receive payment checks on a case-by-case basis if it is deemed necessary and fits within the established program guidelines.
- **Project Verification & Quality Assurance:** A detailed QA/QC protocol was established to ensure technical and programmatic compliance by participating Trade Allies.

5.2.2 LivingWise® Schools Outreach

This channel includes an outreach channel targeted at elementary school students and was designed to provide an educational opportunity to learn about energy efficient opportunities in their home. This approach included an established teaching curriculum that teachers use to

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

review and teach their students what activities they can do to help save energy. The students were given an energy efficiency kit with easy to install measures (e.g., advanced power strips, aerators, showerheads, etc.) that they took home to have their guardians help them install.

This channel is targeted at sixth grade school students and included a survey for the students to fill out at home and return to their teacher. Teachers received the completed survey responses and submitted them to the program.

5.2.3 HVAC Replacement & Tune-up Channel (HVAC)

The objective of the HVAC Replacement and Tune-up channel (HVAC) was to generate energy and demand savings from residential HVAC systems through replacement of older inefficient equipment, or a tune-up of customer's existing HVAC system to optimize its operation and efficiency, effectively reducing energy intensity. This offering was designed as a market-driven approach that utilizes local HVAC contractors for completion of the work.

When customers contacted the program, the project team referred them to available contractors or scheduled an appointment for them. Contractors completed the tune-up or HVAC unit replacement, as well as the data collection on system performance and the paperwork required to submit for the applicable program rebates. Once the application passed the program requirements review, it was processed, and the rebate was paid.

5.2.4 Consumer Products Solutions

The objective of the Consumer Products Solutions (CPS) channel was to achieve cost-effective energy savings by incenting and educating customers to purchase residential lighting and appliances through downstream, upstream, and midstream channels. Appliances offered in CPS include advanced power strips, window ACs, ENERGY STAR® room air purifiers, bathroom ventilation fans, and water dispensers.

The PY2022 CPS channel also distributed LEDs through food banks. The participating food banks received the LEDs from CLEAResult and packed them into food boxes. At the food pantry, each food box is given to an Arkansas resident. The food box contains one four-pack of LEDs. This channel aims to target at all residential customers living within the OG&E Arkansas service territory.

To estimate total participation in HEEP, the Evaluators assumed that total packages of LEDs sold or distributed through CPS would equal the total number of participant households. Under this

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

assumption, 3,924³⁴ homes participated in the HEEP in PY2022. Table 5-5 summarizes the total households, total measures and the *ex ante* gross kWh and peak kW savings, by measure.

Table 5-5 PY2022 HEEP Participation Summary by Channel

Channel	Number Participants/ Households	Total Quantity of Measures	<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex ante</i> Gross Demand Reductions (kW)	Incentives
Residential Solutions	442	4,212 ³⁵	678,564	111	\$ 110,432
LivingWise® Schools Outreach	1,610	6,440	361,006	40	\$ 86,574
HVAC Replacement & Tune-up	213	225	428,357	118	\$ 59,760
Consumer Products Solutions	29,777 ³⁶	96,275 ³⁷	3,070,284	476	\$ 236,239
HEEP Total	32,042	107,152	4,538,210	744	\$ 493,005
Sums may differ due to rounding.					

Table 5-6 below outlines participation by channel, by measure.

³⁴ This includes participation estimates from the upstream portion of the CPS channel in PY2022.

³⁵ Excludes E-score Assessments

³⁶ LEDs in Consumer Products is denominated in number of packages.

³⁷ LEDs in Consumer Products is denominated in number of bulbs sold. This value also includes 3,564 non-LED measures.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-6 PY2022 Participation for HEEP by Measure

Channel / Measure	Households / Measures	Identified SF Participants	Identified MF Participants
Consumer Products	96,275	Unknown	Unknown
Advanced Power Strips	2,895	Unknown	Unknown
LEDs (Food Bank)	30,048	Unknown	Unknown
LEDs (Specialty)	19,230	Unknown	Unknown
LEDs (Standard)	43,433	Unknown	Unknown
Room Air Purifiers	66	Unknown	Unknown
Ventilation Fans	402	Unknown	Unknown
Water Coolers	57	Unknown	Unknown
Window AC Replacement	144	Unknown	Unknown
HVAC	225	178	47
Central AC Replacement	70	70	0
Central AC Tune-up: Modeled	38	38	0
Central HP Tune-up: M&V	2	0	2
Central HP Tune-up: Modeled	92	47	45
Central HP Replacement	23	23	0
RSOL	4,212	2,182	2,030
Assessment	222	222	0
Advanced Power Strips	238	90	148
Air Infiltration	125	0	125

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Ceiling Insulation	2	2	0
Duct Sealing	73	0	73
ES Pool Pumps	8	8	0
ES Windows	504	504	0
Faucet Aerators	83	3	80
LEDs (Standard)	2,870	1,344	1,526
Showerheads	87	9	78
LivingWise	1,610	Unknown	Unknown
Advanced Power Strips	1,610	Unknown	Unknown
Bathroom Aerators (1.0 GPM)	1,610	Unknown	Unknown
Kitchen Aerators (1.5 GPM)	1,610	Unknown	Unknown
Showerheads (1.5 GPM)	1,610	Unknown	Unknown
HEEP Total	102,322	2,360	2,077
*Total households do not equal the sum of measures due to households receiving multiple measures.			

5.3 Gross Impact Evaluation Approach

The Evaluators utilized the AR TRM V9.0 and New Orleans Louisiana (NOLA) TRM 5.0 values in assessing *ex post* gross energy savings (kWh), demand reductions (kW) and NEBs from residential measures. In addition to the AR TRM V9.0 and the NOLA TRM 5.0, the Evaluators also examined the Excel workbook used by the third-party implementation staff (CLEAResult and AM Conservation) to assess savings by measure. The workbook utilizes AR TRM V9.0 savings algorithms with Trade Ally inputs to calculate savings based on the measure and input parameters. The Evaluators verified the factor tables for each measure to ensure the values were appropriate.

5.3.1 Energy Savings Calculations

The following sections outline the impact evaluation approach for each channel in HEEP. For equipment and retrofits rebated through the PY2022 HEEP, calculation methodologies were performed as described in the AR TRM V9.0. Table 5-7 identifies the sections in the AR TRM V9.0 that were used for verification of measure-level savings.

Additionally, the NOLA TRM 5.0 was referenced for water dispenser measures. The gross impact evaluation effort included the following:

- Desk Review of Residential Calculations:** for all channels, the Evaluators utilized AR TRM V9.0 and NOLA TRM 5.0 values in assessing savings from measures in HEEP. In

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

HVAC, for the CoolSaver measure, a CLEAResult white paper³⁸ was utilized to verify savings.

- **Data Tracking Review:** for all channels, project data from the TPIs was reviewed to ensure that tracking systems followed Protocol A, B1 and B2 of the AR TRM V9.0.
- **Survey Analysis:** for AM Conservation, student/parent surveys were reviewed to determine in-service-rates (ISRs) and NEB estimates. For CPS, RSOL and HVAC, surveys were not used in impact analysis.
- **Leakage Analysis:** for CPS, ADM assigned the leakage values developed in the PY2021 evaluation.

Table 5-7 AR TRM V9.0 Sections by Measure Type

Measure Category	Measure	TRM 8.2, Vol. 2 Subsection(s)
Appliances	Advanced Power Strips	2.4.4
	ENERGY STAR® Windows	2.2.7
	ENERGY STAR® Pool Pumps	2.4.5
	ENERGY STAR® Room Air Purifier	2.4.7
	Bathroom Ventilation Fan	2.1.12
	Water Dispenser (Water Cooler)	NOLA TRM 5.0 C.1.4
Domestic Hot Water	Faucet Aerator	2.3.4
	Showerhead	2.3.5
Envelope	Air Infiltration	2.2.9
	Ceiling Insulation	2.2.2
	Wall Insulation	2.2.3
HVAC	Duct Sealing	2.1.11
	Central AC Tune-up	2.1.5
	Central Air Conditioner (AC) Replacement	2.1.6
	Central Heat Pump (HP) Replacement	2.1.8
	Window AC Replacement	2.1.10
Lighting	LEDs (Specialty)	2.5.1.3
	LEDs (Standard)	2.5.1.4

³⁸ The white paper is titled, "2018 Measurement and Verification (M&V) Plan for CoolSaver – Option A – Retrofit Isolation: Key Parameter Measurement."

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5.4 Tracking System Review

The impact evaluation began with a review of program tracking data. The tracking data included a separate row for each measure installed. Every premise in the program had a unique incentive identifier, so each premise had multiple rows to reflect the different measures completed.

The tracking data provided measured values for duct pressurization testing and blower door tests, allowing for the re-creation of *ex ante* calculations based on leakage reduction. Ceiling insulation included an indicator for baseline R-value. Program specifications are to bring the home's insulation level up to R-38 or R-49. The maximum allowable baseline insulation is R-22.

5.5 LivingWise® Schools Outreach

At the outset of each program year, AM Conservation calculates an average per-kit savings based on the then most current AR TRM and some assumptions about installation and NTG. AM Conservation sends electronic reports to OG&E throughout the year on the number of kits delivered to classrooms and the associated impacts. AM Conservation provides OG&E with a final report after the program year is complete that shows the number of kits delivered, as well as their final estimates of annual kWh and kW impacts for the program year.

OG&E maintains a tracking system that shows the number of participants in the program each year and recorded impacts. The data are provided by AM Conservation and transferred into the Saratoga tracking system by OG&E. OG&E uses the participation information and impact estimates provided by AM Conservation as the reported amounts for the program year. For measures rebated through the PY2022 LivingWise® Schools Outreach channel, calculation methodologies were performed as described in the AR TRM V9.0.

In addition to the AR TRM V9.0, the Evaluators also examined the Excel workbook used by implementation staff (AM Conservation) to assess savings by school. The workbook utilizes AR TRM V9.0 savings algorithms to estimate per kit savings based on input parameters and was reported in adjusted gross numbers. The Evaluators verified the project savings for each kit to ensure the values were appropriate and applied those values to the number of kits that were distributed in the program for PY2022.

5.6 HVAC Replacement and Tune-up

The HVAC Replacement and Tune-up channel provided financial incentives to encourage residential customers to improve the efficiency of their HVAC systems. Incentives were provided for a tune-up of the system and for HVAC system replacements.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5.6.1 HVAC Replacement and Tune-up: HVAC Replacements

More detail can be found in AR TRM V9.0 Section 2.1.5, Section 2.1.6, and Section 2.1.8.

5.6.2 HVAC Replacement and Tune-up: AC Tune-ups

Tune-ups were provided by a qualified technician and involve testing the performance of the unit before and after measures are implemented. Typical measures implemented as part of the tune-up procedure include air flow correction; cleaning of the indoor blower, evaporator coils, condenser coils; and correction of refrigerant charge.

Evaluation of the program is based on the CoolSaver PY2022 M&V Plan provided by CLEARResult. The evaluators examined the Excel workbook containing a census of program participants to assess savings by measure. The workbook provided contains data exported from the program tracking tool. The Evaluators examined the data and recreated the overall savings calculations. Savings from AC and heat pump tune-ups were based on AR TRM V9.0 deemed equivalent full-load hours along with unit-specific capacity and deemed efficiency loss recovered due to work performed in accordance with the program.

5.7 Consumer Products Solutions (CPS)

5.7.1 Leakage

Leakage refers to cross-territory sales that occur when program discounted bulbs are installed outside of OG&E's service territory. When this occurs, the energy and demand impacts from the discounted bulbs are not being realized within the territory that paid for and claimed the savings.

The Evaluators developed estimates of leakage in the PY2021 evaluation. This activity was not repeated in PY2022 as the program offering was unchanged and is intended to wind down as the EISA Phase II standards take effect.

The leakage analysis that was performed in PY2021 was as follows:

- First, the Evaluators developed a mapping of concentric circles (drivetimes) surrounding each participating retailer. The initial modeling assumed the "reach" of a retailer is a 60-minute drive, which is then modified by the presence of an alternative sponsoring retailer (i.e., if a customer is within a 60-minute drive of two sponsoring retailers, it is assumed they purchased from the closest one). Non-participating retailers are also included as directly competing alternative retailers with the construction of the drive times.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- Second, the Evaluators used 2010 Census block data from Environmental Systems Research Institute (ESRI) to determine the proportion of the population that falls within each drivetime circle (from Step 1), as well as the proportion of the population that falls within the OG&E AR territory and within the state of Arkansas. Thus, for each drivetime circle for each retail location, the Evaluators determined the proportion of the population within the OG&E AR service territory, outside of OG&E AR service territory, and outside of the state of Arkansas. In addition, per the Department of Energy (DOE) National Renewable Energy Laboratory (NREL) Uniform Methods Project (UMP): Methods for Determining Energy Savings for Specific Measures Chapter 6: Residential Lighting Evaluation Protocol³⁹ (referred to herein as “the UMP Protocol”), the Evaluators also define that bulbs going to another utility which also runs upstream lighting programs will not be considered leakage. The Evaluators determined the following utilities run upstream lighting programs within OG&E’s drivetime areas: SWEPCO Arkansas, Entergy Arkansas, and Public Service Company of Oklahoma (PSO).
- Third, a Random Digit Dial (RDD) survey was used to assess the shopping habits of customers within the radius of participating retailers. This was used to assess the total and maximum drivetime that Arkansas consumers accepted when shopping for products incentivized by the channel and was used in modifying the initial 60-minute drive assumption established in Step 1. An RDD survey was carried out for OG&E in 2015 and the results of this survey are shown in Table 5-8. This approach uses a log transformation of the drivetimes to smooth the data and estimates the cumulative percent via a second order polynomial regression. In 2021, the Wholesale channel was split out from the Mass Merchant channel; however, a dedicated RDD survey for the Wholesale channel did not occur in 2015. The RDD survey for the Wholesale retailer channel was taken from a similar survey conducted by ADM in 2019 in Oklahoma.
- Fourth, for each drive time, the propensity to drive is calculated based on the predicted cumulative percent. The propensity to drive is equal to 1 minus the predicted cumulative percent, such that customers with shorter drive times have a high propensity to drive (because cumulative percent from the RDD survey is lower for shorter drive times), while customers with longer drive times have lower propensity to drive (because predicted cumulative percent is higher for longer drive times). Customers with a propensity to drive represent the estimated population for a given

³⁹ Dimetrosky, Scott, Parkinson, Katie, and Lieb, Noah on behalf of the Department of Energy National Renewable Energy Laboratory. *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures Chapter 6: Residential Lighting evaluation Protocol*. October 2017.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

drive time (i.e. estimated population willing to drive = propensity to drive(%)*total population).

- Lastly, the percentage of bulbs that leaked out of OG&E territory (but still within AR) and the percent that leaked out of state were calculated.

The analysis and creation of drivetimes was performed separately for four retailer types: Discount, Do-it-Yourself (DIY), Mass Merchant, and Wholesale. Discount retailers includes stores such as Dollar Store and Dollar General. DIY includes stores such as Lowe’s, Ace, and Home Depot. Mass Merchant retailers include stores such as Walmart, Sears, and Target, while Wholesale includes Costco and Sam’s Club.

The set of maps below provide an example of the analysis with snapshots of the geo-mapping process for the Discount retailer channel. The first map shows participating and non-participating retailer locations overlaid onto utility territories. The territory for OG&E is shown in light red. Participating stores are shown as green points while non-participating stores are shown as grey points. The second map shows the concentric drivetimes that were constructed for the Discount retailer channel to estimate leakage rates. The map is meant to illustrate how far a 60-minute drivetime extends beyond a store location and how the presence of another store affects the drivetime for other nearby stores.

Table 5-8 shows the drivetime survey results, shown below the two maps.

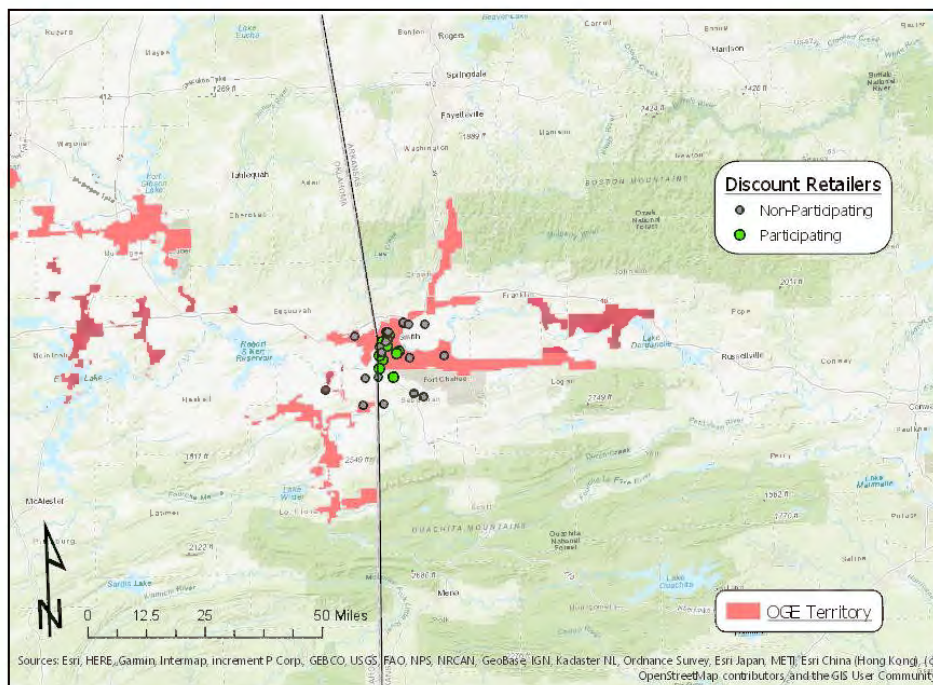


Figure 5-1 Discount Retailer Locations

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

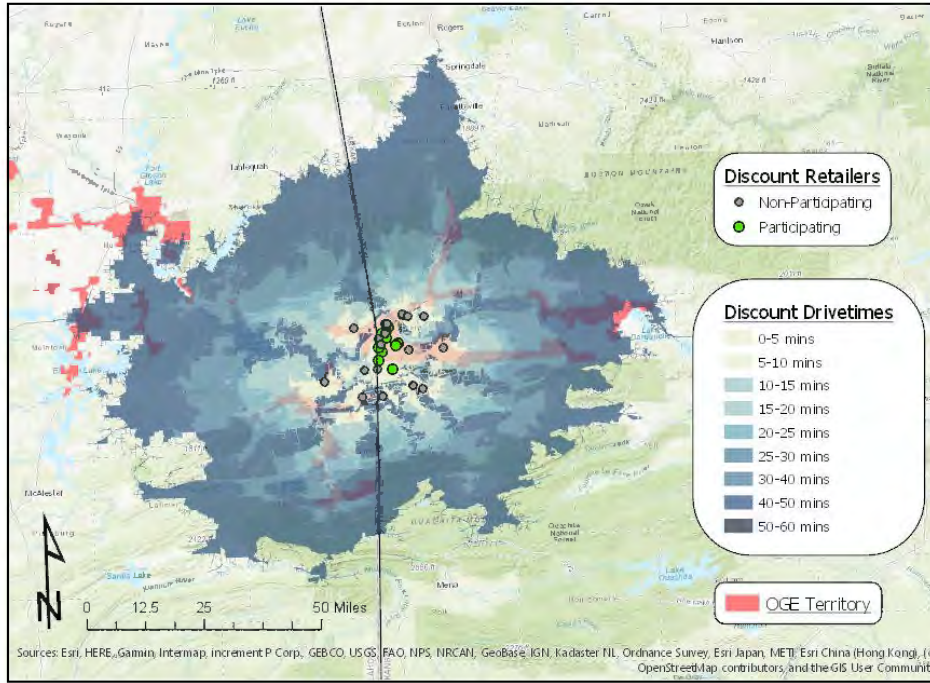


Figure 5-2 Discount Retailer Drive Times

Table 5-8 Drivetime Estimates by Channel

Channel / Drive Time (minutes)	0-5	5-10	10-15	15-19	20-24	25-29	30-40	40-50	50-60	60-70
DIY	9%	15%	13%	28%	17%	6%	6%	0%	0%	7%
Discount	38%	0%	25%	13%	13%	0%	0%	13%	0%	0%
Mass Merchant	8%	22%	20%	15%	17%	3%	5%	2%	0%	7%
Wholesale	14%	16%	25%	16%	9%	5%	6%	4%	1%	4%

The overall estimated program-level leakage rate was 16%, with 10% leakage for Mass Merchant stores, 20% leakage for DIY stores, 8% leakage for Discount stores, and 36% for the single Wholesale store. The table below shows the estimated leakage for each participation channel in the Consumer Products channel for PY2022.

Values presented for Consumer Products are exclusive of leakage effects except where specifically noted.

Table 5-9 PY2022 Leakage Estimates

Measure / Pathway	Leakage Rate	Estimated Net Leakage for	Estimated Net Leakage for	Estimated Net Leakage for
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OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

		Energy Savings (kWh)	Demand Savings (kW)	Energy Savings (Lifetime kWh)
LEDs (Food Bank)	16%	121,902	20	1,523,779
LEDs (Specialty)	16%	64,025	11	800,309
LEDs (Standard)	16%	130,827	22	1,635,332
Total	16%	316,754	53	3,959,421
Sums may differ due to rounding.				

Cross Sector Sales Adjustments

The AR TRM V9.0 estimates that 6.7% of lighting incentivized through a residential retail markdown program will be installed in commercial facilities, and that the Annual Operating Hours (AOH) and Coincidence Factor (CF) for this lighting should align with the average values from commercial programs administered by the sponsoring utility in the same program year. The Evaluators estimated 4,306 AOH and a coincidence factor of 0.65 using a weighted average of AR TRM V9.0 deemed values for the building types found in the CEEP Small Business Direct Install Program. This has the effect of increasing annual energy savings and peak demand reduction for the 6.7% of bulbs estimated to be installed in non-residential settings. This parameter was applied to retail markdown LEDs but not to those distributed through food banks.

5.8 Residential Solutions (RSOL)

The Evaluators completed on-site verification at a sample of 28 homes in RSOL, developing updated Field Verification Rates (FVRs) for the following measures:

- Aerators
- LEDs
- Advanced Power Strips
- Windows

The tables below summarize the FVRs by housing type and measure.

Table 5-10 HEEP RSOL Single Family FVR Results

Measure	Field Verification Rate		Source
	Single Family	Multi-Family	
Aerators	100%	100%	PY2022 Field inspection
Air Infiltration	109%	107%	PY2017-PY2020 field inspection
APS	93%	93%	PY2022 Field inspection
Ceiling Insulation	100%	N/A	PY2017-PY2020 field inspection
Duct Sealing	99%	99%	PY2017-PY2020 field inspection

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

LEDs	94%	94%	PY2022 Field inspection
Pool Pump	100%	100%	PY2017-PY2020 field inspection
Showerheads	96%	92%	PY2017-PY2020 field inspection
Windows	100%	100%	PY2022 Field Inspection

5.9 Verified Savings by Measure

5.9.1 Residential Solutions (RSOL)

After reviewing the tracking data and inputs for savings calculations, the Evaluators provided verified *ex post* savings per AR TRM V9.0 Protocols. The savings from the measures below were verified, and matched, to the calculations provided by CLEAResult.

- Advanced Power Strips;
- Air Infiltration;
- Ceiling Insulation;
- Duct Sealing;
- ENERGY STAR® Pool Pumps;
- ENERGY STAR® Windows;
- Kitchen Faucet Aerators;
- ENERGY STAR® LEDs (Standard); and
- Low-Flow Showerhead.

Factors that impacted savings are listed in individual measure sections below.

5.9.2 RSOL: Advanced Power Strips

There were 238 APS' installed at 153 premises. All deemed values matched the AR TRM V9.0. The lower realization rate is due to the single family and multi-family field verification rates from PY2022 field data collection.

Table 5-11 Advanced Power Strip Savings Summary

<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
59,684	35,327	59%	7	4	59%

5.9.3 RSOL: ENERGY STAR® Windows

There were 504 windows installed at 81 premises.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-12 ENERGY STAR® Window Savings Summary

<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
48,717	48,717	100%	30	30	100%

5.9.4 RSOL: Duct Sealing

This measure was completed at 73 premises. The Evaluators recreated savings estimates based on TRM V9.0 protocols and applied FVRs developed from PY2017-PY2020 fieldwork and found 171% realization.

Table 5-13 Duct Sealing Savings Summary

Heating Type	<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
Natural Gas Furnace	0	0	0	0	0	0
Air Source Heat Pump	0	0	0	0	0	0
Electric Resistance	220,945	378,465	171%	34	34	100%
Total	220,945	378,465	171%	34	34	100%

Sums may differ due to rounding.

Though savings were reduced by 1% due to field data collection findings, the Evaluators found a more significant cause for revision from the overarching review of energy savings calculations. After recreating the energy savings calculations, 67 out of 73 projects had a gross realization rate greater than 120%. Of note, 28 projects had a realization rate of 189%. The Evaluators could not fully recreate the ex ante savings calculations, but savings were closer to ex ante estimates when calculated based off of a heat pump system configuration. The tracking data indicated electric resistance heating and savings were recalculated accordingly.

RSOL: Air Infiltration

This measure was completed at 125 premises. The Evaluators recreated savings estimates based on TRM V9.0 protocols and applied FVRs developed from PY2017-PY2020 fieldwork found 138% realization.

Table 5-14 Air Infiltration Savings Summary

Heating Type	<i>Ex ante</i> Gross	<i>Ex post</i> Gross	Realization Rate	<i>Ex ante</i> Gross	<i>Ex post</i> Gross	Realization Rate
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OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

	Energy Savings (kWh)	Energy Savings (kWh)	(kWh)	Demand Reduction (kW)	Demand Reduction (kW)	(kW)
Natural Gas Furnace	0	0	N/A	0	0	N/A
Air Source Heat Pump	0	0	N/A	0	0	N/A
Electric Resistance	221,946	306,244	138%	19	21	110%
Total	221,946	306,244	138%	19	21	110%
Sums may differ due to rounding.						

Though savings were increased by 7%% due to field data collection findings, the Evaluators found a more significant cause for revision from the overarching review of energy savings calculations. After recreating the energy savings calculations, the Evaluators found that 54 projects displayed 236% realization. Upon further review, the Evaluators found that these projects were erroneously calculated using a heat pump system configuration instead of air conditioning with an electric resistant furnace.

RSOL: Ceiling Insulation

This measure was completed at two premises. No adjustments were made to *ex ante* savings estimates.

Table 5-15 Ceiling Insulation Savings Summary

Heating Type	<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
Natural Gas Furnace	499	499	100%	0.30	0.30	100%
Air Source Heat Pump	702	702	100%	0.18	0.18	100%
Electric Resistance	0	0	N/A	0	0	N/A
Total	1,201	1,201	100%	0.47	0.47	100%
Sums may differ due to rounding.						

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

RSOL: ENERGY STAR® Pool Pumps

This measure was installed at eight premises. No adjustments were made to *ex ante* savings estimates.

Table 5-16 ENERGY STAR® Pool Pump Savings Summary

<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
22,836	22,836	100%	5	5	100%

RSOL: Faucet Aerators

This measure was installed at 69 premises. The Evaluators found small discrepancies in energy savings, and a resulting realization rate of 98%. The basis for the 2% discrepancy could not be identified.

Table 5-17 Faucet Aerator Savings Summary

<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
4,781	4,701	98%	0.49	0.49	99%

RSOL: Low-Flow Showerheads

This measure was installed at 55 premises. The Evaluators found small discrepancies in energy savings (differing by 1% when examining the unit energy savings, independent of FVR impacts). In addition, the Evaluators applied FVRs of 96% and 92% to single-family and multi-family projects, respectively. The overall realization rate for this measure was 92%.

Table 5-18 Showerhead Savings Summary

<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
26,260	24,016	92%	3	3	93%

RSOL: LEDs

There were 2870 LEDs installed at 259 premises in PY2022. The lower realization rate is due to the single family and multi-family field verification rates developed in prior program years as well as corrections to the IEF_e and IEF_d values.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-19 LEDs Savings Summary

<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
72,193	67,469	94%	12	12	97%

5.9.5 RSOL Savings Summary

Error! Reference source not found. presents the verified *ex post* savings results of the PY2022 RSOL channel by measure.

Table 5-20 Residential Solutions Savings Summary for PY2022

Measure	<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	Realization Rate (kWh)	<i>Ex ante</i> Gross Demand Reduction (kW)	<i>Ex post</i> Gross Demand Reduction (kW)	Realization Rate (kW)
APS	59,684	35,327	59%	7	4	59%
Air Infiltration	221,946	306,244	138%	19	21	110%
Ceiling Insulation	1,201	1,201	100%	0.47	0.47	100%
Duct Sealing	220,945	378,465	171%	34	34	100%
ES Pool Pumps	22,836	22,836	100%	5	5	100%
ES Windows	48,717	48,717	100%	30	30	100%
Faucet Aerators	4,781	4,701	98%	0.49	0.49	99%
LEDs	72,193	67,469	94%	12	12	97%
Showerheads	26,260	24,016	92%	3	3	93%
Total	678,564	888,976	131%	111	110	99%

Sums may differ due to rounding.

Error! Reference source not found. outlines the verified *ex post* lifetime savings for the RSOL channel by measure.

Table 5-21 Residential Solutions Lifetime Savings Summary for PY2022

Measure	EUL	<i>Ex post</i> Gross Lifetime Energy Savings (kWh)
Advanced Power Strips	10	353,272
Air Infiltration	11	3,368,688
Ceiling Insulation	20	24,029

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Duct Sealing	18	6,812,370
ENERGY STAR® Pool Pumps	10	228,360
ENERGY STAR® Windows	20	974,341
Faucet Aerators	10	47,006
LEDs	12.5	843,357
Low-Flow Showerheads	10	240,155
Total		12,891,578
Sums may differ due to rounding.		

5.9.6 LivingWise® Schools Outreach

After reviewing the tracking data and inputs for savings calculations, the Evaluators provided verified *ex post* savings per AR TRM V9.0 Protocols.

The savings from the measures below were verified, and matched, to the calculations provided in PY2022.

- Kitchen Faucet Aerators (1.5 GPM);
- Bathroom Faucet Aerators (1.0 GPM);
- Low-Flow Showerheads; and
- Advanced Power Strips.

Factors that impacted savings are listed in individual measure sections below. The Evaluators verified measure-level savings per AR TRM V9.0 guidelines and obtained results that differed from AM Conservation's calculations for the following measures.

LivingWise® Schools Outreach: Faucet Aerators & Low Flow Showerheads

Each kit included one 1.5 GPM kitchen aerator and one 1.0 GPM bathroom aerator. The In-Service Rate (ISR) are listed below:

- Bathroom 1.0 GPM (35%)
- Kitchen 1.5 GPM (35%)
- Showerhead 1.5 GPM (42%)

Additionally, the Evaluators determined water heater percent fuel mix from the student survey responses provided by AM Conservation. The water heater percent fuel mix is shown below:

- Natural gas (30%),
- Electricity (57%)
- Propane (14%)

The savings below were calculated by applying only the electric portion of the percent fuel mix.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-22 Low Flow Device Savings Summary

Measure	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	kWh Realization Rate	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	kW Realization Rate
1.0 GPM Aerator	33,095	19,062	58%	4	2	55%
1.5 GPM Aerator	12,905	11,458	89%	1	1	89%
Showerhead	111,470	118,277	106%	12	12	107%
Total	157,470	148,797	95%	17	15	76%

Sums may differ due to rounding.

LivingWise® Schools Outreach: Advanced Power Strips

Each kit included one advanced power strip. The Evaluators found an ISR of 65% for APS' distributed in school kits.

Additionally, the Evaluators calculated weighted deemed savings values from the student survey responses provided by AM Conservation. Students were asked if they installed the power strip for an entertainment (TV) system, a home office system, or if the power strip was used for other types of peripheral devices. The percent of power strip use is shown below:

- Entertainment system (29%)
- Home office (12%)
- Other (60%)

The Evaluators determined the weighted deemed savings based on the deemed average savings for a Tier 1 power strip found in AR TRM 9.0 Table 180:

- 182 kWh savings per unit
- 0.02 kW reductions per unit

Table 5-23 Advanced Power Strip Savings Summary

<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	kWh Realization Rate	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	kW Realization Rate
203,536	192,683	95%	23	22	95%

5.9.7 LivingWise® Schools Outreach Savings Summary

The table below presents the verified *ex post* energy savings (kWh) results of the PY2022 LivingWise® Schools Outreach channel, by measure.

Table 5-24 PY2022 LivingWise® Schools Outreach Savings Summary

Measure	<i>Ex ante</i> Gross Energy	<i>Ex post</i> Gross Energy	Realization Rate (kWh)	<i>Ex ante</i> Gross	<i>Ex post</i> Gross Demand	Realization Rate (kW)
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OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

	Savings (kWh)	Savings (kWh)		Demand Reduction (kW)	Reduction (kW)	
Advanced Power Strips	203,536	192,683	95%	23	22	95%
Bathroom Aerators	33,095	19,062	58%	4	2	55%
Kitchen Aerators	12,905	11,458	89%	1	1	89%
Low-Flow Showerheads	111,470	118,277	106%	12	12	106%
Total	361,006	341,480	95%	40	38	95%
Sums may differ due to rounding.						

The table below outlines the verified *ex post* lifetime energy savings (kWh) by measure for the LivingWise® Schools Outreach channel.

Table 5-25 PY2022 LivingWise® Schools Outreach Lifetime Savings by Measure

Measure	EUL	<i>Ex post</i> Gross Lifetime Energy Savings (kWh)
Advanced Power Strips	10	1,926,830
Bathroom Aerators	10	190,621
Kitchen Aerators	10	114,576
Low-Flow Showerheads	10	1,182,771
Total	10	3,414,798
Sums may differ due to rounding.		

5.9.8 HVAC Replacement and Tune-up

Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Certificates were matched to all units. Field verification was not conducted in PY2022.

In addition to referencing the AR TRM V9.0 for the evaluation of the central heat pump projects, the Evaluators reviewed the program tracking data and noted that all of the heat pump projects were considered as ‘replace-on-burnout’.

The Evaluators found discrepancies in heating savings calculations on replace-on-burnout heat pump projects. *Ex post* savings calculations were based on heating and cooling capacities and efficiencies as defined in each system’s AHRI certificate.

To address this, the Evaluators examined the relationship between the ratio of AHRI-verified heating capacity and “nominal capacity” (defined as tonnage x 12,000 BTU). Excluding one low and one high outlier, realization rates show a strong correlation to this discrepancy, as identified in Figure 5-3.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

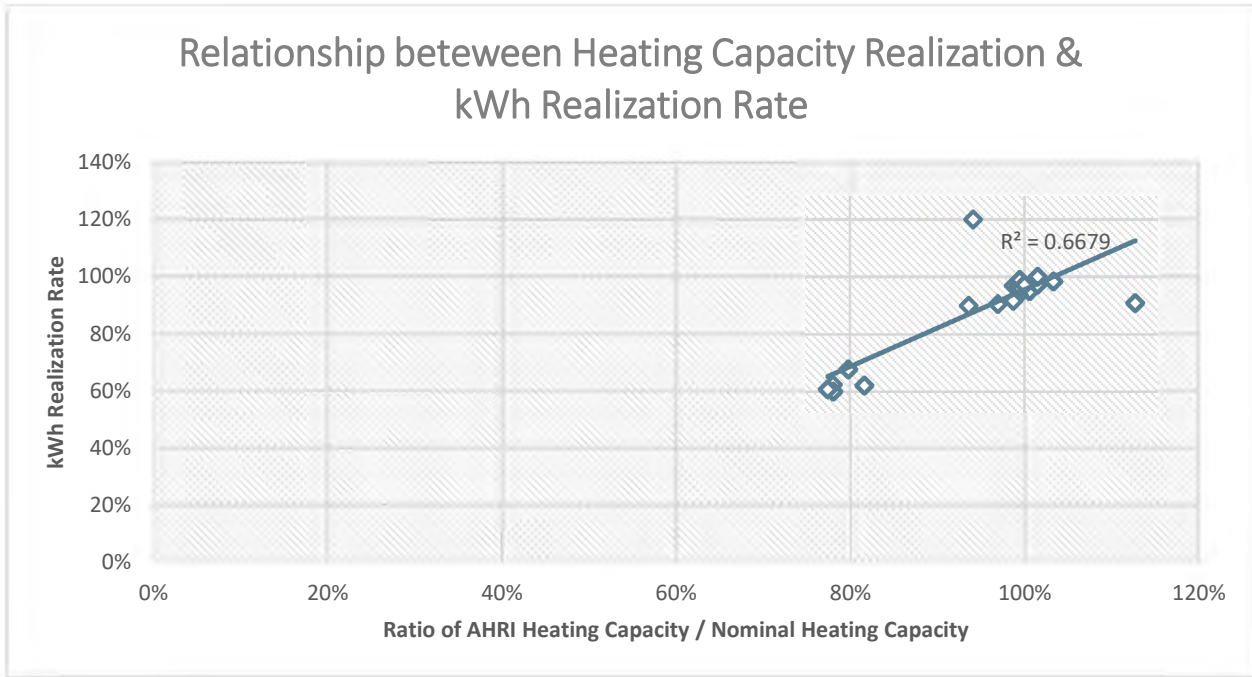


Figure 5-3 Relationship between Heating Capacity Realization & Savings Realization

In addition to projects included in this figure, there was one heat pump project with a discrepancy in savings that could not be identified. The project had ex ante savings of 6,147 kWh, but was a 2.5 ton heat pump with a heat pump baseline. kW estimates for this unit were accurate, however.

Resulting system replacement savings are summarized in Table 5-26.

Table 5-26 HVAC Replacement Savings Summary

Measure	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	kWh Realization Rate	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	kW Realization Rate
AC Replacement	47,934	47,998	100%	17	16	92%
HP Replacement	38,041	30,783	81%	4	4	100%
Total	85,975	78,781	92%	21	20	93%

Sums may differ due to rounding.

Recommendation: Develop a library of AHRI-actual heating and cooling capacities for system replacement savings calculations.

For tune-ups, Program calculations matched the CoolSaver M&V Plan provided by CLEARResult for PY2022.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-27 Central AC Tune-up Savings Summary

Measure	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	kWh Realization Rate	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	kW Realization Rate
Modeled	51,609	51,616	100%	31	31	100%
Modeled	51,609	51,616	100%	31	31	100%
Sums may differ due to rounding.						

Table 5-28 Central Heat Pump Tune-up Savings Summary

Measure	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	kWh Realization Rate	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	kW Realization Rate
M&V	4,342	4,341	100%	1	1	100%
Modeled	286,431	286,462	100%	64	64	100%
Total	290,773	290,803	100%	65	65	100%
Sums may differ due to rounding.						

Table 5-29 PY2022 HVAC Replacement & Tune-up Lifetime Savings Summary

Measure	<i>Ex Post</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross kW Savings	EUL	<i>Ex post</i> Gross Lifetime Energy Savings (kWh)
Central AC Replacement	47,998	16	19	911,970
Central AC Tune-up: Modeled	51,616	31	8	433,084
Central HP Tune-up: M&V	4,341	1	7	32,002
Central HP Tune-up: Modeled	286,462	64	9	2,607,979
Central HP Replacement	30,783	4	16	492,527
Total	421,200	116	10	4,477,562

5.9.9 Consumer Products

Savings for Consumer Products are summarized in Table 5-30.

Table 5-30 Gross Summary for Consumer Products

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Measure	Ex ante Gross Energy Savings (kWh)	Ex post Gross Energy Savings (kWh)	Realization Rate (kWh)	Ex ante Gross Demand Reductions (kW)	Ex post Gross Demand Reductions (kW)	Realization Rate (kW)
Advanced Power Strips	484,623	484,623	100%	55	55	100%
LEDs (Food Bank)	761,890	761,890	100%	124	124	100%
LEDs (Specialty)	563,805	724,655	129%	92	124	135%
LEDs (Standard)	1,131,013	1,480,743	131%	184	253	138%
Room Air Purifiers	77,154	20,488	27%	9	2	27%
Ventilation Fans	11,082	4,101	37%	1	0.52	38%
Water Dispenser	27,463	27,463	100%	3	3	100%
Window AC Replacement	13,255	12,480	94%	8	15	178%
Total	3,070,284	3,516,442	115%	476	577	121%

Sums may differ due to rounding.

The reasons for deviation in savings are as follows:

CPS LED Savings Discrepancies

There was high realization for specialty and standard LEDs (129% and 131%, respectively). The Evaluators added the commercial hours of use factor, through which 6.7% of retail markdown LEDs are stipulated as installed in commercial facilities. The impacts were calculated by estimating the weighted average hours of use and coincidence factor for small business participants in the PY2022 CEEP. The weighted mix of residential and commercial hours of use and coincidence factors were applied to retail channels (standard and specialty) but not to food bank LEDs (which are presumed to be installed only in residential settings). The parameter estimates developed from this analysis are summarized in Table 5-31.

Table 5-31 CPS LED Commercial Parameters

Measure / Participation Pathway	Hours of Use		CF		Weight		Hours of Use	CF
	Res	Com	Res	Com	Res	Com		
LEDs (Food Bank)					100%	0%	792.6	.1
LEDs (Specialty)	792.6	4,306	.1	.65	93.3%	6.7%	1,028	.14
LEDs (Standard)					93.3%	6.7%	1,028	.14

Recommendation: incorporate non-residential impacts into retail markdown lighting. Recommendation is not applicable if retail markdown lighting is discontinued as a result of EISA Phase II standards.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

CPS Room Air Purifiers Savings Discrepancies

There was low realization for room air purifiers (27%). Ex ante savings estimates were 1,169 kWh per unit, using the AR TRM V8.2 value for systems over 250 CFM Clean Air Delivery Rate (CADR). Revisions to savings estimates were as follows:

- 1) The Evaluators changed savings parameters to align with TRM V9.0, which incorporated updated ENERGY STAR standards for this measure.
- 2) The Evaluators assigned savings based on the program-actual CADR. Of the 66 units rebated in PY2022:
 - a. 43% were between 30-99 CFM CADR
 - b. 57% were between 100-179 CFM CADR
 - c. 0% were 180 CFM CADR or greater

Recommendation: Update parameters to align with TRM V9.0. Apply deemed savings based on the three size categories specified in the TRM, which align with updated ENERGY STAR guidelines. Update incremental cost; with the increased efficiency standard and revision to size categories, incremental cost estimates used in initial planning for this measure are likely higher than warranted, as both the base-case efficiency increasing, and the average system size decreasing correspond with lower incremental cost.

CPS Ventilation Fans Savings Discrepancies

There was low realization rate for ventilation fans (37%). The Evaluators found that PY2022 savings estimates cited the Illinois TRM V7.0, as at the time this measure was introduced into CPS there was not a savings value available in the AR TRM. With the AR TRM V9.0 coming into effect for PY2022, savings for this measure required revision. The following parameters impacted the realized savings:

- 1) **Hours of use.** Both the IL and AR TRMs specify the hours of use of bathroom ventilation fans to align with residential lighting hours of use. However, the IL TRM has a value of 1,089 for this parameter while the AR TRM has 792.6. This revision accounted for 43% of the total adjustment in energy savings.
- 2) **Baseline CFM/W.** The IL and AR TRMs both acknowledge that there is no official code or standard for bathroom ventilation fans. The IL TRM specifies an average base CFM/W of 2.2. The AR TRM specifies a “conservative assumption” where ENERGY STAR products are purported to provide 15% incremental savings over their baseline unit, with an average base CFM/W ranging from 2.4 to 3.4, depending on size category. This revision accounted for 32% of the reduction in savings for this measure.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

- 3) **Differences in size categories and efficiencies.** The ex ante savings estimates assumed an average size and efficiency across all systems. The Evaluators updated savings to align with each rebated model's size category and actual efficiency. This revision accounted for 35% of the reduction in savings.

Recommendation: Update parameters to align with TRM V9.0. Apply deemed savings based on the three size categories specified in the TRM, which align with updated ENERGY STAR guidelines. Update incremental cost; with the increased efficiency standard and revision to size categories, incremental cost estimates used in initial planning for this measure are likely higher than warranted, as both the base-case efficiency increasing, and the average system size decreasing correspond with lower incremental cost.

CPS Window ACs Savings Discrepancies

The Evaluators found 90% realization for kWh and 178% realization for kW for window AC replacement. The Evaluators believe this is due to application of system-specific to develop baseline efficiencies by unit.

For kW, the Evaluators' finding is that ex ante estimates incorporated the Room AC Adjustment Factor (RAF), which reduces Room AC hours of use relative to that shown for central air conditioning. The RAF is not intended to be applied to kW as it is assumed that under peak conditions, room ACs will have the same propensity to operate as central ACs.

Recommendation: Remove RAF from kW calculations.

5.9.10 CPS Savings Summary

Table 5-32 PY2022 CPS Lifetime Savings Summary

Measure	Ex Post Gross Energy Savings (kWh)	Ex post Gross kW Savings	EUL	Ex post Gross Lifetime Energy Savings (kWh)
Advanced Power Strips	484,623	55	10	4,846,230
LEDs (Food Bank)	761,890	124	12.5	9,523,620
LEDs (Specialty)	724,655	124	12.5	9,058,192
LEDs (Standard)	1,480,743	253	12.5	18,509,282
Room Air Purifiers	20,488	2	9	184,392
Ventilation Fans	4,101	0.52	19	77,914
Water Dispenser	27,463	3	10	274,626
Window AC Replacement	12,480	15	11	131,041
Total	3,516,442	577	18	42,605,297

5.10 Net Impact Evaluation Approach

The following table summarizes the approach and estimate for NTG by channel and by measure.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-33 PY2022 NTG Summary for HEEP

Channel / Measure	PY2022 NTG	Single-family Free ridership	Single-family Spillover	Single-family NTG	Multi-family Free ridership	Multi-family Spillover	Multi-family NTG	NTG Source
Consumer Products	83%	18%	1%	83%	18%	1%	83%	
APS	52%	48%	0%	52%	48%	0%	52%	Literature Review
Bathroom Ventilation Fan	73%	28%	1%	73%	28%	1%	73%	Literature Review
Room Air Purifier	73%	28%	1%	73%	28%	1%	73%	Literature Review
LEDs (Food Bank)	100%	0%	0%	100%	0%	0%	100%	NTG modeling
LEDs (Specialty)	55%	49%	5%	55%	49%	5%	55%	NTG modeling
LEDs (Standard)	55%	49%	5%	55%	49%	5%	55%	NTG modeling
Water Dispenser	73%	28%	1%	73%	28%	1%	73%	Literature Review
Window AC Replacement	44%	56%	0%	44%	56%	0%	44%	Literature Review
HVAC	83%	23%	0%	77%	0%	0%	100% 40	
AC Replacement	81%	19%	0%	81%	19%	0%	81%	Assigned PY2020 NTG value
HP Replacement	74%	26%	0%	74%	26%	0%	74%	Assigned PY2020 NTG value
AC Tune-up M&V	75%	25%	0%	75%	0%	0%	100%	SF: PY2020 NTG, MF: PY2021 NTG.
AC Tune-up Modeled	75%	25%	0%	75%	0%	0%	100%	
HP Tune-up M&V	100%	25%	0%	75%	0%	0%	100%	
HP Tune-up Modeled	100%	25%	0%	75%	0%	0%	100%	

⁴⁰ NTG is 100% because there was no participation from multifamily customers in the AC Replacement or HP Replacement measures.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Channel / Measure	PY2022 NTG	Single-family Free ridership	Single-family Spillover	Single-family NTG	Multi-family Free ridership	Multi-family Spillover	Multi-family NTG	NTG Source
RSOL	86%	14%	0%	86%	14%	0%	86%	
Advanced Power Strips	78%	12%	0%	78%	12%	0%	78%	Literature Review
Air Infiltration	100%	0%	0%	100%	0%	0%	100%	Participant Surveys
Ceiling Insulation	100%	0%	0%	100%	0%	0%	100%	PY2020 duct / air seal survey
Duct Sealing	100%	0%	0%	100%	0%	0%	100%	PY2020 Surveys
ES Pool Pumps	90%	10%	0%	90%	10%	0%	90%	SO: Lit review, FR: PY2020 surveys
ES Windows	44%	10%	0%	90%	10%	0%	90%	Literature Review
Faucet Aerators	87%	13%	0%	87%	13%	0%	87%	Literature Review
LEDs (Standard)	74%	26%	0%	74%	26%	0%	74%	Literature Review
Low-Flow Showerheads	86%	14%	0%	86%	14%	0%	86%	Literature Review
LivingWise® Schools Outreach	93%	7%	0%	93%	7%	0%	93%	
Advanced Power Strips	78%	12%	0%	78%	12%	0%	78%	Literature Review
Faucet Aerators	98%	2%	0%	98%	2%	0%	98%	Literature Review
Low-Flow Showerheads	95%	5%	0%	95%	5%	0%	95%	Literature Review
HEEP Total	73%							

NTG was estimated for all program measures in PY2020, at the onset of the new planning period and values from PY2020 and PY2021 were applied to PY2022 except where primary research has been noted.

5.10.1 Literature Review Results

For measures or channels where the approaches described above could not be performed, such as LivingWise® Schools Outreach kit recipients or measures with low participation that were not captured in the participant survey, a literature review was performed.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

More information about which measures this pertains to can be found in the tables below. The tables below are labeled PY2020 to reflect the year the research was performed.

5.10.2 Residential Solutions

Literature reviews were utilized to determine NTG for advanced power strips, aerators, ENERGY STAR® windows, LED lamps (direct install), and showerheads. Both free ridership and spillover were determined through this approach.

The literature reviews completed for RSOL in PY2020 were applied in PY2021 and are presented in the tables below for reference.

Table 5-34 PY2020 Literature Review Results for RSOL APS (Direct Install)

Reference Number	FR	SP	NTG	PY	State
1	8%	0%	92%	2016	OK
2	0%	0%	100%	2015	NM
3	0%	0%	100%	2017	NM
Average	3%	0%	97%		
1. https://www.occeweb.com/pu/EnergyEfficiency/2016OGE_DemandProgramsAnnualReport.pdf 2. https://www.pnm.com/documents/396023/3157050/2015+Independent+Measurement+%26+Verification+Report+-+Part+1+ADM+Associates.pdf/87814b15-cc02-4c8f-9fb5-50d39dd65fc0 3. https://www.pnm.com/documents/396023/3157050/2016+Independent+Measurement+and+Verification+Report%2C%20Part+1%2C%20ADM+Associates%2C%20Inc.pdf/011b6c03-4358-4396-acf8-73cd8a24009e					

Table 5-35 PY2020 Literature Review Results for RSOL ENERGY STAR® Windows

Reference Number	FR	SP	NTG	PY	State
1	0%	11%	111%	2015	MD
2	33%	0%	67%	2016	AR
3	0%	0%	100%	2017	AR
4	18%	0%	82%	2014	UT
5	0%	0%	100%	2011	MA
6	22%	2%	80%	2015	CT
Average	13%	2%	90%		
1. http://webapp.psc.state.md.us/newIntranet/casenum/NewIndex3_VOpenFile.cfm?filepath=C:%5CCasenum%5C9100-9199%5C9157%5CItem_655%5C%5C9153-57-EY6NavigantEvaluationMemos-Navigant-102116.pdf 2. http://www.apscservices.info/EEInfo/EEReports/SWEPCO%202016.pdf 3. http://www.apscservices.info/EEInfo/EEReports/SWEPCO%202017.pdf 4. http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Demand_Side_Management/2016/2013-2014_Utah_HES_Evaluation.pdf 5. https://www9.nationalgridus.com/non_html/eer/ma/10_MA_E_EEAR_Pt_3.pdf 6. https://www.energizect.com/sites/default/files/R4_HES-HESIE%20Process%20Evaluation,%20Final%20Report_4.13.16.pdf					

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-36 PY2020 Literature Review Results for RSOL LED Lamps (Direct Install)

Reference Number	FR	SP	NTG	PY	State
1	0%	0%	100%	2017	AR
2	0%	0%	100%	2017	AR
3	5%	0%	95%	2017	AR
4	24%	0%	76%	2017	AR
5	24%	0%	76%	2018	WI
Average	11%	0%	89%		
1. SWEPCO AR HPwES, PY2017 2. SWEPCO AR REIP MF, PY2017 3. OG&E AR CWA, PY2017 4. SWEPCO AR REIP SF, PY2017 5. SWEPCO AR REIP SF, PY2018					

Table 5-37 PY2020 Literature Review Results for RSOL Showerheads (Direct Install)

Reference Number	FR	SP	NTG	PY	State
1	12%	0%	88%	2016	WI
2	25%	0%	75%	2015	IN
3	2%	0%	98%	2017	IN
4	16%	0%	84%	2016	NC
Average	14%	0%	86%		
1. https://www.focusonenergy.com/sites/default/files/Evaluation%20Report%20-%202016%20Appendices.pdf 2. https://www.indianamichiganpower.com/global/utilities/lib/docs/info/projects/IMDemandSideManagement/44841%20Jon%20C.%20Walter%20Direct%20Testimony%20&%20Attachments%20Vol%20II.pdf 3. https://iurc.portal.in.gov/_entity/sharepointdocumentlocation/86b05142-05c8-e811-8143-1458d04eaba0/bb9c6bba-fd52-45ad-8e64-a444aef13c39?file=43827DSM8%20IM%20WP%20WP%20JCW%201%20Residential%20100418.pdf 4. http://www.researchintoaction.com/wp-content/uploads/2018/12/P421-Duke-SEWKP-DEP-DEC-2016-PY-Evaluation-Report.pdf					

5.10.3 Consumer Products

The Evaluators used the results from literature reviews performed in PY2020 for LED lamps (upstream) to determine spillover. The spillover from this literature review was combined with the free ridership determined through the econometric modeling described in Section 5.10.5 to develop NTG estimates.

Table 5-38 PY2020 Literature Review Results for LED Lamps (Upstream)

Reference Number	FR	SP	NTG	PY	Region
1		4%		2015	Midwest
2		2%		2019	Midwest
Average		3%			
1. This spillover literature review was previously published by Tetra Tech in the Entergy Arkansas PY2017 Evaluation found here: http://www.apscservices.info/EEInfo/EEReports/Entergy%202017.pdf					

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The Evaluators performed a new literature review for upstream appliance NTG ratio. This value was applied for bathroom ventilation fans, room air purifiers, and water dispensers. The Evaluators attempted to find NTG ratios that were technology-specific, but these measures are often low contributors to utility portfolio savings and thus are not typically the subject of targeted NTG research.

Table 5-39 PY2021 Literature Review Results for Appliances (Upstream)

Reference Number	FR	SP	NTG	PY	Region
1	29%	0%	71%	2019	MA
2	42%	0%	58%	2019	OK
3	40%	0%	60%	2019	AR
4	0%	4%	104%	2015	MO
Average	28%	1%	73%		
1 https://ma-eeac.org/wp-content/uploads/MA20X04-E-PRODNTG_Res-Products-NTG-Report_FINAL_2021.06.08.pdf					
2 https://oklahoma.gov/content/dam/ok/en/occ/documents/pu/energyefficiency/demand-program-annual-reports/psa-2019-demand-report.pdf					
3 EAL EM&V Report, 2019, RLA Program					
4 Ameren Missouri, Equipment Rebate Program, 2015 by Cadmus					

5.10.4 LivingWise® Schools Outreach

The Evaluators conducted a literature review in PY2020 for school kits NTG. Beginning in PY2021, OG&E's LivingWise kits no longer include LEDs and instead include advanced power strips. This measure could not be found in the kit contents of programs in the Evaluators' literature review. As a result, the Evaluators applied the school kits literature review value for low flow devices but then applied the NTG ratio value determined for APS' in RSOL to those in school kits (78%).

Table 5-40 PY2020 School Kits Literature Review Sources

Utility	State	Year
Ameren Missouri	Missouri	2016
Duke Energy	North and South Carolina	2015
ComEd	Illinois	2017
I&M	Indiana	2016
Duke	Kentucky	2015
Energy New Orleans	Louisiana	2015

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-41 PY2022 School Kits NTG by Measure

Program Measure	Number of Studies	Average Value
Advanced Power Strips	N/A	78%
Faucet Aerators	6	98%
Low flow showerheads	6	95%

5.10.5 Econometric Modeling Approach for HEEP CPS channel

This method of free ridership was developed through the estimation of a price response model which will be used to predict sales levels in the absence of the program. The premise of the price response model is that the quantity of the subsidized product will vary based on the price of the product and how well they are promoted. The program tracking data should include sales for each retailer, by model number and week (monthly data works as well). For each retailer and model number combination, original retail price and program price data will be available. As program price discounts and/or retailer original pricing change throughout the year, the tracking data is updated, allowing for the comparison of same-model sales under slightly different pricing conditions. Price effects are the main program tool for encouraging the purchase of high efficiency lighting choices. Due to the inability to observe price effects for other program offerings, this approach will be used only for the lighting portion of the program. The final price response model is used to estimate a free ridership as described in the equation below:

$$Free\ ridership\ ratio = \frac{\sum_i^n (E[Product_{NoProgram_i}] * kWh_i)}{\sum_i^n (E[Product_{Program_i}] * kWh_i)}$$

Where:

$E[Product_{NoProgram_i}]$ = the expected number of products, i, purchased given original retail pricing (as predicted by the model).

$E[Product_{Program_i}]$ = the expected number of products, i, given program discounted pricing (as predicted by the model).

kWh_i = the average gross kWh savings for product, i.

The price response modeling approach is advantageous in that it is built upon actual sales data from participating retailers (as opposed to relying solely on consumer self-report surveys). There are, however, many limitations for the approach. Most importantly, non-program sales

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

data was not for inclusion in the model. As a result, the modeling of price impacts may fit program sales data well, but it is uncertain whether those price effects apply well to prices outside of program ranges. Finally, there are likely variables that affect sales levels for products that are not captured by the program tracking data; thus, there is a risk of omitted variable bias in addition to the inherent amount of error from statistical modeling.

The Evaluators used a negative binomial model to account for the right-skewed relationship between prices and quantities. The dependent variable was number of packages sold by the program. Independent variables used to predict sales included, month, program price, and a dummy variable for each model type. Model types were defined as a combination of bulb type (i.e., specialty LED vs. standard LED), bulb shape (i.e., A19 vs BR40), lumens range (i.e., 0-500, 500-1000, etc.), rated life, and the number of bulbs per package.

Additional details on the HEEP NTG methods and results can be found in Appendix C Net-to-Gross Approach and Outcomes.

5.11 Net Impact Evaluation Summary and Findings

Table 5-42 below summarizes free ridership (FR), spillover (SO) and NTG by channel for the PY2022 HEEP.

Table 5-42 PY2022 NTG by Channel for HEEP

	<i>Ex post Gross Energy Savings (kWh)</i>	FR	SO	NTG	<i>Ex post Net Energy Savings (kWh)</i>
Consumer Products	3,516,442	38%	2%	64%	2,275,375
HVAC Replacement & Tune-up	421,200	12%	0%	88%	391,173
Residential Solutions	888,976	7%	0%	93%	830,124
LivingWise® Schools Outreach	341,480	14%	0%	86%	292,565
Total	5,168,098	28%	1%	73%	3,789,237
Sums may differ due to rounding.					

5.11.1 Residential Solutions Net Savings Results

Table 5-43 summarizes the measure-level NTG results and net savings for RSOL. The RSOL channel totaled 830,124 net kWh savings and 88 net kW reduction.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-43 PY2022 Net Savings for HEEP Residential Solutions

Measure	<i>Ex post</i> Gross Energy Savings (kWh)	<i>Ex post</i> Net Energy Savings (kWh)	FR	SO	NTG	<i>Ex post</i> Gross Demand Reductions (kW)	<i>Ex post</i> Net Demand Reductions (kW)
Advanced Power Strips	35,327	27,555	22%	0%	78%	4	3
Air Infiltration	306,244	306,244	0%	0%	100%	21	21
Ceiling Insulation	1,201	1,201	0%	0%	100%	0.47	0.47
Duct Sealing	378,465	378,465	0%	0%	100%	34	34
ENERGY STAR® Pool Pumps	22,836	20,552	10%	0%	90%	5	5
ENERGY STAR® Windows	48,717	21,435	56%	0%	44%	30	13
Faucet Aerators	4,701	4,090	13%	0%	87%	0.49	0.42
LEDs	67,469	49,927	26%	0%	74%	12	9
Low-Flow Showerheads	24,016	20,653	14%	0%	86%	3	3
Total	888,976	830,124	7%	0%	93%	110	88

Sums may differ due to rounding.

Table 5-44 shows net lifetime kWh savings for the Residential Solutions channel by measure.

Table 5-44 PY2022 HEEP RSOL Net Lifetime Savings Summary

Measure	EUL	<i>Ex post</i> Net Lifetime Energy Savings (kWh)
Advanced Power Strips	10	275,552
Air Infiltration	11	3,368,688
Ceiling Insulation	20	24,029
Duct Sealing	18	6,812,370
ENERGY STAR® Pool Pumps	10	205,524
ENERGY STAR® Windows	20	428,710
Faucet Aerators	10	40,896
LEDs (Standard)	12.5	624,084
Low-Flow Showerheads	10	206,533
Total	14	11,986,387

Sums may differ due to rounding.

5.11.2 LivingWise® Schools Outreach Net Savings Results

The literature review resulted in a NTG ratio of 87% for LivingWise® Schools Outreach. The table below outline the net energy savings (kWh) and net demand reduction (kW) results for the LivingWise® Schools Outreach channel.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-45 PY2022 Net Energy (kWh) Savings for HEEP LivingWise® Schools Outreach

Measure	<i>Ex post</i> Gross Energy Savings (kWh)	<i>Ex post</i> Net Energy Savings (kWh)	NTG	<i>Ex post</i> Gross Demand Reductions (kW)	<i>Ex post</i> Net Demand Reductions (kW)
Advanced Power Strips	192,683	150,293	95%	22	17
Bathroom Aerators (1.0 GPM)	19,062	18,681	58%	2	2
Kitchen Aerators (1.5 GPM)	11,458	11,228	89%	1	1
Showerheads	118,277	112,363	106%	12	12
Total	341,480	292,565	95%	38	32

Sums may differ due to rounding.

Table 5-46 shows net lifetime energy (kWh) savings for LivingWise® Schools Outreach channel by measure.

Table 5-46 LivingWise® Schools Outreach Net Lifetime Savings Summary

Measure	EUL	<i>Ex post</i> Net Lifetime Energy Savings (kWh)
Advanced Power Strips	10	1,502,927
Bathroom Aerators (1.0 GPM)	10	186,808
Kitchen Aerators (1.5 GPM)	10	112,285
Showerheads	10	1,123,633
Total	10	2,925,653

Sums may differ due to rounding.

5.11.3 HVAC Replacement and Tune-up Net Savings Results

Results from PY19-PY2021 surveys were applied to PY2022 program participants.

Table 5-47 PY2022 NTG Results for the HVAC Channel

Measure	<i>Ex post</i> Gross Energy Savings (kWh)	FR	SO	NTG	<i>Ex post</i> Net Energy Savings (kWh)
HVAC Replacement (AC and HP)	78,781	22%	0%	78%	61,658
Central AC/HP Tune-up	342,419	4%	0%	96%	329,515
Total	421,200	7%	0%	93%	391,173

Sums may differ due to rounding.

The NTG in the HVAC channel differs between demand reductions (kW) and energy savings (kWh) because of the mix of housing type (single versus multifamily), which leads to a different mixture of heating type (i.e., heat pump vs non-heat pump). This difference impacts the NTG.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-48 below shows net results by measure in the HVAC channel.

Table 5-48 PY2022 Net Savings Summary for HVAC Channel

Measure	<i>Ex post</i> Gross Energy Savings (kWh)	<i>Ex post</i> Net Energy Savings (kWh)	NTG	<i>Ex post</i> Gross Demand Reductions (kW)	<i>Ex post</i> Net Demand Reductions (kW)
Central AC Replacement	47,998	38,879	81%	16	13
Central AC Tune-up: Modeled	51,616	38,712	75%	31	24
Central HP Tune-up: M&V	4,341	4,341	75%	1	1
Central HP Tune-up: Modeled	286,462	286,462	100%	64	64
Central HP Replacement	30,783	22,779	100%	4	3
Total	421,200	391,173	93%	116	104
Sums may differ due to rounding.					

The table below outlines the net lifetime energy (kWh) savings for the HVAC Replacement and Tune-up channel.

Table 5-49 Net Lifetime Energy Savings for HVAC Channel

Measure	EUL	<i>Ex post</i> Net Lifetime Energy Savings (kWh)
Central AC Replacement	19	738,696
Central AC Tune-up: Modeled	8	324,813
Central HP Tune-up: M&V	7	32,002
Central HP Tune-up: Modeled	9	2,607,979
Central HP Replacement	16	364,470
Total	11	4,067,960
Sums may differ due to rounding.		

5.11.4 Consumer Products Net Savings Results

The Evaluators estimated a free ridership rate of 85% for Specialty bulbs and 45% for Standard bulbs for upstream LEDs using the price response model. The model coefficients are shown in the tables below. The coefficients on program price are negative and statistically significant at the 99% level for both Standard and Special bulbs. The Evaluators found that the free-ridership rate was essentially unchanged from PY2021.

The equations below show how free ridership is calculated for a single bulb model (the Specialty bulb model show in the table below) with sales in August, a retail price of \$10, and a program price of \$5.

$$\text{Pre-program Sales} = \exp(3.147 + 2.037 + 0.142 - 0.026 * 10) = 158$$

$$\text{Program Sales} = \exp(3.147 + 2.037 + 0.142 - 0.026 * 5) = 180$$

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

$$\text{Free ridership (Example Bulb)} = 158/180 = 88\%$$

This calculation is done for each invoiced line item, using retail and program prices, and the month of sale. As mentioned in Section 5.10.5, each bulb model receives its own coefficient but only one bulb model coefficient is shown below for each bulb type for the sake of brevity.

The Evaluators assessed other predictors of sales quantities related to retailer-specific characteristics, such as, retailer type (e.g., DIY, Mass Merchant, etc.), retailer (e.g., Walmart, Home Depot, etc.), and unique store identifier. However, inclusion of one or more of these predictors resulted in model overfitting or non-sensical price coefficients due to limited price variation observed within a particular store for a particular model type. While bias from omitting these retail-specific predictors may exist, a suitable model could not be developed with their inclusion (e.g., price coefficients are positive and non-sensical or there are too many predictors in the model). The Evaluators judge this to be a limitation of this method in estimating free ridership.

NTG is calculated as: $100*(1 - \text{Free Ridership} + \text{Spillover})$. The Evaluators performed a survey of participants and estimated spillover in PY2021 at 4%. The NTG ratio for the program is 55% ($100*(1-0.494+0.0462)$).

Table 5-50 Price Response Model Results, Specialty LEDs

Coefficient	Estimate	Std Err	Statistic	P-Value	CI-low	CI-high
(Intercept)	3.147	0.630	4.996	0.000	1.912	4.382
Program Price	-0.026	0.009	-3.041	0.002	-0.043	-0.009
Aug	0.142	0.116	1.223	0.221	-0.086	0.370
Dec	0.302	0.118	2.552	0.011	0.070	0.534
Feb	0.314	0.123	2.555	0.011	0.073	0.554
Jan	0.329	0.112	2.943	0.003	0.110	0.548
July	0.081	0.110	0.734	0.463	-0.135	0.298
June	-0.221	0.115	-1.918	0.055	-0.447	0.005
Mar	0.097	0.123	0.793	0.428	-0.143	0.338
May	-0.066	0.107	-0.622	0.534	-0.276	0.143
Nov	0.012	0.118	0.100	0.920	-0.220	0.244
Oct	0.512	0.105	4.889	0.000	0.307	0.717
Sept	0.004	0.109	0.037	0.970	-0.210	0.218
Specialty LED_A-Line Omni_500-1000_4_15000	2.037	0.749	2.720	0.007	0.569	3.504

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-51 Price Response Model Results, Standard LEDs

Coefficient	Estimate	Std Err	Statistic	P-Value	CI-low	CI-high
(Intercept)	2.129	0.213	10.017	0.000	1.713	2.546
Program Price	-0.181	0.011	-16.852	0.000	-0.202	-0.160
Aug	-0.294	0.116	-2.529	0.011	-0.522	-0.066
Dec	0.015	0.114	0.133	0.894	-0.208	0.238
Feb	0.131	0.118	1.111	0.266	-0.100	0.361
Jan	0.143	0.114	1.256	0.209	-0.080	0.366
July	-0.267	0.105	-2.542	0.011	-0.473	-0.061
June	-0.201	0.109	-1.850	0.064	-0.414	0.012
Mar	0.068	0.113	0.599	0.549	-0.154	0.290
May	-0.101	0.110	-0.919	0.358	-0.316	0.114
Nov	0.207	0.123	1.684	0.092	-0.034	0.447
Oct	0.167	0.107	1.560	0.119	-0.043	0.378
Sept	-0.331	0.108	-3.065	0.002	-0.542	-0.119
Standard LED_A-Line Omni_0-500_4_20000	1.323	0.216	6.137	0.000	0.900	1.745

The tables below summarize the results of the net savings analysis. The net energy (kWh) savings of the Consumer Products channel totaled 2,275,375 kWh, with a NTG ratio of 65%. Net peak demand (kW) reductions totaled 372 kW with an 64% NTG ratio.

Table 5-52 Net kWh Savings for HEEP Consumer Products

Measure	<i>Ex ante</i> Gross Energy Savings (kWh)	<i>Ex post</i> Gross Energy Savings (kWh)	FR	SO	<i>Ex post</i> Net Energy Savings (kWh)	NTG
Advanced Power Strips	484,623	484,623	48%	0%	252,004	52%
LEDs (Food Bank)	761,890	761,890	0%	0%	761,890	100%
LEDs (Specialty)	563,805	724,655	49%	5%	400,155	55%
LEDs (Standard)	1,131,013	1,480,743	49%	5%	817,666	55%
Room Air Purifiers	77,154	20,488	27%	0%	15,024	73%
Ventilation Fans	11,082	4,101	27%	0%	3,007	73%
Water Coolers	27,463	27,463	27%	0%	20,138	73%
Window AC Replacement	13,255	12,480	56%	0%	5,491	44%
Total	3,070,284	3,516,442	35%	2%	2,275,375	65%
Sums may differ due to rounding.						

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-53 Net kW Peak Demand Reductions for HEEP Consumer Products

Measure	<i>Ex ante</i> Gross Demand Reductions (kW)	<i>Ex post</i> Gross Demand Reductions (kW)	FR	SO	<i>Ex post</i> Net Demand Reductions (kW)	NTG
Advanced Power Strips	55	55	48%	0%	29	52%
LEDs (Food Bank)	124	124	0%	0%	124	100%
LEDs (Specialty)	92	124	49%	5%	68	55%
LEDs (Standard)	184	253	49%	5%	140	55%
Room Air Purifiers	9	2	27%	0%	2	73%
Ventilation Fans	1	0.52	27%	0%	0.38	73%
Water Coolers	3	3	27%	0%	2	73%
Window AC Replacement	8	15	56%	0%	7	44%
Total	476	577	35%	2%	372	64%

Sums may differ due to rounding.

Table 5-54 outlines net lifetime energy (kWh) savings for the Consumer Products channel.

Table 5-54 Net Lifetime Savings Summary for Consumer Products Channel

Measure	EUL	<i>Ex post</i> Net Lifetime Energy Savings (kWh)
Advanced Power Strips	10	2,520,040
LEDs (Food Bank)	12.5	9,523,620
LEDs (Specialty)	12.5	5,001,934
LEDs (Standard)	12.5	10,220,826
Room Air Purifiers	9	135,215
Ventilation Fans	19	57,134
Water Coolers	10	201,383
Window AC Replacement	11	57,658
Total	12	27,717,809

Sums may differ due to rounding.

5.12 Non-Energy Benefits (NEBs)

Protocol L of the AR TRM V9.0 states that EM&V of demand-side management (DSM) programs in Arkansas must account for NEBs resulting from each program. Specifically, the categories of NEBs that are to be calculated for each DSM program are as follows:

- Benefits of electricity, natural gas, and liquid propane energy savings (i.e. other fuels);
- Benefits of public water and wastewater savings; and
- Benefits of avoided and deferred equipment replacement costs.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

As discussed below, the NEBs applicable to the HEEP Program in PY2022 are avoided replacement costs (ARCs), propane, natural gas, and water savings.

Measures with zero entries are included to ensure consistency of table structure and to demonstrate that no measures or potential energy and non-energy impacts were omitted.

5.12.1 Natural Gas Energy Savings

In HEEP, OG&E customers can have either electric or natural gas heating. When a customer has natural gas heating, OG&E can claim the natural gas therms savings as NEBs. The table below presents the *ex post* net natural gas that can be claimed as NEBs for cost-effectiveness purposes. The natural gas savings estimated in HEEP were all from channels where there are no gas utility partners as there are in the CWA. The natural gas penalties presented for Consumer Products are inclusive of leakage effects.

Table 5-55 Natural Gas Savings (NGS) by Measure, for HEEP in PY2022

Measure	<i>Ex post</i> NGS (Therms)	<i>Ex post</i> Net NGS (Therms)	<i>Ex post</i> Net Lifetime NGS (Therms)	NEB Natural Gas Savings (\$)	NPV NGS (\$)
Consumer Products	(15,992)	(11,047)	(138,084)	\$ (5,859)	\$ (70,682)
LEDs (Food Bank)	(4,948)	(4,948)	(61,854)	\$ (2,624)	\$ (31,662)
LEDs (Specialty)	(3,629)	(2,004)	(25,048)	\$ (1,063)	\$ (12,821)
LEDs (Standard)	(7,415)	(4,095)	(51,182)	\$ (2,172)	\$ (26,199)
RSOL	1,407	579	13,162	\$ 307	\$ 5,803
Ceiling Insulation	81	81	1,616	\$ 43	\$ 732
ES Windows	1,612	709	14,184	\$ 376	\$ 6,422
LEDs (Standard)	(285)	(211)	(2,638)	\$ (112)	\$ (1,351)
LivingWise®	3,300	3,155	31,550	\$ 1,673	\$ 16,087
Bathroom Aerator	423	414	4,143	\$ 220	\$ 2,112
Kitchen Aerator	254	249	2,490	\$ 132	\$ 1,270
Showerhead	2,623	2,492	24,917	\$ 1,322	\$ 12,705
Total	(11,285)	(7,313)	(93,372)	\$ (3,878)	\$ (48,793)

Natural gas savings were estimated as follows:

- **Consumer Products:** the project data provided heating type, which was used to determine if the project qualified for natural gas savings.
- **Residential Solutions:** the project data provided heating type, which was used to determine if the project qualified for natural gas savings.
- **LivingWise® Schools Outreach:** participant survey responses provided by AM Conservation were used to estimate natural gas savings.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5.12.2 Propane Savings

When a customer has propane, OG&E can claim the savings as NEBs. The table below presents the *ex post* net propane savings can be claimed as NEBs for cost-effectiveness purposes.

Propane was only identified in the surveys delivered to the LivingWise® Outreach participants.

Table 5-56 Propane Savings by Measure, for HEEP in PY2022

Channel	Measure	<i>Ex post</i> Gross LPG Savings (gallons)	<i>Ex post</i> Net LPG Savings (gallons)	LPG Benefit (\$)	NPV LPGS (\$)
LivingWise® Schools Outreach	Bathroom Aerator	64	62	\$ 151	\$ 1,430
	Kitchen Aerator	38	37	\$ 91	\$ 860
	Showerhead	395	375	\$ 907	\$ 8,603
Total		496	475	\$ 1,148	\$ 10,893

Sums may differ due to rounding.

5.12.3 Water Savings

The Evaluators applied AR TRM V9.0 Volume 1, Section II, Protocol L1 to calculated water savings from faucet aerators and low-flow showerheads.

Table 5-57 Total Marginal Water Rates

Customer Class	AR TRM V9.0 PY2020-PY2022 Values		
	Water Rates (per 1,000 gallons)	Sewage Rates (per 1,000 gallons)	Marginal Water Rates (per 1,000 gallons)
Residential	\$3.51	\$4.74	\$8.24
Commercial	\$2.84	\$4.27	\$7.11
Average Cost \$/Gallon	\$3.20	\$4.50	\$7.70

In PY2022, the water saving measures implemented through the HEEP included faucet aerators and low-flow showerheads. The program tracking data included flow rates for these measures, and the Evaluators applied these flow rates to the TRM V9.0 algorithms for faucet aerators and showerheads to calculate annual gallons of water saved. Table 5-58 below presents the estimates for HEEP.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-58 Water Savings by Measure Type for HEEP in PY2022

Channel	Measure	<i>Ex post</i> Gross Water/WW Savings (gallons)	<i>Ex post</i> Net Water/ WW Savings (gallons)	NEB Water/ WW Benefit (\$)	NPV Water/ WW (\$)
RSOL	Aerators	48,757	42,419	\$ 327	\$ 3,098
RSOL	Showerheads	236,620	203,493	\$ 1,567	\$ 14,862
LivingWise® Schools	Bathroom Aerator	332,715	326,060	\$ 2,511	\$ 23,813
	Kitchen Aerator	199,985	195,985	\$ 1,509	\$ 14,313
Outreach	Showerheads	2,064,439	1,961,217	\$ 15,101	\$ 143,232
Total		2,882,515	2,729,174	\$ 21,015	\$ 199,318

Sums may differ due to rounding.

5.12.4 Avoided and Deferred Replacement Costs

To calculate avoided replacement costs (ARCs) and incremental costs for LEDs in OG&E's HEEP, the AR TRM V9.0 Protocol L calculator was used with the following assumptions:

- 1) Replacement-on-burnout for all bulbs; and
- 2) 12.5 EUL for all LEDs, per AR TRM V9.0.

LED costs were sourced from OG&E program tracking data where available. For direct install LEDs, the Evaluators assumed that the incentive was equal to the total cost of equipment and labor. In cases where project cost was not available and the project was not direct install, the Evaluators cited costs from IL TRM v9.0 Volume 3⁴¹.

There were no deferred replacement costs (DRC) estimated in the PY2022 HEEP. Table 5-59 below shows the ARC benefits for the PY2022 HEEP.

⁴¹ http://ilsagfiles.org/SAG_files/Technical_Reference_Manual/Version_9/Final/IL-TRM_Effective_010118_v9.0_Vol_3_Res_020817_Final.pdf

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-59 Avoided Replacement Costs (ARCs) by Measure, for HEEP in PY2022

Channel	Measure	Ex post Gross ARCs (\$)	Ex post Net ARC (\$)	NPV of ARC (\$)
Consumer Products	LEDs (Food Bank)	\$ 78,683	\$ 78,683	\$ 78,683
	LEDs (Specialty)	\$ 50,347	\$ 27,802	\$ 27,802
	LEDs (Standard)	\$ 113,732	\$ 62,803	\$ 62,803
RSOL	LED Lamp (Standard)	\$ 7,515	\$ 5,561	\$ 5,561
Total		\$ 250,277	\$ 174,848	\$ 174,848

Sums may differ due to rounding.

5.12.5 NEBs Summary

The table below summarizes the net present value (NPV) of NEBs attributable to HEEP, including natural gas savings, water savings, propane, and avoided replacement cost. There were no deferred replacement costs (DRCs) in the PY2022 HEEP. There were no NEBs identified in the HVAC Replacement & Tune-up channel.

Table 5-60 PY2022 HEEP Non-Energy Benefits (NEBs) Summary

Channel	Measure	NPV NGS (\$)	NPV LPGS (\$)	NPV Water/WW (\$)	NPV ARC (\$)	Total NPV (\$)
Consumer Products	LEDs (Food Bank)	\$ (31,662)	\$ -	\$ -	\$ 78,683	\$ 47,021
	LEDs (Specialty)	\$ (12,821)	\$ -	\$ -	\$ 27,802	\$ 14,980
	LEDs (Standard)	\$ (26,199)	\$ -	\$ -	\$ 62,803	\$ 36,604
LivingWise® Schools Outreach	Faucet Aerators	\$ 3,382	\$ 2,290	\$ 38,126	\$ -	\$ 43,798
	Showerheads	\$ 12,705	\$ 8,603	\$ 143,232	\$ -	\$ 164,540
RSOL	Ceiling Insulation	\$ 732	\$ -	\$ -	\$ -	\$ 732
	ES Windows	\$ 6,422	\$ -	\$ -	\$ -	\$ 6,422
	Faucet Aerators	\$ -	\$ -	\$ 3,098	\$ -	\$ 3,098
	Showerheads	\$ -	\$ -	\$ 14,862	\$ -	\$ 14,862
	LEDs (Standard)	\$ (1,351)	\$ -	\$ -	\$ 5,561	\$ 4,211
Total		\$ (48,793)	\$ 10,893	\$ 199,318	\$ 174,848	\$ 336,267

5.13 Process Evaluation Reasoning

The AR TRM V9.0 Protocol C addresses the criteria used to determine the timing and conditions needed for a process evaluation, and the following tables summarize the program in the context of these requirements.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-61 Determining Process Evaluation Timing

Variable Name	Variable Type
New and Innovative Components	Partially. The program continues to incorporate a set list of measures that is similar to prior years with a few additions.
No Previous Process Evaluation	The Program received a process evaluation in PY2020.
Less than Expected Energy Savings or Accomplishments	No. OG&E offerings have exceeded energy savings expectations in prior years.
Participant Reported Problems or Low Participant Satisfaction	No. There have been few reported incidences of customer dissatisfaction for OG&E offerings.
New Vendor or Contractor	No. The program continues to be implemented by CLEAResult and uses installation contractors who were previously involved.
Energy Savings are being Achieved Slower than Expected	No. Energy savings are being achieved at a rate that is consistent with program expectations.

Table 5-62 Determining Process Evaluation Conditions

Component	Status
Impact problems	No. Savings are not substantially lower than expected for most measures although M&V activities will verify the accuracy of savings estimates and TRM guidelines.
Informational/educational objectives	None identified thus far.
Participation problems	None identified thus far.
Operational challenges	None identified thus far.
Cost-effectiveness issues	No. The program is designed to implement the most cost-effective measures for each participating customer, and historical cost-effectiveness for the offering has been adequate.
Negative feedback	None identified thus far.
Market effects	None identified thus far.

HEEP received a process evaluation in PY2020. PY2022 process evaluation activities were limited to following up on outstanding program recommendations.

5.14 Process Evaluation Approach and Findings

This section outlines the findings of the PY2022 HEEP process evaluation.

5.14.1 Data Collection Activities

As part of the PY2022 evaluation of HEEP, the Evaluators completed in-depth interviews with program staff working on the program: the program managers from OG&E, and a program

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

representative from CLEARResult. The Evaluators used the information gleaned in these interviews to identify program updates or changes experienced in PY2022 compared to available documentation. Further, these interviews explored energy efficiency staff roles and responsibilities, program communications and marketing, and the overall program delivery processes in place during PY2022.

Additionally, evaluators conducted surveys with HEEP program participants, collecting feedback on the participant experience as well as collecting data for NTG estimation.

Table 5-63 below summarizes the survey and interview data collection for the PY2022 program evaluation, including data collection type and number of respondents.

Table 5-63 Interview and Survey Data Collection Summary

Target	Component	Activity	n	Precision	Details
Program Staff	OG&E Program Staff	Interview: Program Manager EM&V Analyst	4	N/A	The Program Manager handles day-to-day operations of the program, including interactions with Trade Allies and implementers. The EM&V Analyst liaisons between the program and the Evaluators and ensures that program operations and energy savings calculations are TRM-compliant. The LivingWise® Schools Outreach Program manager manages the LivingWise® Schools Outreach program.
	CLEARResult Staff	Interview: Program Manager	1	N/A	The Program Manager handles overall program oversight for HEEP.
Program Participants	HEEP Pathway	Surveys	54	±11.2%	This survey was conducted on a sample of residents who participated in HEEP

The next few sections present the results and key findings from the process evaluation activities. These findings are based upon interviews with utility staff, implementation staff, and surveys with participating customers. The findings presented pertain to program communications and marketing, program delivery, participant energy efficiency awareness and behaviors, and customer characteristics.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

5.14.2 OG&E and CLEAResult Staff Interview Findings

The interviewees identified as the Portfolio Manager, EMV Analyst, LivingWise® Schools Outreach Program Manager, and CLEAResult manager. OG&E and CLEAResult staff were interviewed separately, but their findings were included together in the below summary.

Program Status

OG&E staff indicated that 2022 was a unique year for their portfolio because unlike years past, each program is *“carrying its own weight as designed.”* They went to explain that in previous years they *“had to borrow from Peter to pay Paul”*, but 2022 saw an uptick in demand and all the program channels have been humming along smoothly. OG&E staff suspect the success of the portfolio across all programs stems from the hard work of the team and the fact that everyone is familiar with their roles and have *“hit a groove”*. Additionally, the lessening of COVID restrictions have allowed for more in-person interactions and relationship building, which have improved staff’s capacity to demonstrate the benefit of the programs to customers.

Code Changes

When asked about upcoming code changes, staff indicated that the plan to use this upcoming planning year as an opportunity to strategize the following triennials portfolio goals. They noted that their savings goals are set forth by the commission and they will have to respond based on those goals. In the immediate, they plan to drop lighting in response to EISA regulations and follow any other protocols set forth by CLEAResult. OG&E staff noted that *“it’s going to be difficult to make up for the cheap kWh savings of lighting”* and that they *“will need to be creative.”*

For the SEER2 updates, CLEAResult is working on a company-wide approach that includes educating and training trade allies to understand the new procedures so that quality assurance and quality control processes run smoothly. Both OG&E and CLEAResult staff noted that the IECC changes are not pertinent to them as they do not go into effect until 2024 and they rarely have new construction projects in either the residential or commercial sector.

As of the end of the third quarter the HEEP programs were performing better than they had in past years. Staff indicated that there has been an overwhelming interest for all the programs. Although they were not sure the exact reason for the demand, they speculated that inflation and rising temperatures have motivated customers to upgrade their equipment. Staff noted that no changes were made to the measures offered nor data tracking or quality assurance in the HEEP program.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Program Challenges

Despite the success of the program staff cited supply chain issues as a continued concern for the HEEP programs. Not only has the price of equipment changed, but contractors struggle to find suppliers for some measures. Although the programs are performing well, staff believe the programs could be doing even better if more products were available.

Marketing

OG&E staff create marketing materials for the HEEP programs. CLEAResult and OG&E communicate and coordinate often about marketing strategies. Marketing strategies include social media posts, mail outs, flyers, etc. Staff provide cobranding to Trade Allies and require all Trade Allies to wear an OG&E badge. Social media has proven to be a successful marketing strategy and CLEAResult tracks which posts and advertisements generate the most interest. Staff also emphasized the importance of word-of-mouth marketing, as well as meeting people in-person. Staff noted that the HVAC tune up pathway currently has one trade ally, but staff are looking to recruit more contractors for next year.

5.14.3 Home Energy Efficiency Programming (HEEP) Survey

Residential participants were contacted via phone to complete an online survey regarding their experience with the OG&E's Home Energy Efficiency Program (HEEP). Thirty-six participants who had received a high efficiency air conditioner, high efficiency heat pump, and/or high efficiency windows responded to the survey. The following summary outlines their responses.

The respondents consisted of:

- **HVAC measures:** 18
- **Windows:** 18

Program Awareness

Respondents learned about the program through a variety of avenues including a contractor (50%, n=18), retailer (17%, n=6), and utility website (14%, n=5), and word of mouth (14%, n=5) (Figure 5-4).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

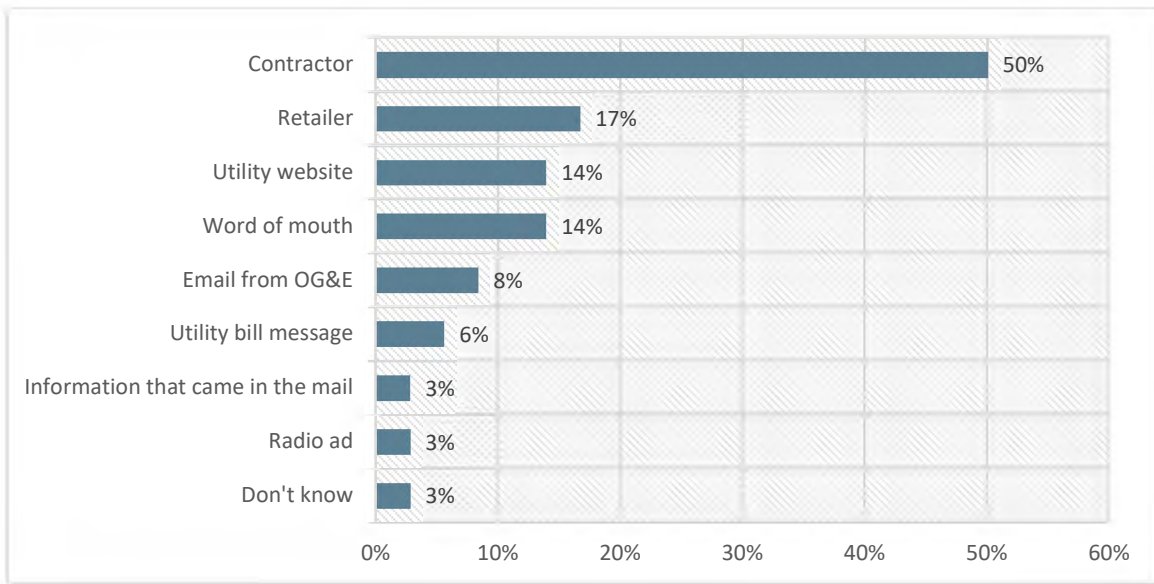


Figure 5-4 Program Awareness (n=48)

More than half of respondents (56%, n=20) were interested in participating in the program to save energy or to save money on utility bills (Figure 5-5).

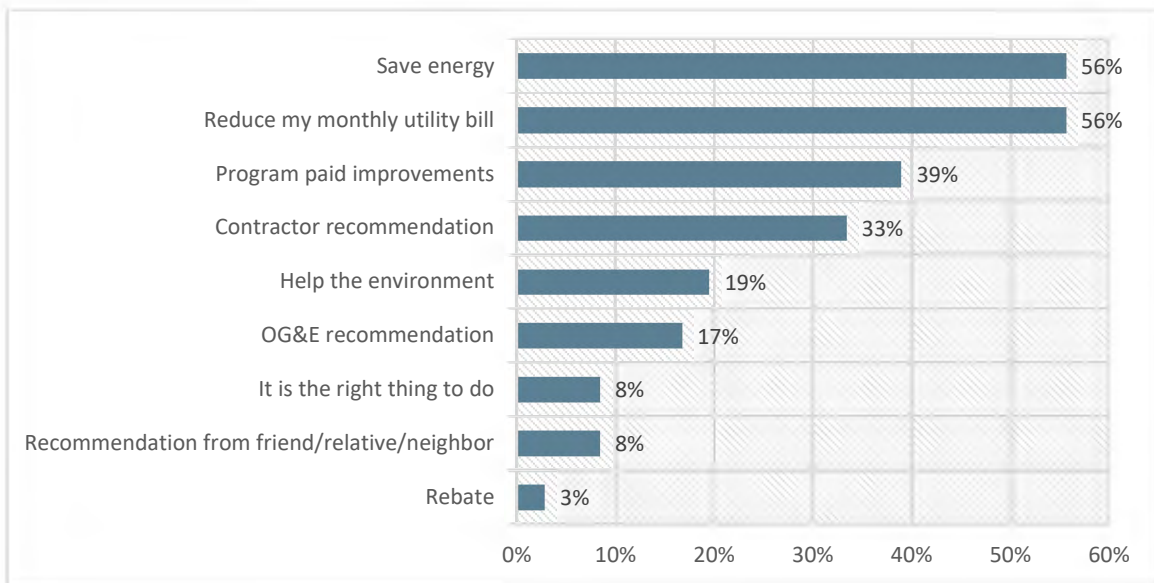


Figure 5-5 Participation Motivation (n=54)

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Program Participation

Eighteen respondents received an HVAC related measure (high efficiency air conditioner and/or a high efficiency heat pump) and eighteen respondents received high efficiency windows. Respondents were interested in these energy efficient measures for a variety of reasons, most notably the appliances’ features, ENERGY Star label, and because a contractor or retailer recommended it to them (Figure 5-6). Many respondents got information about the specific appliance they purchased through their contractor (56%, n=20). Respondents mostly purchased their equipment from heating/cooling contractors (47%, n=17) or window installers (47%, n=17) two respondents purchased their equipment online.

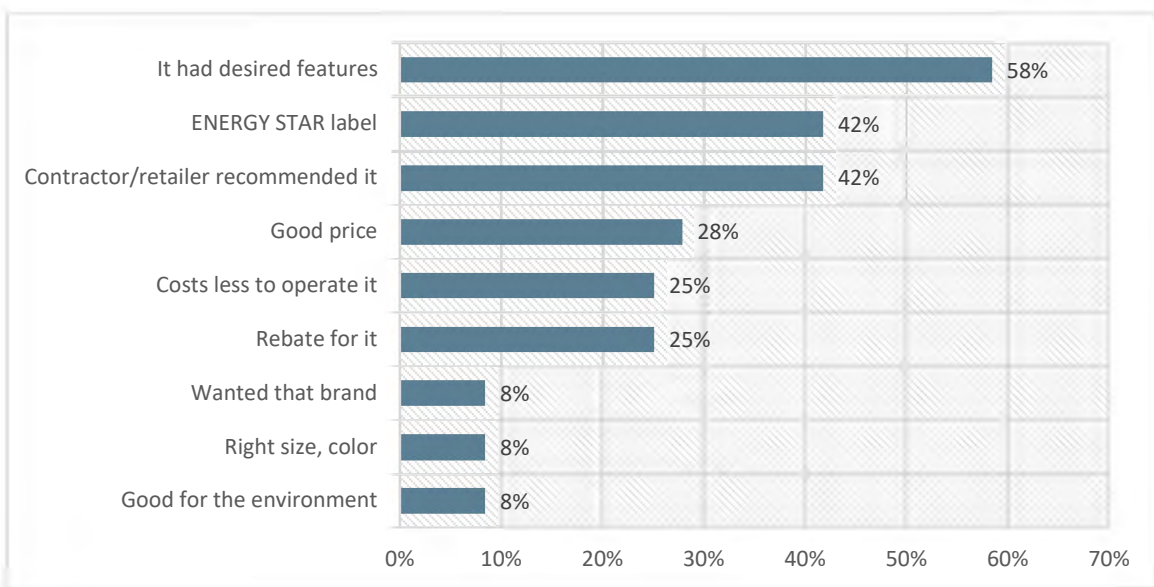


Figure 5-6 Motivation for Appliance Purchase (n=36)

Program Satisfaction

Respondents were generally satisfied with HEEP (Figure 5-7), however they were least satisfied with their energy bill savings. Eighty-three percent of respondents expressed satisfaction with OG&E as their energy provider (87%, n=31).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

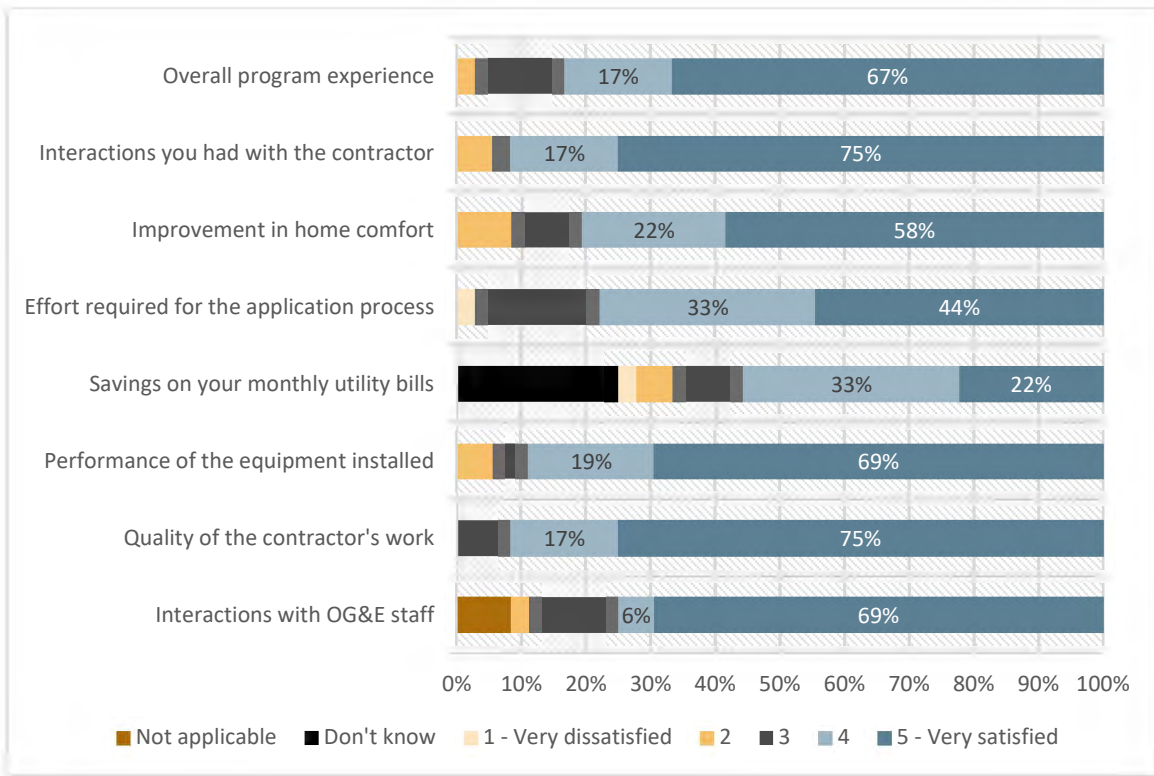


Figure 5-7 Program Satisfaction (n=54)

Among the respondents who expressed dissatisfaction with the program, reasons include poor contractor performance (n=2) and rebate took too long (n=1).

5.15 Progress on PY2021 Evaluation Recommendations

The table below summarizes the response by OG&E and CLEAResult to PY2021 recommendations for HEEP.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 5-64 Status of Recommendations from PY2021 Evaluation

2021 Recommendations	Status	Comment
<p>Consider adding an EER requirement for heat pump replacements.</p> <p>There were 7 projects for which the demand (kW) reductions resulted in a negative value due to the installed units having EERs being less than the federal standard EER value of 11.8 for replace-on-burnout projects.</p> <p>The overall kW realization rate was 8% for central heat pump replacement projects.</p>	<p>Reviewed and rejected</p>	<p>The standards for rebate/kWh payout is tied directly to the SEER rating and not the EER. The SEER rating is what makes the difference in the efficiency rating/output usage of the unit.</p>
<p>Consider aggregating all program data together to address macro-level database inconsistencies.</p> <p>The datasets for the various program channels often have inconsistent heading titles for the same datapoint. Additionally, each channel is provided in unique and separate tabs. It is a time-consuming effort to combine them for the program-level evaluation of HEEP.</p>	<p>Completed</p>	<p>This has been addressed and should no longer be an issue.</p>

5.16 Planned Program Changes

There are no planned changes for PY2022.

5.16.1 Conclusions

Overall HEEP Performance in PY2022

The program performed relatively well in PY2022. Savings declined by 8%, but this has been driven largely by a reduction in emphasis on LEDs in advance of EISA Phase II standards.

Overall program NTG remained consistent at 73%.

Overall program realization was high, at 114% for kWh savings.

Some new measures had low realization rates as a result of AR TRM V9.0 updates. The Evaluators found low realization for bathroom ventilation fans and Energy Star air purifiers.

The Evaluators identified discrepancies in heating savings calculations for central heat pump replacements.

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5.16.2 Recommendations

Consumer Products:

Room Air Purifiers & Ventilation fans: Update parameters to align with TRM V9.0. Apply deemed savings based on the size categories specified in the TRM, which align with updated ENERGY STAR guidelines. Update incremental cost; with the increased efficiency standard and revision to size categories, incremental cost estimates used in initial planning for these measures are likely higher than warranted, as both the base-case efficiency increasing and the average system size decreasing correspond with lower incremental cost.

Window ACs: Remove RAF value from kW calculations.

Residential Solutions

Advanced Power Strips: Incorporate a 59% ISR into ex ante estimates.

HVAC Replacement & Tune-up

Develop a library of AHRI-actual heating and cooling capacities for system replacement savings calculations.

6 Consistent Weatherization Approach (CWA) Program

6.1 Overview of Evaluation Findings

Table 6-1 through Table 6-4 outline the *ex ante* and *ex post* energy (kWh) savings and demand (kW) reductions by measure, respectively, for the CWA and Low Income channels.

Table 6-1 PY2022 Gross Electric Energy Savings Summary by Measure – CWA

Measure	<i>Ex Ante</i> Annual Energy Savings (kWh)	<i>Ex Post</i> Gross Annual Savings (kWh)	Realization Rate (kWh)
Advanced Power Strip	72,578	29,017	40%
Air Infiltration	454,698	473,435	104%
Assessment	0	0	100%
Ceiling Insulation	694,591	693,031	100%
Duct Sealing	2,147,871	2,092,065	97%
Faucet Aerators	2,330	2,147	92%
Health & Safety	0	0	100%
LEDs (Specialty)	24,991	25,764	103%
LEDs (Standard)	120,911	124,691	103%
Low-Flow Showerheads	4,909	4,097	83%
Total	3,522,879	3,444,247	98%

Sums may differ due to rounding.

Table 6-2 PY2022 Gross Electric Energy Savings Summary by Measure – Low Income

Measure	<i>Ex Ante</i> Annual Energy Savings (kWh)	<i>Ex Post</i> Gross Annual Savings (kWh)	Realization Rate (kWh)
Advanced Power Strip	35,868	19,896	55%
Air Infiltration	171,550	222,713	130%
Assessment	0	0	100%
Ceiling Insulation	348,956	348,956	100%
Duct Sealing	962,999	950,406	99%
Faucet Aerators	5,382	5,408	100%
Health & Safety	0	0	100%
LEDs (Specialty)	27,298	28,143	103%
LEDs (Standard)	70,561	72,744	103%
Low-Flow Showerheads	9,844	9,939	101%
Total	1,632,459	1,658,205	102%

Sums may differ due to rounding.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 6-3 PY2022 Gross Electric Demand Savings Summary by Measure – CWA

Measure	<i>Ex Ante</i> Annual Demand Savings (kW)	<i>Ex Post</i> Gross Demand Savings (kW)	Realization Rate (kW)
Advanced Power Strip	9	3	40%
Air Infiltration	101	105	103%
Assessment	0	0	100%
Ceiling Insulation	199	202	102%
Duct Sealing	508	480	95%
Faucet Aerators	0.24	0.22	92%
Health & Safety	0	0	100%
LEDs (Specialty)	4	4	104%
LEDs (Standard)	19	20	103%
Low-Flow Showerheads	0.51	0.43	83%
Total	840	815	97%

Sums may differ due to rounding.

Table 6-4 Gross Electric Demand Savings Summary by Measure – Low Income

Measure	<i>Ex Ante</i> Annual Demand Savings (kW)	<i>Ex Post</i> Gross Demand Savings (kW)	Realization Rate (kW)
Advanced Power Strip	4	2	55%
Air Infiltration	35	47	133%
Assessment	0	0	100%
Ceiling Insulation	103	103	100%
Duct Sealing	209	200	96%
Faucet Aerators	0.56	0.56	100%
Health & Safety	0	0	100%
LEDs (Specialty)	5	5	104%
LEDs (Standard)	11	11	103%
Low-Flow Showerheads	1	1	101%
Total	368	369	100%

Sums may differ due to rounding.

Table 6-5 and

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Table 6-6 outline the *ex ante* and verified *ex post* natural gas savings (therms) claimed by OG&E, by measure, for the PY2022 CWA and Low Income channels, respectively. The Evaluators found that therms shown in program tracking were not claimable by OG&E as they were in almost all cases in line items that indicated that the home had received funding from AOG. In prior program years, OG&E would obtain significant therms savings from homes weatherized in the fourth quarter of the program year, as AOG would often run out of funds while OG&E still had budget. In these cases, OG&E would still weatherize homes with natural gas service and claim the gas savings as a NEB. In PY2022, AOG had budget available for the full program year, and as a result the gas savings had all received incentive payments and were claimed by AOG.

While this does reduce the NEBs claimable by OG&E, this is nonetheless a positive development as all fuel savings are going to their primary utility; by reducing the amount spent by OG&E on homes with gas service (due to all such homes getting AOG co-funding), this improves the Utility Cost Test benefit-cost ratio of the program.

Measures with zero entries are included to ensure consistency of table structure and to demonstrate that no measures or potential energy and non-energy impacts were omitted.

Table 6-5 PY2022 Gross Therms Savings Summary by Measure – CWA

Measure	<i>Ex Post</i> Annual Therms Savings
Advanced Power Strip	0
Air Infiltration	645
Assessment	0
Ceiling Insulation	120
Duct Sealing	479
Faucet Aerators	0
Health & Safety	0
LEDs (Specialty)	-76
LEDs (Standard)	-477
Low-Flow Showerheads	0
Total	692
Sums may differ due to rounding.	

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Table 6-6 PY2022 Gross Therms Savings Summary by Measure – Low Income

Measure	<i>Ex Post</i> Annual Therms Savings
Advanced Power Strip	0
Air Infiltration	0
Assessment	0
Ceiling Insulation	0
Duct Sealing	0
Faucet Aerators	0
Health & Safety	0
LEDs (Specialty)	-67
LEDs (Standard)	-295
Low-Flow Showerheads	0
Total	-362
Sums may differ due to rounding.	

Table 6-7 and

Table 6-8 outline the EUL and *ex post* lifetime energy (kWh) savings by measure for the PY2022 CWA and Low Income channels.

Table 6-7 PY2022 Gross Lifetime Savings Summary by Measure – CWA

Measure	EUL	<i>Ex Post</i> Gross Lifetime kWh Savings
Advanced Power Strip	10	290,167
Air Infiltration	11	5,207,787
Assessment	1	0
Ceiling Insulation	20	13,860,620
Duct Sealing	18	37,657,179
Faucet Aerators	10	21,473

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Health & Safety	1	0
LEDs (Specialty)	12.5	322,045
LEDs (Standard)	12.5	1,558,642
Low-Flow Showerheads	10	40,966
Total	17	58,958,878
Sums may differ due to rounding.		

Table 6-8 PY2022 Gross Lifetime Savings Summary by Measure – Low Income

Measure	EUL	Ex Post Gross Lifetime kWh Savings
Advanced Power Strip	10	198,958
Air Infiltration	11	2,449,842
Assessment	1	0
Ceiling Insulation	20	6,979,128
Duct Sealing	18	17,107,315
Faucet Aerators	10	54,081
Health & Safety	1	0
LEDs (Specialty)	12.5	351,782
LEDs (Standard)	12.5	909,296
Low-Flow Showerheads	10	99,387
Total	17	28,149,790
Sums may differ due to rounding.		

Table 6-9 presents the net savings summary, by channel, for the PY2022 CWA. The overall program NTG ratio is 93%.

Table 6-9 Ex Post Net Savings Summary

Program Channel	# Homes	Ex Post Net Annual kWh Savings	Ex Post Net kW Savings	Ex Post Net Lifetime kWh Savings	NTG Ratio
CWA	710	3,104,979	738	53,343,266	90%
Low Income	436	1,658,205	369	28,149,790	100%
Total	1,146	4,763,183	1,107	81,493,056	93%
Sums may differ due to rounding.					

Figure 6-1 and Figure 6-2 summarize the gross and net energy savings (kWh) by program channel.

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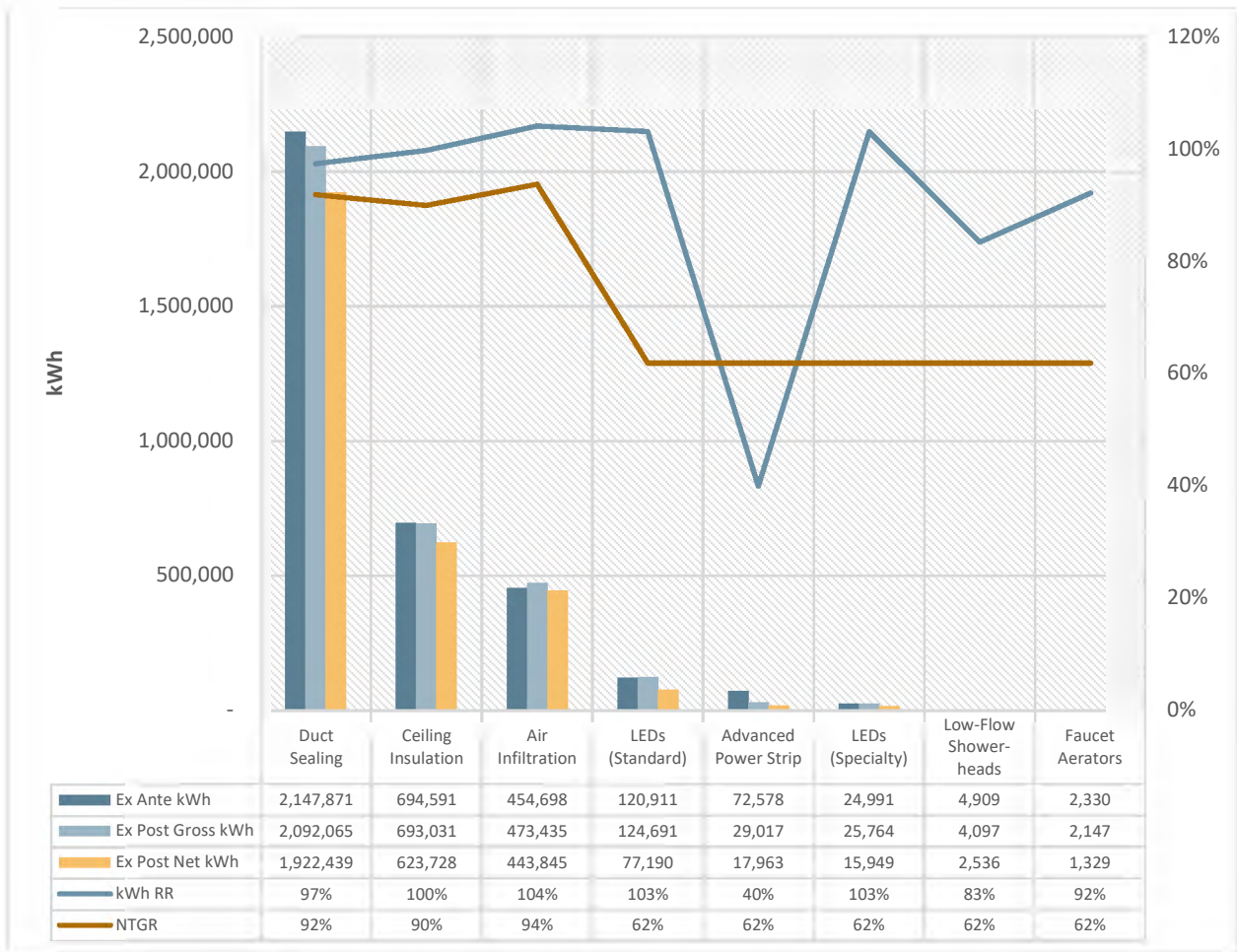


Figure 6-1 CWA Energy Savings (kWh) Summary

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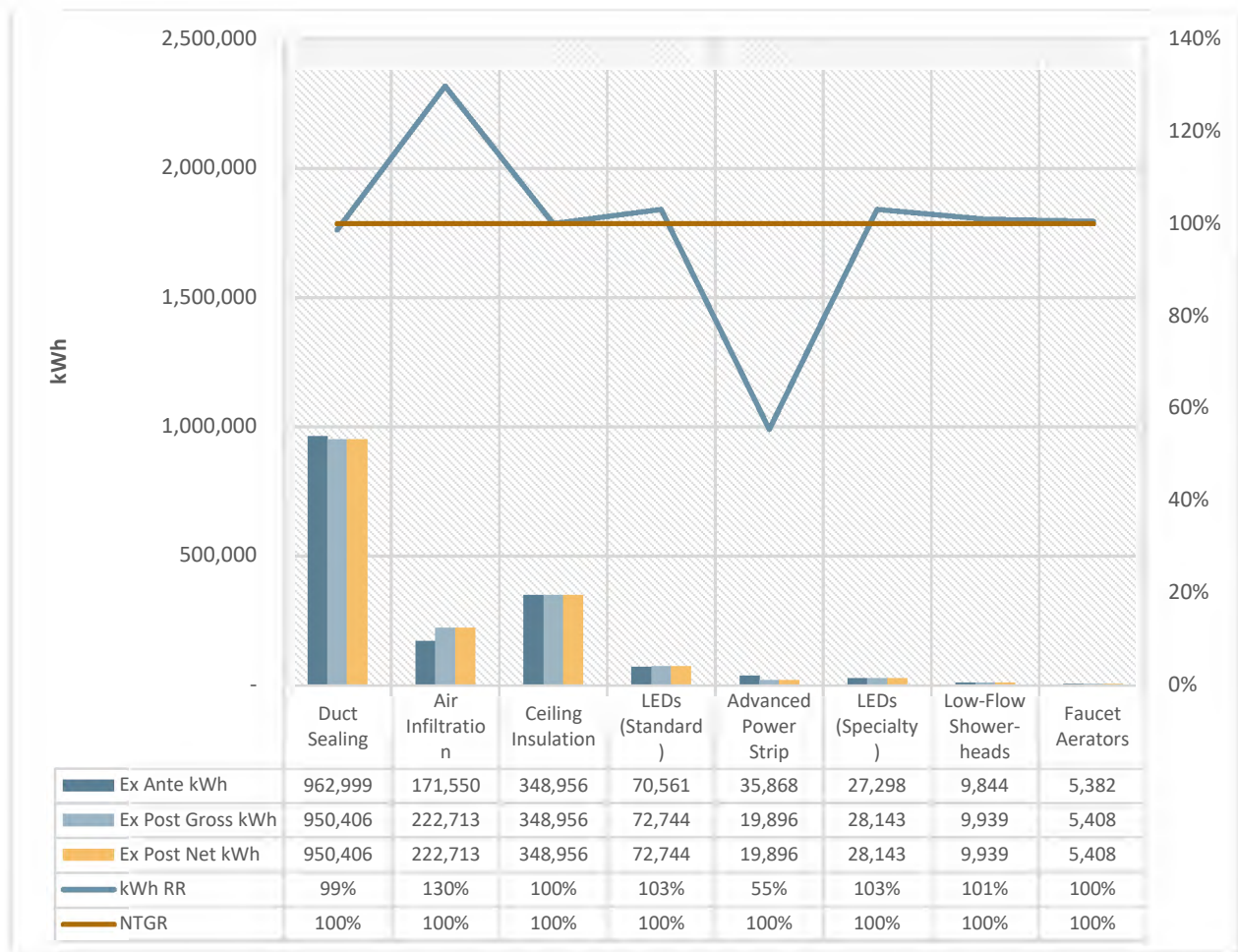


Figure 6-2 Low Income Energy Savings (kWh) Summary

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Figure 6-3 and Figure 6-4 summarize the gross and net demand savings (kW) by program channel.

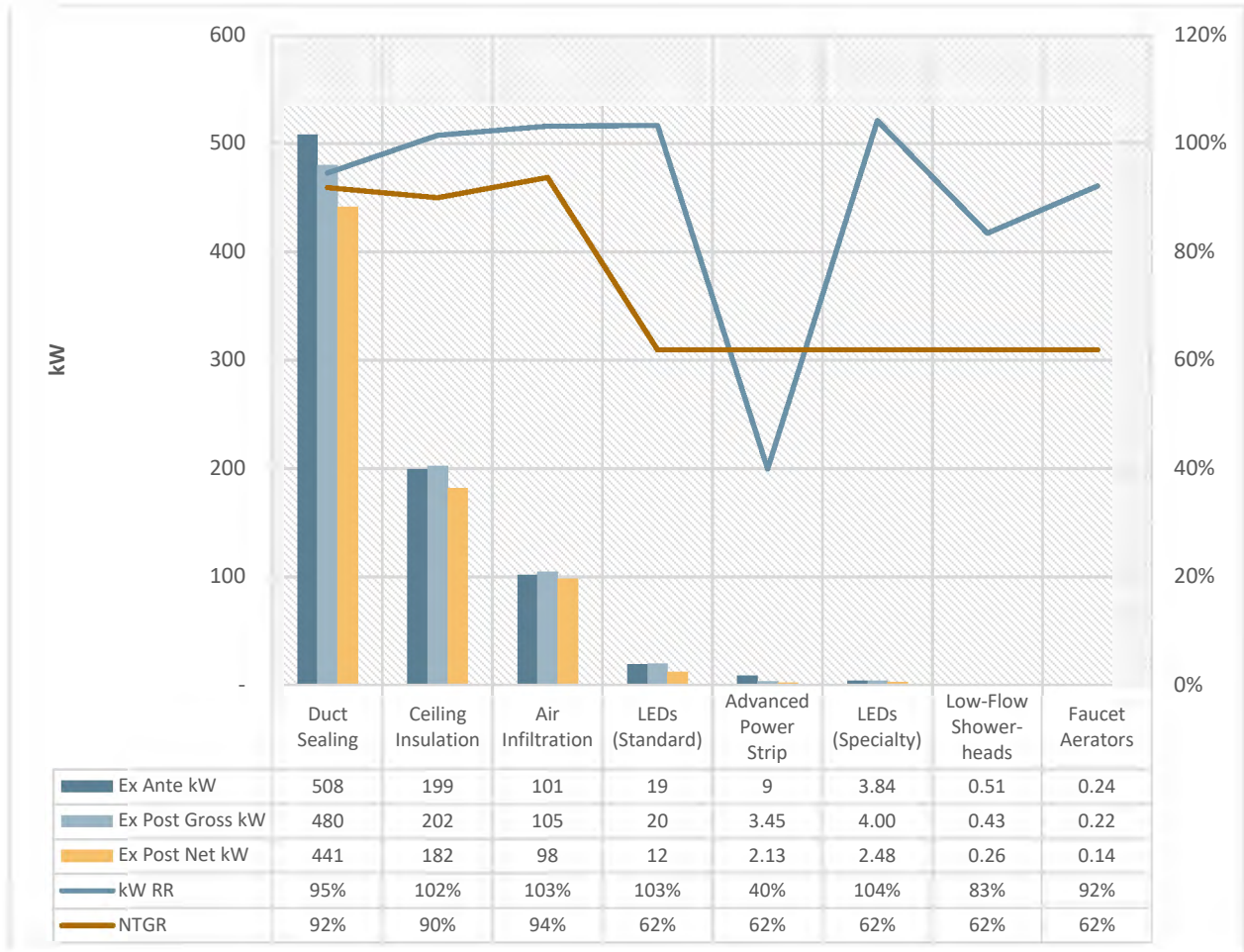


Figure 6-3 CWA Demand Reduction (kW) Summary

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Figure 6-4 Low Income Demand Reduction (kW) Summary

Table 6-10 and Table 6-11 present the total participants, measures, and incentives by program channel.

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Table 6-10 Measures and Incentives Summary - CWA

Measure	Total Participants	Total Measures	Total Incentives
Advanced Power Strip	227	291	\$ 8,730
Air Infiltration	413	414	\$ 106,411
Assessment	692	696	\$ 173,475
Ceiling Insulation	252	267	\$ 301,594
Duct Sealing	494	535	\$ 164,620
Faucet Aerators	42	78	\$ 333
Health & Safety	713	1,322	\$ 55,116
LEDs (Specialty)	137	834	\$ 4,441
LEDs (Standard)	458	4,487	\$ 22,471
Low-Flow Showerheads	34	44	\$ 588
Total	710	8,968	\$ 837,779

Total participants is the sum of unique electric account numbers to represent households. Sums may differ due to rounding.

Table 6-11 Measures and Incentives Summary – Low Income

Measure	Total Participants	Total Measures	Total Incentives
Advanced Power Strip	102	142	\$ 4,260
Air Infiltration	148	148	\$ 31,177
Assessment	416	417	\$ 100,200
Ceiling Insulation	143	150	\$ 173,597
Duct Sealing	216	228	\$ 64,885
Faucet Aerators	38	105	\$ 435
Health & Safety	433	731	\$ 42,382
LEDs (Specialty)	103	919	\$ 5,168
LEDs (Standard)	263	2,613	\$ 13,065
Low-Flow Showerheads	32	54	\$ 675
Total	436	5,507	\$ 435,844

Total participants is the sum of unique electric account numbers to represent households. Sums may differ due to rounding.

6.2 Program Overview

The CWA, administered by CLEAResult under contract to OG&E, provides energy audits and whole house retrofit services to OG&E residential customers. The program is administered with significant coordination with AOG due to their high level of overlap in their service territory.

The program is designed to use both gas utility and electric utility funds to provide customers in-home audit and energy efficient measures at no additional cost.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The CWA was developed by the Parties Working Collaboratively (PWC) Weatherization Collaborative comprised of Arkansas IOUs and other stakeholders to provide a consistent and comprehensive weatherization offering across the state of Arkansas. The former OG&E/AOG Weatherization Program designed and implemented by OG&E and AOG was the model for the rest of the state's IOUs CWA programs.

The IOUs are responsible for delivering the Program. Each IOU has a separate program budget and may use its own Building Performance Institute (BPI) or Residential Energy Services Network (RESNET) certified contractors or trained private contractors. Each IOU must follow the guidelines of the statewide approach when delivering weatherization services but is able to supplement the Program with complementary program elements such as additional measure offerings. While all IOUs are required to offer weatherization services under the CWA framework, each IOU offers its own iteration of the framework and may or may not deliver weatherization through a joint utility offering. OG&E's CWA is an example of a joint utility offering, where OG&E and AOG are the joint sponsors and share the costs of weatherizing participant homes.

The program targets energy-inefficient homes by requiring that participating residences must either be at least 10 years old or have a minimum energy usage cost per square foot of ten cents for electricity based on the customer's highest bill in the past 12 months.

The program is designed to facilitate the installation of a wide range of cost-effective weatherization measures that have been approved as "core measures" to be provided under the CWA framework, including:

- Ceiling Insulation;
- Air Infiltration;
- Duct Sealing;
- Advanced Power Strips;
- LEDs (Standard);
- Low-Flow Shower Heads; and
- Faucet Aerators.

Though not required by CWA rules, OG&E does provide health and safety measure to CWA participants.

Measures are selected for individual homes through a contractor assessment which identifies a list of cost-effective improvements. The program contracts with four installation contractors who perform the weatherization and measure implementation services. After the measures are

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

installed, CLEAResult staff members perform post-inspections on a sample of homes to verify that all measures have been properly implemented.

Beginning in PY2020, the program included the Low Income channel per requirements outlined in Act 1102. Act 1102 programs target low income and elderly (age 65+) customers and are intended to provide enhanced health and safety (H&S) improvements along with the energy efficiency improvements included under the CWA.

In PY2022, the CWA directed a significant amount of funding towards the Low Income channel. The CWA channel treated 710 homes and the Low Income channel treated 436 homes. Participants received in-home energy assessments and the same suite of measures offered in the CWA along with health and safety improvements.

Depending on the location of customers and the fuel sources used in their homes, services for each customer are funded by OG&E, AOG, or both OG&E and AOG. Figure 6-5 cross-tabulates the number of participating homes by channel and fuel type. Homes with electric and natural gas service were all served by (and co-funded by) AOG. As participants were only required to be customers of one of the two sponsoring utilities, some residences in the program were serviced by utilities other than OG&E and AOG. These utilities included municipal utilities, co-ops, propane service providers, or other investor-owned utilities that do not pay into the CWA.

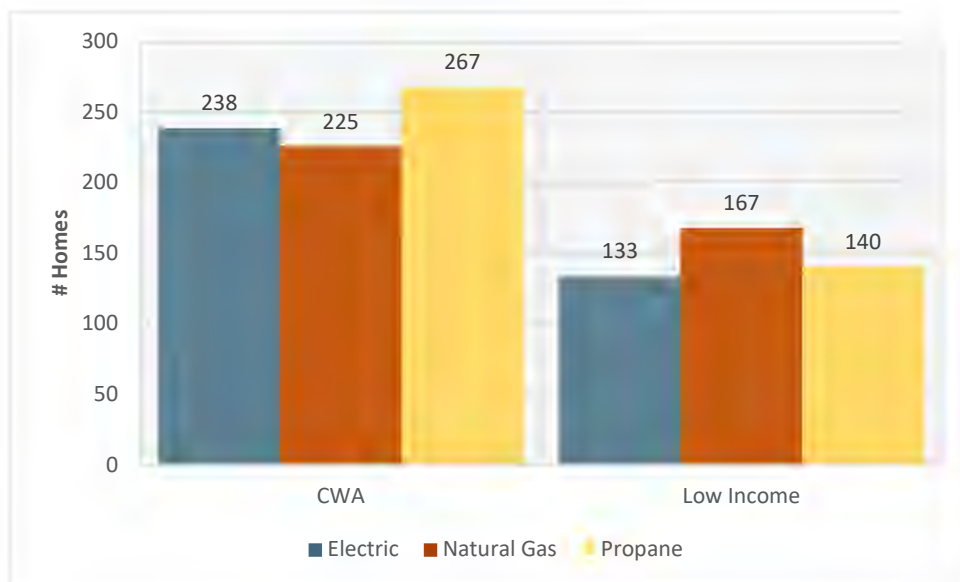


Figure 6-5 Participant Homes by Channel and Heating Fuel Type

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6.2.1 Consistent Weatherization Approach Metrics

Table 6-12 summarizes the CWA metrics for the core CWA program offering (excluding Act 1102).

Table 6-12 CWA Metrics for the PY2022 Evaluation

Metric	Value	
	PY2021	PY2022
Program Name	Consistent Weatherization Approach	Consistent Weatherization Approach
CWA Implementation	Yes	Yes
Total Audits Completed	369	696
Total Submitted Projects	399	690
Conversion Rate	100%	99.6%
Measures installed per-project	2.47	2.73
Cost per participant	\$1,027	\$1,183
Percent of contractors promoting program	100% (4 Contractors)	100% (4 Contractors)

Table 6-13 CWA Metrics for the PY2022 Evaluation – Low Income Pilot

Metric	PY2022
Program Name	Low Income Pilot
CWA Implementation	Yes
Total Audits Completed	416
Total Submitted Projects	436
Conversion Rate	100%
Measures installed per-project	2.21
Cost per participant	\$1,003
Percent of contractors promoting program	100% (4 Contractors)

6.2.2 Act 1102 Pilot Evaluation Metrics

Beginning in PY2020, CWA included a low-income pilot per Act 1102. The participants are tracked in the CWA database. Table 6-14 shows how OG&E has met the Act 1102 Pilot evaluation metrics.

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Table 6-14 ACT 1102 Metrics

Topic Area	Metric	Tracked by OG&E	Reported by Evaluators
Marketing Efforts	Track how program is marketed	Yes	Yes
	Identify effectiveness of each method	No	Yes
	Indicate if and how utility is working with CAP agency/social service agency	No	N/A
Site Visit Assessment	Track if customer qualifies as LI, Age or Both	Yes	Yes
	Catalog measures not installed and why	No	No
	Track if customer is receiving benefits from other programs	No	No
	Track NEBs such as eliminating arrearages, collectibles, LIHEAP payments, etc.	Yes	Yes
Deferred Homes	Identify if program referral methods were left behind	No	Yes
	Identify reasons for deferral	No	No
	Track health and safety repairs completed	Yes	Yes
	Identify any measures installed	Yes	Yes
	Identify if home was tracked to CAP agency	No	No
	Track reasons for customer denial in program	No	No
Post Installation	Track participation in other utility programs	No	No
	Assess participant's satisfaction with all aspects of the pilot program	No	Yes
	Track number of times a participant was visited	Yes	Yes
	Track number of hours spent in the home	No	No
	Calculate average project cost-effectiveness-TRC for each project	Yes	Yes
	SIR for each project	No	No
	Cost range of projects	Yes	Yes
	Average cost of projects	Yes	Yes
	Track home type	Yes	Yes
	Identify neighborhoods where the pilot would be effective	Yes	No
	Identify methods to certify age/income	Yes	Yes

Figure 6-6 summarizes the extent to which PY2022 Low Income participants were eligible by age (65+), income (LIHEAP-qualifying), or qualified by both criteria.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report



Figure 6-6 PY2022 Low Income Participants Act 1102 Qualification Criteria

6.3 Gross Impact Evaluation Approach

This section presents the methodologies for, and key findings from, the gross impact evaluation of the PY2022 program.

For measures implemented through the PY2022 program, savings verification was performed according to methodologies described in AR TRM V9.0. For savings verification involving lighting and NEBs, methodologies described in AR TRM V9.0 were performed. Table 6-15 identifies the sections in the AR TRM V9.0 that were used for verification of measure-level savings under the CWA.

Table 6-15 AR TRM V9.0 Sections by Measure

Measure Type	AR TRM V9.0 Section
Ceiling Insulation	2.2.2
Duct Sealing	2.1.11
Air Infiltration	2.2.9
Advanced Power Strips	2.4.4
LEDs (Standard)	2.5.1.4
Low-Flow Showerheads	2.3.5
Faucet Aerators	2.3.4

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

6.4 Field Verification Rates and Survey Procedures and Findings

ADM conducted field verification at 56 homes in the CWA. Measures included in this sample were as follows:

- Air Infiltration: 21 homes
- Ceiling Insulation: 20 homes
- Duct Sealing: 24 homes, 27 HVAC systems
- LEDs: 44 homes
- Advanced Power Strips: 21 homes, 24 units

The Evaluators conducted duct blast and blower door tests at all homes that received duct sealing and air sealing (respectively).

6.4.1 Duct Sealing

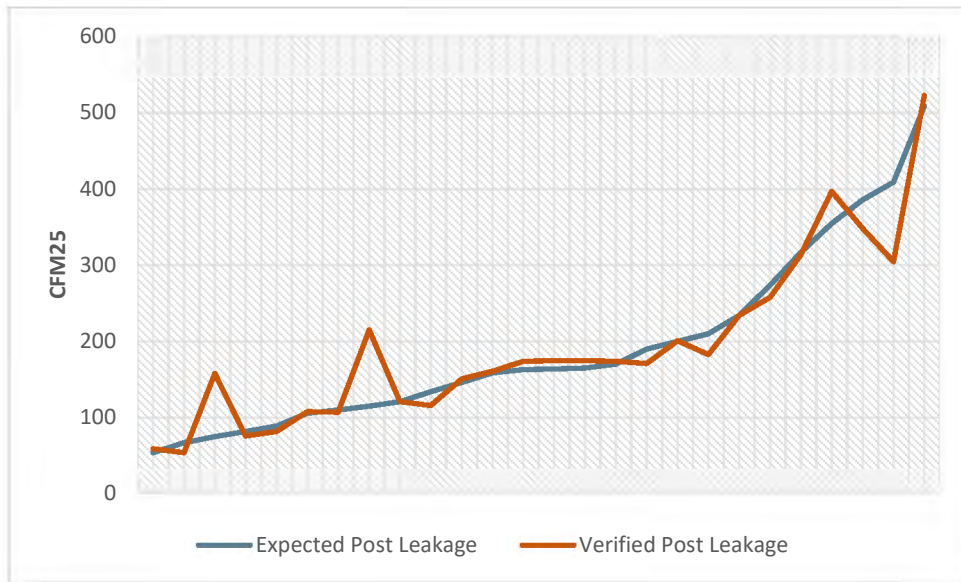


Figure 6-7 Duct Sealing Field Data Collection Results (n=27)

The Evaluators found lower duct leakage than shown in ex ante estimates. This resulted in an overall in-service rate (ISR) of 102%.

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6.4.2 Air Infiltration

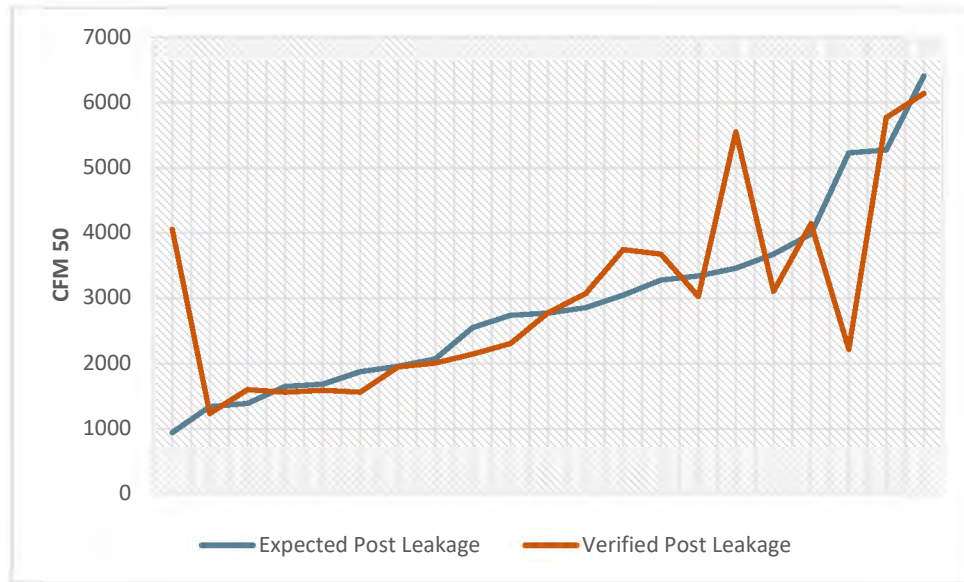


Figure 6-8 Air Infiltration Field Data Collection Results (n=21)

The Evaluators found slightly higher infiltration than shown in ex ante estimates. This resulted in an overall ISR of 99%.

6.4.3 Other Install Measures

ISRs for other measures were:

- LEDs: 100%
- Ceiling insulation: 100%
- Advanced power strips: 40%

6.5 Net Impact Evaluation Approach

6.5.1 Major-Measure Free-ridership

The scoring mechanism for major measure free-ridership is summarized in Figure 6-9.

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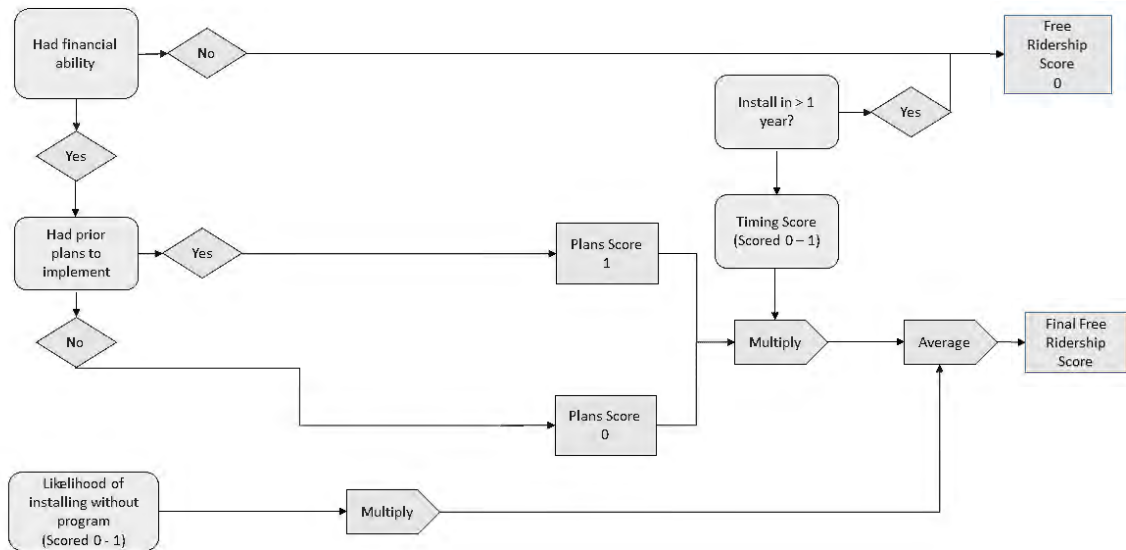


Figure 6-9 Major Measure Free-ridership

To assess the program’s influence on major measures (i.e., duct sealing, air sealing, and insulation), program participants were asked questions regarding:

- If they could afford to install the equipment if it had not been provided for free through the program;
- If they had plans to complete the project;
- The likelihood of installing the equipment if it had not been provided for free; AND
- The timing of the project in the absence of the program.

The procedures for developing a free-ridership score based on the survey responses are summarized below.

In this methodology, financial ability is essentially a gateway value, in that if a participant does not have the financial ability to purchase energy efficient equipment absent a rebate, the other components of free-ridership become moot. Respondents that reported they could have afforded to implement the improvements were assigned an overall free-ridership score based on a prior plan score, a likelihood of installing the measure in the absence of the program, and a timing score.

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Prior Plans and Deferred Free-ridership

The prior plans score was based on a response to a question regarding the presence of plans. Specifically, respondents were considered to have had prior plans if they answered “Yes” to the following question:

- Prior to learning about the program, did you have plans to implement the [Measure]?

The program influence on the timing of the project was incorporated into the estimation of free-ridership in one of two ways. First, consistent with the Arkansas TRM definition of free-ridership, respondents who indicated that the project would have been completed in more than one year if the program were not available were assigned a free-ridership score of 0. For all other respondents, the plans score was factored by the program impact on timing. Specifically,

- If the respondent stated that they would have installed the measure in 6 months to one year, then the prior plans score was reduced by one-half.
- If the respondent stated that they would have installed the measure at the same time or within 6 months of when it was installed, the prior plans score was not adjusted.

Likelihood of Implementing Measure without Program

A likelihood of installing the measure in the absence of the program was developed based on respondents stated likelihood of installing a measure if the financial support was not provided or if the measure had not been recommended through the energy assessment. Specifically, responses to this question were scored as follows:

- Very likely: 1
- Somewhat likely: .75
- Neither particularly likely nor unlikely: .5
- Somewhat unlikely: .25
- Very unlikely: 0

The likelihood score was based on the lower value of the likelihood of installing the measure if the program financial support was not available or if the measure was not recommended through the energy assessment.

The overall free-ridership score for participants with the financial ability to install the measures was based on the average of the prior plans and the likelihood scores.

6.5.2 Direct Install Measures Free-ridership

The approach to estimating free-ridership for the direct install measures was similar to the approach described above but differed in three regards. First, because the direct install measures are relatively low-cost items, financial ability is less likely to be a factor for participants. Second, because of their relatively low cost and the ability to easily self-install the items, it is unlikely that participants would have had plans to install the equipment for an extended period. As such, the free-ridership methodology did not factor in financial ability or the program’s impact on the projects timing. Third, for LED light bulbs, which respondents received several of, the respondent’s plans may have been to install fewer than the total number of bulbs received through the program. The average percent of the bulbs received that these respondents reported installing was used to adjust the free-ridership score for respondents that were not asked this question.

The free-ridership scoring is summarized in Figure 6-10. Under this approach, a respondent was considered to have prior plans to implement the measure if they 1) stated that they had prior plans and 2) that they had previously purchased that measure type.

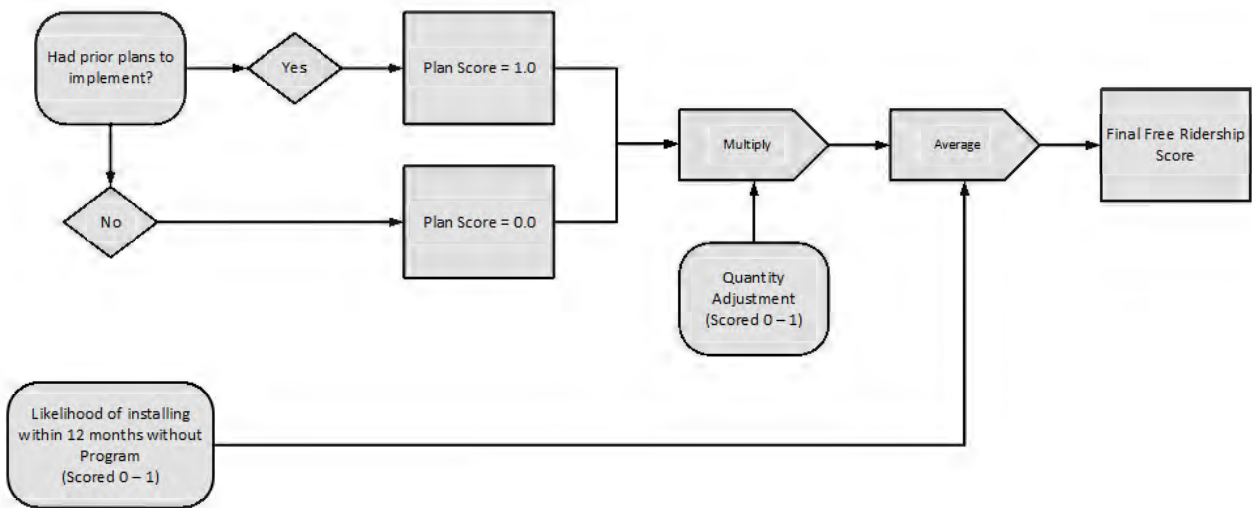


Figure 6-10 Direct Install Free-ridership

6.5.3 Low Income Net-to-Gross

The Evaluators researched existing literature on NTG for low income programs. The Evaluators concluded from this that assigning a 100% NTG ratio would be within industry best-practices. This is cited in:

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- Uniform Methods Project ⁴²
- DOE Federal Weatherization Assistance Program⁴³
- California Energy Savings Assistance Program⁴⁴

6.5.4 NTG Results

The Evaluators performed surveys to determine NTG ratios. The resulting NTG ratios were as follows:

- CWA:
 - Duct sealing: 92%
 - Air sealing: 94%
 - Ceiling insulation: 90%
 - Direct-install measures: 62%
- Low Income: 100% NTG

Additional details on the NTG approach and results can be found in Appendix C.

6.6 Gross Evaluation Summary and Findings

After reviewing the tracking data and inputs for savings calculations, the Evaluators provided *ex post* gross savings according to protocols from the AR TRM V9.0. *Ex post* gross electricity and gas savings were within 3% of *ex ante* estimates for the program.

Table 6-16 presents the *ex post* gross energy savings (kWh) achieved by program channel.

Table 6-16 *Ex Post* Gross Energy Savings

Program Channel	# of homes	<i>Ex Post</i> Gross Peak Demand Savings (kW)	<i>Ex Post</i> Gross Annual Savings (kWh)	<i>Ex Post</i> Gross Lifetime Savings (kWh)	<i>Ex Post</i> Gross Realization Rate
CWA	696	815	3,444,247	58,958,878	98%
Low Income	436	369	1,658,205	28,149,790	102%
Total	1,132	1,184	5,102,452	87,108,668	99%
Sums may differ due to rounding.					

⁴² <https://www.nrel.gov/docs/fy17osti/68578.pdf>

⁴³ <https://eta.lbl.gov/news/events/2009/09/11/estimating-the-impacts-of-low-income-weatherization-assistance-using-a-random>

⁴⁴ <https://liob.cpuc.ca.gov/wp-content/uploads/sites/14/2020/12/ESA-Program-Impact-Evaluation-Program-Years-2015-2017-042619.pdf>

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Table 6-17 and Table 6-18 summarizes the PY2022 *ex post* gross energy (kWh) and demand reductions (kW) by measure for OG&E.

Table 6-17 *Ex Post* Gross Savings by Measure - CWA

Measure	<i>Ex Post</i> Gross Annual Savings (kWh)	<i>Ex Post</i> Gross Lifetime Savings (kWh)	<i>Ex Post</i> Gross Peak Demand Savings (kW)
Advanced Power Strip	29,017	290,167	3
Air Infiltration	473,435	5,207,787	105
Assessment	0	0	0
Ceiling Insulation	693,031	13,860,620	202
Duct Sealing	2,092,065	37,657,179	480
Faucet Aerators	2,147	21,473	0
Health & Safety	0	0	0
LEDs (Standard)	25,764	322,045	4
LEDs (Specialty)	124,691	1,558,642	20
Low-Flow Showerheads	4,097	40,966	0
Total	3,444,247	58,958,878	815
Sums may differ due to rounding.			

Table 6-18 *Ex Post* Gross Savings by Measure – Low Income

Measure	<i>Ex Post</i> Gross Annual Savings (kWh)	<i>Ex Post</i> Gross Lifetime Savings (kWh)	<i>Ex Post</i> Gross Peak Demand Savings (kW)
Advanced Power Strip	19,896	198,958	2
Air Infiltration	222,713	2,449,842	47
Assessment	0	0	0
Ceiling Insulation	348,956	6,979,128	103
Duct Sealing	950,406	17,107,315	200
Faucet Aerators	5,408	54,081	1
Health & Safety	0	0	0
LEDs (Standard)	28,143	351,782	5
LEDs (Specialty)	72,744	909,296	11
Low-Flow Showerheads	9,939	99,387	1
Total	1,658,205	28,149,790	369
Sums may differ due to rounding.			

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

6.7 Net Impact Evaluation Summary and Findings

Table 6-19 and Table 6-20 summarize *ex post* net kWh and kW savings by measure and program channel.

Table 6-19 *Ex Post* Net Savings by Measure - CWA

Measure	<i>Ex Post</i> Net Peak Demand (kW)	<i>Ex Post</i> Net Savings (kWh)	<i>Ex Post</i> Net Lifetime Savings (kWh)
Advanced Power Strip	2	17,963	179,627
Air Infiltration	98	443,845	4,882,300
Assessment	0	0	0
Ceiling Insulation	182	623,728	12,474,558
Duct Sealing	441	1,922,439	34,603,894
Faucet Aerators	0	1,329	13,293
Health & Safety	0	0	0
LEDs (Standard)	2	15,949	199,361
LEDs (Specialty)	12	77,190	964,874
Low-Flow Showerheads	0	2,536	25,360
Total	738	3,104,979	53,343,266
Sums may differ due to rounding.			

Table 6-20 *Ex Post* Net Savings by Measure – Low Income

Measure	<i>Ex Post</i> Net Peak Demand (kW)	<i>Ex Post</i> Net Savings (kWh)	<i>Ex Post</i> Net Lifetime Savings (kWh)
Advanced Power Strip	2	19,896	198,958
Air Infiltration	47	222,713	2,449,842
Assessment	0	0	0
Ceiling Insulation	103	348,956	6,979,128
Duct Sealing	200	950,406	17,107,315
Faucet Aerators	1	5,408	54,081
Health & Safety	0	0	0
LEDs (Standard)	5	28,143	351,782
LEDs (Specialty)	11	72,744	909,296
Low-Flow Showerheads	1	9,939	99,387
Total	369	1,658,205	28,149,790
Sums may differ due to rounding.			

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

6.8 Non-Energy Benefits (NEBs)

Protocol L of the AR TRM V9.0 states that EM&V of DSM programs in Arkansas must account for NEBs resulting from each program. Specifically, the categories of NEBs that are to be calculated for each DSM program are as follows:

- Benefits of electricity, natural gas, and liquid propane energy savings (i.e., other fuels);
- Benefits of public water and wastewater savings; and
- Benefits of avoided and deferred equipment replacement costs.

As discussed below, the NEBs applicable to the CWA in PY2022 are natural gas savings, liquid propane savings, water savings, and avoided replacement costs.

Measures with zero entries are included to ensure consistency of table structure and to demonstrate that no measures or potential energy and non-energy impacts were omitted.

6.8.1 Natural Gas and Liquid Propane Energy Savings

In the CWA, the participating utilities are OG&E and AOG. Typically, the amount that either utility pays for a participating home depends on whether the utility is serviced by OG&E, by AOG, or by both utilities. Weatherization of a home receiving both electric service from OG&E and gas service from AOG would typically be paid for by both utility companies.

Table 6-21 and Table 6-22 present the *ex post* net natural gas savings NEBs by channel.

Table 6-21 Natural Gas (Therms) NEBs - CWA

Measure	<i>Ex Post</i> Gross Natural Gas Savings (therms)	Net Natural Gas Savings (therms)	Net Lifetime N. Gas Savings (therms)	NEB Natural Gas Savings (\$)	NPV NGS (\$)
Air Infiltration	645	605	6,655	\$ 321	\$ 3,355
Ceiling Insulation	120	108	2,163	\$ 57	\$ 979
Duct Sealing	479	440	7,926	\$ 234	\$ 3,673
LEDs (Standard)	-76	-47	-587	\$ (25)	\$ (301)
LEDs (Specialty)	-477	-295	-3,692	\$ (157)	\$ (1,890)
Total	692	811	12,465	\$ 430	\$ 5,816
Sums may differ due to rounding.					

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 6-22 Natural Gas (Therms) NEBs – Low Income

Measure	Ex Post Gross Natural Gas Savings (therms)	Net Natural Gas Savings (therms)	Net Lifetime N. Gas Savings (therms)	NEB Natural Gas Savings (\$)	NPV NGS (\$)
LEDs (Standard)	-67	-67	-834	\$ (35)	\$ (427)
LEDs (Specialty)	-295	-295	-3,687	\$ (156)	\$ (1,887)
Total	-362	-362	-4,521	\$ (192)	\$ (2,314)
Sums may differ due to rounding.					

Table 6-23 and Table 6-24 present *ex post* net propane savings in gallons and the monetization of these benefits by program channel.

Table 6-23 Propane (Gallons) Savings - CWA

Measure	Ex Post Gross LPG Savings (gallons)	Net LPG Savings (gallons)	LPG Benefit (\$)	NPV LPGS (\$)
Air Infiltration	30,270	28,378	\$ 68,662	\$ 709,216
Ceiling Insulation	22,427	20,184	\$ 48,836	\$ 841,163
Duct Sealing	78,176	71,837	\$ 173,814	\$ 2,734,347
LEDs (Standard)	-496	-307	\$ (743)	\$ (8,877)
LEDs (Specialty)	-145	-89	\$ (216)	\$ (2,586)
Total	130,232	120,002	\$ 290,353	\$ 4,273,262
Sums may differ due to rounding.				

Table 6-24 Propane (Gallons) Savings – Low Income

Measure	Ex Post Gross LPG Savings (gallons)	Net LPG Savings (gallons)	LPG Benefit (\$)	NPV LPGS (\$)
Air Seal	9,600	9,600	\$ 23,227	\$ 239,912
Ceiling Insulation	14,618	14,618	\$ 35,369	\$ 609,197
Duct Seal	25,745	25,745	\$ 62,292	\$ 979,938
LEDs (Standard)	-101	-101	\$ (245)	\$ (2,922)
LEDs (Specialty)	-290	-290	\$ (701)	\$ (8,380)
Total	49,572	49,572	\$ 119,941	\$ 1,817,745
Sums may differ due to rounding.				

6.8.2 Avoided and Deferred Replacement Cost

To calculate avoided or deferred replacement costs and incremental costs for LEDs in OG&E's CWA Program, the AR TRM V9.0 Protocol L calculator was used with the following assumptions: 1) replacement-on-burnout for all bulbs and 2) EUL for LEDs is 12.5 years [1]. LED costs were sourced from OG&E program tracking data where available. For direct install LEDs, the Evaluators assumed that the incentive was equal to the total cost of equipment and labor.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 6-25 shows the avoided or deferred replacement costs for LED lamps in PY2022. The total net avoided replacement cost for CWA was \$17,874. There were no deferred replacement costs for CWA in PY2022.

Table 6-25 Avoided Replacement Costs

Measure	Net ARC (\$) CWA	Net ARC (\$) Low Income	Total Net ARC (\$)
LEDs (Standard)	\$ 1,352	\$ 2,406	\$ 3,758
LEDs (Specialty)	\$ 7,273	\$ 6,482	\$ 14,116
Total	\$ 8,625	\$ 9,249	\$ 17,874
Sums may differ due to rounding.			

6.8.3 Water Savings

During PY2022 the water saving measures implemented through the CWA included faucet aerators and low flow showerheads. The program tracking data included flow rates for these measures, and the Evaluators applied these flow rates to the AR TRM V9.0 algorithms for faucet aerators and showerheads to calculate annual gallons of water saved.

For homes receiving utility service from only one of the sponsoring utilities (OG&E or AOG), all water savings resulting from program measures were attributed to the sponsoring utility, regardless of water heater fuel type. For homes receiving utility service from both OG&E and AOG, water savings were attributed based on water heater fuel type. For example, water savings for a home receiving electric service from OG&E and gas service from AOG would be attributed to OG&E if the home had an electric water heater and to AOG if the home had a gas water heater. Table 6-26 and Table 6-27 present water savings verified water savings.

Table 6-26 PY2022 Water (gallons) Savings by Measure - CWA

Measure	Ex Post Gross Water/ WW Savings (gallons)	Ex Post Net Water/ WW Savings (gallons)	Water/ WW Benefit (\$)	NPV Water/WW (\$)
Faucet Aerators	40,251	24,917	\$ 192	\$ 1,820
Low-Flow Showerheads	78,535	48,617	\$ 374	\$ 3,551
Total	118,786	73,534	\$ 566	\$ 5,370
Sums may differ due to rounding.				

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 6-27 PY2022 Water (gallons) Savings by Measure – Low Income

Measure	<i>Ex Post</i> Gross Water/ WW Savings (gallons)	<i>Ex Post</i> Net Water/ WW Savings (gallons)	Water/ WW Benefit (\$)	NPV Water/WW (\$)
Faucet Aerators	62,175	62,175	\$ 479	\$ 4,541
Low-Flow Showerheads	119,448	119,448	\$ 920	\$ 8,724
Total	181,623	181,623	\$ 1,398	\$ 13,264
Sums may differ due to rounding.				

6.8.4 NEBs Summary

Table 6-28 summarizes the net present value (NPV) of NEBs attributable to OG&E for the PY2022 CWA (inclusive of all channels), including avoided and deferred replacement costs, natural gas savings, water savings, and propane savings.

Table 6-28 Non-Energy Benefits (NEBs) Summary

Measure	NPV NGS (\$)	NPV LPGS (\$)	NPV Water/ WW (\$)	NPV ARC (\$)	Total NEB NPV (\$)
Ceiling Insulation	\$ 979	\$ 1,450,360	\$ -	\$ -	\$ 1,451,339
Duct Sealing	\$ 3,673	\$ 3,714,285	\$ -	\$ -	\$ 3,717,958
Air Infiltration	\$ 3,355	\$ 949,128	\$ -	\$ -	\$ 952,483
LEDs (Standard)	\$ (728)	\$ (11,800)	\$ -	\$ 3,758	\$ (8,769)
LEDs (Specialty)	\$ (3,777)	\$ (10,966)	\$ -	\$ 14,116	\$ (627)
Advanced Power Strips	\$ -	\$ -	\$ -	\$ -	\$ -
Low-Flow Showerheads	\$ -	\$ -	\$ 12,274	\$ -	\$ 12,274
Faucet Aerators	\$ -	\$ -	\$ 6,361	\$ -	\$ 6,361
Total	\$ 3,502	\$ 6,091,008	\$ 18,635	\$ 17,874	\$ 6,131,019
Sums may differ due to rounding.					

6.9 Process Evaluation Summary and Findings

The AR TRM V9.0 Protocol C addresses the criteria used to determine the timing and conditions needed for a process evaluation, and the following tables summarize the program in the context of these requirements. The findings in Table 6-29 and Table 6-30 are based on the PY2021 process evaluation results, which were then used to inform PY2022 process evaluation activities.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 6-29 Determining Process Evaluation Timing

Variable Name	Variable Type
New and Innovative Components	No. Program offering has been consistent with past evaluations.
No Previous Process Evaluation	No. The program received a process evaluation in PY2021
Less than Expected Energy Savings or Accomplishments	Yes. The program only met 57% of its net savings goal in PY2021.
Participant Reported Problems or Low Participant Satisfaction	Yes. PY2021 surveys indicated lower satisfaction than in prior evaluations.
New Vendor or Contractor	No. Program implementation is unchanged from PY2021.
Energy Savings are being Achieved Slower than Expected	No. Energy savings are being achieved at a rate that is consistent with program expectations.

Table 6-30 Determining Process Evaluation Conditions

Component	Status
Impact problems	No. Though the program did not meet its savings goal in PY2021, realization rates were generally high.
Informational/educational objectives	Addressed. The participant surveys for the OG&E weatherization offering in the past determined that customers are more aware of energy efficiency options and energy-saving methods after participating. Additionally, the Evaluators concluded in PY2021 that the Low Income Pathway was not meeting Act 1102 requirements for health and safety measure implementation.
Participation problems	Yes. Corresponding to the shortfall in savings in PY2021, participation was below target as well.
Operational challenges	None identified thus far.
Cost-effectiveness issues	No. The program is designed to implement the most cost-effective measures for each participating customer, and historical cost-effectiveness for the OG&E weatherization offering has been adequate.
Negative feedback	Yes. The percent of survey respondents indicating that they are "Satisfied" or "Very Satisfied" with the program overall declined from 97% to 81% from PY2020 to PY2021.
Market effects	Addressed. Staff interviews and contractor interviews determined that the OG&E weatherization offering resulted in minor market effects where contractors promote energy saving measures to the broader customer market.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Based on these criteria, the CWA program received a process evaluation in PY2022 to address matters related to shortfalls in participation and savings outcomes as well as health and safety measure implementation.

6.9.1 Data Collection Activities

As part of the PY2022 evaluation of the CWA, the Evaluators completed an in-depth interview with the program managers from OG&E and CLEAResult. The Evaluators used the information gleaned in this interview to identify program updates or changes experienced in PY2022 compared to available documentation. Further, these interviews explored energy efficiency staff roles and responsibilities, program communications and marketing, and the overall program delivery processes in place during PY2022.

Telephone surveys were completed with CWA participants. Surveys collected process evaluation information, including gathering respondent feedback on program communication and offerings, evaluating changes in participant energy efficiency awareness and behaviors due to program participation, and verifying measure installation. The survey also collected household characteristics and limited demographic information. The Evaluators received, and reviewed program population data queried from tracking data received through CLEAResult. The program tracking data provides contact information on participating customers and measure descriptions of equipment installed through the program.

The Evaluators surveyed 62 participants from a population of 1,146 participants. The survey was intended to meet $\pm 10\%$ precision at 90% confidence. However, due to lower response rates than observed in past evaluations, the precision level met was $\pm 10.2\%$ at 90% confidence. The final sample distribution and response rate for this survey can be found in Appendix C.

Table 6-31 below summarizes the survey and interview data collection for the PY2022 program evaluation, including data collection type and number of respondents.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 6-31 Interview and Survey Data Collection Summary

Target	Component	Activity	n	Precision	Details
Program Staff	OG&E Program Staff	Interview	1	N/A	The program director and three program staff responsible for coordinating program data, managing program resources, directing installation contractors, and communicating with OG&E, AOG, and CLEARResult staff as needed during the program process.
Program Staff	CLEARResult Program Staff	Interview	1	N/A	CLEARResult program manager responsible for implementation of the residential and commercial programs.
Program Participants	Telephone Survey	Survey	62	±10.2%	This consisted of a satisfaction questionnaire and a series of questions related to program and energy efficiency awareness and engagement.

6.9.2 Process Results and Findings

This section presents the results and key findings from the process evaluation activities. These findings are based upon interviews with utility staff, implementation staff, and surveys with participating customers. The findings presented pertain to program communications and marketing, program delivery, participant energy efficiency awareness and behaviors, and customer characteristics.

6.9.3 Program Delivery

The primary focus for the PY2022 process evaluation was on two key program delivery items 1) identify program delivery aspects that may have changed within the past year and 2) verify that the actual program measures and equipment offered through the program were installed.

6.9.4 OG&E Program Staff Interview

The interviewees identified as the Portfolio Manager, EMV Analyst, LivingWise® Schools Outreach Program Manager, and CLEARResult manager. OG&E and CLEARResult staff were interviewed separately, but their findings were included together in the below summary.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

OG&E and CLEAResult staff meet on a weekly basis with additional meetings happening as needed. Interviewees also noted that they correspond regularly with each other over email if a problem or question arises.

Program Status

PY2022 marked the second year of the CWA transition from self-implemented by OG&E to externally implemented by CLEAResult. Although the initial handoff in 2021 resulted in a brief slowdown due to program operations, OG&E staff indicated that in 2022 CLEAResult has met their expectations and things are running smoothly. While CLEAResult staff manage the day-to-day logistics and concerns of the program, OG&E staff continue to call Trade Allies to check in on them to solicit feedback. When taking over implementation of the weatherization program, CLEAResult brought in its own network of Trade Allies. In 2022, the weatherization program had a network of four trade allies. Trade allies may generate their own leads, and in addition CLEAResult will divide other leads that come through OG&E directly across the participating trade allies as equally as possible.

Marketing

CLEAResult and OG&E communicate and coordinate often about marketing strategies. Marketing strategies include social media posts, mail outs, flyers, etc. Staff provide cobranding to Trade Allies and require all of their allies to wear an OG&E badge. Social media has proven a successful marketing strategy and CLEAResult tracks which posts and advertisements generate the most interest. Staff also emphasized the importance of word-of-mouth marketing, as well as meeting people in-person.

Interviewees stated they had no concerns or issues with the program data tracked by CLEAResult. Additionally, the interviewees stated they are happy with the amount of data being collected by CLEAResult and the monthly transfers are a smooth process.

6.9.5 Participant Survey

Residential participants were contacted via phone to complete an online survey regarding their experience with the OG&E's weatherization program. Sixty-two participants responded to the survey and indicated they remembered receiving energy improvements.

Respondent Profile

The majority of respondents own and live in their home (85%, n=41), and half of respondents live with one to two other people (50%, n=24). Seventy percent of respondents were less than 65 years old (71%, n=34), and a two-thirds work or attend school (65%, n=31).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Three-quarters of respondents use natural gas in their home (75%, n=36). Two-thirds of respondents use natural gas for their space heating (65%, n=31) and water heater (65%, n=31).

Program Awareness

Program awareness is driven mostly by OG&E bill inserts and word-of-mouth from past participants.

Respondents learned about the program through a variety of avenues including word of mouth (21%, n=10), OG&E bill insert (17%, n=8), and OG&E mailing (15%, n=7) (Figure 6-11).

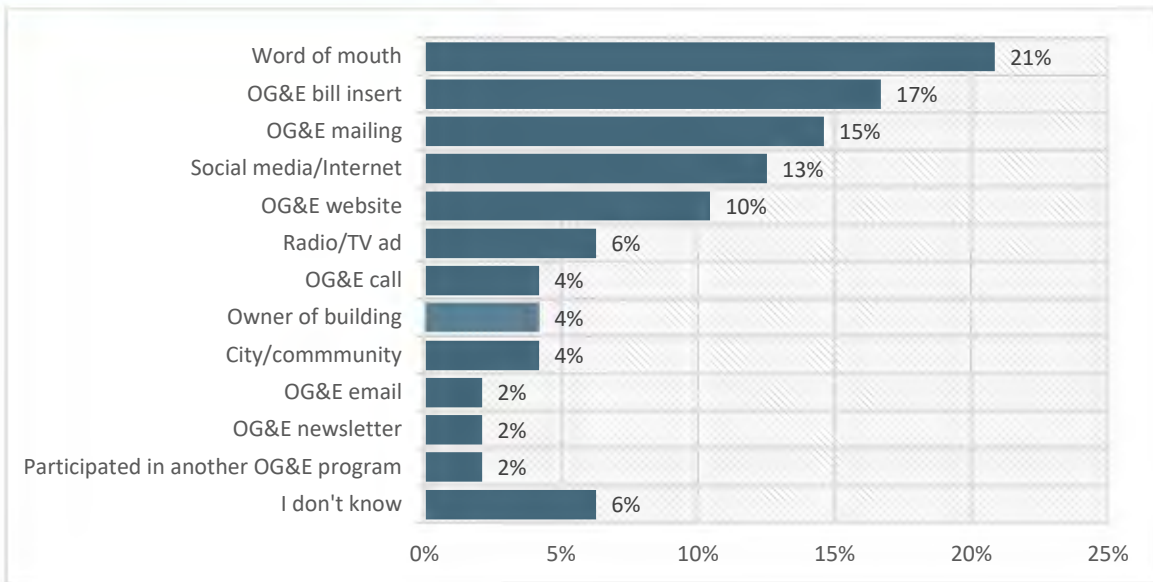


Figure 6-11 Program Awareness (n=48)

Over half of respondents (54%, n=26) were interested in participating in the program to save money on utility bills (Figure 6-12) and three-quarters of respondents made the improvements to their home to increase the efficiency of their equipment in order to save energy (75%, n=36).

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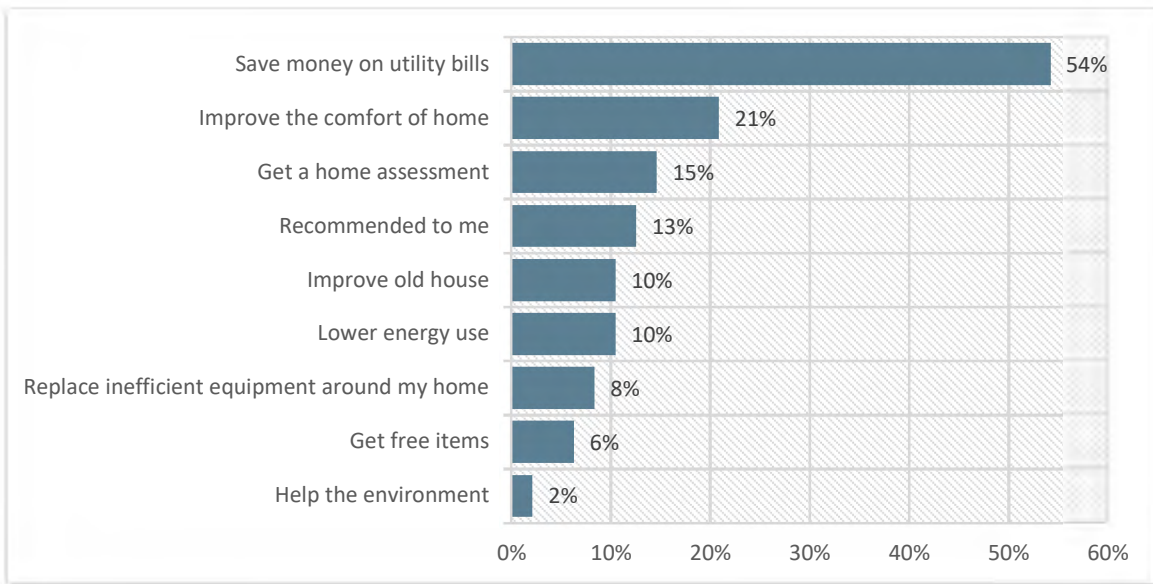


Figure 6-12 Participation Motivation (n=48)

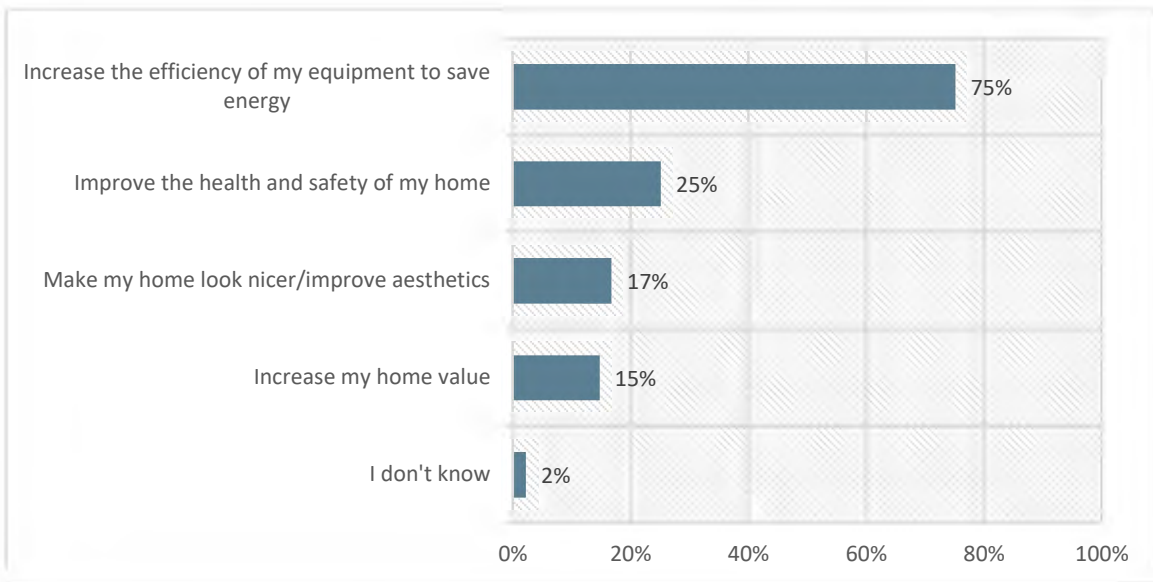


Figure 6-13 Home Improvement Motivations (n=48)

Home Energy Assessment

Only two of the respondents had plans to have an energy assessment prior to their participation in the program (4%). Just under half were interested in the assessment to learn ways they could save energy and money (48%, n=29) (Figure 6-14).

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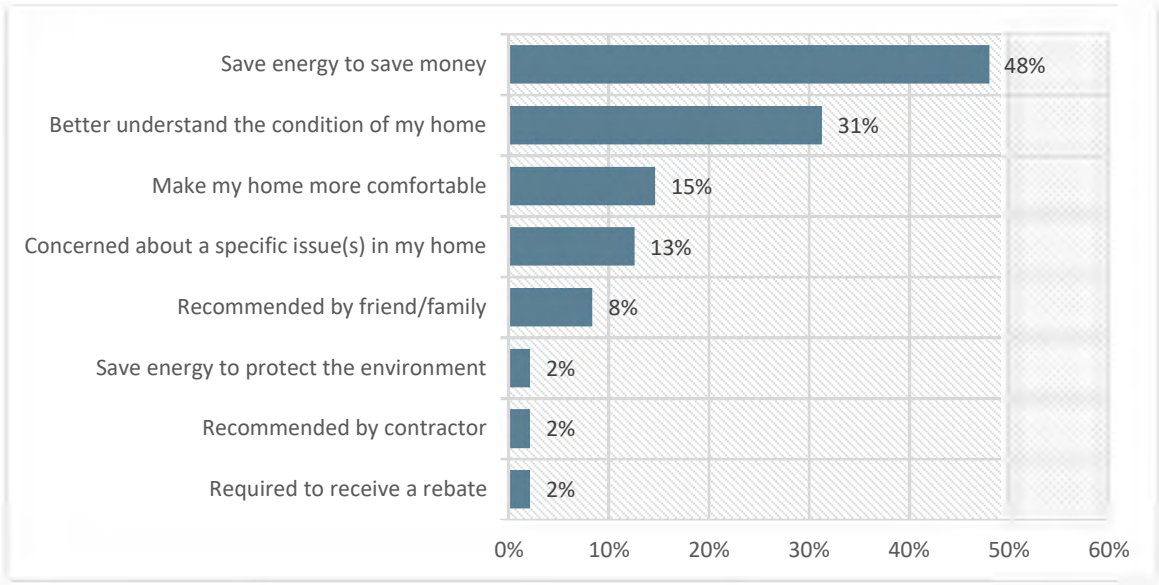


Figure 6-14 Home Energy Assessment Motivation (n=48)

Respondents were pleased with the home energy assessment and found the information provided in to be useful (Figure 6-15 Home Energy Assessment Satisfaction (n=47)).

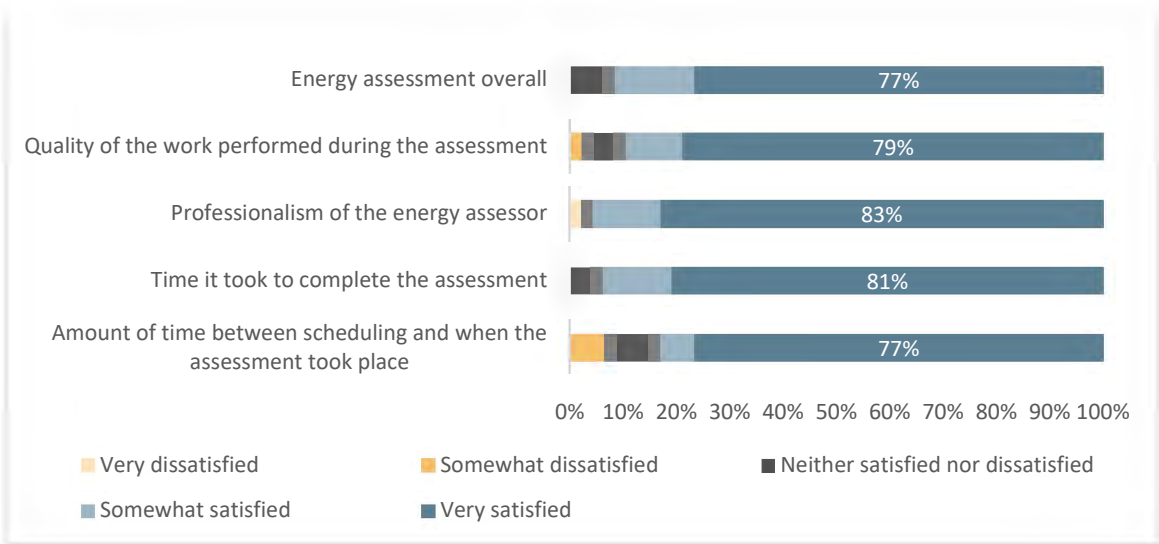


Figure 6-15 Home Energy Assessment Satisfaction (n=47)

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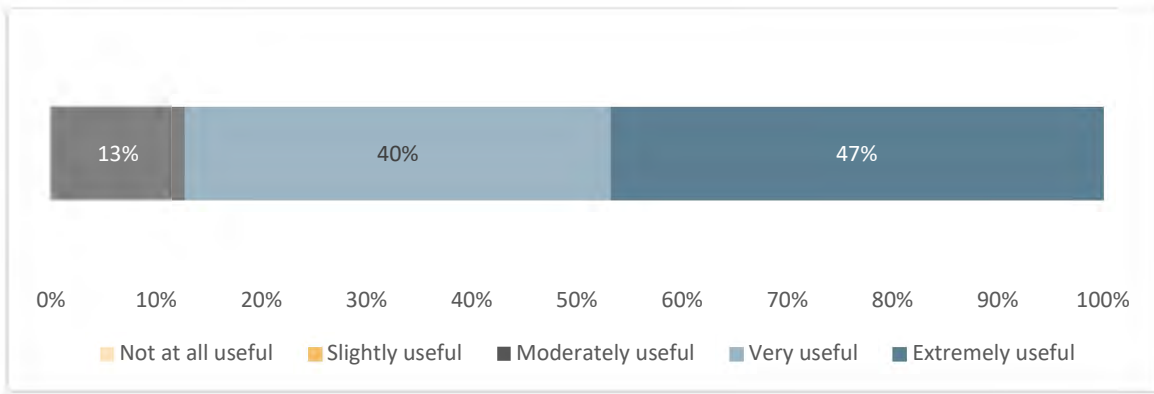


Figure 6-16 Home Energy Assessment Usefulness (n=47)

Program Participation

Respondents chose their contractor through a variety of avenues including contractor contacted them (50%, n=24) and OG&E matched them with someone (25%, n=12) (Figure 6-17).

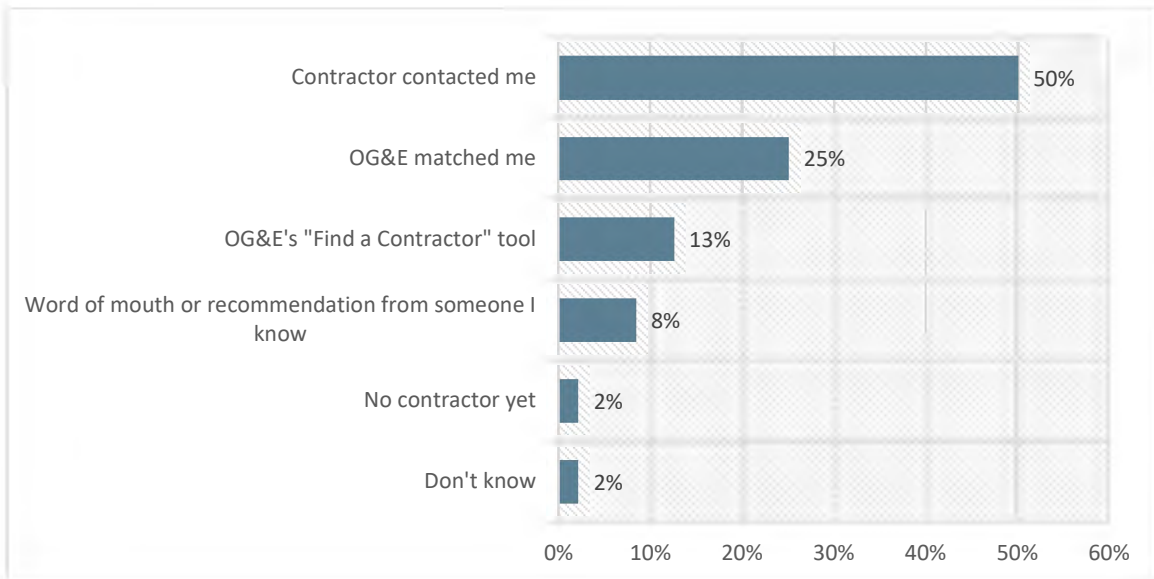


Figure 6-17 Connected with Contractor (n=48)

Less than half of respondents interacted with and OG&E representative during their participation in the program (42%, n=20). Among those respondents the interactions were generally positive and informative.

About half of respondents have noticed a decrease in their energy bill since their participation in the program (Figure 6-18) and almost seventy percent reported noticing benefits of the energy efficient equipment installed (69%, n=33).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

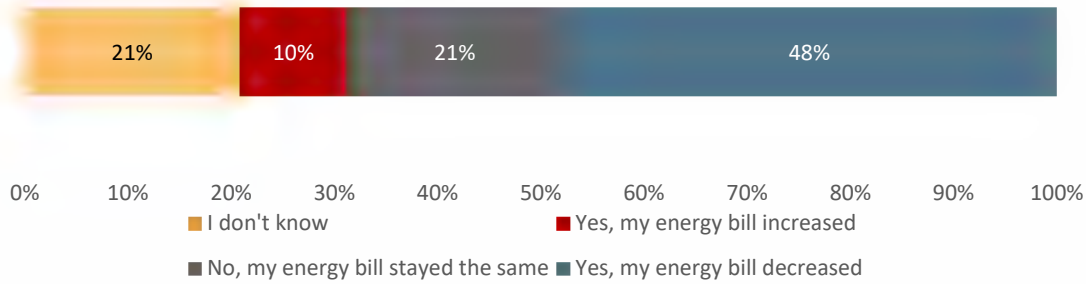


Figure 6-18 Changes in Energy Bill (n=48)

Program Satisfaction

In general, respondents were satisfied with OG&E as their electric service provider as well as the CWA program.

The percent that are either “satisfied” or “very satisfied” with the program increased from 81% to 92% from PY2021 to PY2022.

Respondents were generally satisfied with the weatherization program (Figure 6-19) and most respondents have recommended the program to other people (83%, n=40). Eighty-one percent of respondents indicated that participating in the program increased their satisfaction with OG&E as their energy provider (81%, n=39).

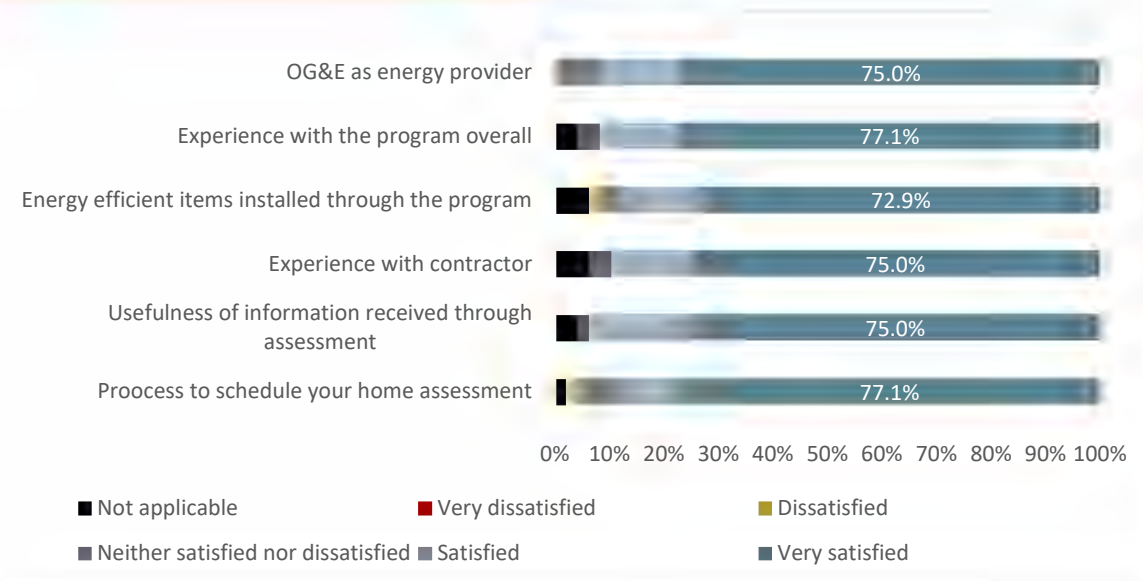


Figure 6-19 Program Satisfaction (n=48)

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When asked what OG&E can do to improve its weatherization program, many respondents did not have any suggestions (73%, n=35). Among respondents with feedback, suggestions included: more measures (n=4), faster turnaround time (n=2), better communication with contractors (n=1), more programs for senior citizens (n=1), and higher incentives (n=1).

6.9.6 Adherence to Protocol A

With implementation moving to CLEAResult, program tracking transitioned from the Frontier Associates EnerTrek database to the CLEAResult DSMT database. In accordance with Protocol A, tracking data should be checked for:

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

The tracking data contained all required fields for calculation of energy savings.

6.9.7 Customer, Premise, Cost, and Vendor Information

Each of these factors was assessed individually based on the guidelines stated in AR TRM V9.0. Overall, the Evaluators conclude the following regarding tracking data completeness:

- Participating customer information was complete for all participants. This included Job IDs, telephone numbers, addresses, and full names. In PY2022, 80% of all projects had complete customer information, down from 93% in PY2021. Eleven percent of projects had an email address listed.
- All participant records included the name of the installation contractor who performed the implementation as well as the invoice date and weatherization date.
- Tracking data included the measure and project costs for each home.
- Key parameters (square footage, duct/blower test values, AC system tons) were tracked.

6.9.8 Measure Specific Information

The content of tracking data was found to include sufficient information for all measures in PY2022. There were no large issues with measure specific information in the PY2022 program tracking data.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

6.9.9 Trade Ally Performance

Figure 6-20 shows the types of measures installed by each Trade Ally.

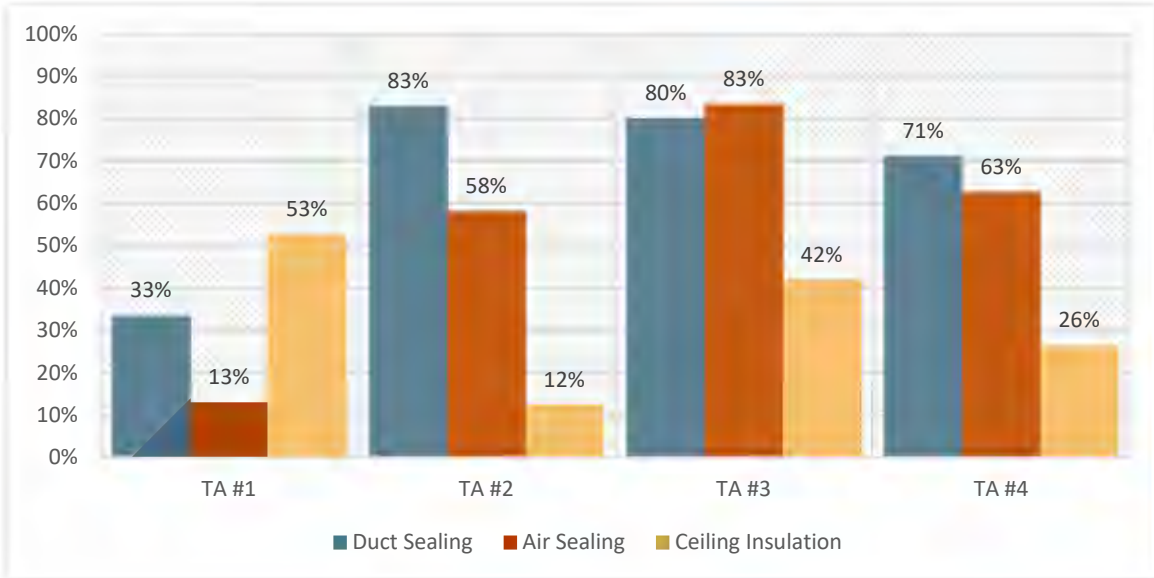


Figure 6-20 Percent of Projects with Key Measures by Trade Ally – PY2022

For context, Figure 6-21 presents the percent of projects with each major weatherization measure from PY2020-PY2022. The percent of projects receiving ceiling insulation has increased significantly (from 21% to 38%). The percent of projects receiving duct sealing and air sealing had small but not statistically significant declines.

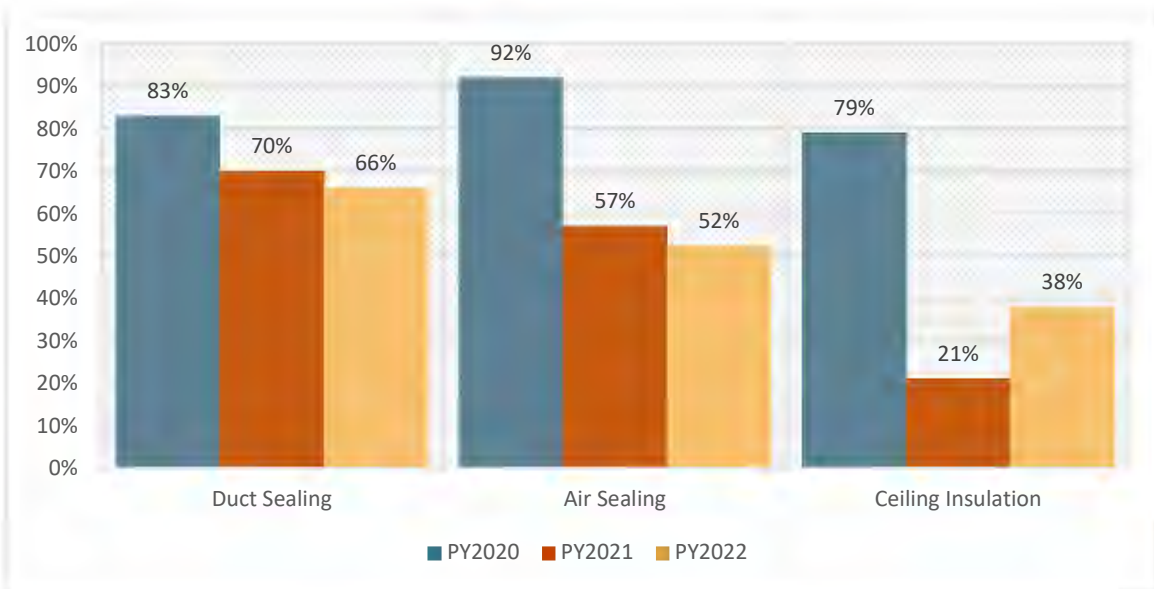


Figure 6-21 Percent of Projects with Key Measures– PY2020-PY2022

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The Evaluators conclude from this that progress has been made, as demonstrated by increased prevalence of ceiling insulation. Comprehensiveness levels are still below PY2020 levels, however.

6.9.10 Health and Safety Measures

Act 1102 specifies required spending on health and safety (H&S) improvements for qualified homes. OG&E was already including H&S measures prior to Act 1102, such as appliance combustion testing, carbon monoxide alarms, and smoke detectors.

In PY2021, a total of \$2,958 was spent on H&S measures across the entirety of the CWA program. Within the Low Income channel, a total of \$213 was spent. Across the entirety of the CWA, the amount spent per-participant declined from \$84 to \$4 (95% decline from PY2020).

This improved in PY2022, with the CWA H&S measure expenditures increasing to \$97,497 (\$77 per home for CWA, \$97 per home for Low Income). This is notable progress compared to PY2021 and is higher than prior to CLEAResult's administration of the program. However, it remains below benchmark values elsewhere in Arkansas, where H&S spending ranges from \$250-\$500 per home for Act 1102 programs.

6.9.11 Progress on PY2021 Evaluation Recommendations

OG&E responded to the Evaluators' PY2021 recommendations. The status of these recommendations is summarized in Table 6-32.

Table 6-32 Status of Recommendations from PY2021 Evaluation

PY2021 Recommendations	OG&E / CLEAResult Response	Evaluators' Comment	Status
<p><i>Direct payment per-kWh results in projects focusing on fewer high-return measures. The program should address this with incentives for deeper retrofits. Options include:</i></p> <p><i>(1) differing values per kWh by measure (analogous to electric utility C&I programs paying higher incentives for non-lighting).</i></p> <p><i>(2) payment accelerators for multiple measures.</i></p> <p><i>(3) program requirements tied to comprehensiveness.</i></p>	<p><i>CLEAResult has followed the same the payment procedures as practiced by OGE prior to transitioning the implementation of the offering over..</i></p>		Reviewed & Rejected
<p><i>Four percent of program participants received any H&S measures, and the amount spent was very limited. There two possible scenarios for this:</i></p> <p><i>1: Program Trade Allies are visiting homes that need H&S but are not delivering them – this would require further training or performance requirements to be imposed.</i></p> <p><i>2: Program Trade Allies are not visiting homes that need H&S. This would mean the program needs to readdress how it targets participants, if the program is not reaching customers with H&S issues. OG&E, CLEAResult, and the Evaluators should collaborate to diagnose this matter, and provide guidance to the Trade Allies as appropriate.</i></p>	<p><i>Health and Safety measure installation was addressed with all participating Continuous Weatherization Approach contractors at the kickoff meeting in the first quarter of 2022. Since that meeting Health & Safety measure installations have increased as each home is inspected for potential health and safety measures including, but not limited to; smoke/CO2 detectors, vent terminations, attic fan seals, etc.</i></p>	<p>The Evaluators found that the program increased H&S efforts significantly, and now exceeds rates from prior to the assignment of this program to CLEAResult. At \$97 per home in PY2022, the H&S spending per home is still below that observed in other AR utilities (\$250-\$500) and thus there is room for further improvement.</p>	Continuing
<p><i>The decline in project comprehensiveness could be attributable to multiple factors. Recommendations to address this include: 1. Conduct training for Trade Allies to ensure technical capability (for example, ensuring that Trade Allies can capably use a duct blaster or blower door. 2. Conduct QA/QC audits of new Trade Allies' projects that had been completed in PY2021 to identify rate of missed/ignored opportunities for energy savings and instruct Trade Allies to follow up and provide all eligible major measures. 3. Release funding allocations on a quarterly basis (or half-year basis) based on Trade Ally compliance with comprehensiveness guidelines.</i></p>	<p><i>As the program is evolving and TA crews are getting more exposure, the program comprehensiveness is increasing with each visit. As TAs hire new techs, they are field training to ensure expectations of the program are met. When questions arise, they are discussed with TA, CLEAResult, OG&E, Engineering, etc., depending on the situation; it is also important to note that these are issues from a start-up year and have been addressed and corrected.</i></p>	<p>Though the recommendations have been rejected, the Evaluators' note that PY2022 had increased prevalence of ceiling insulation (from 21% to 38% of projects. This is notable progress in progressing towards CWA/Act 1102 comprehensiveness goals.</p>	Continuing

6.10 Conclusions

Progress has been made in meeting savings and H&S goals.

Net savings have increased by 72% (from 2,770,05 to 4,7663,183). H&S spending has increased from \$4 per home to \$97 per home for Low Income customers.

Satisfaction is improved from PY2021

In PY2021, 81% indicated being “Satisfied” or “Very Satisfied”, down from 97% in PY2020. In PY2022, this increased to 92%.

Program tracking data was mostly complete.

82% of projects had contact information available, down from 97% in PY2021.

Progress has been made on project comprehensiveness.

The program installed 2.73 measures per home at \$1,183 per home, increased from 2.47 measures at \$1,027 per home in PY2021.

Goals are readily attainable at the current participation volume.

The program met 98% of its net savings target. The shortfall could be readily attained with deeper retrofits at the current participant volume, as 20% of PY2022 participants received a single measure.

6.11 Recommendations

Expand H&S measure offerings to align with those offered elsewhere in Arkansas.

H&S efforts improved compared to PY2021. Program staff should work toward aligning with AR benchmark ranges of \$250-\$500 in H&S spending per-home that is Act 1102-qualified.

Define H&S efforts in greater detail in program tracking.

Over two-thirds of H&S spending was in a general category, intended to indicate home repairs. There are common repairs that could be noted with a specified incentive, for example:

- Bathroom ventilation
- Window/door repair
- Air purifiers
- Furnace flue repair

Potential options include:

Consider additional DI measures for deeper retrofits.

- Smart thermostats
- Energy Star bathroom ventilation fans
- Energy Star air purifiers
- High efficiency portable ACs
- High efficiency window ACs

7 Commercial Energy Efficiency Program (CEEP)

7.1 Evaluation Findings Overview

The verified *ex post* kWh and kW savings for the PY2022 CEEP are summarized by sampling stratum in Table 7-1.

Table 7-1 *Ex Ante* and *Ex Post* Gross kWh Savings by Sampling Stratum

Stratum Name	<i>Ex Ante</i> Gross kWh Savings	<i>Ex Post</i> Gross kWh Savings	Realization Rate - kWh	<i>Ex Ante</i> Gross kW Savings	<i>Ex Post</i> Gross kW Savings	Realization Rate - kW
C&I Solutions (Certainty)	5,688,108	5,708,035	100%	685	687	100%
C&I Solutions 1	1,196,803	1,252,069	105%	190	200	105%
C&I Solutions 2	2,524,444	2,330,145	92%	327	299	91%
C&I Solutions 3	1,720,027	1,720,027	100%	322	322	100%
SBS (Certainty)	116,936	116,959	100%	28	28	100%
SBS 1	733,223	708,330	97%	160	154	97%
SBS 2	1,665,277	1,677,287	101%	329	332	101%
SBS 3	488,362	483,231	99%	91	90	99%
SAGE (Certainty)	823,844	823,840	100%	96	96	100%
SAGE 1	266,844	268,588	101%	50	50	101%
SAGE 2	540,318	508,719	94%	91	86	95%
Midstream	750,762	758,119	101%	224	160	71%
CEI	4,106,034	4,096,206	100%	692	692	100%
RCx	372,115	375,954	101%	45	46	101%
HVAC Tune-up	151,256	150,156	99%	89	109	122%
Total	21,144,350	20,977,664	99%	3,419	3,351	98%
Sums may differ due to rounding.						

Table 7-2 and Table 7-3 present the net kWh and kW savings summary, by program channel, for the PY2022 CEEP, respectively.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-2 CEEP Net kWh Savings Summary

Channel	<i>Ex Ante</i> Gross kWh Savings	<i>Ex Post</i> Gross kWh Savings	Realization Rate - kWh	NTG	<i>Ex Post Net</i> kWh Savings
C&I Solutions	11,280,637	11,160,432	99%	91%	10,154,727
SBS	3,003,798	2,985,807	99%	90%	2,687,226
SAGE	1,631,006	1,601,147	98%	100%	1,601,147
Midstream	750,762	758,119	101%	90%	682,307
CEI	4,106,034	4,096,206	100%	100%	4,096,206
RCx	372,115	375,954	101%	100%	375,954
Totals	21,144,350	20,977,664	99%	93%	19,597,567

Sums may differ due to rounding.

Table 7-3 CEEP Net kW Savings Summary

Channel	<i>Ex Ante</i> Gross kW Savings	<i>Ex Post</i> Gross kW Savings	Realization Rate - kW	NTG	<i>Ex Post Net</i> kW Savings
C&I Solutions	1,613	1,617	98%	91%	1,445
SBS	608	604	160%	90%	544
SAGE	236	232	100%	100%	232
Midstream	224	160	102%	90%	144
CEI	692	692	98%	100%	692
RCx	45	46	100%	100%	46
Totals	3,419	3,351	98%	93%	3,103

Sums may differ due to rounding.

Table 7-4 outlines the verified *ex post* lifetime kWh savings by channel for the PY2022 CEEP.

Table 7-4 CEEP Gross and Net Lifetime Savings by Channel

Channel	<i>Ex Post Gross</i> Savings (kWh)	<i>Ex Post Gross</i> Lifetime Energy Savings (kWh)	NTG	<i>Ex Post Net</i> Lifetime Savings (kWh)
C&I Solutions	11,160,432	163,258,187	91%	148,960,788
SBS	2,985,807	44,756,708	90%	40,281,037
SAGE	1,601,147	20,244,465	100%	20,244,465
Midstream	758,119	10,842,957	90%	9,758,661
CEI	4,096,206	4,096,206	100%	4,096,206
RCx	375,954	3,007,632	100%	3,007,632
Totals	20,977,664	246,206,154	93%	226,348,788

Sums may differ due to rounding.

Additional details on the evaluation of the CEEP are provided in the following sections.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.2 Program Overview

The CEEP provides financial incentives to all commercial and industrial (C&I) customers and includes six channels to participation. The channels are designed to maximize participation among the C&I customer base.

The program seeks to combine the provision of financial inducements with access to technical expertise to maximize program penetration across the range of potential C&I customers. The primary goal of the program is to generate energy and demand savings for large and small commercial and industrial customers through the promotion of high efficiency electric end-use products including (but not limited to): lighting, retrofit of existing equipment, and HVAC replacement. The program provides OG&E's C&I customers with flexibility in choosing how to participate, either self-sponsoring or by working through a third-party service provider to leverage technical expertise. The program has the following additional goals:

- Increase customer awareness of applicable energy saving measures;
- Achieve customer cost savings;
- Increase the market share of commercial grade high efficiency technologies sold through market channels; and
- Increase the installation rate of high efficiency technologies in C&I facilities by businesses that would not have done so absent the program.

The program offers prescriptive incentives for electric energy efficiency equipment upgrades and improvements. Incentives are provided for qualified equipment installed as a retrofit or equipment replacement, and as new construction or major refurbishment. The program also offers incentives for custom measures that are not included in the program as prescriptive measures.

Energy savings from prescriptive measures are calculated using deemed values and savings algorithms provided in the AR TRM V9.0. Savings from custom projects are calculated using various methods, including on-site monitoring, engineering calculations, whole building energy modeling, billing data regression analysis, etc. Custom projects may use some deemed values from the TRM, but do not necessarily follow savings algorithms.

In PY2022, the CEEP was implemented with six program channels. These include:

- **C&I Solutions:** The C&I Solutions channel of CEEP offers incentives to customers with a peak demand of greater than 150 kW at a single site. Incentives are paid directly to customers who install energy efficient equipment. This channel focuses on five key areas; lighting, retrofit of existing equipment, new constructions built above minimum building code, high efficiency industrial equipment, and HVAC replacement. The C&I

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Solutions channel is the largest of the six channels offered through CEEP. In PY2022, this channel accounted for 53% of CEEP *ex ante* savings. There were three custom projects in the C&I Solutions channel in PY2022, accounting for 59% of *ex ante* channel savings.

- **Small Business Solutions (SBS):** This channel offers incentives to customers with a peak demand of less than 150 kW at a single site, for lighting audits and equipment installation through approved Trade Allies. The Small Businesses Solutions Channel was the third largest channel offered through CEEP in 2022. During PY2022 this channel accounted for 14% of program *ex ante* savings. No custom projects were incentivized through this channel.
- **Schools & Governmental Entities (SAGE):** The SAGE channel of CEEP is marketed towards public school districts, private schools, universities and colleges, and all government agencies. This channel includes financial incentives for both lighting and non-lighting measures and both prescriptive and custom projects. In PY2022 this channel accounted for 8% of *ex ante* savings.
- **Midstream:** The Midstream channel of CEEP encourages customers to participate by providing point of sale (POS) discounts on selected products through local lighting distributors. Through this channel, the financial incentives are paid to the lighting distributor to allow reduced costs for the end customer. Energy savings associated with the Midstream channel are calculated using custom calculations developed by the program implementer, CLEAResult. The custom calculations are based on the mix of facility types in the OG&E service territory to determine baseline lamp wattages and the distribution of facility types which allows for deemed hours from the AR TRM V9.0 to be applied to local market conditions. The combination of baseline lamp wattages blended deemed annual operating hours, and program tracking data of actual counts and wattages of lamps sold allow for custom savings calculations to be performed. This channel accounts for 4% of program *ex ante* kWh savings.
- **Continuous Energy Improvement (CEI):** Continuous Energy Improvement is a behavioral channel of CEEP that aims to engage larger customers with a goal of cost savings from low to no cost measures. The Continuous Energy Improvement Channel was the second largest channel offered through CEEP in PY2022. Five customers participated in the CEI program. The CEI channel is a 36-month behavioral program that provides energy conservation training to all levels of employees within a customer's organization with a focus on low/no cost savings opportunities. The program also offers a facility wide assessment of energy usage and provides customers with continuous energy usage

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

monitoring. PY2022, this channel accounted for 19% of program *ex ante* savings, increased from 6% in PY2021.

- **Retro-Commissioning (RCx):** In PY2022 the CEEP Retro-Commissioning channel provided customers with comprehensive system energy optimization studies to assist customers in identifying low and no-cost improvement strategies. In PY2022 the RCx channel had one project completed. This channel accounted for 2% of program *ex ante* savings.

CLEAResult was contracted to implement all channels of CEEP for PY2022. CLEAResult was responsible for program planning, development of marketing material, quantifying *ex ante* energy savings estimates and paying appropriate incentives to customers. CLEAResult also identified and approved Trade Allies and distributors for participation in the SBS and Midstream Lighting channels of the program. For PY2022, service providers (Trade Allies and distributors) were recruited to participate by submitting rebate applications on behalf of customers implementing qualifying energy efficiency measures.

The results of the M&V efforts for the program are intended to provide $\pm 10\%$ precision at the 90% confidence interval for the overall program based upon site-by-site verification activities. In PY2022, the CEEP resulted in 310 projects being implemented through the six program channels. The reported performance of the program is summarized in Table 7-5. The projects completed during PY2022 resulted in a gross *ex ante* savings of 21,144,350 kWh and a peak demand reduction of 3,419 kW. In PY2022 CEEP had \$2,018,657 in incentive spending.

Table 7-5 OG&E's PY2022 CEEP Program Summary

Channel	Number of Projects	<i>Ex Ante</i> Gross kWh Savings	<i>Ex Ante</i> Gross Peak kW Savings	Percent of kWh Savings
C&I Solutions	62	11,280,637	1,613	53%
SBS	197	3,003,798	608	14%
SAGE	1	1,631,006	236	8%
Midstream	14	750,762	224	4%
CEI	8	4,106,034	692	19%
RCx	35	372,115	45	2%
Total	317	21,144,350	3,419	100%
Sums may differ due to rounding.				

As shown in Table 7-6, CEEP had participation in seven measure categories: custom, lighting, CEI, RCx, HVAC, Weather Stripping and Refrigeration. The custom measure and lighting measure categories were the single highest contributors to *ex ante* savings, accounting for 16,032,328 kWh, 76% of the program savings. Custom projects including air compressors, chillers, horticulture grow lighting and VFDs accounted 8,090,301 kWh, 38% of the program

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

savings. CEI accounted for 4,106,034 kWh, 19% of program savings which is a large increase from PY2021.

Table 7-6 Contribution to Ex Ante Savings by Measure Type by Channel

Measure Type	C&I Solutions	SBS	SAGE	Midstream	CEI	RCx	Total	% Total
Custom	7,146,993	-	943,308	-	-	-	8,090,301	38%
Lighting	3,667,885	3,003,798	519,582	750,762	-	-	7,942,026	38%
CEI	-	-	-	-	4,106,034	-	4,106,034	19%
RCx	-	-	-	-	-	372,115	372,115	2%
HVAC	155,798	-	168,116	-	-	-	323,914	2%
Weather Stripping	306,062	-	-	-	-	-	306,062	1%
Refrigeration	3,898	-	-	-	-	-	3,898	0%
Total	11,280,637	3,003,798	1,631,006	750,762	4,106,034	372,115	21,144,350	100%

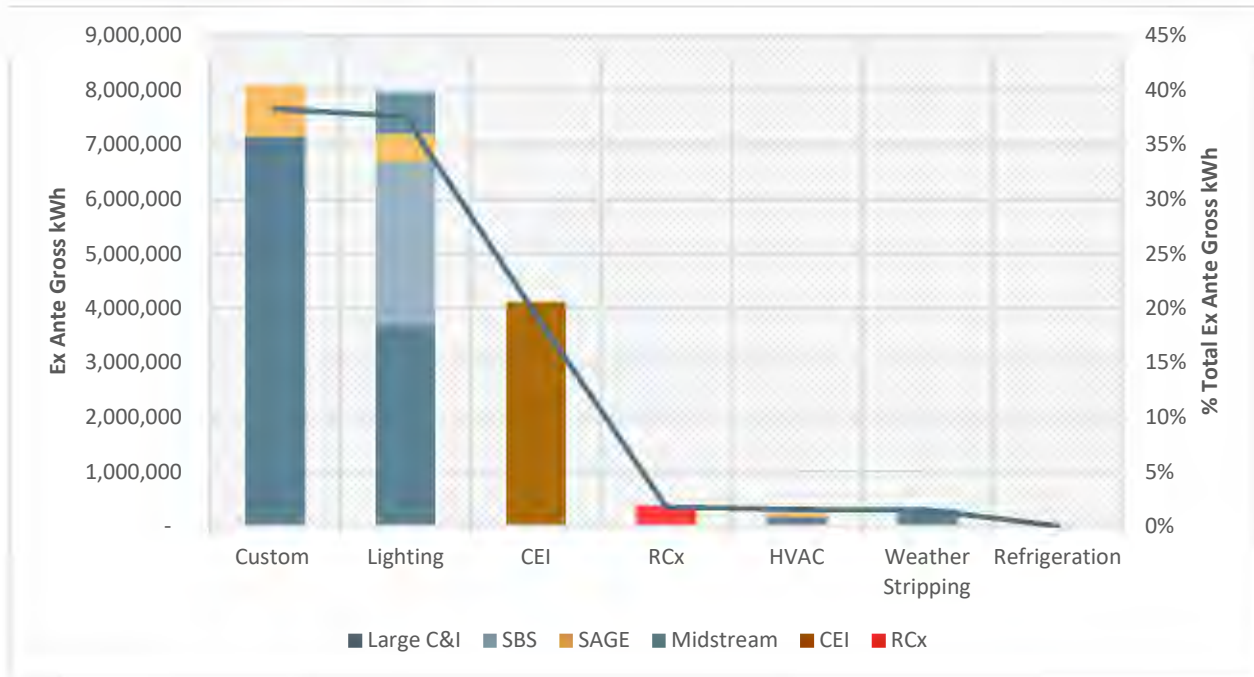


Figure 7-1 Contribution to Savings by Measure

Figure 7-2 below shows what percentage of lighting ex ante savings came what from what facility type across all channels.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

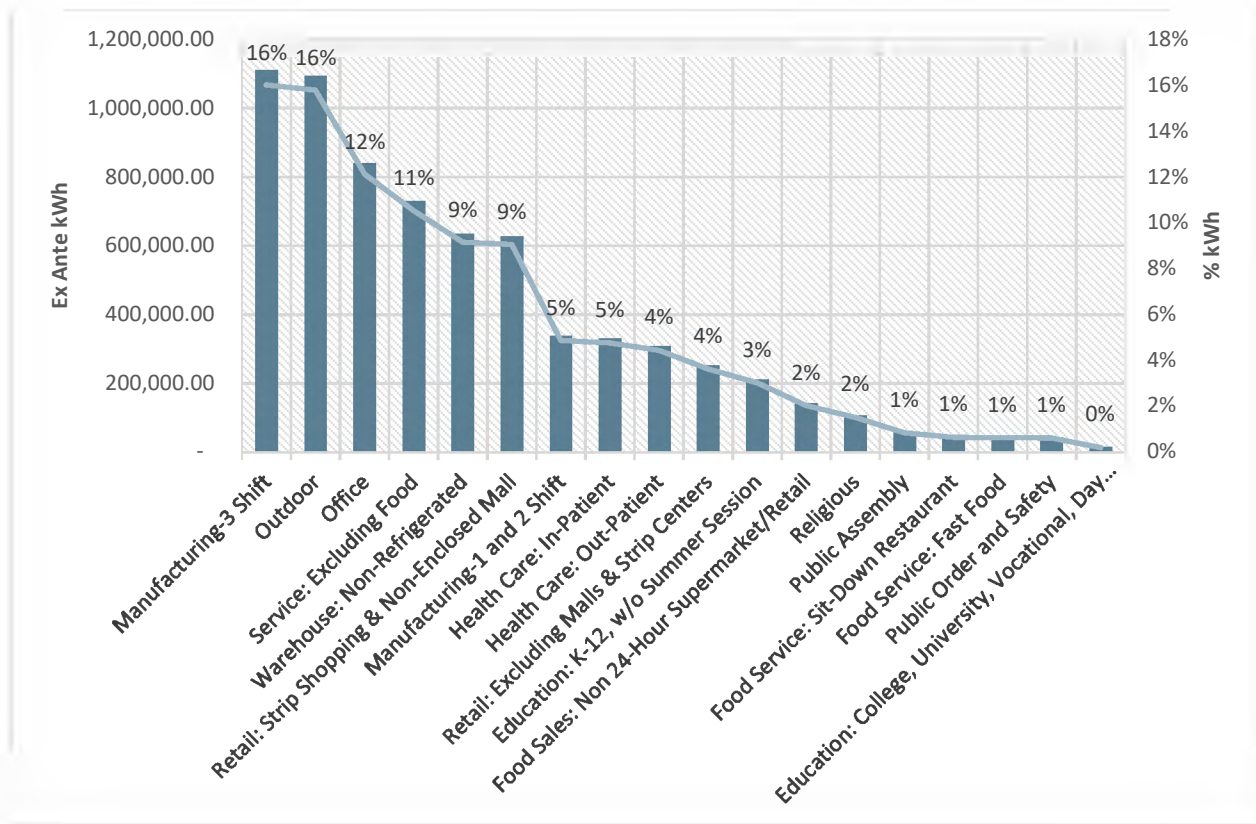


Figure 7-2 Ex Ante Lighting Savings by Facility Type

7.3 Gross Impact Evaluation Approach

The evaluation of gross energy savings and peak demand reduction from projects rebated through the CEEP can be broken down into the following steps:

- First, CLEAResult’s tracking database was reviewed to determine the scope of the program and to ensure there were no duplicate entries. The tracking database was used to define a discrete set of rebated projects that made up the PY2022 program population. A random sample of projects was then drawn from the population established in the tracking system review. For the PY2022, a total of 49 projects from the C&I Solutions, SBS, SAGE, and RCx program channels were selected for the M&V sample. For the Midstream and Continuous Energy Improvement channels, a database review resulted in a census of projects being reviewed.
- Next, a detailed desk review was conducted for each project sampled for measurement and verification. The desk review process includes a thorough examination of all project materials including invoices, equipment cut sheets, pre- and

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

post-inspection reports, and estimated savings calculators. This review process informed the Evaluators' fieldwork by identifying potential uncertainties, missing data, and sites where monitoring equipment was needed to verify key inputs to the reported savings calculations. Additionally, the review process involved assessing the reasonableness of deemed savings values given in the AR TRM V9.0 and calculation input assumptions.

- After reviewing the project materials, detailed desk reviews of the sampled projects in the C&I Solutions, SBS, SAGE, and RCx channels were completed. Sites with higher uncertainty or discrepancies in project documentation were selected for site visits and on-site verifications were completed at these sites. In PY2022, a total of five sites were visited for on-site verification.
- Next, the project documents that were reviewed during the desk reviews were used to revise savings calculations, as necessary. For example, if the reported savings calculations relied on certain measure operating hours that were determined inaccurate based on the facility type or the facilities' actual schedule (determined through on-site monitoring), changes were made to reflect actual operating conditions more accurately.
- For the Midstream channel, no on-site inspections were conducted. Instead, the Evaluators reviewed the implementation contractor's database to determine methodologies and assumptions used to determine *ex ante* savings. For this channel, *ex post* savings are determined through the database review process. A more detailed description of the methodology used to determine *ex post* savings for the Midstream channel is included in the following sections.
- For the CEI channel, no on-site inspections were conducted. The Evaluators conducted whole facility analysis using utility billing regression.
- For the RCx channel, no on-site inspections were conducted. The Evaluators conducted desk reviews of implementer provided project documentation.
- Finally, after determining the *ex post* savings impacts for each sampled project, results were extrapolated to the program population using project specific sampling weights. This allows for the estimation of program level gross *ex post* energy (kWh) savings with a given amount of sampling precision and confidence. For the CEEP, the sample was designed to ensure $\pm 10\%$ or better relative precision at the 90% confidence level for kWh savings.

7.3.1 Midstream Impact Evaluation Activities

Ex post savings from the Midstream channel were determined through a review of the database used by CLEAResult for tracking lamps and fixtures sold through the program. The

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Midstream channel accounted for 4% of CEEP *ex ante* savings. Because of the relatively small amount of savings associated with this channel, the M&V effort was focused on a review of the *ex ante* model used to determine savings. In PY2022, the evaluator used the average in-service rate (ISR) from the previous years for the *ex post* savings model.

The model used to determine *ex ante* savings associated with the Midstream lighting channel uses several sources to determine typical baseline lamp wattage, annual operating hours (AOH), coincident factors (CF), and mix of facility types to allow for calculation of energy savings. Baseline lamp wattages were determined using data from the “2010 U.S. Lighting Market Characterization” study published by the US Department of Energy in January 2012. The results of this study allow for the determination of the number of lamps installed in specific facility types and the energy usage associated with those lamps. This study did not include LED lamps as the research was conducted in 2010 when LEDs had a lower market share.

The annual operating hours, coincidence factors, and facility types were determined using the deemed values provided in the AR TRM V9.0 The 2012 version of the “Commercial Buildings Energy Consumption Survey (CBECS)”, published by the U.S. Energy Information Administration was used to determine the total floor space of commercial buildings, by facility type, in the service territory. The data from the CBECS allowed for CLEAResult to develop a weighted average AOH and CF. Combining these data with the baseline wattage data allowed the models to estimate a weighted average baseline wattage, AOH, and CF for each lamp type included in the program.

In future years, the Evaluators will employ an engineering analysis to determine the *ex post* verified energy savings. The verified energy savings per fixture or lamp will be calculated with methods developed by the Evaluators and consistent with chapter 6 of *The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures*. The calculations will use the following equations:

$$\text{Annual kWh savings} = \left(\frac{(W_{\text{baseline}} - W_{\text{measure}}) * HOU_{\text{annual}} * HCIF}{1000} \right)$$

$$\text{Peak kW savings} = \left(\frac{(W_{\text{baseline}} - W_{\text{measure}}) * HOU_{\text{annual}} * HCIF * CF}{1000} \right)$$

Where:

W_{baseline} = baseline wattage per category determined from sales data supplied by CLEAResult and verified by the Evaluators.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

$W_{measure}$	= measure wattage as determined by the average for that measure category in the current program year. This will be calculated based on Point of Sale (POS) data for each program year and will be adjusted as necessary to reflect actual lamps sold.
1000	= conversion factor for Watts per kW
HOU_{annual}	= annual hours of use, calculated using <i>ex ante</i> model values
HCIF	= “Heating & Cooling Interactive-effects Factor”, determined using deemed values from the appropriate version of the TRM and weighted average facility types.
CF	= Coincidence factor, a ratio between 0.0 and 1.0 that adjusts the change in connected electric load from lighting efficiency projects for electric peak demand savings. CF will be calculated using <i>ex ante</i> model values.

7.4 Impact Evaluation Data Collection Activities

Data for the evaluation were collected through review of program materials, on-site inspections, end-use metering, and interviews with participating customers and service providers. Based on program tracking data provided by CLEAResult, sample design was developed for M&V data collection. The central program database, where program activities are tracked, and project documentation is stored, was developed, and managed by CLEAResult. The verification and data collection samples were drawn to provide gross impact estimates with $\pm 10\%$ precision or better at the 90% confidence level for the overall program.

Desk reviews of project documentation and site visits were used to collect data for gross impact calculations, to verify measure installation, and to determine measure operating parameters. Projects were selected for on-site inspections at random, except for those with a higher level of uncertainty (custom sites, etc.). After receiving and reviewing the provided project documentation, if it was determined that the measures or *ex ante* calculations had a higher level of uncertainty, the site would then be selected for an on-site inspection. The Evaluators completed 49 desk reviews and 5 on-sites. When deemed values were used to determine *ex post* energy savings, including equivalent full load hours for heating and cooling projects, or annual operating hours for lighting projects, the Evaluators referred to the AR TRM V9.0.

Table 7-7 below presents the sample design. The 49 projects that were sampled for measurement and verification in the C&I Solutions, SBS, SAGE, and RCx channels account for 44% of reported *ex ante* kWh savings within these channels. With the inclusion of the census of Midstream Lighting projects and CEI that received M&V, the total program sample accounts for 48% of program *ex ante* savings.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-7 CEEP Sample Design

Stratum Name	Ex ante Gross kWh Savings	Strata Minimum (kWh)	Strata Maximum (kWh)	Population of Projects	Design Sample Size	Desk Review	Site Visit
C&I Solutions (Certainty)	5,688,108	900,000	N/A	1	1	1	0
C&I Solutions 1	1,196,803	0	100,000	38	7	7	1
C&I Solutions 2	2,524,444	100,000	400,000	13	4	4	2
C&I Solutions 3	1,720,027	400,000	900,000	3	2	2	0
SBS (Certainty)	116,936	100,000	N/A	1	1	1	0
SBS 1	733,223	0	14,000	111	14	14	1
SBS 2	1,665,277	14,000	40,000	76	11	11	0
SBS 3	488,362	40,000	100,000	9	3	3	0
SAGE (Certainty)	823,844	300,000	N/A	1	1	1	1
SAGE 1	266,844	0	300,000	10	3	3	0
SAGE 2	540,318	200,000	300,000	3	2	2	0
Midstream	750,762	N/A	N/A	35	Census	Census	0
CEI	4,106,034	N/A	N/A	8	Census	Census	0
RCx	372,115	N/A	N/A	1	Census	Census	0
HVAC Tune Up	151,256	N/A	N/A	7	Census	Census	0
Total	21,144,350			317	49	49	5

Sums may differ due to rounding.

In addition to the desk review activities, in-depth interviews with OG&E and implementation staff members, as well as customer surveys were conducted to provide additional perspectives for the process evaluation. Table 7-8 shows the achieved sample sizes for the different types of data collection employed for this study.

Table 7-8 Sample Sizes for Data Collection Efforts

Data Collection Activity	Sample Size
On-Site M&V visits	5
Desk Review of Project Documentation	49
In-depth Interviews with Implementation Staff	1
In-depth Interviews with Program Staff	1

The achieved sampling precision for the CEEP gross impact evaluation is ±7%.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.5 Gross Impact Evaluation Findings

The reported *ex ante* savings for CEEP was 21,144,350 kWh. The Evaluators found *ex post* gross savings of 20,977,664 kWh (99% gross realization). The *ex post* net savings was 19,597,567 kWh which was 115% of the program's net savings goal of 16,974,247 kWh.

The PY2022 sample resulted in *ex post* gross kWh estimates with $\pm 7\%$ relative precision at the 90% confidence interval. *Ex post* gross energy savings were relatively close to the original reported values at the program level (98% gross realization rate).

The sample also resulted in *ex post* gross kW estimates with $\pm 9\%$ relative precision at the 90% confidence interval.

7.5.1 C&I Solutions Gross Impact Findings

Summary

- **11,280,637 *ex ante* kWh**
- **11,160,432 *ex post* verified kWh (99% gross realization)**
- **1,617 *ex post* verified kW (100% gross realization)**

- Program population: 55 projects
- 7 HVAC Tune Up projects
- M&V sample: 14 projects
- Four M&V strata:
 - Certainty stratum: 90% realization
 - One project accounts for 50% of C&I Solutions channel savings (EA-0000701997)
 - Stratum 1: 105%
 - Stratum 2: 92%
 - EA-0000692418 had a 78% realization rate. This project represented 12% of Stratum 2 total *ex ante* savings.
 - Stratum 3: 100%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.5.2 Small Business Solutions Gross Impact Findings

Summary

- 3,003,798 *ex ante* kWh
- 2,985,807 *ex post* verified kWh (99% gross realization)
- 604 *ex post* verified kW (160% gross realization)
- Program population: 197 projects
- M&V sample: 29 projects
- Four M&V strata:
 - Certainty stratum: 100% realization
 - Stratum 1: 97%
 - Stratum 2: 101%
 - Stratum 3: 99%

7.5.3 SAGE Gross Impact Findings

Summary

- 1,631,006 *ex ante* kWh
- 1,601,147 *ex post* verified kWh (98% gross realization)
- 232 *ex post* verified kW (98% gross realization)
- Program population: 14 projects
- M&V sample: 6 projects
- Three M&V strata,
 - Certainty stratum: 100%
 - Stratum 1: 101%
 - Stratum 2: 94%

7.5.4 Midstream Gross Impact Findings

Summary

- 750,762 *ex ante* kWh
- 758,119 *ex post* verified kWh (101% gross realization)
- 160 *ex post* verified kW (71% gross realization)
- Program population: 1,989 fixtures purchased by 34 participants
- Database review: examined data for input errors, project repeat entries.
- Assigned AOH/CF/baseline based on lamp/fixture type, and wattage based on manufacturer’s / DLC specifications.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.5.5 Continuous Energy Improvement Gross Impact Findings

Summary

- 4,106,034 *ex ante* kWh
- 4,096,206 *ex post* verified kWh (100% gross realization)
- 692 *ex post* verified kW (100% gross realization)
- Program population: 5 participants, 8 projects
- Census of projects analyzed in the evaluation
- Minor corrections made to models to improve model fit

7.5.6 Retro Commissioning (RCx) Gross Impact Findings

Summary

- 372,115 *ex ante* kWh
- 375,954 *ex post* verified kWh (101% gross realization)
- 46 *ex post* verified kW (101% gross realization)
- Program population: 1 Project
- Census of projects analyzed in the evaluation
- Minor corrections made to models to improve model fit

7.6 Net Impact Evaluation Approach

Details on the CEEP NTG approach and results can be found in Appendix C Net-to-Gross Approach and Outcomes.

7.7 Net Impact Evaluation Findings

The Evaluators conducted new net-to-gross analysis in PY2022 for C&I Solutions and SBS.

7.7.1 C&I Solutions

The C&I Solutions channel free-ridership was based on survey responses from participants. The C&I solutions channel NTG was 91%. Table 7-9 and Table 7-10 summarize the *ex post* gross net kWh savings and peak kW demand reductions of the channel. Net impacts totaled 10,154,727 kWh and 1,445 kW in peak demand.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-9 Summary of Net Annual Energy Savings (kWh) – C&I Solutions

Channel	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	Realization Rate – kWh	NTG	<i>Ex post</i> Net kWh Savings
C&I Solutions	11,280,637	11,160,432	99%	91%	10,154,727

Table 7-10 Summary of Net Peak Demand Reductions (kW) – C&I Solutions

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate – kW	NTG	<i>Ex post</i> Net kW Savings
C&I Solutions	1,613	1,617	98%	91%	1,445

7.7.2 SBS

Table 7-11 and Table 7-12 summarize the realized net kWh savings and peak kW demand reductions of the SBS channel. Channel free-ridership was based on surveys collected from the previous program year because there were no program changes for PY2022. Program channel free-ridership (kWh) is estimated at 10%.

Table 7-11 Summary of Net Annual Energy Savings (kWh) – SBS

Channel	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	Realization Rate – kWh	NTG	<i>Ex post</i> Net kWh Savings
SBS	3,003,798	2,985,807	99%	90%	2,687,226

Table 7-12 Summary of Net Peak Demand Reductions (kW) – SBS

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate – kW	NTG	<i>Ex post</i> Net kW Savings
SBS	608	604	99%	90%	544

7.7.3 SAGE

Table 7-13 and Table 7-14 summarize the realized net kWh savings and peak kW demand reductions for SAGE. Due to a low survey response, the program channel free-ridership that is applied in PY2022 is 0%. Net savings totaled to 1,601,147 kWh and 232 kW in peak demand (100% NTG).

Table 7-13 Summary of Net Annual Energy Savings (kWh) – SAGE

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate – kW	NTG	<i>Ex post</i> Net kW Savings
SAGE	1,631,006	1,601,147	98%	100%	1,601,147

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-14 Summary of Net Peak Demand Reductions (kW) – SAGE

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate – kW	NTG	<i>Ex post</i> Net kW Savings
SAGE	236	232	98%	100%	232

7.7.4 Midstream

Channel free-ridership was based on surveys collected from the small business channel participants. Table 7-15 and Table 7-16 summarize the realized net kWh savings and peak kW demand reductions of the Midstream channel.

Table 7-15 Summary of Net Annual Energy Savings (kWh) – Midstream Lighting

Channel	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	Realization Rate - kWh	NTG	<i>Ex post</i> Net kWh Savings
Midstream	750,762	758,119	101%	90%	682,307

Table 7-16 Summary of Net Peak Demand Reductions (kW) – Midstream Lighting

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate - kW	NTG	<i>Ex post</i> Net kW Savings
Midstream	224	160	71%	90%	144

7.7.5 Continuous Energy Improvement

Table 7-17 and Table 7-18 summarize the realized net kWh savings and peak kW demand reductions of the CEI channel.

Table 7-17 Summary of Net Annual Energy Savings (kWh) – CEI

Channel	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	Realization Rate - kWh	NTG	<i>Ex post</i> Net kWh Savings
CEI	4,106,034	4,096,206	100%	100%	4,096,206

Table 7-18 Summary of Net Demand Reductions (kW) – CEI

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate - kW	NTG	<i>Ex post</i> Net kW Savings
CEI	692	692	100%	100%	692

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.7.6 Retro-Commissioning (RCx)

Table 7-19 and Table 7-20 summarize the realized net kWh savings and peak kW demand reductions of this program channel.

Table 7-19 Summary of Net Demand Reductions (kWh) – RCx

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate - kW	NTG	<i>Ex post</i> Net kW Savings
RCx	372,115	375,954	101%	100%	375,954

Table 7-20 Summary of Net Demand Reductions (kW) – RCx

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate - kW	NTG	<i>Ex post</i> Net kW Savings
RCx	45	46	101%	100%	46

7.7.7 Summary of Net Savings Results

Table 7-21 and Table 7-22 summarize CEEP net savings.

Table 7-21 Summary of CEEP Net Annual Energy Savings (kWh)

Channel	<i>Ex ante</i> Gross kWh Savings	<i>Ex post</i> Gross kWh Savings	Realization Rate - kWh	NTG	<i>Ex post</i> Net kWh Savings
C&I Solutions	11,280,637	11,160,432	99%	91%	10,154,727
SBS	3,003,798	2,985,807	99%	90%	2,687,226
SAGE	1,631,006	1,601,147	98%	100%	1,601,147
Midstream	750,762	758,119	101%	90%	682,307
CEI	4,106,034	4,096,206	100%	100%	4,096,206
RCx	372,115	375,954	101%	100%	375,954
Totals	21,144,350	20,977,664	99%	93%	19,597,567
Sums may differ due to rounding.					

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-22 Summary of CEEP Net Peak Demand Reductions (kW)

Channel	<i>Ex ante</i> Gross kW Savings	<i>Ex post</i> Gross kW Savings	Realization Rate - kW	NTG	<i>Ex post</i> Net kW Savings
C&I Solutions	1,613	1,617	100%	91%	1,445
SBS	608	604	99%	90%	544
SAGE	236	232	98%	100%	232
Midstream	224	160	71%	90%	144
CEI	692	692	100%	100%	692
RCx	45	46	101%	100%	46
Totals	3,419	3,351	98%	93%	3,103
Sums may differ due to rounding.					

7.8 Non-Energy Benefits (NEBs)

Protocol L of the AR TRM V9.0 states that EM&V of demand-side management (DSM) programs in Arkansas must account for NEBs resulting from each program. Specifically, the categories of NEBs that are to be calculated for each DSM program are as follows:

- Benefits of electricity, natural gas, and liquid propane energy savings (i.e. other fuels);
- Benefits of public water and wastewater savings; and
- Benefits of avoided and deferred equipment replacement costs.

As discussed below, the NEBs applicable to the CEEP Program in PY2022 are natural gas savings and avoided replacement costs (ARCs). There were no propane or water savings in PY2022. Measures with zero entries are included to ensure consistency of table structure and to demonstrate that no measures or potential energy and non-energy impacts were omitted.

7.8.1 Natural Gas Energy Savings

In the CEEP, OG&E customers can have either electric or natural gas heating. When a customer has natural gas heating, OG&E can claim the natural gas therms savings as NEBs. Conversely, when a customer has natural gas space heating, there are negative natural gas savings from lighting retrofits associated with the heating-cooling interactive factor of lighting and HVAC. For CEEP, the primary driver of savings is lighting retrofits and as a result the overall effect is a negative NEB from natural gas. The table below presents the *ex post* net natural gas that can be claimed as NEBs for cost-effectiveness purposes. There were no natural gas savings calculated for RCx or CEI.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-23 PY2022 CEEP Natural Gas (NGS) Savings by Measure

Channel	Measure	Ex post Gross NGS (therms)	Ex post Net NGS (therms)	Ex post Net Lifetime NGS (therms)	NGS Benefit (\$)	NPV NGS (\$)
Large C&I	LED High Bay	-6,150	-4,981	-74,720	\$ (2,642)	\$ (35,878)
Large C&I	De-Lamp	-562	-455	-2,276	\$ (241)	\$ (1,214)
Large C&I	LED Troffer	-8,676	-7,027	-105,411	\$ (3,727)	\$ (50,616)
Large C&I	Linear LED Lamps	-3,140	-2,544	-38,153	\$ (1,349)	\$ (18,320)
Large C&I	Exterior LED	-1,472	-1,192	-17,886	\$ (632)	\$ (8,588)
Large C&I	Screw-based LED Lamp	-452	-366	-1,463	\$ (194)	\$ (783)
Large C&I	NC Lighting - LED Troffer	-69	-56	-833	\$ (29)	\$ (400)
SBS	Linear LED Lamps	-15,214	-13,693	-205,389	\$ (7,262)	\$ (98,623)
SBS	Exterior LED	-645	-580	-8,705	\$ (308)	\$ (4,180)
SBS	Interior LED	-4,628	-4,165	-62,472	\$ (2,209)	\$ (29,998)
SBS	Screw-based LED Lamp	-22	-20	-80	\$ (11)	\$ (43)
SAGE	LED Troffer	-1,024	-1,024	-15,353	\$ (543)	\$ (7,372)
SAGE	LED High Bay	-105	-105	-1,570	\$ (56)	\$ (754)
SAGE	Screw-based LED Lamp	-168	-168	-673	\$ (89)	\$ (360)
SAGE	NC Lighting - LED Troffer	-1,414	-1,414	-21,214	\$ (750)	\$ (10,187)
SAGE	Linear LED Lamps	-716	-716	-10,740	\$ (380)	\$ (5,157)
SAGE	Exterior LED	-23	-23	-348	\$ (12)	\$ (167)
SAGE	LED Exit Sign	-1	-1	-14	\$ (0)	\$ (7)
Midstream	LED Linear T8	-273	-246	-3,505	\$ (130)	\$ (1,672)
Midstream	LED Reflector	-14	-13	-147	\$ (7)	\$ (71)
Midstream	2x4 LED Linear Fixture	-194	-174	-2,488	\$ (93)	\$ (1,187)
Midstream	2x2 LED Linear Fixture	-19	-17	-244	\$ (9)	\$ (116)
Midstream	Downlight LED	-28	-25	-285	\$ (13)	\$ (138)
Midstream	LED High Bay	-2,185	-1,967	-28,055	\$ (1,043)	\$ (13,387)
	Total	-47,192	-40,971	-602,023	\$ (21,730)	\$ (282,219)

Sums may differ due to rounding.

The bullets below outline how the Evaluators determined if there were natural gas savings:

- **C&I Solutions:** natural gas savings were estimated using heating type information in the project data provided by the TPI.
- **SBS:** natural gas savings were estimated using heating type information in the project data provided by the TPI.
- **Midstream:** natural gas savings were estimated using heating type information in the project data provide by the TPI.
- **SAGE:** natural gas savings were estimated using heating type information in the project data provided by the TPI.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.8.2 Propane Savings

When a customer has propane, OG&E can claim the savings as NEBs. There were no propane savings in PY2022 for CEEP.

7.8.3 Water Savings

When a customer installs a water saving device, OG&E can claim the water savings (gallons) as a NEBs. There were no water savings in PY2022 for CEEP.

7.8.4 Avoided and Deferred Replacement Costs

To calculate avoided replacement costs (ARC) and incremental costs for LEDs in the CEEP the AR TRM V9.0 Protocol L calculator was used.

Avoided replacement cost NEBs were calculated for lighting projects by lighting fixture and bulb types. The implementer provided detailed lamp and fixture types for all participants and the Evaluators used that data to estimate avoided replacement cost. Equipment costs were taken from program tracking where available and citing Illinois TRM V11.0⁴⁵ where not available.

The AR TRM V9.0 lists the EUL for HID as 16 years and this is longer than the EUL of common LED fixtures (15 years) which would result in no avoided replacement cost. The Evaluators reviewed the calculation used to derive the EUL in AR TRM V9.0 and recalculated the EUL because AR TRM V9.0 used the ballast lifetime to calculate EUL. The Evaluators used the lamp life of 15,000 hours for exterior HID and 18,000 hours for high/low bay HID, divide them by weighted average of 3,205 AOH (the same AOH used to calculate EUL from AR TRM V9.0). The resulting EUL for exterior HID was 4 years and high/low bay HID was 6 years. The value of the avoided replacement cost NEB was determined using a calculator provided by the IEM, which accounts for differences in EULs, changing baseline fixtures in future years (per EISA tiers), and the Net Present Value (NPV) of the avoided replacement cost.

The table below shows the ARCs for the PY2022 CEEP. There were no ARCs for CEI.

⁴⁵ https://www.ilsag.info/wp-content/uploads/IL-TRM_Effective_010123_v11.0_Vol_2_C_and_I_092222_FINAL.pdf.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-24 PY2022 CEEP Avoided Replacement Costs (ARCs) by Measure

Channel	Measure	Ex post Gross ARC (\$)	Ex post Net ARC (\$)	NPV of ARC (\$)
Large C&I	LED Retrofit - LED High Bay	\$ 135,754	\$ 109,961	\$ 109,961
Large C&I	LED Retrofit - LED Troffer	\$ 65,012	\$ 52,660	\$ 52,660
Large C&I	LED Retrofit - Linear LED Lamps	\$ 13,870	\$ 11,235	\$ 11,235
Large C&I	LED Retrofit - Exterior LED	\$ 70,522	\$ 57,123	\$ 57,123
Large C&I	LED Retrofit - Screw-based LED Lamp	\$ 379	\$ 307	\$ 307
Large C&I	NC Lighting - Exterior LED	\$ 1,433	\$ 1,161	\$ 1,161
Large C&I	NC Lighting - LED Troffer	\$ 995	\$ 806	\$ 806
SBS	LED Retrofit - Linear LED Lamps	\$ 36,346	\$ 32,712	\$ 32,712
SBS	LED Retrofit - Exterior LED	\$ 122,840	\$ 110,556	\$ 110,556
SBS	LED Retrofit - Interior LED	\$ 80,603	\$ 72,543	\$ 72,543
SBS	LED Retrofit - Screw-based LED Lamp	\$ 29	\$ 26	\$ 26
SAGE	LED Retrofit - LED Troffer	\$ 7,161	\$ 7,161	\$ 7,161
SAGE	LED Retrofit - LED High Bay	\$ 7,258	\$ 7,258	\$ 7,258
SAGE	LED Retrofit - Screw-based LED Lamp	\$ 248	\$ 248	\$ 248
SAGE	NC Lighting - LED Troffer	\$ 5,961	\$ 5,961	\$ 5,961
SAGE	NC Lighting - Exterior LED	\$ 6,020	\$ 6,020	\$ 6,020
SAGE	LED Retrofit - Linear LED Lamps	\$ 4,601	\$ 4,601	\$ 4,601
SAGE	LED Retrofit - Exterior LED	\$ 10,034	\$ 10,034	\$ 10,034
Midstream	LED Linear T8	\$ 3,843	\$ 3,458	\$ 3,458
Midstream	2x4 LED Linear Fixture	\$ 2,390	\$ 2,151	\$ 2,151
Midstream	Exterior LED Flood Light	\$ 7,310	\$ 6,579	\$ 6,579
Midstream	2x2 LED Linear Fixture	\$ 215	\$ 193	\$ 193
Midstream	Downlight LED	\$ 1,700	\$ 1,530	\$ 1,530
Midstream	LED High Bay	\$ 58,468	\$ 52,621	\$ 52,621
Total		\$ 642,992	\$ 556,904	\$ 556,904

Sums may differ due to rounding.

7.8.5 NEBs Summary

The table below summarizes the NPV of NEBs attributable to CEEP, including natural gas savings, water savings, propane, and avoided replacement cost. There were no propane savings (gallons), no water savings (gallons) and no DRCs in the PY2022 CEEP.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-25 PY2022 CEEP Non-Energy Benefits (NEBs) Summary

Channel	Measure	NPV NGS (\$)	NPV ARC (\$)	Total NPV (\$)
SAGE	LED Retrofit - LED Troffer	\$ (7,372)	\$ 7,161	\$ (211)
SAGE	LED Retrofit - LED High Bay	\$ (754)	\$ 7,258	\$ 6,504
SAGE	LED Retrofit - Screw-based LED Lamp	\$ (360)	\$ 248	\$ (112)
SAGE	New Construction Lighting - LED Troffer	\$ (10,187)	\$ 5,961	\$ (4,226)
SAGE	New Construction Lighting - Exterior LED	\$ -	\$ 6,020	\$ 6,020
SAGE	LED Retrofit - Linear LED Lamps	\$ (5,157)	\$ 4,601	\$ (556)
SAGE	LED Retrofit - Exterior LED	\$ (167)	\$ 10,034	\$ 9,866
SAGE	LED Retrofit - LED Exit Sign	\$ (7)	\$ -	\$ (7)
Large C&I	LED Retrofit - LED High Bay	\$ (35,878)	\$ 109,961	\$ 74,082
Large C&I	LED Retrofit - De-Lamp	\$ (1,214)	\$ -	\$ (1,214)
Large C&I	LED Retrofit - LED Troffer	\$ (50,616)	\$ 52,660	\$ 2,044
Large C&I	LED Retrofit - Linear LED Lamps	\$ (18,320)	\$ 11,235	\$ (7,085)
Large C&I	LED Retrofit - Exterior LED	\$ (8,588)	\$ 57,123	\$ 48,535
Large C&I	LED Retrofit - Screw-based LED Lamp	\$ (783)	\$ 307	\$ (476)
Large C&I	New Construction Lighting - Exterior LED	\$ -	\$ 1,161	\$ 1,161
Large C&I	New Construction Lighting - LED Troffer	\$ (400)	\$ 806	\$ 406
Midstream	LED Linear T8	\$ (1,672)	\$ 3,458	\$ 1,786
Midstream	LED Reflector	\$ (71)	\$ -	\$ (71)
Midstream	2x4 LED Linear Fixture	\$ (1,187)	\$ 2,151	\$ 964
Midstream	Exterior LED Flood Light	\$ -	\$ 6,579	\$ 6,579
Midstream	2x2 LED Linear Fixture	\$ (116)	\$ 193	\$ 77
Midstream	Downlight LED	\$ (138)	\$ 1,530	\$ 1,391
Midstream	LED High Bay	\$ (13,387)	\$ 52,621	\$ 39,235
SBS	LED Retrofit - Linear LED Lamps	\$ (98,623)	\$ 32,712	\$ (65,911)
SBS	LED Retrofit - Exterior LED	\$ (4,180)	\$ 110,556	\$ 106,376
SBS	LED Retrofit - Interior LED	\$ (29,998)	\$ 72,543	\$ 42,545
SBS	LED Retrofit - Screw-based LED Lamp	\$ (43)	\$ 26	\$ (16)
Total		\$ (289,219)	\$ 556,904	\$ 267,686
Sums may differ due to rounding.				

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.9 Process Evaluation

The AR TRM V9.0 Protocol C addresses the criteria used to determine the timing and conditions needed for a process evaluation, and the following tables summarize the program in the context of these requirements.

Table 7-26 Determining Process Evaluation Timing

Variable Name	Variable Type
New and Innovative Components	No. The program is unchanged from PY2021
No Previous Process Evaluation	No. The program received process evaluations in prior program years.
Less than Expected Energy Savings or Accomplishments	No. CEEP has exceeded energy savings expectations in prior program years.
Participant Reported Problems or Low Participant Satisfaction	No. Participants have consistently reported high satisfaction.
New Vendor or Contractor	No. The program continues to be implemented by CLEAResult.
Energy Savings are being Achieved Slower than Expected	No. Energy savings are being achieved at a rate that is consistent with program expectations.

Table 7-27 Determining Process Evaluation Conditions

Component	Status
Impact problems	No. CEEP has consistently high realization rates.
Informational/educational objectives	Addressed. CEEP has met program goals for outreach and education of OG&E customers and Trade Allies.
Participation problems	No. CEEP has consistently met participation targets.
Operational challenges	None identified thus far.
Cost-effectiveness issues	No. The program is highly cost-effective. Prescriptive measures are screened during triennial planning and custom measures are screened for cost-effectiveness.
Negative feedback	No. Participants and Trade Allies have consistently provided positive feedback about their program experience.
Market effects	Addressed. Staff interviews and contractor interviews determined that CEEP offering resulted in minor market effects where vendors have changed stocking practices. This manifests especially as a result of the Midstream channel.

The program received a limited process for PY2022.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-28 CEEP Process Evaluation Interview and Survey Data Collection Summary

Target	Component	Activity	n	Precision	Details
Program Staff	OG&E Program Staff	Interview	2	N/A	OG&E staff interview included the Program Manager that is responsible for overall oversight of CEEP, and one EM&V analyst.
Program Staff	CLEAResult Program Staff	Interview	1	N/A	CLEAResult staff interviewed included the Program Manager that is responsible for overall day-to-day implementation of CEEP.
Program Participants	Large C&I Solutions	Participant Survey	9	±8.5%	Survey effort was used for NTG and process evaluation feedback.
	Small Business Solutions	Participant Survey	34	±9.9%	Interviews with distributors were used to obtain process evaluation feedback. Three out of four distributors were interviewed.
	School & Government	Participant Survey	2	±23.8%	

7.9.1 Program and CLEAResult Staff Interviews

The Evaluators completed in-depth interviews with one AR CEEP program manager and one EM&V analyst at OG&E and the manager at CLEAResult. The Evaluators used these program staff interviews to identify program updates or changes in PY2022. Further, these interviews explored energy efficiency staff roles and responsibilities, program communications and marketing, and the overall program delivery processes in place during PY2022.

Program Status

At the end of the third quarter, the C&I programs were expected to exceed goal, which staff note has never happened. Staff speculate that the success of the programs stem with increased energy costs and greater awareness about the importance of reducing the carbon footprint. Staff also indicated that Small Business Solutions was performing well, despite struggles faced by this market segment over the period spanning the COVID-19 pandemic and associated restrictions on business activity. Staff explained that there have not been any major changes to the programs' design nor measures offered in the past year, but rather stronger and more

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

consistent marketing, education, and promotion appears to be paying off. Lastly, no major changes to data tracking or quality assurance or control occurred in 2022.

Marketing

OG&E and CLEAResult staff work together to market the CEEP. Marketing strategies include social media posts, mail outs, flyers, etc. Staff provide cobranding marketing collateral to Trade Allies and require all of their allies to wear an OG&E badge. Social media has proven a successful marketing strategy and CLEAResult tracks which posts and advertisements generate the most interest. OG&E and CLEAResult staff also emphasized the importance of word-of-mouth marketing, as well as meeting people in-person.

Program Challenges

Supply chain issues continue to impact the CEEP programs. Not only has the price of equipment changed, but contractors struggle to identify sources for some measures. Although the programs are performing well, staff believe the programs could be doing even better if more products were available.

Trade Allies

Custom and prescriptive C&I solutions customers can use whomever they like for their equipment upgrades. Small business direct install customers can choose from a group of about six trade allies. The small business direct install program is contractor driven, and thus trade allies generate their own leads.

7.9.2 OG&E CEEP Program Participant Surveys and Interviews

OG&E Large C&I Program Participant Survey

Nine participants in OG&E's Large C&I program responded to a survey. Respondents learned about the Large C&I program through a variety of avenues including a friends and colleagues and OG&E representatives (Figure 7-3). Respondents noted that in-person contact (44%, n=4) and email (56%, n=5) are the best ways for OG&E to keep organizations like theirs informed about other incentive opportunities.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

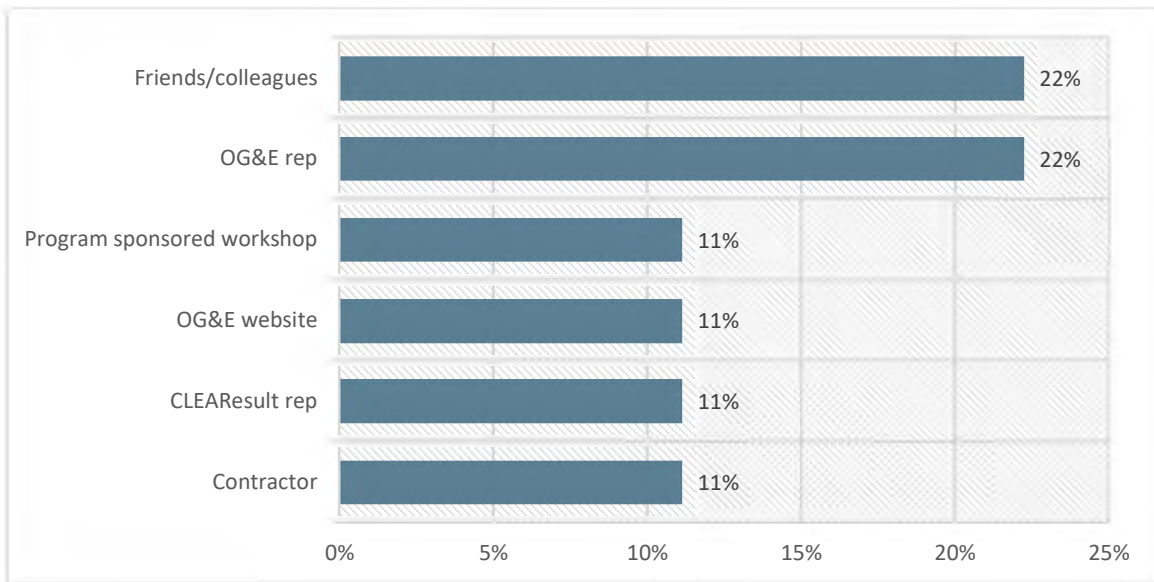


Figure 7-3 Source of Program Awareness (n=9)

Less than half of respondents knew OG&E offered incentives for other energy efficient commercial and industrial equipment services (44%, n=4). The five respondents who indicated they were familiar with other OG&E incentives referenced the lighting (n=3), HVAC (n=2), air compressors (n=2), lighting controls (n=1), variable frequency drivers, and refrigeration (n=1) opportunities.

Respondents reported energy efficiency payback period/return on investment as the most important priority when making equipment upgrades. When asked to rate priorities on a scale of 0-10 with 0 being “not at all important” and 10 being “extremely important”, 63% of respondents noted the payback period was a 9-10. Other priorities included customer and/or employee comfort, aesthetics, ENERGY STAR rating, and upfront cost of equipment (Figure 7-3).

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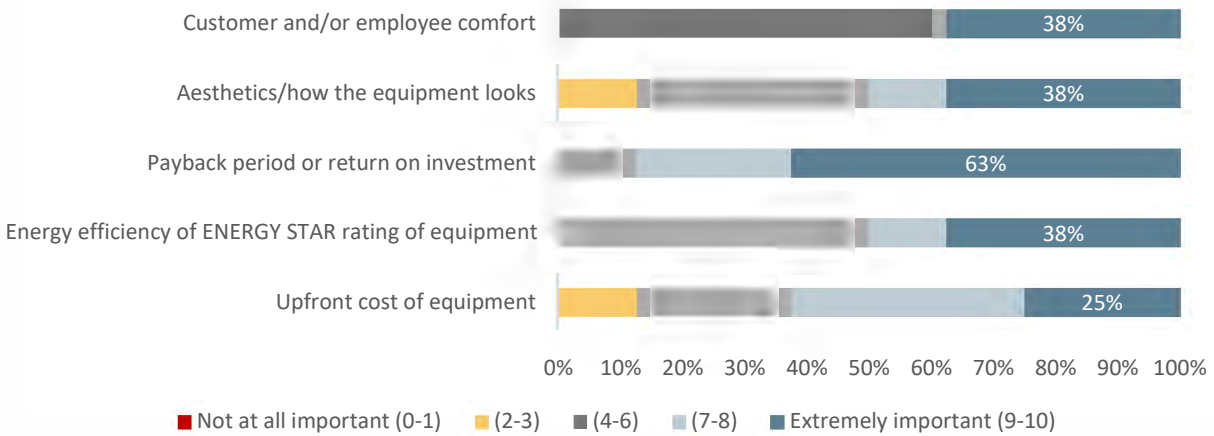


Figure 7-4 Importance of Various Factors in Deciding to Upgrade (n=9)

Three respondents reported technical assistance when deciding which equipment to select, but no respondents reported receiving an energy assessment.

Respondents indicated that the application process and communication with OG&E staff went smoothly. Five respondents indicated they filled out the program application themselves and none of those respondents reported the application was difficult to complete. Additionally, five respondents noted they communicated with OG&E staff during the program and all five reported positive experiences.

Three-quarters of respondents reported a decrease in their energy bill since participating in the program (75%, n=6); the remaining respondents did not know if their bill had changed. No respondent reported an increase in their energy bill.

Program Challenges

Only one respondent reported a problem with their participation in the program. This respondent indicated the upfront equipment cost was high and that they did not fully understand what equipment was eligible. This respondent noted more assistance with the application would have been appreciated.

Although most respondents did not report challenges participating in the program, they did indicate there are challenges with increasing energy efficiency in the commercial and industrial sectors in general. Most notably, they reported challenges with the high initial cost of equipment, funding competition, and long payback periods/return on investment (Table 7-29). Three respondents reported no challenges.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-29 Energy Efficiency Challenges (n=9)

	n
High initial cost	2
Funding competition with other investments/improvements	2
Long payback period/return on investment	2
Understanding potential areas for improvement/lack of technical knowledge	1
Lack of awareness about available incentives for energy efficient equipment	1
Don't own building	1

Program Satisfaction

Respondents were satisfied with OG&E’s program (Figure 7-5). Not only were all respondents satisfied or very satisfied with the overall program, but most respondents were also satisfied or very satisfied with the equipment installed, the quality of work, the time it took to receive the incentive, and the incentive amount.

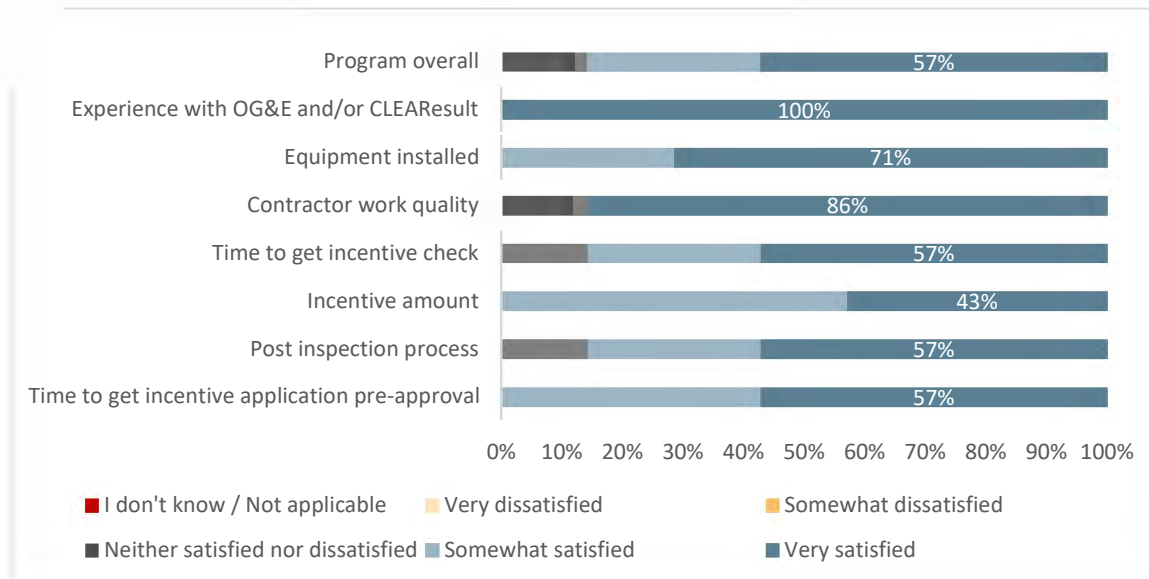


Figure 7-5 Program Satisfaction (n=7)

The majority of respondents were satisfied or very satisfied with OG&E as their utility service provider (86%, n=4). When asked how OG&E could have improved their overall experience of the program respondents suggested larger incentives, more communication, simpler and faster application process, and more technical assistance.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

“It made sense for our organization”

“Savings were good and feedback throughout the program was also good”

“I experienced no significant issues during the process and received all the help and payback that was promised to me.”

OG&E Small Business Solutions Participant Surveys

Thirty-four participants in OG&E’s Small Business Solutions program channel responded to a survey. Respondents learned about the Small Business Solutions program through a variety of avenues including an OG&E representative (41%, n=14) and friends or colleagues (15%, n=5) (Figure 7-6). Respondents also noted that email (50%, n=17), in-person contact (38%, n=13), phone calls (38%, n=13), and bill inserts (32%, n=11) are the most effective way for OG&E to provide companies with energy saving tips.

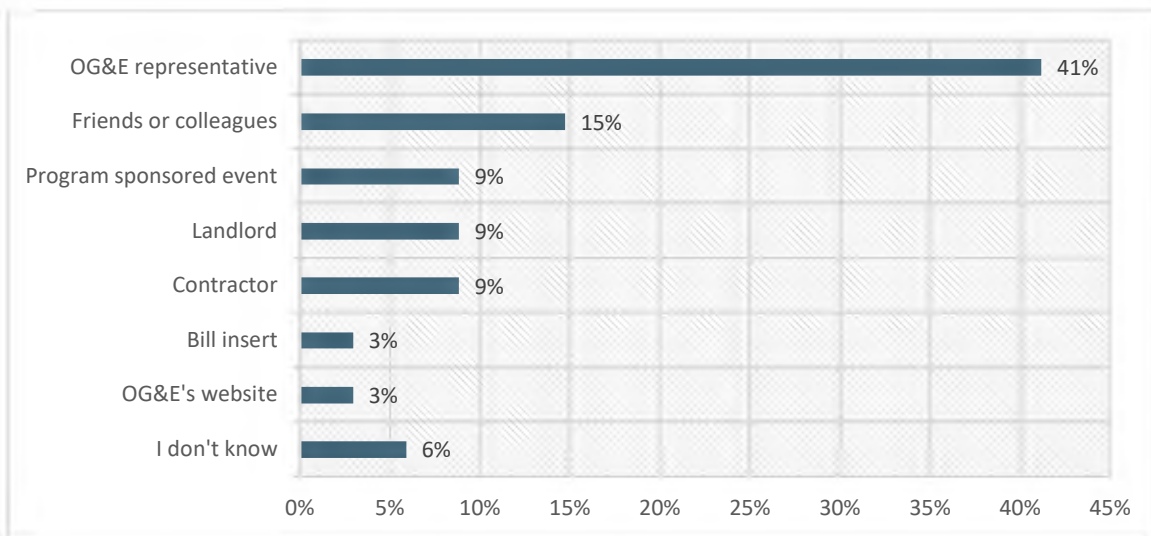


Figure 7-6 Source of Program Awareness (n=34)

The majority of respondents were not familiar with the other incentives and offerings provided by OG&E to increase energy efficiency (81%, n=26). Among the six respondents who were aware of other OG&E incentives and programming, respondents were most familiar with lighting (n=4), HVAC (n=3), and air compressors (n=3).

Respondents were interested in OG&E’s small business solutions program for a variety of reasons. The majority of respondents reported wanting to save money on utility bills (82%, n=28); many respondents also wanted to reduce maintenance costs (68%, n=23), save energy (53%, n=18), and replace old but still working equipment (50%, n=17) (Figure 7-7).

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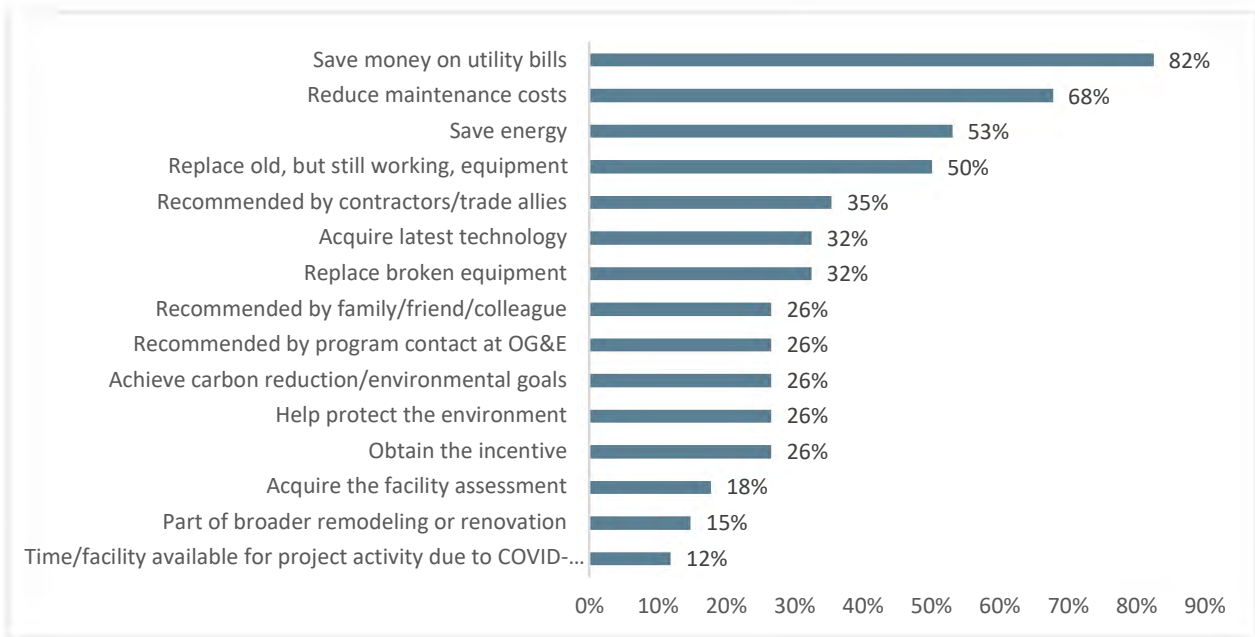


Figure 7-7 Motivation for Participation (n=34)

Respondents reported energy efficiency ENERGY STAR rating of equipment and the upfront cost of equipment as the most important priorities when making equipment upgrades. When asked to rate priorities on a scale of 0-10 with 0 being “not at all important” and 10 being “extremely important”, 50% (n=15) of respondents noted they ENERGY STAR rating of the equipment was a 9-10 and 63% (n=19) reported the upfront cost of the equipment was a 9-10 (Figure 7-8).

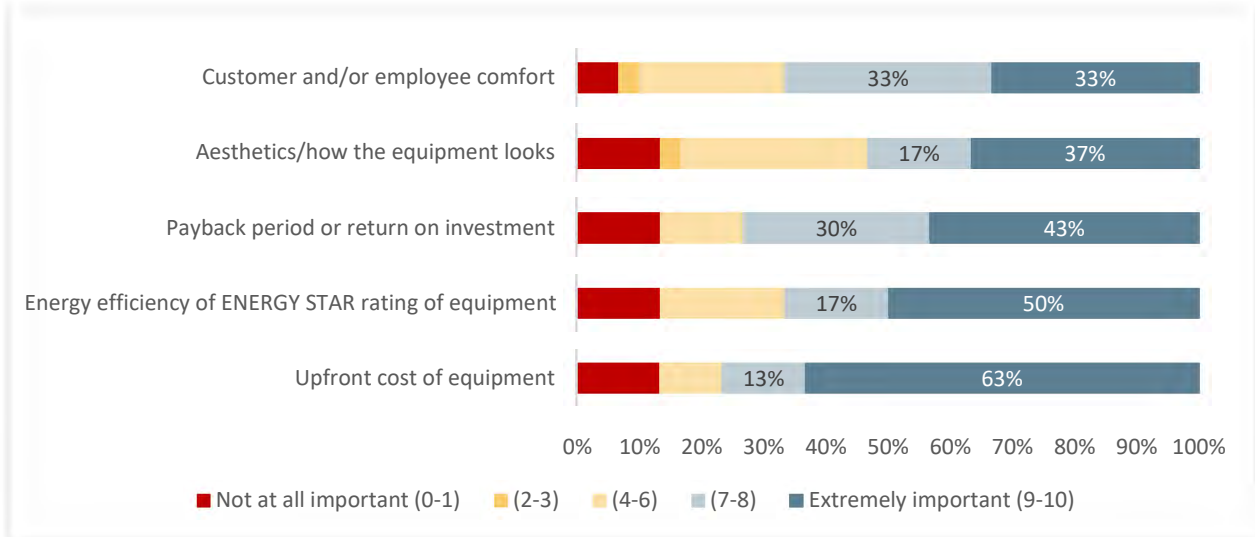


Figure 7-8 Importance of Various Factors in Deciding to Upgrade (n=26)

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Just under half of respondents received an energy assessment as part of their participation in the program (47%, n=14). All of these respondents thought the assessment was at least moderately useful (Figure 7-9) and all respondents indicated they had all the information they needed to act on the recommendations that came out of their facility assessment. Among the participants who received an energy assessment (n=14), more than three-quarters wanted to save energy and money (79%, n=11) and more than half wanted to make their business more comfortable (57%. n=8).

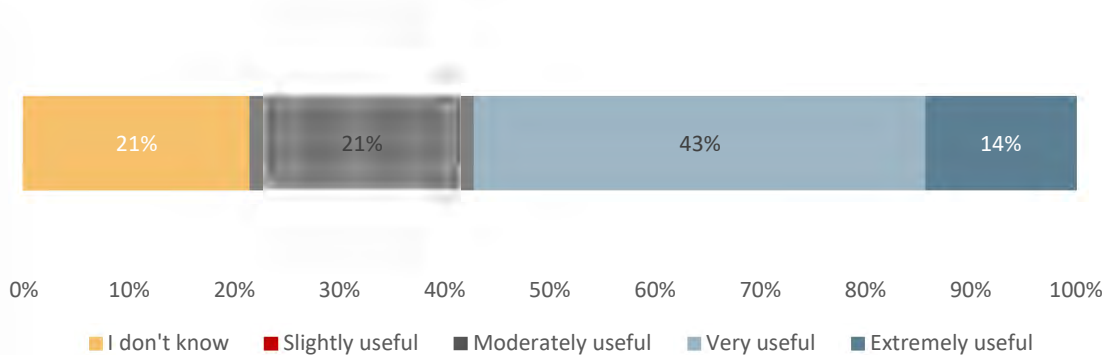


Figure 7-9 Usefulness of Energy Assessment (n=14)

Respondents indicated that the application process and communication with OG&E staff went smoothly. Five respondents completed the application themselves (17%) and twelve had help from their contractor (40%). All five respondents who completed the application themselves said it was easy.

Just under half of respondents reported a decrease in their energy bill since participating in the program; only one respondent reported an increase in their energy bill (Figure 7-10).

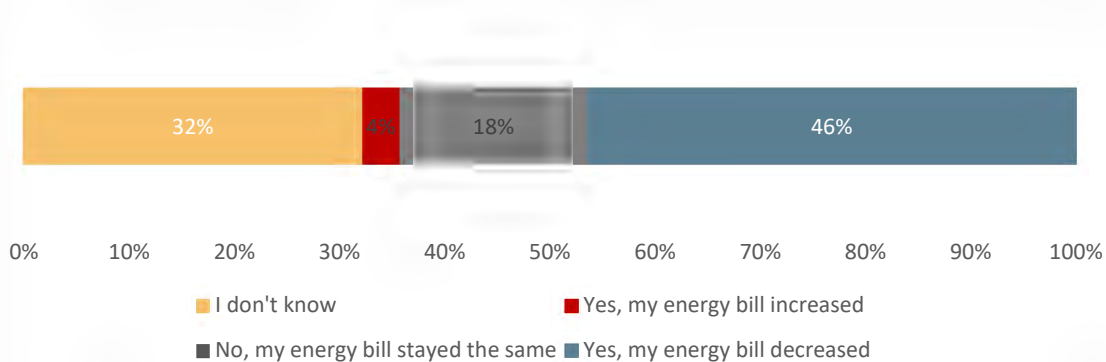


Figure 7-10 Change in Energy Bill (n=28)

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Program Challenges

Although few respondents reported challenges with participating in the program (n=2), many respondents reported challenges with upgrading to efficiency equipment more generally. The two respondents who reported program challenges reported issues with the equipment installed (n=1) and issues with the contractor (n=1). About one-quarter of all respondents reported not owning the building (27%, n=9), lack of awareness about available incentives (24%, n=8), and high initial cost (24%, n=8) as barriers in upgrading equipment (Figure 7-11). Respondents indicated that OG&E can help mitigate these challenges by providing higher incentives (n=3), more technical assistance (n=1), and an improved application process (n=1)

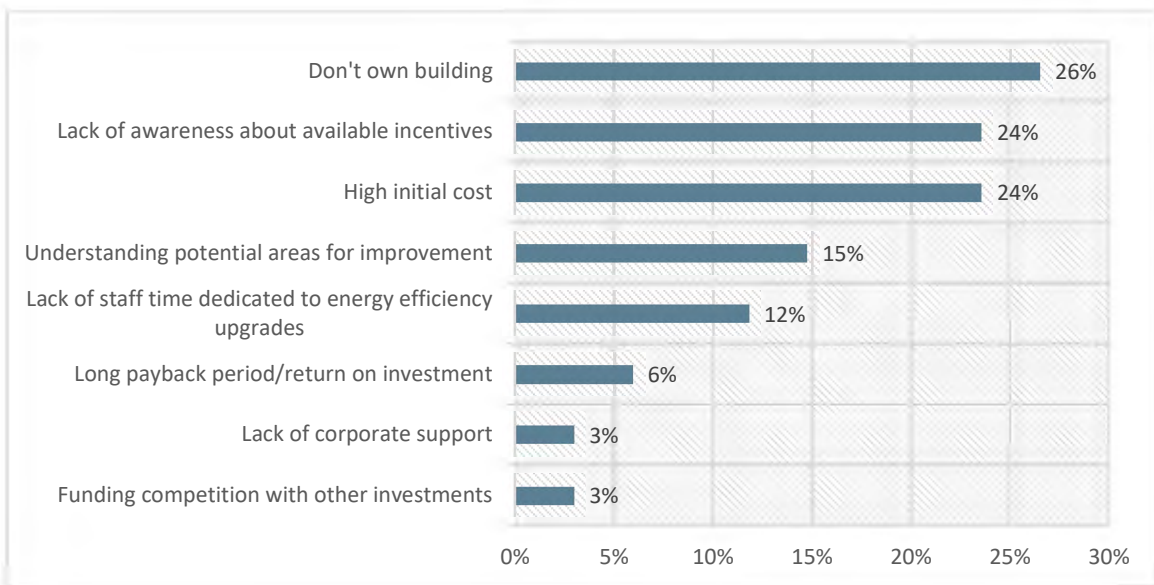


Figure 7-11 Barriers to Making Energy Efficient Equipment Upgrades (n=26)

Program Satisfaction

Respondents were satisfied with OG&E’s program (Figure 7-12). Not only were 85% (n=23) respondents satisfied or very satisfied with the overall program, but in general they were also satisfied or very satisfied with their experience with OG&E and/or CLEAResult, the equipment installed, and the quality of work.

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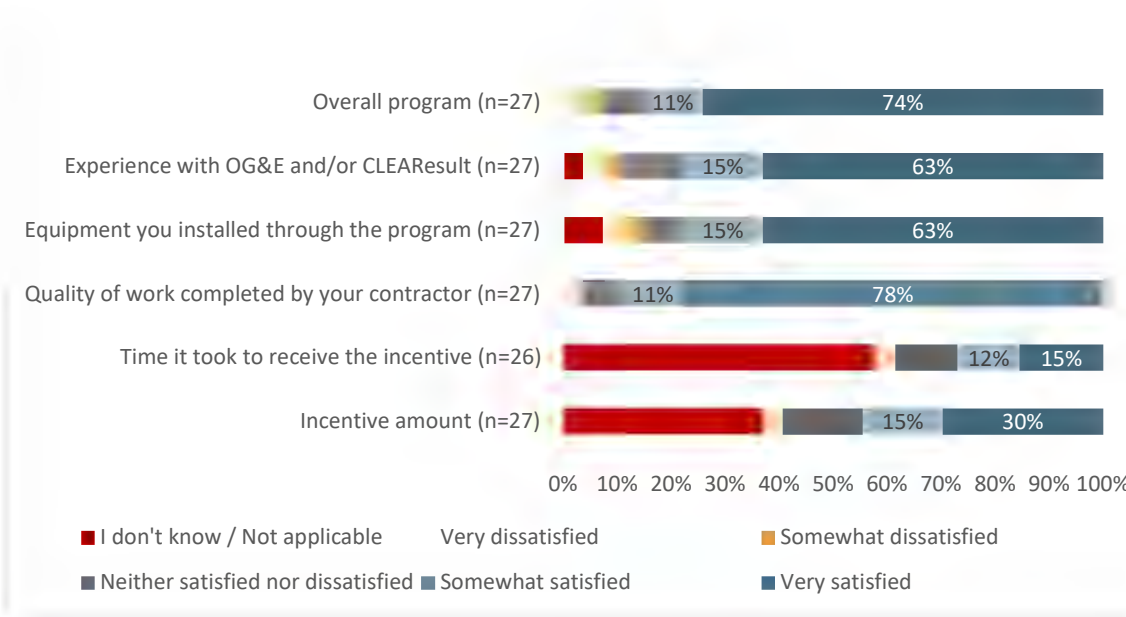


Figure 7-12 Program Satisfaction (n varies)

“Program was good for our business” *“Energy bill went down contractor did a great job”*
“The cost was correct as quoted, the contractors were able to work around our business without disruption to workflow. There was a notable difference after the lighting was installed.”

Most respondents were satisfied or very satisfied with OG&E as their utility service provider (89%, n=34). Respondents recommended OG&E provide higher incentives (n=5), improved communication (n=2), simpler applications (n=2), and faster incentive processing (n=1).

School and Government Efficiency (SAGE) Program Participant Surveys

Two participants in OG&E’s School and Government Efficiency program channel responded to a survey. Both respondents learned about the SAGE program through an OG&E representative. They also indicated in-person contact, email, bill inserts, and letters are effective ways to spread the word of about opportunities to save energy.

Both respondents were familiar with the other incentives and offerings provided by OG&E to increase energy efficiency. Both respondents reported knowing about lighting, HVAC improvements, lighting controls, and motors; one respondent knew about air compressors, variable frequency drivers, and refrigeration incentives.

Respondents were interested in OG&E’s SAGE program for a variety of reasons. Both respondents wanted to save money, save energy, and reduce maintenance costs. Other

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

motivating factors included replacing old equipment (n=1) and getting the newest technology (n=1).

Respondents reported upfront cost of equipment was the most important priority when making equipment upgrades. When asked to rate priorities on a scale of 0-10 with 0 being “not at all important” and 10 being “extremely important”, both respondents reported a 9-10 for upfront costs.

Neither respondent could speak to any potential changes in their energy bill since their participation in the program.

Program Challenges

Neither respondent reported any challenges participating in the program, however they reference high initial costs of equipment (n=1) and lack of staff time dedicated to energy efficiency upgrades as challenges for energy efficient improvements more generally. One respondent recommended OG&E offer high incentives to help offset these challenges.

Program Satisfaction

Respondents were satisfied with OG&E’s program. Both respondents were at least somewhat satisfied with the incentive amount, time it took to get the incentive, quality of work completed by contractor, and the equipment installed. Respondents were also very satisfied with their overall program experience and OG&E as their service provider.

7.10 Deviations from the AR TRM V9.0

The following are deviations from the AR TRM V9.0.

- The AR TRM V9.0 lists the EUL for HID as 16 years and this is longer than EUL of common LED fixtures (15 years) which would result in no avoided replacement cost. The Evaluators reviewed the calculation used to derive the EUL in AR TRM 9.0 and recalculated the EUL because AR TRM V9.0 used the ballast lifetime to calculate EUL. The Evaluators used the lamp life of 15,000 hours for exterior HIDs and 18,000 hours for high/low bay HIDs, divide them by weighted average of 3,205 AOH (the same AOH used to calculate EUL from AR TRM V9.0). The resulting EUL for exterior HID was 4 years and high/low bay HID was 6 years.
- Protocols for midstream lighting measures are not available in AR TRM and conventional lighting retrofit protocols cannot be used because the incentive was provided at the point of sale without a site inspection to verify preexisting fixtures. Baselines were estimated based on a market saturation study completed by the DOE. The Evaluators reviewed the proposed approach from the implementation contractor which has been approved by IEM.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.10.1 Adherence to Protocol A

The tracking system in the database conforms reasonably well to the tracking system protocol developed for use in Arkansas. While data included in the tracking system is relatively limited, it does provide the data necessary for the evaluation. The bullets below show a summary of how well the CLEAResult program tracking systems meets the components of the protocol.

- **Participating Customer Information** – Includes all information required including customer contact information, customer identifier (account number), location of the project, and date completed.
- **Measure Specific Information** – Generally includes the type of measures installed but did not include detailed information for all projects. Most of the projects listed in the database were missing detailed information, including equipment type, equipment fuel, equipment size, and equipment efficiency. The database, in general, has the fields necessary for verification of TRM compliance, but few of the fields are populated.
- **Vendor Specific Information** – The database included a “Payee”, but did not list a contact name, nor contact information for the Contractor associated with the project, if applicable. The Payee data field could be used to determine if a third-party contractor received the payment for the project, but no other identifying information was provided.
- **Program Tracking Information** – Generally all program tracking information was provided in the database. Incentive amounts and paid dates were both included in the database.
- **Program Costs** – While the main database used to track program progress did not include overall budgets or expenditures to date, these data were available from the Implementation Contractor or OG&E throughout the year.
- **Marketing and Outreach Activities** – Similar to program costs, these data were not tracked in the main program database used for EM&V purposes. Additional data was provided by the implementer or OG&E when requested.

7.10.2 Progress on PY2021 Evaluation Recommendations

OG&E responded to the Evaluators’ PY2021 recommendations. The status of these recommendations is summarized in Table 7-30.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table 7-30 Status of Recommendations from PY2021 Evaluation

PY2021 Recommendations	Status	Comment
<p>Enforce greater consistency in tracking data across program channels In PY2021, how efficient measures were reported in the tracking data changed for SBS but for none of the other channels. The new efficient measure listings for SBS are not consistent with the other channels which makes assigning measure categories more difficult and less accurate for the final program evaluation. SBS now reports fixture model numbers, rather than the traditional format (i.e., LED014-FIXT).</p>	<p>In progress</p>	<p>Column AI on the data reports contains the relative wattage for each MLI in correspondence to the entered model number. Model number is used in field tool and is cross referenced with DLC & ES websites to verify product eligibility and get more accurate wattage for calculations down to the decimal point as opposed to previous methods the use whole numbers. Reference previous conversations with OG&E Oklahoma regarding this topic as well.</p>
<p>Improve facility designations for prescriptive lighting Consistent with past years, the greatest cause of discrepancies in <i>ex ante</i> and <i>ex post</i> savings on prescriptive lighting projects is incorrect facility type identification, particularly in the SBS channel.</p>	<p>In progress</p>	<p>The program team is taking proactive measures to verify the building type the contractors are choosing based on a combination of Google map pictures, pre/post inspections, more overall training for our contractors. Will also update the Field Tool to prevent user error on entry of building type during project creation. Also making internal tracking changes that will improve efficiencies around QA/QC.</p>
<p>Small Business Solutions Measure Cost Reporting The SBS tracking data does not list out specific measure costs associated with the reported efficient equipment and count. Currently it lists out the total project cost. Listing out the total project precludes the passivity of an incremental cost audit – when this activity was performed for Large C&I Solutions in prior program years, the Evaluators often found areas of significant cost reductions (typically associated with misalignment of savings basis and cost basis).</p>	<p>Reviewed and Rejected</p>	<p>The Arkansas SBDI channel is handled the same as it is for the Oklahoma channels and no co-workers there are aware that this was ever a concern there. If this continues to be an area of concern CLEAResult will work with internal IT and CLEAResult teams seeking resolution by locating other potential SBDI programs that the company manages.</p>
<p>Small Business Marketing & Messaging Consider including marketing messages to small businesses about how SBS can reduce their stress or concerns on their plate, reduce operating costs, etc. and messages should also highlight the ease of turnkey services. Some businesses may have deprioritized upgrades and may need to be convinced that upgrading their equipment will contribute to improving other, more pressing challenges.</p>	<p>Completed</p>	<p>The team reaches out to customers that did not move forward on proposals to find trends that we may utilize to further train and support the contractors. Getting the OG&E website up to date would also provide legitimacy to the TAs.</p>

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

7.11 Conclusions

Continuous Energy Improvement and Retrocommissioning have significantly increased their contribution to program-level savings

In PY2020, CEI and RCx totaled 245,803 gross kWh savings (less than 1% of total CEEP gross kWh). In PY2021, this increased to 1,151,862 gross kWh (11% of total CEEP gross kWh). This increased again in PY2022, where CEI and RCx totaled 4,472,160 kWh (21% of total gross kWh).

Custom projects are the large drivers of program savings.

Including RCx, CEI, and custom projects within Large C&I and SAGE, custom projects comprised 61% of CEEP PY2022 gross kWh savings.

In PY2022, only 38% of CEEP net savings were from lighting projects. This marks significant progress for the program in diversification of end-uses reached.

Cost-effectiveness has declined.

The program TRC has declined from 3.02 to 1.56. This is attributable to increased project costs, as a greater share of the program impacts are coming from custom and non-lighting measures.

7.12 Recommendations

Improve facility designations for prescriptive lighting

Consistent with past years, the greatest cause of discrepancies in *ex ante* and *ex post* savings on prescriptive lighting projects is incorrect facility type identification, particularly in the SBS channel. There is consistently projects claimed as a facility type of “Retail: other” which is not a TRM facility type.

Appendix A. Portfolio Cost-Effectiveness

Overview

The Evaluators estimated the cost-effectiveness for the overall energy efficiency and demand response portfolio of programs, based on PY2022 costs and savings estimates provided by OG&E and their third-party implementers, AM Conservation and CLEAResult. This appendix provides the cost-effectiveness results, as well as a brief overview of the approach taken by the Evaluators. The portfolio and energy efficiency programs pass all the cost-effectiveness tests except the RIM test. The table below presents the cost-effectiveness results for the PY2022 portfolio.

Table A-1 PY2022 Cost-effectiveness Results

Program	TRC	UCT	RIM	PCT	TRC Net Benefits
HEEP	2.42	2.04	0.46	9.20	\$ 1,464,331
CWA	4.65	1.79	0.52	10.47	\$ 7,969,374
CEEP	1.56	2.47	0.50	3.90	\$ 3,700,770
EEA	0.00	0.00	0.00	0.00	\$ (22,205)
Total	2.33	2.19	0.50	5.56	\$ 13,112,270

Approach

The California Standard Practice Model was used as a guideline for the calculations, along with guidance from the AR TRM V9.0. The cost-effectiveness analysis methods that were used in this analysis are among the set of standard methods used in this industry and include the Utility Cost Test (UCT)⁴⁶, Total Resource Cost Test (TRC), Ratepayer Impact Measure Test (RIM), and Participant Cost Test (PCT). All tests weigh monetized benefits against costs. These monetized amounts are presented as net present value (NPV) evaluated over the lifespan of the measure. The benefits and costs differ for each test based on the perspective of the test. The definitions below are taken from the California Standard Practice Manual (CSPM).

The TRC measures the net costs of a demand-side management program as a resource option based on the total costs of the program, including both the participants' and the utility's costs.

⁴⁶ The UCT is also referred to as the Program Administrator Cost Test (PACT).

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The UCT measures the net costs of a demand-side management program as a resource option based on the costs incurred by the program administrator (including incentive costs) and excluding any net costs incurred by the participant. The benefits are similar to the TRC benefits. Costs are defined more narrowly.

The PCT is the measure of the quantifiable benefits and costs to the customer due to participation in a program. Since many customers do not base their decision to participate in a program entirely on quantifiable variables, this test cannot be a complete measure of the benefits and costs of a program to a customer.

The RIM test measures what happens to customer bills or rates due to changes in utility revenues and operating costs caused by the program. Rates will go down if the change in revenues from the program is greater than the change in utility costs. Conversely, rates or bills would go up if revenues collected after program implementation is less than the total costs incurred by the utility in implementing the program. This test indicates the direction and magnitude of the expected change in customer bills or rate levels.

A common misperception is that there is a single best perspective for evaluation of cost-effectiveness. Each test is useful and accurate, but the results of each test are intended to answer a different set of questions. The questions to be addressed by each cost test are shown in the table below.⁴⁷

⁴⁷ <http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf>

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table A-2 Questions Addressed by the Various Cost Tests

Cost Test	Questions Addressed
Participant Cost Test (PCT)	<ul style="list-style-type: none"> ■ Is it worth it to the customer to install energy efficiency?
	<ul style="list-style-type: none"> ■ Is it likely that the customer wants to participate in a utility program that promotes energy efficiency?
Ratepayer Impact Measure (RIM)	<ul style="list-style-type: none"> ■ What is the impact of the energy efficiency project on the utility’s operating margin?
	<ul style="list-style-type: none"> ■ Would the project require an increase in rates to reach the same operating margin?
Utility Cost Test (UCT)	<ul style="list-style-type: none"> ■ Do total utility costs increase or decrease?
	<ul style="list-style-type: none"> ■ What is the change in total customer bills required to keep the utility whole?
Total Resource Cost Test (TRC)	<ul style="list-style-type: none"> ■ What is the regional benefit of the energy efficiency project (including the net costs and benefits to the utility and its customers)?
	<ul style="list-style-type: none"> ■ Are all of the benefits greater than all of the costs (regardless of who pays the costs and who receives the benefits)?
	<ul style="list-style-type: none"> ■ Is more or less money required by the region to pay for energy needs?

Overall, the results of all four cost-effectiveness tests provide a more comprehensive picture than the use of any one test alone. The TRC cost test addresses whether energy efficiency is cost-effective overall. The PCT, UCT, and RIM address whether the selection of measures and design of the program are balanced from the perspective of the participants, utilities, and non-participants. The scope of the benefit and cost components included in each test are summarized in the table below.⁴⁸

⁴⁸ Ibid.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table A-3 Benefits and Costs Included in each Cost-Effectiveness Test

Test	Benefits	Costs
PCT (Benefits and costs from the perspective of the customer installing the measure)	<ul style="list-style-type: none"> ■ Incentive payments ■ Bill Savings ■ Applicable tax credits or incentives 	<ul style="list-style-type: none"> ■ Incremental equipment costs ■ Incremental installation costs
UCT (Perspective of utility, government agency, or third party implementing the program)	<ul style="list-style-type: none"> ■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution 	<ul style="list-style-type: none"> ■ Program overhead costs ■ Utility/program administrator incentive costs
TRC (Benefits and costs from the perspective of all utility customers in the utility service territory)	<ul style="list-style-type: none"> ■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution ■ Additional resource savings ■ Monetized non-energy benefits as outlined by the TRM version 8.0 	<ul style="list-style-type: none"> ■ Program overhead costs ■ Program installation costs ■ Incremental measure costs
RIM (Impact of efficiency measure on non-participating ratepayers overall)	<ul style="list-style-type: none"> ■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution 	<ul style="list-style-type: none"> ■ Program overhead costs ■ Lost revenue due to reduced energy bills ■ Utility/program administrator installation costs

Non-Energy Benefits

In Arkansas, the IEM, in collaboration with OG&E and the other investor-owned utilities (IOUs) and other stakeholders through the Parties Working Collaboratively (PWC), have developed a uniform set of benefits to be associated with measures implemented in the portfolio. These Non-Energy Benefits (NEBs) are an addition to programs under the authorization of Arkansas TRM V9.0. Volume 1 - Protocol L. After reviewing the guidance from the PWC, the Arkansas Public Service Commission (Commission) issued Order No. 30 on December 10, 2015, which

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

provided direction and guidance regarding the inclusion of NEBs in the Technical Reference Forum, as follows.⁴⁹

“The Commission therefore orders and directs that the following three categories of NEBs be consistently and transparently accounted for in all applications of the TRC test, as it is applied to measures, programs, and portfolios:

- o benefits of electricity, natural gas, and propane energy savings (i.e., other fuels);*
- o benefits of public water and wastewater savings; and*
- o benefits of avoided and deferred equipment replacement costs as conditioned herein.”*

In response to the Commission Order for NEBs outlined above, Protocol L was added to the Arkansas TRM in version 6.0, which encompasses NEBs:

- Protocol L1: Non-Energy Benefits for Electricity, Natural gas, and Liquid Propane (“other fuels”)
- Protocol L2: Non-Energy Benefits for Water Savings
- Protocol L3: Non-Energy Benefits of Avoided and Deferred Equipment Replacement Costs.

This recommended approach has been developed jointly by the IEM and the PWC for each category as directed by the Commission. Below is a summary of the NEBs that were calculated in each program in PY2022.

- **HEEP:** this program captured propane (LivingWise® Schools Outreach), natural gas (Residential Solutions, Consumer Products and LivingWise® Schools Outreach), water (Residential Solutions and LivingWise® Schools Outreach) and ARCs (Residential Solutions and Consumer Products).
- **CWA:** this program captured natural gas, propane, water and ARCs.
- **CEEP:** this program captured natural gas (C&I Solutions, SAGE, Midstream and Small Business Solutions) and ARCs (C&I Solutions, SAGE, Midstream and Small Business Solutions).

Methodologies and measure-level results for each NEB are found in each of the program chapters within this report.

⁴⁹ Arkansas TRM version 8.2, Protocol L.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Economic Inputs for Cost Effectiveness Analysis

The Evaluators used the economic inputs provided by OG&E for the cost benefit analysis; this included avoided costs that were estimated using the Real Economic Carrying Charge (RECC) approach.

Marginal line losses, provided by OG&E, were utilized in the PY2022 evaluation.

The rates utilized for avoided water and avoided propane use were from Protocol L in the Arkansas TRM V9.0.

The Evaluators used the discount rates provided by OG&E to perform the cost benefit analysis, and these values align with the rates used in the PY2020-2022 Plan. The Weighted Average Cost of Capital (WACC) was utilized for the TRC, UCT and RIM tests.

Table A-4 outlines the economic inputs used in the cost benefit analysis.

Table A-4 PY2022 Economic Inputs for Cost Effectiveness Analysis

Discount Rates	
Utility (TRC)	5.42%
Utility (UCT)	5.42%
Utility (RIM)	5.42%
Societal (SCT)	1.29%
Participant (PCT)	6.04%
Marginal Line Losses	
Line Losses (demand)	7.83%
Line Losses (energy)	7.25%
Line Losses (therm)	2.67%
Escalation rate	2.20%
Avoided Costs	
Avoided Energy (\$/kWh)	\$ 0.03
Avoided Demand (\$/kW)	\$ 97
Avoided Natural Gas (\$/therm)	\$ 0.530
Avoided Water (\$/gallon)	\$ 0.0077
Avoided Propane (\$/gallon)	\$ 2.42

Results

The tables below outline the results for each test, for both the programs and the portfolio as a whole. Summations may differ due to rounding.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Table A-5 PY2022 Cost-Effectiveness Results by Program

Program	TRC	UCT	RIM	PCT
HEEP	2.42	2.04	0.46	9.20
CWA	4.65	1.79	0.52	10.47
CEEP	1.56	2.47	0.50	3.90
EEA	0.00	0.00	0.00	0.00
Total	2.33	2.19	0.50	5.56

Table A-6 PY2022 Cost-Effectiveness Benefits by Program

Program	TRC Benefits	UCT Benefits	RIM Benefits	PCT Benefits
HEEP	\$ 2,495,076	\$ 2,158,809	\$ 2,158,809	\$ 4,279,894
CWA	\$ 10,153,402	\$ 4,022,384	\$ 4,022,384	\$ 12,660,463
CEEP	\$ 10,342,062	\$ 10,074,377	\$ 10,074,377	\$ 17,862,480
EEA	\$ -	\$ -	\$ -	\$ -
Total	\$ 22,990,541	\$ 16,255,569	\$ 16,255,569	\$ 34,802,837

Table A-7 PY2022 Cost-Effectiveness Costs by Program

Program	TRC Costs	UCT Costs	RIM Costs	PCT Costs
HEEP	\$ 1,030,745	\$ 1,058,494	\$ 4,657,255	\$ 465,256
CWA	\$ 2,184,028	\$ 2,248,114	\$ 7,718,441	\$ 1,209,536
CEEP	\$ 6,641,292	\$ 4,078,666	\$ 20,350,224	\$ 4,581,284
EEA	\$ 22,205	\$ 22,205	\$ 22,205	\$ -
Total	\$ 9,878,271	\$ 7,407,480	\$ 32,748,125	\$ 6,256,076

Table A-8 PY2022 Cost-Effectiveness Net Benefits by Program

Program	TRC Net Benefits	UCT Net Benefits	RIM Net Benefits	PCT Net Benefits
HEEP	\$ 1,464,331	\$ 1,100,315	\$ (2,498,446)	\$ 3,814,638
CWA	\$ 7,969,374	\$ 1,774,269	\$ (3,696,057)	\$ 11,450,927
CEEP	\$ 3,700,770	\$ 5,995,711	\$ (10,275,847)	\$ 13,281,196
EEA	\$ (22,205)	\$ (22,205)	\$ (22,205)	\$ -
Total	\$ 13,112,270	\$ 8,848,090	\$ (16,492,556)	\$ 28,546,761

Appendix B. CEEP Custom Project Site Reports

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

ADM Site Report: EA-0000692418**Executive Summary**

This facility is a large office building that retrofitted interior lighting fixtures. The facility removed 1,355 4' 2L T8 fixtures, 38 2L 13W CFL Twin fixtures, 731 4'3L T8 fixtures, 37 2L 28W CFL Twin fixtures, 4 2L 18W CFL Twin fixtures, and 16 1L 26W CFL Twin fixtures. These were replaced with 1,746 39W LED fixtures, 503 29W LED fixtures, 12 31W LED fixtures, 100 18W LED fixtures, and 39 27W LED fixtures. The space has standard cooling and resistance heating throughout the facility. The kWh realization rate for this project is 79% and the peak coincidence kW realization rate 100%.

Project Description

This project consisted of the following retrofits:

- (2) 31W LED fixtures replacing (9) 4' 2L T8 fixtures
- (8) 27W LED fixtures replacing (38) 2L 13W CFL Twin fixtures
- (28) 18W LED fixtures replacing (38) 4' 2L T8 fixtures
- (350) 39W LED fixtures replacing (291) 4' 2L T8 fixtures
- (19) 27W LED fixtures replacing (4) 4' 2L T8 fixtures
- (91) 29W LED fixtures replacing (138) 4' 3L T8 fixtures
- (2) 31W LED fixtures replacing (4) 4' 2L T8 fixtures
- (14) 18W LED fixtures replacing (12) 4' 2L T8 fixtures
- (357) 39W LED fixtures replacing (291) 4' 2L T8 fixtures
- (90) 29W LED fixtures replacing (138) 4' 3L T8 fixtures
- (14) 18W LED fixtures replacing (12) 4' 2L T8 fixtures
- (4) 27W LED fixtures replacing (4) 4' 2L T8 fixtures
- (1) 31W LED fixtures replacing (4) 4' 2L T8 fixtures
- (91) 29W LED fixtures replacing (138) 4' 3L T8 fixtures
- (14) 18W LED fixtures replacing (12) 4' 2L T8 fixtures
- (2) 31W LED fixtures replacing (4) 4' 2L T8 fixtures
- (4) 27W LED fixtures replacing (4) 4' 2L T8 fixtures
- (369) 39W LED fixtures replacing (278) 4' 2L T8 fixtures
- (336) 39W LED fixtures replacing (198) 4' 3L T8 fixtures
- (10) 18W LED fixtures replacing (12) 4' 2L T8 fixtures
- (4) 27W LED fixtures replacing (4) 4' 2L T8 fixtures
- (14) 18W LED fixtures replacing (37) 2L 28W CFL Twin fixtures
- (6) 18W LED fixtures replacing (4) 2L 18W CFL Twin fixtures
- (5) 31W LED fixtures replacing (16) 1L 26W CFL Twin fixtures
- (130) 29W LED fixtures replacing (141) 4' 2L T8 fixtures

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Measurement and Verification Effort

ADM performed a site visit to verify the installation of lighting fixtures and re-lamping. During the site visit the lamp quantity, lamp type, and space type were verified to be accurate versus the ex-ante expectations. Savings are calculated using the lamp type, quantity and location using the approach from the AR TRM v9.0 Section 3.6.3 Lighting efficiency. The following equations were used to calculate the annual energy savings from the retrofit:

$$kWh_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times IEF_E$$

$$kW_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times CF \times IEF_E$$

$$therms_{penalty} = kWh_{savings} \times IEF_G$$

Where:

- kWh_{savings}* = Annual energy savings
- kW_{savings}* = Peak energy demand reduction
- N_{fixt}* = Quantity of fixtures either being removed or installed
- W_{fixt}* = Rated wattage of the fixture being removed or installed
- AOH* = Annual operating hours for specified building type
- IEF_E* = Interactive effects factor for energy savings
- IEF_D* = Interactive effects factor for demand savings
- IEF_G* = Interactive effects factor for gas heating savings
- CF* = Peak demand coincidence factor
- pre* = Denotes pre-installation state
- post* = Denotes post-installation state

The tables below detail the inputs to the calculations for annual kWh savings and peak kW reductions based on deemed TRM values and a combination of site visit details and initial application.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Annual kWh Savings

Measure	Quantity (Fixtures)		Wattage		Hours	IEFe	Expected kWh Savings	Realized kWh Savings	Realization Rate	EUL	Lifetime Savings
	Old	New	Old	New							
F42LL to LED039-FIXT	147	200	60	39	3,227	0.87	11,819	9,433	79.8%	15	141,498
F42LL to LED039-FIXT	84	134	60	39	3,227	0.87	4,861	3,879	79.8%	15	58,191
F43LL to LED029-FIXT	119	101	93	29	3,227	0.87	28,625	22,847	79.8%	15	342,710
F42LL to LED031-FIXT	9	2	60	31	3,227	0.87	1,646	1,342	81.5%	15	20,130
CFT13/2-L to LED027-FIXT	38	8	28	27	3,227	0.87	2,983	2,381	79.8%	15	35,711
F42LL to LED018-FIXT	38	28	60	18	3,227	0.87	6,739	4,986	74.0%	15	74,792
F42LL to LED039-FIXT	291	350	60	39	3,227	0.87	27,805	22,193	79.8%	15	332,898
F42LL to LED027-FIXT	4	19	60	27	3,227	0.87	-960	-766	79.8%	15	-11,497
F43LL to LED029-FIXT	138	91	93	29	3,227	0.87	35,860	28,622	79.8%	15	429,335
F42LL to LED031-FIXT	4	2	60	31	3,227	0.87	667	552	82.8%	15	8,279
F42LL to LED018-FIXT	12	14	60	18	3,227	0.87	1,892	1,314	69.5%	15	19,709
F42LL to LED039-FIXT	291	357	60	39	3,227	0.87	27,133	21,657	79.8%	15	324,851
F43LL to LED029-FIXT	138	90	93	29	3,227	0.87	35,962	28,704	79.8%	15	430,557
F42LL to LED018-FIXT	12	14	60	18	3,227	0.87	1,892	1,314	69.5%	15	19,709
F42LL to LED027-FIXT	4	4	60	27	3,227	0.87	464	371	80.0%	15	5,559
F42LL to LED031-FIXT	4	1	60	31	3,227	0.87	756	613	81.1%	15	9,193
F43LL to LED029-FIXT	138	91	93	29	3,227	0.87	35,860	28,622	79.8%	15	429,335
F42LL to LED018-FIXT	12	14	60	18	3,227	0.87	1,892	1,314	69.5%	15	19,709
F42LL to LED031-FIXT	4	2	60	31	3,227	0.87	591	500	84.6%	15	7,496
F42LL to LED027-FIXT	4	4	60	27	3,227	0.87	464	371	80.0%	15	5,559
F42LL to LED039-FIXT	278	369	60	39	3,227	0.87	23,237	18,547	79.8%	15	278,207
F43LL to LED039-FIXT	198	336	93	39	3,227	0.87	32,506	25,945	79.8%	15	389,169
F42LL to LED018-FIXT	12	10	60	18	3,227	0.87	2,075	1,516	73.1%	15	22,741
F42LL to LED027-FIXT	4	4	60	27	3,227	0.87	464	371	80.0%	15	5,559
CFT28/2 to LED018-FIXT	37	14	66	18	3,227	0.87	7,949	6,148	77.3%	15	92,226
CFT18/2 to LED018-FIXT	4	6	38	18	3,227	0.87	260	124	47.7%	15	1,853
CFT26/1 to LED031-FIXT	16	5	32	31	3,227	0.87	1,358	1,133	83.4%	15	16,992
F42LL to LED029-FIXT	141	130	60	29	3,227	0.87	16,497	13,167	79.8%	15	197,507
Total							311,297	247,198	79.4%	15	3,707,976

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Peak kW Reductions

Measure	Quantity (Fixtures)		Wattage		CF	IEFd	Expected Peak kW Reductions	Realized Peak kW Reductions	Realization Rate
	Old	New	Old	New					
F42LL to LED039-FIXT	147	200	60	39	0.54	1.20	3.10	3.09	100%
F42LL to LED039-FIXT	84	134	60	39	0.54	1.20	1.51	1.51	100%
F43LL to LED029-FIXT	119	101	93	29	0.54	1.20	5.27	5.27	100%
F42LL to LED031-FIXT	9	2	60	31	0.54	1.20	0.30	0.31	103%
CFT13/2-L to LED027-FIXT	38	8	28	27	0.54	1.20	0.55	0.55	100%
F42LL to LED018-FIXT	38	28	60	18	0.54	1.20	1.24	1.15	93%
F42LL to LED039-FIXT	291	350	60	39	0.54	1.20	6.73	6.73	100%
F42LL to LED027-FIXT	4	19	60	27	0.54	1.20	-0.18	-0.18	100%
F43LL to LED029-FIXT	138	91	93	29	0.54	1.20	6.61	6.61	100%
F42LL to LED031-FIXT	4	2	60	31	0.54	1.20	0.13	0.13	100%
F42LL to LED018-FIXT	12	14	60	18	0.54	1.20	0.35	0.30	86%
F42LL to LED039-FIXT	291	357	60	39	0.54	1.20	6.64	6.64	100%
F43LL to LED029-FIXT	138	90	93	29	0.54	1.20	6.63	6.63	100%
F42LL to LED018-FIXT	12	14	60	18	0.54	1.20	0.35	0.30	86%
F42LL to LED027-FIXT	4	4	60	27	0.54	1.20	0.09	0.09	100%
F42LL to LED031-FIXT	4	1	60	31	0.54	1.20	0.14	0.15	107%
F43LL to LED029-FIXT	138	91	93	29	0.54	1.20	6.61	6.61	100%
F42LL to LED018-FIXT	12	14	60	18	0.54	1.20	0.35	0.30	86%
F42LL to LED031-FIXT	4	2	60	31	0.54	1.20	0.11	0.12	109%
F42LL to LED027-FIXT	4	4	60	27	0.54	1.20	0.09	0.09	100%
F42LL to LED039-FIXT	278	369	60	39	0.54	1.20	5.97	5.97	100%
F43LL to LED039-FIXT	198	336	93	39	0.54	1.20	7.53	7.53	100%
F42LL to LED018-FIXT	12	10	60	18	0.54	1.20	0.38	0.35	92%
F42LL to LED027-FIXT	4	4	60	27	0.54	1.20	0.09	0.09	100%
CFT28/2 to LED018-FIXT	37	14	66	18	0.54	1.20	1.46	1.42	97%
CFT18/2 to LED018-FIXT	4	6	38	18	0.54	1.20	0.05	0.03	60%
CFT26/1 to LED031-FIXT	16	5	32	31	0.54	1.20	0.27	0.28	104%
F42LL to LED029-FIXT	141	130	60	29	0.54	1.20	3.04	3.04	100%
Total							65.39	65.09	100%

Results

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	65.39	65.09	100%
Annual kWh:	311,297	247,198	79%

The kWh realization rate for this project is 79% and the peak coincidence kW realization rate is 100%. There were three discrepancies leading to realization rates of less than 100%. During the desk review, it was found using the invoice that two out of the five fixture types used as retrofit equipment for this project incorporated inaccurate fixture codes based off incorrectly claimed wattages. Claimed wattages were compared against provided spec sheets and DLC listed wattages, the efficient fixture wattages in the ex-post analysis were updated to reflect the wattage listed on the spec sheets and the DLC listings. The third discrepancy was found during the site visit, where the heating type for the building was determined to be electrical heating rather than gas. These changes to the ex-post calculator resulted in the stated realization rates.

The ex-post calculator used the fixture type and quantity provided, which were verified during the site visit, and the prescriptive TRM values for the AOH, IEF_E, IEF_D, and CF. The prescriptive building type used was "Office" for all spaces because it best fits the space description where the lighting retrofit took place.

The following table is a list of changes between the ex-ante and ex-post calculators:

List of Discrepancies			
Variable	Ex-Ante	Ex-Post	Reason
Heating Type	Gas	Resistance	Site visit reported electric heat not gas
Fixture Code	LED036-FIXT	LED031-FIXT	Ex post used wattage based on DLC listing
Fixture Code	LED013-FIXT	LED018-FIXT	Ex post used wattage based on DLC listing

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

ADM Site Report: EA-0000716589**Executive Summary**

This facility is a stadium that has received lighting retrofits throughout the stadium and the exterior of the arena office. The space is outdoors and unconditioned. The kWh realization rate for this project is 130% and the peak coincidence kW realization rate 67%.

Project Description

This project consisted of the following retrofits:

- (4) 149W LED - Non-Int. Ballast fixtures replacing (5) 500W 1L Halogen fixtures
- (2) 149W LED - Non-Int. Ballast fixtures replacing (2) 300W 1L Halogen fixtures
- (1) 149W LED - Non-Int. Ballast fixtures replacing (1) 300W 1L Halogen fixtures
- (2) 149W LED - Non-Int. Ballast fixtures replacing (2) 400W MH fixtures
- (2) Removed fixtures replacing (2) 250W MH fixtures
- (28) 39W LED - Non-Int. Ballast fixtures replacing (28) 300W Inc. fixtures
- (14) 9W LED w/ integrated ballast fixtures replacing (14) 23W CFL fixtures
- (20) 36W LED - Non-Int. Ballast fixtures replacing (10) 8' 2L T12ES fixtures
- (14) 9W LED w/ integrated ballast fixtures replacing (14) 28W CFL fixtures
- (2) 40W LED - Non-Int. Ballast fixtures replacing (2) 4' 4L T8 fixtures
- (9) Removed fixtures replacing (9) 60W Inc. fixtures
- (8) 137W LED - Non-Int. Ballast fixtures replacing (8) 400W MH fixtures
- (2) 137W LED - Non-Int. Ballast fixtures replacing (2) 1500W MH fixtures
- (4) 149W LED - Non-Int. Ballast fixtures replacing (5) 400W MH fixtures
- (2) 101W LED - Non-Int. Ballast fixtures replacing (2) 500W 1L Halogen fixtures
- (7) 9W LED w/ integrated ballast fixtures replacing (7) 60W Inc. fixtures
- (1) 40W LED - Non-Int. Ballast fixtures replacing (1) 4' 2L T12ES fixtures
- (1) Removed fixtures replacing (1) 500W 1L Halogen fixtures
- (1) Removed fixtures replacing (1) 500W 1L Halogen fixtures
- (3) 30W LED - Non-Int. Ballast fixtures replacing (3) 300W Inc. fixtures

Measurement and Verification Effort

ADM performed a desk review to verify the installation of lighting fixtures and re-lamping. During the desk review the lamp quantity, lamp type, and space type were verified to be accurate versus the ex-ante expectations. Savings are calculated using the lamp type, quantity and location using the approach from the AR TRM v9.0 Section 3.6.3 Lighting efficiency. The following equations were used to calculate the annual energy savings from the retrofit:

$$kWh_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times IEF_E$$

$$kW_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times CF \times IEF_E$$

$$therms_{penalty} = kWh_{savings} \times IEF_G$$

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Where:

$kWh_{savings}$	= Annual energy savings
$kW_{savings}$	= Peak energy demand reduction
N_{fixt}	= Quantity of fixtures either being removed or installed
W_{fixt}	= Rated wattage of the fixture being removed or installed
AOH	= Annual operating hours for specified building type
IEF_E	= Interactive effects factor for energy savings
IEF_D	= Interactive effects factor for demand savings
IEF_G	= Interactive effects factor for gas heating savings
CF	= Peak demand coincidence factor
pre	= Denotes pre-installation state
post	= Denotes post-installation state

The tables below detail the inputs to the calculations for annual kWh savings and peak kW reductions based on deemed TRM values and a combination of site visit details and initial application.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Annual kWh Savings

Measure	Quantity (Fixtures)		Wattage		Hours	IEFe	Expected kWh Savings	Realized kWh Savings	Realization Rate	EUL	Lifetime Savings
	Old	New	Old	New							
H500/1 to LED149-FIXT	5	4	500	149	3,996	1.00	3,800	7,608	200%	15	114,126
H300/1 to LED149-FIXT	2	2	300	149	3,996	1.00	603	1,207	200%	15	18,102
H300/1 to LED149-FIXT	1	1	300	149	3,996	1.00	301	603	200%	15	9,051
MH400/1 to LED149-FIXT	2	2	453	149	3,996	1.00	1,214	2,430	200%	15	36,444
MH250/1 to Removed	2	2	288	0	3,996	1.00	1,150	2,302	200%	15	34,526
I300/1 to LED039-FIXT	28	28	300	39	1,928	1.00	14,587	14,090	97%	15	211,347
CF23/1-SCRW to LED009-SCRW	14	14	23	9	1,928	1.00	391	378	97%	15	5,668
F82EE to LED036-FIXT	10	20	110	36	1,928	1.00	758	733	97%	15	10,990
CF28/1-SCRW to LED009-SCRW	14	14	28	9	1,928	1.00	531	513	97%	15	7,693
F44ILL to LED040-FIXT	2	2	112	40	1,928	1.00	287	278	97%	15	4,164
I60/1 to Removed	9	9	43	0	1,928	1.00	772	746	97%	15	11,192
MH400/1 to LED137-FIXT	8	8	453	137	1,928	1.00	5,046	4,874	97%	15	73,110
MH1500/1 to LED137-FIXT	2	2	1,605	137	1,928	1.00	5,860	5,661	97%	15	84,909
MH400/1 to LED149-FIXT	5	4	453	149	3,996	1.00	3,331	6,669	200%	15	100,040
H500/1 to LED101-FIXT	2	2	500	101	3,996	1.00	1,593	3,189	200%	15	47,832
I60/1 to LED009-SCRW	7	7	43	9	3,996	1.00	475	951	200%	15	14,266
F42EE to LED040-FIXT	1	1	58	40	3,996	1.00	36	72	200%	15	1,079
H500/1 to Removed	1	1	500	0	3,996	1.00	998	1,998	200%	15	29,970
H500/1 to Removed	1	1	500	0	3,996	1.00	998	1,998	200%	15	29,970
I300/1 to LED030-FIXT	3	3	300	30	1,928	1.00	1,617	1,562	97%	15	23,425
Total							44,348	57,860	130%	15	867,903

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Peak kW Reductions

Measure	Quantity (Fixtures)		Wattage		CF	IEFd	Expected Peak kW Reductions	Realized Peak kW Reductions	Realization Rate
	Old	New	Old	New					
H500/1 to LED149-FIXT	5	4	500	149	0.00	1.00	1.07	0.00	0.0%
H300/1 to LED149-FIXT	2	2	300	149	0.00	1.00	0.17	0.00	0.0%
H300/1 to LED149-FIXT	1	1	300	149	0.00	1.00	0.09	0.00	0.0%
MH400/1 to LED149-FIXT	2	2	453	149	0.00	1.00	0.34	0.00	0.0%
MH250/1 to Removed	2	2	288	0	0.00	1.00	0.32	0.00	0.0%
I300/1 to LED039-FIXT	28	28	300	39	0.56	1.00	4.09	4.09	100.0%
CF23/1-SCRW to LED009-SCRW	14	14	23	9	0.56	1.00	0.11	0.11	100.0%
F82EE to LED036-FIXT	10	20	110	36	0.56	1.00	0.21	0.21	100.0%
CF28/1-SCRW to LED009-SCRW	14	14	28	9	0.56	1.00	0.15	0.15	100.0%
F44ILL to LED040-FIXT	2	2	112	40	0.56	1.00	0.08	0.08	100.0%
I60/1 to Removed	9	9	43	0	0.56	1.00	0.22	0.22	100.0%
MH400/1 to LED137-FIXT	8	8	453	137	0.56	1.00	1.42	1.42	100.0%
MH1500/1 to LED137-FIXT	2	2	5	137	0.56	1.00	1.64	1.64	100.0%
MH400/1 to LED149-FIXT	5	4	453	149	0.00	1.00	0.94	0.00	0.0%
H500/1 to LED101-FIXT	2	2	500	101	0.00	1.00	0.45	0.00	0.0%
I60/1 to LED009-SCRW	7	7	43	9	0.00	1.00	0.13	0.00	0.0%
F42EE to LED040-FIXT	1	1	58	40	0.00	1.00	0.01	0.00	0.0%
H500/1 to Removed	1	1	500	0	0.00	1.00	0.28	0.00	0.0%
H500/1 to Removed	1	1	500	0	0.00	1.00	0.28	0.00	0.0%
I300/1 to LED030-FIXT	3	3	300	30	0.56	1.00	0.45	0.45	100.0%
Total							12.44	8.37	67.3%

Results

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	12.44	8.37	67.3%
Annual kWh:	44,348	57,860	130.5%

The kWh realization rate for this project is 130% and the peak coincidence kW realization rate is 67%. The ex-post calculator used the fixture type and quantity provided, which were verified during the desk review, and the prescriptive TRM values for the AOH, IEF_E, IEF_D, and CF. The building type used was “Outdoor” & “Custom” for all spaces because it best fits the space description where the lighting retrofit took place.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

ADM Site Report: EA-0000710288**Executive Summary**

This project is a small retail facility that has completed a lighting retrofit. The facility removed 10 112 W lamps and 2 29 W lamps and replaced them with 22 10 W LED lamps. The space has standard cooling and gas heating throughout the facility. The kWh realization rate for this project is 87% and the peak coincidence kW realization rate 100%.

Project Description

This project consisted of the following retrofits:

- (18) 10W LED - Non-Int. Ballast fixtures replacing (9) 4' 4L T8 fixtures
- (2) 10W LED - Non-Int. Ballast fixtures replacing (2) 40W Inc. fixtures
- (2) 10W LED w/ integrated ballast fixtures replacing (1) 4' 4L T8 fixtures

Measurement and Verification Effort

ADM performed a desk review to verify the installation of lighting fixtures and re-lamping. During the desk review the lamp quantity, lamp type, and space type were verified to be accurate versus the ex-ante expectations. Savings are calculated using the lamp type, quantity and location using the approach from the AR TRM v9.0 Section 3.6.3 Lighting efficiency. The following equations were used to calculate the annual energy savings from the retrofit:

$$kWh_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times IEF_E$$

$$kW_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times CF \times IEF_E$$

$$therms_{penalty} = kWh_{savings} \times IEF_G$$

Where:

$kWh_{savings}$	= Annual energy savings
$kW_{savings}$	= Peak energy demand reduction
N_{fixt}	= Quantity of fixtures either being removed or installed
W_{fixt}	= Rated wattage of the fixture being removed or installed
AOH	= Annual operating hours for specified building type
IEF_E	= Interactive effects factor for energy savings
IEF_D	= Interactive effects factor for demand savings
IEF_G	= Interactive effects factor for gas heating savings
CF	= Peak demand coincidence factor

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

pre = Denotes pre-installation state

post = Denotes post-installation state

The tables below detail the inputs to the calculations for annual kWh savings and peak kW reductions based on deemed TRM values and a combination of site visit details and initial application.

Annual kWh Savings

Measure	Quantity (Fixtures)		Wattage		Hours	IEFe	Expected kWh Savings	Realized kWh Savings	Realization Rate	EUL	Lifetime Savings
	Old	New	Old	New							
F44ILL to LED010-FIXT	9	18	112	10	3,406	1.09	-	3,074		15	46,110
I40/1 to LED010-FIXT	2	2	29	10	3,406	1.09	-	141		15	2,116
F44ILL to LED010-SCRW	1	2	112	10	3,406	1.09	-	342		4	1,366
Total							4,112	3,557	87%	11.33	49,592

Peak kW Reductions

Measure	Quantity (Fixtures)		Wattage		CF	IEFd	Expected Peak kW Reductions	Realized Peak kW Reductions	Realization Rate
	Old	New	Old	New					
F44ILL to LED010-FIXT	9	18	112	10	0.90	1.20	0.89	0.89	
I40/1 to LED010-FIXT	2	2	29	10	0.90	1.20	0.04	0.04	
F44ILL to LED010-SCRW	1	2	112	10	0.90	1.20	0.10	0.10	
Total							1.03	1.03	100%

Results

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	1.03	1.03	100%
Annual kWh:	4,112	3,557	87%

The kWh realization rate for this project is 87% and the peak coincidence kW realization rate is 100%.The ex-post calculator used the fixture type and quantity provided, which were verified during the desk review, and the prescriptive TRM values for the AOH, IEF_E, IEF_D, and CF. The prescriptive building type used was “Service (non-food)” for all spaces because it best fits the space description where the lighting retrofit took place rather than the ex-ante claim of retail.

ADM Site Report: EA-0000720151

Executive Summary

This project is a small retail facility that replaced 4 4’ 3L T12ES lamps and 1 4’ 4L T8 lamps, with 10 10W LED lamps. The space has standard cooling and gas heating throughout the facility. The kWh realization rate for this project is 87% and the peak coincidence kW realization rate 101%.

7.13 Project Description

This project consisted of the following retrofits:

- (8) 10W LED - Non-Int. Ballast fixtures replacing (4) 4’ 3L T12ES fixtures
- (2) 10W LED - Non-Int. Ballast fixtures replacing (1) 4’ 4L T8 fixtures

Measurement and Verification Effort

ADM performed a desk review, to verify the installation of lighting fixtures and re-lamping. During the desk review the lamp quantity, lamp type, and space type were verified to be accurate versus the ex-ante expectations. Savings are calculated using the lamp type, quantity and location using the approach from the AR TRM v9.0 Section 3.6.3 Lighting efficiency. The following equations were used to calculate the annual energy savings from the retrofit:

$$kWh_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times AOH \times IEF_E$$

$$kW_{Savings} = \sum \left(\left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{pre} - \left[N_{fixt(i)} \times \frac{W_{fixt(i)}}{1000} \right]_{post} \right) \times CF \times IEF_E$$

$$therms_{penalty} = kWh_{savings} \times IEF_G$$

Where:

$kWh_{savings}$	= Annual energy savings
$kW_{savings}$	= Peak energy demand reduction
N_{fixt}	= Quantity of fixtures either being removed or installed
W_{fixt}	= Rated wattage of the fixture being removed or installed
AOH	= Annual operating hours for specified building type
IEF_E	= Interactive effects factor for energy savings
IEF_D	= Interactive effects factor for demand savings
IEF_G	= Interactive effects factor for gas heating savings
CF	= Peak demand coincidence factor
pre	= Denotes pre-installation state

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

post = Denotes post-installation state

The tables below detail the inputs to the calculations for annual kWh savings and peak kW reductions based on deemed TRM values and a combination of site visit details and initial application.

Annual kWh Savings

Measure	Quantity (Fixtures)		Wattage		Hours	IEFe	Expected kWh Savings	Realized kWh Savings	Realization Rate	EUL	Lifetime Savings
	Old	New	Old	New							
F44EE to LED010-FIXT	4	8	112	10	3,406	1.09	-	1,366		15	20,493
F44ILL to LED010-FIXT	1	2	112	10	3,406	1.09	-	342		15	5,123
Total							1,972	1,708	87%	15	25,616

Peak kW Reductions

Measure	Quantity (Fixtures)		Wattage		CF	IEFd	Expected Peak kW Reductions	Realized Peak kW Reductions	Realization Rate
	Old	New	Old	New					
F44EE to LED010-FIXT	4	8	112	10	0.90	1.20	-	0.40	
F44ILL to LED010-FIXT	1	2	112	10	0.90	1.20	-	0.10	
Total							0.49	0.50	101%

Results

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	0.49	0.50	101%
Annual kWh:	1,972	1,708	87%

The kWh realization rate for this project is 86.6% and the peak coincidence kW realization rate is 101%. The ex-post calculator used the fixture type and quantity provided, which were verified during the desk review, and the prescriptive TRM values for the AOH, IEF_E, IEF_D, and CF. The prescriptive building type used was “Service (Non-food)” for all spaces because it best fits the space description where the lighting retrofit took place.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

ADM Site Report: EA-0000682573

Executive Summary

For this project, the customer installed a new variable speed ammonia compressor used for refrigeration in their facility. The kWh realization rate for this project is 102% and the peak coincident kW realization rate is 102%.

Project Description

This project installed a new variable speed ammonia compressor at the facility.

Baseline Equipment

- Vilter VSS 1051 Ammonia Compressor

New Equipment

- MYCOM 280JS-V Ammonia Compressor

Measurement and Verification Effort

ADM performed an on-site inspection of the installed compressor. While on-site ADM verified installed compressor. ADM used pre/post monitored data provided by implementer with manufacturers’ specification to calculate savings.

Implementer provided post retrofit monitored data which was kW monitored data of the new compressor at one-minute intervals for approximately 85 days and pre retrofit monitored data for approximately 27 days. ADM used manufacturer’s specification curve to estimated total refrigeration tons using the logged kW for the post period. The total refrigeration calculated was then used to determine the kW the baseline compressor would have used to produce the same tons of refrigeration. This modeled baseline condition and post trend data was then normalized to TMY3 weather data with production data to calculate an avoided energy usage.

Results

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	14.70	14.93	102%
Annual kWh:	128,800	130,772	102%

Both ADM and implementer used the same monitored data used in ex ante analysis. The slightly higher ex-post savings are a result of ADM identifying a higher baseline compressor power than what was used in the ex-ante analysis.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

ADM Site Report: EA-0000750912**Executive Summary**

This facility is a manufacturing facility that replaced twenty older venturi loaders on two separate air systems, with twenty electrically driven auto-loaders. The Ex-Ante claimed savings for this project are 45,244 kWh and a peak coincidence savings of 9.06 kW. The realization rate for the project is 100% and the peak coincidence kW realization rate is 100%.

Project Description

This project includes the removal and installation of:

- (14) Elgi Venturi Loader to (14) NOVATEC GSL-19-20 Brushless Loader
- (6) Quincy Venturi Loader to (6) NOVATEC GSL-19-20 Brushless Loader

Measurement and Verification Effort

The implementor provided calculations and specification sheets of pre and post installed equipment, as well as a report of the saving methods used. All implementer provided information was confirmed during the site visit. The following formula was used and verified for the savings calculations:

Annual Energy Savings

$$kWh\ Savings = (Annual\ Venturi\ kWh) - (Annual\ Autoloader\ kWh)$$

Baseline Annual Energy Usage

$$Annual\ Venturi\ kWh = (Total\ CFM * Eff_{specific}) * AOH$$

As Built Annual Energy Usage

$$Annual\ Autoloader\ kWh = (Quantity * kW_{autoloader}) * AOH$$

Where:

Total CFM = CFM * Loader Quantity

Eff Specific (kW/CFM) = Specific efficiency of air compressor

AOH = Annual Operating hours of loader system

kW Autoloader = Measured power of autoloader

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

The following table shows the pre and post data for the installed systems:

Pre and Post Equipment Data

	Elgi Venturi	Quincy Venturi	Auto Loader
Annual Op. Hours	417	417	417
Quantity	14	6	20
CFM/Unit	33	33	-
kW/CFM	0.18	0.19	-
kW	83.7	38.4	19.4

Results

The calculated ex post savings are shown in the summary table below.

Verified Gross Savings/Realization Rates

Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	45,243	9.06	100%
Annual kWh:	45,243	9.06	100%

The kWh realization rate is 100% and the peak coincidence kW realization rate is 100%.

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

ADM Site Report: EA-0000759739**Executive Summary**

This facility is a wastewater treatment facility that replaced its UV sanitation system with a chemical sanitation system. The Ex-Ante claimed savings for this project are 823,844 kWh and a peak coincidence savings of 95.57 kW. The realization rate for the project is 100% and the peak coincidence kW realization rate is 100%.

Project Description

This project includes the installation of:

- Peroxyacetic acid sanitation system including two fractional horsepower pumps and removal of UV sanitation system.

Measurement and Verification Effort

ADM performed a site visit of the facility. The implementor provided 18 days of pre installation UV system power monitoring and spot measurements of post installation sanitation pump power. During the pre-monitoring period the UV systems ran continuously at a consistent combined power of approximately 96 kW. The annual hours were continuous minus (1) 8-hour shift for maintenance every 3 weeks. Both the ex-ante and ex-post site visits were unable to get accurate power readings due to low power draw and limitations with measurement equipment. Instead, pump power was calculated using nameplate information and customer testimony about usage.

ADM used the pre-project UV power trend data and post-project pump power to extrapolate energy use over an entire year. The energy savings are the difference in pre and post project kWh use.

The following formulas were used to calculate the annual kWh savings and kW peak demand savings respectively:

$$kWh_{Savings} = Average Power_{UV} \times Annual Hours_{UV} - Power_{Pumps} \times Annual Hours_{Pumps}$$

$$kW_{Savings} = Average Power_{UV} - Power_{Pumps}$$

Where:

$$Average Power_{UV} = 95.91 \text{ kW}$$

$$Annual Hours_{UV} = 8760 - 8 \text{ hrs} * \left(\frac{52.143 \text{ weeks}}{3 \text{ weeks}} \right) = 8,621 \text{ hours}$$

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

$$Power_{Pumps} = Power_{Pump\ 1} + Power_{Pump\ 2} = .171\ kW + .171\ kW = 0.342\ kW$$

$$Annual\ Hours_{Pumps} = 8760\ hours$$

Final savings calculations are shown below:

$$kWh_{Savings} = 95.91\ kW \times 8,621\ hours - 0.324\ kW \times 8760\ hours = 823,840\ kWh$$

$$kW_{Savings} = 95.91\ kW - .342\ kW = 95.568\ kW$$

Results

The calculated ex post savings are shown in the summary table below.

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Expected	Measured	Realization Rate:
Coincident Peak kW:	96	96	100%
Annual kWh:	823,844	823,840	100%

The kWh realization rate for the project is 100% and the peak coincidence kW realization rate is 100%.

The slight difference in expected and realized energy and power savings can be attributed to rounding at different intermediate steps and the baseline annual operating hours calculation.

ADM Site Report: EA-0000701997

Executive Summary

This facility is a manufacturing facility which constructed a new building and installed multiple VFDs to control fans on production equipment. The project had a verified annual energy savings of 5,708,035 kWh and a peak demand savings of 663.83 kW resulting in realization rates of 100% and 97% respectively.

Project Description

This project includes 42 process related fans at the facility:

- (1) 125 HP Fans
- (6) 100 HP Fans
- (1) 75 HP Fan
- (9) 60 HP Fans
- (5) 50 HP Fans
- (2) 40 HP Fans
- (9) 30 HP Fans
- (3) 20 HP Fans
- (2) 15 HP Fans
- (4) 2 HP Fans

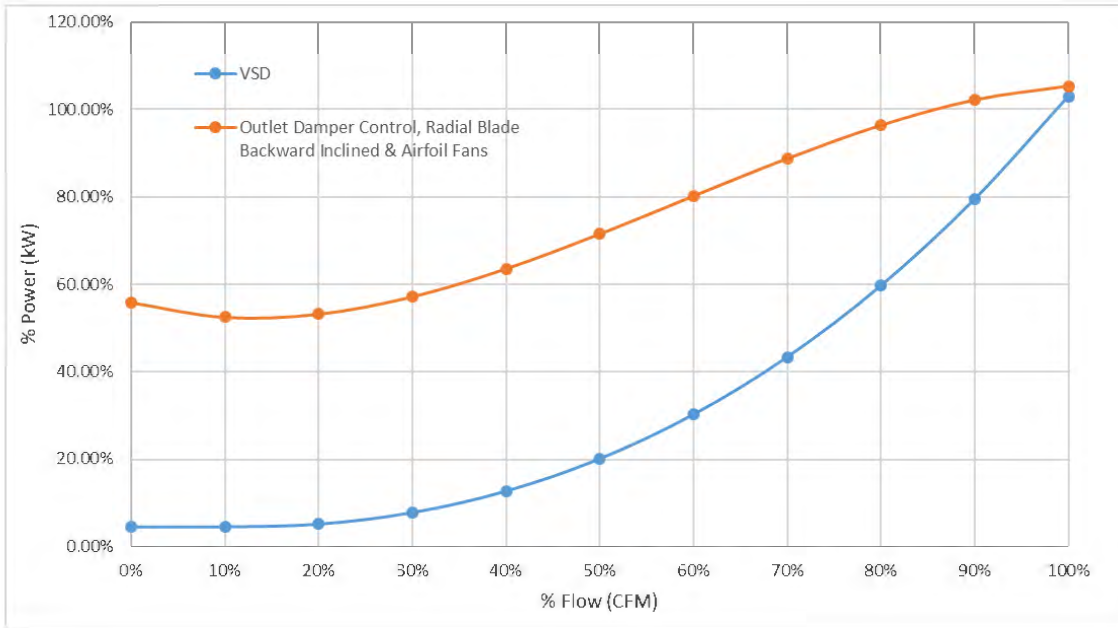
Measurement and Verification Effort

ADM performed a desk review to evaluate the project based on trended data. The implementer provided 14 days of post-installation trend data. The facility is new construction, so the baseline for this project is assumed to be typical industrial baseline practices which is to use outlet dampers on the fan to control flow. ADM assumed the facility operates steadily throughout the year and the trended data was extrapolated to the entire year. The trended data showed nearly continuous operation and the facility claimed to shut down the facility for 12 hours on every 3rd Thursday.

ADM used a default fan curve method according to the Uniform Methods Project to calculate energy savings from this project in addition to trended data from the facility. This would qualify as IMPVP option A, partial measure retrofit isolation. Both the as-built and baseline fan curves are shown in the figure below.

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Baseline and As-Built Fan Curves



The

following equations were used to calculate the annual energy savings from the retrofit:

$$kWh_{Savings} = \frac{\sum_{hour} [kW_{hour}]_{pre} - [kW_{hour}]_{post}}{Hr} \times AOH$$

$$kW_{Savings} = \overline{kW}_{pre} - \overline{kW}_{post}$$

Where:

- $kWh_{savings}$ = Annual energy savings
- $kW_{savings}$ = Peak energy demand reduction
- kW_{hour} = Fan energy demand at hours of the week
- Hr = The total number of monitored hours
- AOH = Annual operating hours based on monitoring data, the table below
- \overline{kW} = The average energy demand during monitoring period
- pre = Denotes pre-installation state
- $post$ = Denotes post-installation state

The following table shows AOH of each fan based on monitoring data, accounting for 12 hours of downtime on every 3rd Thursday of the month, average savings per hour, and annual savings for each unit.

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Annual Savings per Unit

Measure Equipment	AOH	Average Savings (kW)	Annual Savings (kWh)
2 HP Fan	8,616	0.70	6,060
2 HP Fan	8,004	0.62	5,000
2 HP Fan	8,616	0.56	4,844
2 HP Fan	8,616	0.67	5,772
15 HP Fan	7,948	9.26	73,562
15 HP Fan	7,948	5.03	43,286
20 HP Fan	8,616	6.49	55,952
20 HP Fan	8,616	33.79	291,115
20 HP Fan	8,616	33.41	287,887
30 HP Fan	8,604	9.89	85,098
30 HP Fan	8,616	6.63	57,129
30 HP Fan	8,616	7.05	60,783
30 HP Fan	8,616	9.29	80,067
30 HP Fan	8,616	10.07	86,573
30 HP Fan	8,616	8.90	76,685
30 HP Fan	8,616	5.61	48,308
30 HP Fan	8,616	8.52	73,386
30 HP Fan	8,603	28.06	241,416
40 HP Fan	8,616	13.43	115,723
40 HP Fan	8,616	13.42	115,430
50 HP Fan	8,616	16.20	139,551
50 HP Fan	8,616	9.23	79,568
50 HP Fan	8,616	16.07	138,468
50 HP Fan	8,616	16.12	138,869
50 HP Fan	8,349	2.43	20,271
60 HP Fan	8,616	17.69	152,448
60 HP Fan	8,616	15.56	134,036
60 HP Fan	8,616	19.23	165,702
60 HP Fan	8,400	2.66	22,349
60 HP Fan	8,616	19.44	167,474
60 HP Fan	8,616	19.40	167,159
60 HP Fan	8,616	19.43	167,399
60 HP Fan	8,616	13.86	119,413
60 HP Fan	8,401	2.50	20,966

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

75 HP Fan	8,616	25.17	216,432
100 HP Fan	8,616	30.99	266,991
100 HP Fan	8,616	32.17	277,215
100 HP Fan	8,616	33.56	288,576
100 HP Fan	8,616	33.56	288,576
100 HP Fan	8,616	33.56	288,576
100 HP Fan	8,616	33.39	287,655
125 HP Fan	8,616	40.19	346,264
TOTAL		663.83	5,708,035

Results

The calculated ex post savings for this project is shown in the summary table below.

Verified Gross Savings/Realization Rates

SUMMARY			
Metric	Ex-Ante	Ex-Post	Realization Rate:
Coincident Peak kW:	684.96	663.83	97%
Annual kWh:	5,688,108	6,708,035	100%

The kWh realization rate for the project is 100% and the peak coincidence kW realization rate is 97%.

Appendix C. Net-to-Gross Survey Outcomes

Consistent Weatherization Approach Survey

Major Measures

Note that for this survey, Measure 1 and Measure 2 refer to the most prevalent measure (by savings) for the respondent. The mix of measures comprised in this framework is summarized at the beginning of the table below.

Measure Discussed in Survey	MEASURE 1 (n=65)	MEASURE 2 (n=43)
Duct Sealing	75%	0%
Air Infiltration	7%	86%
Ceiling Insulation	17%	14%
Did you know that you could save energy by sealing your ducts before you learned of the $\{e://Field/CHANNEL_NAME\}$ program?	MEASURE 1 (n = 4)	MEASURE 2 (n = 0)
Yes	50%	--
No	50%	--
Prior to the completion of the home energy assessment, did you know that your ducts were leaking air?	MEASURE 1 (n = 4)	MEASURE 2 (n = 0)
Yes	0%	--
No	100%	--
Prior to learning about the [Field-CHANNEL_NAME] program, did you have plans to [Field-INSTALL1/2] the [Field-EFF_MEASURE1/2]?	MEASURE 1 (n = 13)	MEASURE 2 (n = 33)
Yes	23%	48%
No	77%	52%
Was the [Field-EFF_MEASURE1/2] recommended during the home energy assessment?	MEASURE 1 (n = 13)	MEASURE 2 (n = 33)
Yes	92%	91%
No	8%	9%
Would you have been financially able to $\{e://Field/INSTALL1/2\}$ the $\{e://Field/EFF_MEASURE1/2\}$ without the financial assistance provided through the program?	MEASURE 1 (n = 13)	MEASURE 2 (n = 33)
Yes	15%	42%
No	85%	58%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

How likely is it that you would have $\{e://Field/INSTALLED1/2\}$ the same $\{e://Field/EFF_MEASURE1/2\}$ within a year of when you received it if the financial assistance was not available?	MEASURE 1 (n = 13)	MEASURE 2 (n = 33)
Very unlikely	46%	12%
Somewhat unlikely	46%	33%
Neither likely nor unlikely	0%	9%
Somewhat likely	0%	18%
Very likely	8%	27%
How likely is it that you would have $\{e://Field/INSTALLED1/2\}$ the same $\{e://Field/EFF_MEASURE1/2\}$ within one year of when you received it if it was not recommended through the home energy assessment?	MEASURE 1 (n = 12)	MEASURE 2 (n = 30)
Very unlikely	75%	37%
Somewhat unlikely	17%	17%
Neither likely nor unlikely	0%	10%
Somewhat likely	0%	20%
Very likely	8%	17%
Did you $\{e://Field/INSTALL1/2\}$ the $\{e://Field/EFF_MEASURE1/2\}$ sooner than you would have if the information and financial assistance from the program had not been available?	MEASURE 1 (n = 13)	MEASURE 2 (n = 33)
Yes	54%	67%
No	46%	33%
When might you have installed the same $\{e://Field/EFF_MEASURE1\}$ if you had not participated in the program?	MEASURE 1 (n = 7)	MEASURE 2 (n = 30)
Within 6 months of when you had it completed	14%	9%
Between 6 months and 1 year	0%	36%
In more than 1 year to 2 years	0%	27%
In 2 to 3 years	29%	9%
In more than 3 years	29%	0%
Never	29%	18%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

Direct Install Measures

Had you purchased and installed any [Field-DIMEASURE] before you received them for free through the program?	Percent Selected (n = 42)
Yes	38%
No	62%
Did you have plans to purchase and install [Field-DIMEASURE] before you learned about the [Field-CHANNEL_NAME] Program?	Percent Selected (n = 42)
Yes	31%
No	69%
Just to be clear, did you have plans to purchase an energy saving power strip or plans to purchase a standard power strip?	Percent Selected (n = 1)
I had plans to purchase an energy saving power strip	100%
I had plans to purchase a standard power strip	0%
How many of the [Field-DIMEASURE]'s that you received had you already planned to purchase?	(n = 11)
Count	8
How familiar were you with smart power strips as a technology to save energy before you participated in the [Field-CHANNEL_NAME] Program?	Percent Selected (n =)
Very unfamiliar	53%
Somewhat unfamiliar	24%
Neither familiar nor unfamiliar	0%
Somewhat familiar	12%
Very familiar	12%
If you had not received the free [Field-DIMEASURE], how likely is it that you would have installed them within 12 months of when you received them anyways?	Percent Selected (n =)
Very unlikely	40%
Somewhat unlikely	17%
Neither likely nor unlikely	5%
Somewhat likely	14%
Very likely	24%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

CEEP Survey

Not including the project that your organization received an incentive for in [Field-YEAR], has your organization completed any significant energy efficiency projects in the last three years?	Large C&I (n = 10)	SBS (n = 24)
Yes	30%	8%
No	70%	92%
I don't know	0%	0%
Did you complete any of those projects without receiving a program incentive or rebate?	Large C&I (n = 3)	SBS (n = 1)
Yes	67%	0%
No	33%	100%
I don't know	0%	0%
In the last three years, did you complete any energy efficiency projects similar to the [Field-MEASURE1] project implemented at the facility located at [Field-LOCATION]?	Large C&I (n = 3)	SBS (n = 2)
Yes	67%	50%
No	33%	50%
I don't know	0%	0%
How important was your previous experience with the program in making your decision to [Field-IMPLEMENT1] the [Field-MEASURE1] at your facility?	Large C&I (n = 4)	SBS (n = 2)
Very important	0%	0%
Somewhat important	0%	50%
Only slightly important	25%	0%
Not at all important	50%	0%
I don't know	25%	50%
Did you have plans to [Field-IMPLEMENT1] the [Field-MEASURE1] at the facility before deciding to participate in the [Field-CHANNEL_NAME] Program?	Large C&I (n = 10)	SBS (n = 26)
Yes	60%	42%
No	40%	50%
I don't know	0%	8%
Would you have completed the [Field-MEASURE1] project even if you had not participated in the program?	Large C&I (n = 10)	SBS (n = 26)
Yes	80%	35%
No	20%	54%
I don't know	0%	12%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

If the [Field-CHANNEL_NAME] Program representative had not recommended [Field-IMPLEMENTING1] the [Field-MEASURE1], how likely is it that you would have [Field-IMPLEMENTED1] it anyway?	Large C&I (n = 1)	SBS (n = 5)
Definitely would have	0%	20%
Probably would have	0%	20%
Probably would not have	0%	20%
Definitely would not have	100%	20%
I don't know	0%	20%
Would have been financially able to [Field-IMPLEMENT1] the [Field-MEASURE1] at your facility if the incentives from the [Field-CHANNEL_NAME] Program were not available?	Large C&I (n = 10)	SBS (n = 26)
Yes	60%	35%
No	30%	46%
I don't know	10%	19%
To confirm, your organization would NOT have allocated the funds to complete a similar energy saving project if the program incentive was not available. Is that correct?	Large C&I (n = 3)	SBS (n = 12)
Yes, that is correct	100%	92%
No, that is not correct	0%	0%
I don't know	0%	8%
If the incentive from the [Field-CHANNEL_NAME] Program had not been available, how likely is it that you would have [Field-IMPLEMENTED1] the [Field-MEASURE1] at your facility anyway?	Large C&I (n = 10)	SBS (n = 26)
Definitely would have	50%	12%
Probably would have	30%	20%
Probably would not have	10%	40%
Definitely would not have	10%	24%
I don't know	0%	4%
Did you choose [Field-MEASURE1B] equipment that was more energy efficient than you would have chosen had you not participated in the program?	Large C&I (n = 8)	SBS (n = 25)
Yes	75%	48%
No	25%	36%
I don't know	0%	16%
Did you [Field-IMPLEMENT1] the [Field-MEASURE1] earlier than you otherwise would have without the program?	Large C&I (n = 10)	SBS (n = 25)
Yes	40%	64%
No	60%	24%
I don't know	0%	12%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

When would you otherwise have [Field-IMPLEMENTED1] the [Field-MEASURE1]?	Large C&I (n = 4)	SBS (n = 16)
Within 6 months	25%	0%
7 months to 1 year	0%	0%
More than 1 year to up to 2 years	25%	31%
More than 2 years to up to 3 years	25%	19%
More than 3 years to up to 5 years	0%	0%
More than 5 years	0%	6%
I don't know	25%	44%

Appendix D. Cost-Effectiveness Inputs

OG&E Avoided Energy & Demand Values

Year	Avoided Energy Cost by Time Period (\$/kWh)					Avoided Capacity Cost (\$/kW)
	Summer On-Peak	Summer Off-Peak	Winter On-Peak	Winter Off-Peak	Shoulder	
2022	\$0.050	\$0.033	\$0.032	\$0.028	\$0.029	\$97
2023	\$0.051	\$0.034	\$0.033	\$0.030	\$0.030	\$100
2024	\$0.054	\$0.036	\$0.035	\$0.031	\$0.031	\$102
2025	\$0.055	\$0.038	\$0.037	\$0.032	\$0.033	\$105
2026	\$0.058	\$0.040	\$0.039	\$0.033	\$0.034	\$107
2027	\$0.060	\$0.041	\$0.040	\$0.035	\$0.036	\$110
2028	\$0.062	\$0.043	\$0.042	\$0.036	\$0.038	\$113
2029	\$0.064	\$0.044	\$0.042	\$0.037	\$0.038	\$115
2030	\$0.065	\$0.046	\$0.044	\$0.038	\$0.039	\$118
2031	\$0.066	\$0.047	\$0.045	\$0.039	\$0.041	\$121
2032	\$0.066	\$0.047	\$0.046	\$0.040	\$0.041	\$124
2033	\$0.067	\$0.048	\$0.047	\$0.041	\$0.042	\$127
2034	\$0.067	\$0.050	\$0.048	\$0.042	\$0.043	\$131
2035	\$0.069	\$0.051	\$0.050	\$0.043	\$0.044	\$134
2036	\$0.070	\$0.053	\$0.051	\$0.044	\$0.046	\$137
2037	\$0.071	\$0.055	\$0.055	\$0.047	\$0.049	\$141
2038	\$0.071	\$0.056	\$0.056	\$0.048	\$0.050	\$144
2039	\$0.075	\$0.058	\$0.058	\$0.050	\$0.051	\$148
2040	\$0.083	\$0.064	\$0.063	\$0.056	\$0.057	\$159
2041	\$0.084	\$0.065	\$0.064	\$0.057	\$0.059	\$163

OG&E Discount Rates

Test	Discount Rate
TRC	5.42%
UCT	5.42%
RIM	5.42%
PCT	6.04%

Line & Distribution Losses

Test	Value
Gas Distribution Losses	2.67%
Line Losses – Energy	7.25%
Line Losses – Demand	7.83%

OG&E Arkansas PY2022 Energy Efficiency Portfolio EM&V Report

OG&E NEB Values

Year	\$/Therm	\$/Gallon LP	\$/Gallon Water
2022	\$0.5477	\$2.42	\$0.0077
2023	\$0.5753	\$2.49	\$0.0081
2024	\$0.6056	\$2.60	\$0.0085
2025	\$0.6318	\$2.75	\$0.0089
2026	\$0.6497	\$2.92	\$0.0093
2027	\$0.6686	\$3.03	\$0.0097
2028	\$0.6818	\$3.15	\$0.0102
2029	\$0.7048	\$3.19	\$0.0107
2030	\$0.7195	\$3.30	\$0.0112
2031	\$0.7355	\$3.42	\$0.0117
2032	\$0.7539	\$3.46	\$0.0123
2033	\$0.7710	\$3.55	\$0.0129
2034	\$0.7889	\$3.63	\$0.0135
2035	\$0.8070	\$3.74	\$0.0142
2036	\$0.8369	\$3.84	\$0.0148
2037	\$0.8575	\$4.10	\$0.0156
2038	\$0.8845	\$4.20	\$0.0163
2039	\$0.9100	\$4.36	\$0.0171
2040	\$0.9358	\$4.75	\$0.0179
2041	\$0.9623	\$4.84	\$0.0188

OG&E cost-effectiveness testing was performed with a cost of carbon of \$0 for the Low, Medium, and High scenarios.

Attachment B: Samples of OG&E Promotional and Educational Materials

Commercial Offerings (continued)

Commercial Midstream Instant Incentive

OG&E provides commercial customers with instant rebates on select LED lighting at participating lighting distributors.

Schools and Government Efficiency Program

From walkthrough audits to benchmarking and energy master planning workshops, we provide educational and government facilities with everything you need better inform you about your energy usage.

Continuous Energy Improvement (CEI) Program

Under the CEI Program, OG&E offers incentives for qualified commercial, industrial and school customers who partner with OG&E's consultants to help them identify and implement no/low-cost energy-saving changes.



ARKANSAS

ENERGY EFFICIENCY PROGRAMS

With a wide variety of programs, services and incentives designed to help you save energy, OG&E is your go-to source for all things efficiency.



The energy- saving possibilities are endless.

With rates among the lowest in the country, OG&E will never stop finding ways to help Arkansas save energy and money.

Get started.

To learn more about all the ways OG&E can help you save energy, visit oge.com or call **844-413-3065** today.



We Energize Life

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We Energize Life

Residential Offerings

Residential Solutions Program

This program identifies energy-saving improvements in your home by providing a free online Home Energy Profile and walkthrough In-Home Energy Assessment. The online profile takes only a few minutes and your assessment includes free installations of energy-saving items.

Rebates

To offset the costs of energy efficiency improvements, OG&E offers rebates toward a number of energy efficiency improvements, including duct and air sealing, attic and wall insulation, ENERGY STAR® windows and pool pumps.

Multi-Family Efficiency Program

Own or live in a residential apartment or multi-family unit? OG&E offers many of the same rebates for multi-family customers, such as property assessments, air sealing, duct sealing, A/C tune-ups and more.



Consumer Products

This program offers instant in-store discounts at select retailers on ENERGY STAR LED lighting, advanced power strips, room a/c window units, room air purifiers, water dispensers and bathroom vent fans.

HVAC Replacement and Tune-Up

OG&E offers incentives and rebates toward qualified HVAC replacements to offset project costs and lower your energy bill as well as No Cost A/C tune-ups for qualifying units.

Weatherization

This program provides energy efficiency upgrades at no additional cost to customers who own or rent a single-family home or duplex. These upgrades will help lower energy costs and increase comfort and safety in your home.

Student Energy Education LivingWise

Got a sixth grader at home? OG&E teams up with local schools to provide them with educational kits, at no cost, that can teach them how to save energy at home and in the classroom.



Commercial Offerings

Large Commercial & Industrial Solutions

When completed on a large scale, a few energy-saving upgrades can have an enormous impact on a business' bottom line. This program helps business owners identify the most cost-effective energy efficiency opportunities and provides incentives based on how much is saved.

Small Business Solutions

For smaller commercial facilities, qualifying energy efficient project costs could be covered up to 90 percent through the program when doing a lighting upgrade. It all starts with a free walkthrough evaluation.



OG&E WEATHERIZATION PROGRAM

TODAY'S HIGH: YOUR COMFORT



At OG&E, our goal is to help customers save energy and live more comfortably.

The weather inside is always delightful with OG&E's Weatherization Program. Sign up today and we'll send a trained crew to install a variety of weatherization improvements throughout your home—**at no additional cost to you.**

To qualify, you must be a current OG&E residential customer who owns or rents a single-family home or duplex.*

Your improvements may include:

- Adding attic insulation to lower energy costs and improve year-round comfort
- Air sealing, caulking and weatherstripping to reduce energy waste, allergens and outside noise
- Sealing around doors and windows to reduce drafts and save energy
- Installing LED bulbs to save on energy and maintenance costs

*Certain limitations and state-mandated guidelines may apply. Home must be at least 10 years old. Weatherization services are available to rental properties if an eligible customer lives in the home and has approval from the property owner.

Valued up to

\$3,000

Enroll now at
oge.com/weatherization
or contact us to get started.

844-413-3065

OG&E

We Energize Life

OG&E.com

HOME ENERGY EFFICIENCY PROGRAM

HIGH EFFICIENCY, LOWER COST

Your energy efficiency toolbox

Complete your online Tracker profile to see if your home could benefit from our In-Home Energy Assessment. Valued at \$250, the assessment includes all the following with no out-of-pocket costs required:

- An expert walk-through analysis of your home's energy efficiency
- LED bulbs (up to 15)
- Advanced power strips (up to two as needed)
- Showerheads and aerators (up to two as needed)
- A custom Home Energy Report with recommended improvements
- Access to additional services, incentives and offerings to help you manage energy costs

Tune up your energy costs

An OG&E A/C Tune-up can boost your A/C unit's efficiency by up to 30 percent. Valued at \$200, the tune-up typically requires no out-of-pocket costs from qualifying customers.

Instant incentives

Look for "Special Pricing from OG&E" signs at your local retailer for special deals on energy-efficient products.

For more ways OG&E can help you manage your energy costs, visit oge.com/arheep or contact us at **844-413-3065**.

**Incentive funds are limited. Please call 844-413-3065 to confirm fund availability and schedule work.

Even more ways to save

Want to become a more energy-conscious consumer? OG&E rebates and incentives let you pay less for the technology that saves you more.**

Insulation

We offer rebates for professionally installed insulation.

Rebates: \$0.15/sq. ft. for attic insulation; \$0.50/sq. ft. for wall insulation.

Windows

We offer a \$50 rebate for each professionally installed ENERGY STAR® certified window (limit 7).

Pool pumps

ENERGY STAR certified multi-speed (≥ 1 HP) and variable-speed (≥ 0.5 HP) pool pumps qualify for a \$300 rebate.

Air sealing

We offer rebates for professionally installed air sealing.

Rebates: \$100 for ≥ 15 percent reduction in air leakage; \$150 for ≥ 30 percent reduction in air leakage.

A/C or heat pump replacement

We offer rebates for high-performance A/C and heat pump replacement systems.

Rebates: \$80/ton for 16 SEER; \$100/ton for 17 SEER; \$120/ton for 18 SEER.

**SPECIAL
PRICING**

from OG&E on select
ENERGY STAR®
certified products

OG&E
OGE.COM

OG&E
We Energize Life

OGE.com

HVAC REPLACEMENT REBATE

FUND AVAILABILITY IS LIMITED. SUBMISSION OF APPLICATION DOESN'T GUARANTEE REBATE PAYMENT.

SECTION 1. CUSTOMER INFORMATION (PLEASE PRINT)

OG&E Account Number:		Customer Email Address:	
Customer Name (as shown exactly on OG&E electric bill):		Customer Daytime Phone:	
Service Address:			
City:	State: AR	ZIP Code:	County:
Mailing Address (if different than installation address):		City:	State: ZIP Code:

SECTION 2. ALTERNATE REBATE RECIPIENT (PLEASE PRINT)

Name:		Daytime Phone:	
Mailing Address:		City:	State: ZIP Code:

I (Customer Signature) _____ authorize the above party to receive the rebate check.

SECTION 3. INSTALLING CONTRACTOR INFORMATION (PLEASE PRINT)

Contractor Name:		Business Name:		Contractor Phone:	
Contractor Address:		City:	State:	ZIP Code:	

SECTION 4. HVAC INFORMATION (TO BE PROVIDED BY INSTALLING CONTRACTOR, INCLUDE INVOICE AND AHRI DOCUMENTATION)

HVAC Unit 1	HVAC Unit 2
1. What date was the project completed? _____	1. What date was the project completed? _____
2. What is the home type? (circle one) Single Family Multi-Family	2. What is the home type? (circle one) Single Family Multi-Family
3. HVAC unit installed? (circle one) Heat Pump Central Air Conditioner	3. HVAC unit installed? (circle one) Heat Pump Central Air Conditioner
4. Evaporator model # _____	4. Evaporator model # _____
5. Condenser model # _____	5. Condenser model # _____
6. Manufacturer: _____ AHRI # _____	6. Manufacturer: _____ AHRI # _____
7. A/C cooling capacity: _____ Heat pump heating capacity: _____	7. A/C cooling capacity: _____ Heat pump heating capacity: _____
8. EER: _____ SEER: _____ HSPF: _____ Tonnage: _____	8. EER: _____ SEER: _____ HSPF: _____ Tonnage: _____
Rebate Amount: 16 SEER - \$80/ton 17 SEER - \$100/ton 18 SEER - \$120/ton	Rebate Amount: 16 SEER - \$80/ton 17 SEER - \$100/ton 18 SEER - \$120/ton

I hereby certify that the information listed above is accurate and true. I understand the information submitted is subject to audit and onsite verification may be required prior to payment of rebate. The verification inspection is for record purposes only and does not guarantee the quality of the work performed. I also understand that submission of the rebate application does not guarantee a rebate. The program will end when funds are depleted. I understand that all the guidelines have been followed (see Rebate Rules and Guidelines). I also understand that Oklahoma Gas and Electric Company is not liable for any work performed. REBATE APPLICATION, INVOICE AND DOCUMENTATION MUST BE SUBMITTED WITHIN 30 DAYS OF INSTALLATION DATE. If application is incomplete, rebate will be denied. Contractor and homeowner signatures are required. Make a copy of all receipts and documentation for your records before submitting for rebate.

Installing Contractor: _____ (Signature)	Homeowner: _____ (Signature)
Date: _____	Date: _____

Please return completed rebate form and contractor documentation by email or mail to:
Email: residential.ar@oge.com | **Mail:** OG&E AR Residential Rebates, 3600 Old Greenwood Road, Ste 1, Fort Smith, AR 72903

FOR REBATE OFFICIAL USE ONLY. DO NOT WRITE IN THIS AREA.

DATE INSTALLED _____	DATE RECEIVED _____	REBATE AMOUNT _____	PROCESSED BY _____
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REBATE DETAILS

- Rebate applies only to OG&E Arkansas customers with an active residential account.
- Rebates are limited to two HVAC replacements per home.
- Rebate will not exceed contractor invoice amount.
- Rebates are issued in the form of checks, not utility bill credits.
- Only one (1) rebate request per service address.
- Rebate Application, Invoice and AHRI Certificate for HVAC replacements must be received within 30 days of completion of installation.
- OG&E is not responsible for inaccurate information.
- Funding for this program is limited to funds availability.

REBATE APPLICATION DETAILS

Qualifying HVAC replacement must have invoice dated between January 1 and December 15 of the program year. Completed rebate application, invoice and documentation must be submitted no later than 30 days after the HVAC installation.

A valid invoice includes the installation date, products purchased, quantity purchased, price and payment made in full. The HVAC replacement invoice must also specify all required information, including the customer name, address of installation, phone number, contractor name, business name, address and phone number. All information on the invoice must match the information on the rebate application or the application will not be processed. OG&E reserves the right to conduct random inspections to verify installation of the rebated equipment at the installation address listed on the form. **Failure to complete all information may result in denial of rebate.**

DO NOT INCLUDE REBATE APPLICATION WITH YOUR OG&E ELECTRIC BILL.

OG&E reserves the right to inspect installations before issuing a rebate. OG&E reserves the right to conduct random inspections to verify installation of the rebated equipment at the installation address listed on the form. If the residence does not have the qualifying material or work installed, the homeowner may be required to pay back the rebate and the contractor will be deemed ineligible to offer rebates to future customers. OG&E reserves the right to amend or suspend this program without notice.

LIMITATIONS OF LIABILITY; INDEMNIFICATION

In no way shall Oklahoma Gas and Electric Company be liable for, and Customer hereby agrees to indemnify, defend and hold harmless Oklahoma Gas and Electric Company, its subsidiaries or affiliates, and their respective employees, Officers and directors, from and against any and all liability, loss, damage, cost or expense, including attorney's fees, that may be caused by, due to, occasioned by, or otherwise arising out of the installation, operation, mis-operation, or use of customer's installed materials and installations.

Customer acknowledges and agrees that in no event shall any statement, representation, or lack thereof, either express or implied, Oklahoma Gas and Electric Company relieve the customer of exclusive responsibility for the Customer's systems. Specifically, Oklahoma Gas and Electric Company approval of the rebate application, payment of the rebate, or any Oklahoma Gas and Electric Company inspection of the qualifying materials and installations shall not be construed as confirming or endorsing the materials or installation or its operating or maintenance procedures nor as a warranty or guarantee as to the safety, reliability, or durability of the materials or installation.

Oklahoma Gas and Electric Company is not responsible for items lost or delayed in the mail, or any rebate delayed due to incomplete or incorrect information on the rebate application and/or invoice. Oklahoma Gas and Electric Company is not responsible for any taxes that may be imposed as a result of your receipt of any rebate.

QUALIFYING CUSTOMERS

- This program is available only to OG&E residential customers in Arkansas who own or rent a permanent foundation, single family home.
- Multi-family homes and apartments do not qualify for this rebate.
- Program is available only to retrofit (existing) homes built prior to 2016 with electric air conditioning.
- Program excludes new home residential construction, garages, sheds, workshops, basement and doors.

QUALIFYING INSTALLATION

All HVAC equipment must be installed by an Arkansas licensed, HVAC professional. All rebate forms need to have a copy of the invoice and AHRI Certificate for all installed equipment.

WHERE TO SUBMIT REBATE APPLICATION AND INVOICE

Please return completed rebate form and contractor documentation by email:

residential.ar@oge.com

or mail to:

OG&E AR Residential Rebates
3600 Old Greenwood Road, Ste 1
Fort Smith, AR 72903

Please allow 6 to 8 weeks after receipt of all documents for the rebate to be processed. Make a copy of all receipts and documentation for your records before submitting for rebate. If you have any questions about your rebate, please call us toll-free at **844-413-3065** or email **residential.ar@oge.com**.



POOL PUMP REPLACEMENT REBATE

FUND AVAILABILITY IS LIMITED. SUBMISSION OF APPLICATION DOESN'T GUARANTEE REBATE PAYMENT.

SECTION 1. Customer Information (please print)

OG&E Account Number:		Customer Email Address:			
Customer Name (as shown exactly on OG&E electric bill):		Customer Daytime Phone:			
Service Address:					
City:	State: AR	ZIP Code:	County:		
Mailing Address (if different than installation address):		City:	State:	ZIP Code:	

SECTION 2. Alternate Rebate Recipient (please print)

Name:		Daytime Phone:			
Mailing Address:		City:	State:	ZIP Code:	

I (Customer Signature) _____ authorize the above party to receive the rebate check.

SECTION 3. Installing Contractor Information (please print)

Contractor Name:		Business Name:		Contractor Phone:	
Contractor Address:		City:	State:	ZIP Code:	

SECTION 4. Pool Pump Information (to be provided by installing contractor)

- Is it an ENERGY STAR® certified pool pump? (circle one) **Yes** **No**
- Manufacturer: _____
- Model/Product # _____
- How much horsepower? _____
- What is the pump type? (circle one) **Multi-speed** **Variable-speed**
- Old pump manufacturer: _____
- Old pump model/product # _____
- Old pump horsepower: _____

Rebate amount up to \$300 toward the purchase of an ENERGY STAR certified multi-speed (at least 1 horsepower) or variable-speed (0.5 horsepower or higher) pool pump.

I hereby certify that the information listed above is accurate and true. I understand the information submitted is subject to audit and onsite verification may be required prior to payment of rebate. The verification inspection is for record purposes only and does not guarantee the quality of the work performed. **I also understand that submission of the rebate application does not guarantee a rebate. The program will end when funds are depleted. I understand that all the guidelines have been followed (see Rebate Rules and Guidelines).** I also understand that Oklahoma Gas and Electric Company is not liable for any work performed. **REBATE APPLICATION AND INVOICE MUST BE SUBMITTED WITHIN 30 DAYS OF INSTALLATION DATE.** Contractor and homeowner signatures are required. Make a copy of all receipts and documentation for your records before submitting for rebate.

Installing Contractor: _____
(Signature)

Homeowner: _____
(Signature)

Date: _____

Date: _____

Please return completed rebate form and contractor invoice by email or mail to:

Email: residential.ar@oge.com | Mail: OG&E AR Residential Rebates, 3600 Old Greenwood Road, Ste. 1, Fort Smith, AR 72903

FOR REBATE OFFICIAL USE ONLY. DO NOT WRITE IN THIS AREA.

DATE INSTALLED _____ DATE RECEIVED _____ REBATE AMOUNT _____ PROCESSED BY _____

REBATE DETAILS

- Rebate applies only to the installation of a qualifying ENERGY STAR pool pump.
- Rebates are limited to the amount listed in section 4 of this document.
- Rebate will not exceed contractor invoice amount.
- Rebates are issued in the form of checks, not utility bill credits.
- Rebate Application and Invoice must be received within 30 days of new pump installation.
- OG&E is not responsible for inaccurate information.
- Funding for this program is limited to funds availability.

REBATE APPLICATION DETAILS

Qualifying pool pump replacement must be dated between January 1 and December 15 of the program year.

A valid invoice includes the installation date, products purchased, quantity purchased, price and payment made in full. The pool pump replacement invoice must also specify all required information, including the customer name, address of installation, phone number, contractor name, business name, address and phone number. All information on the invoice must match the information on the rebate application or the application will not be processed. **Failure to complete all information may result in denial of rebate.**

DO NOT INCLUDE REBATE APPLICATION WITH YOUR OG&E BILL.

OG&E reserves the right to inspect installations before issuing a rebate. OG&E reserves the right to conduct random inspections to verify installation of the rebated equipment at the installation address listed on the form. If the residence does not have the qualifying material or work installed, the homeowner may be required to pay back the rebate and the contractor will be deemed ineligible to offer rebates to future customers. OG&E reserves the right to amend or suspend this program without notice.

LIMITATIONS OF LIABILITY; INDEMNIFICATION

In no way shall Oklahoma Gas and Electric Company be liable for, and Customer hereby agrees to indemnify, defend and hold harmless Oklahoma Gas and Electric Company, its subsidiaries or affiliates, and their respective employees, Officers and directors, from and against any and all liability, loss, damage, cost or expense, including attorney's fees, that may be caused by, due to, occasioned by, or otherwise arising out of the installation, operation, mis-operation, or use of customer's installed materials and installations.

Customer acknowledges and agrees that in no event shall any statement, representation, or lack thereof, either express or implied, Oklahoma Gas and Electric Company relieve the customer of exclusive responsibility for the Customer's systems. Specifically, Oklahoma Gas and Electric Company approval of the rebate application, payment of the rebate, or any Oklahoma Gas and Electric Company inspection of the qualifying materials and installations shall not be construed as confirming or endorsing the materials or installation or its operating or maintenance procedures nor as a warranty or guarantee as to the safety, reliability, or durability of the materials or installation.

Oklahoma Gas and Electric Company is not responsible for items lost or delayed in the mail, or any rebate delayed due to incomplete or incorrect information on the rebate application and/or invoice.

Oklahoma Gas and Electric Company is not responsible for any taxes that may be imposed as a result of your receipt of any rebate.

QUALIFYING CUSTOMERS

This program is available only to OG&E Arkansas residential customers who are replacing an existing pool pump. New pool installations do not qualify for this rebate. Multi-family structures do not qualify for this rebate.

QUALIFYING INSTALLATION

All pool pumps must be installed by a professional installation company, to the manufacturer's specifications and meet all state, local codes and federal regulations. Pool pumps must meet qualifying type and horsepower as listed under section 4.

WHERE TO SUBMIT REBATE APPLICATION AND INVOICE

Please return completed rebate form and contractor invoice by email or mail to:

residential.ar@oge.com
 OG&E AR Residential Rebates
 3600 Old Greenwood Road, Ste 1
 Fort Smith, AR 72903

Please allow 4 to 6 weeks after receipt of all documents for the rebate to be processed. Make a copy of all receipts and documentation for your records before submitting for rebate. If you have any questions about your rebate, please call us toll-free at 844-413-3065 or email residential.ar@oge.com.



ARKANSAS HEEP WINDOW REPLACEMENT REBATE

APSC Filed Time: 5/1/2023 10:24 AM; Recvd 5/1/2023 10:20:53 AM; Docket 07-075-TF-Doc. 468

ARKANSAS

FUND AVAILABILITY IS LIMITED. SUBMISSION OF APPLICATION DOESN'T GUARANTEE REBATE PAYMENT.

SECTION 1. Customer Information (please print)

OG&E Account Number:		Customer Email Address:		
Customer Name (as shown exactly on OG&E electric bill):		Customer Daytime Phone:		
Service Address:				
City:	State: AR	ZIP Code:	County:	
Mailing Address (if different than installation address):		City:	State:	ZIP Code:

SECTION 2. Alternate Rebate Recipient (please print)

Name:		Daytime Phone:		
Mailing Address:		City:	State:	ZIP Code:

I (Customer Signature) _____ authorize the above party to receive the rebate check.

SECTION 3. Installing Contractor Information (please print)

Contractor Name:		Business Name:		Contractor Phone:	
Contractor Address:		City:		State:	ZIP Code:

SECTION 4. Window Information (to be provided by installing contractor, include invoice and NFRC documentation)

1. What date was the project completed? _____
2. What is the total square footage of the new windows installed? _____
3. What is the central HVAC type? (circle one) **Electric A/C with Gas Heat** **Electric A/C with Resistance Heat**
Gas Heat Only (no A/C) Heat Pump **Air Source Heat Pump**
4. Is the window ENERGY STAR® rated? (circle one) **Yes** **No**
5. How many panes does the existing window have? (circle one) **Single Pane** **Double Pane**
6. What is the U-factor rating of the new window? _____
7. What is the SHGC rating of the new window? _____
8. How many ENERGY STAR rated windows were installed (limit **seven** per home)? _____ **Rebate Amount: \$50 per window, maximum \$350 total.**

I hereby certify that the information listed above is accurate and true. I understand the information submitted is subject to audit and onsite verification may be required prior to payment of rebate. The verification inspection is for record purposes only and does not guarantee the quality of the work performed. **I also understand that submission of the rebate application does not guarantee a rebate. The program will end when funds are depleted. I understand that all the guidelines have been followed (see Rebate Rules and Guidelines).** I also understand that Oklahoma Gas and Electric Company is not liable for any work performed. REBATE APPLICATION AND INVOICE MUST BE SUBMITTED WITHIN 30 DAYS OF INSTALLATION DATE. Contractor and homeowner signatures are required. Make a copy of all receipts and documentation for your records before submitting for rebate.

Installing Contractor: _____ **Homeowner:** _____
(Signature) (Signature)

Date: _____ **Date:** _____

Please return completed rebate form and contractor invoice by email or mail to:

Email residential.ar@oge.com | OG&E AR Residential Rebates, 3600 Old Greenwood Road, Ste. 1, Fort Smith, AR 72903

FOR REBATE OFFICIAL USE ONLY. DO NOT WRITE IN THIS AREA.

DATE INSTALLED _____ DATE RECEIVED _____ REBATE AMOUNT _____ PROCESSED BY _____

REBATE DETAILS

- Rebate applies only to OG&E customers with an active Arkansas residential account.
- Rebates are limited to seven (7) windows per home, up to \$350 total rebate.
- Rebate will not exceed contractor invoice amount.
- Rebates are issued in the form of checks, not utility bill credits.
- Only one (1) rebate request per service address.
- Rebate Application, Invoice and Documentation for all windows showing U-factor, SHGC and Measurements (in inches) must be received within 30 days of completion of job.
- OG&E is not responsible for inaccurate information.
- Funding for this program is limited to funds availability.

REBATE APPLICATION DETAILS

Qualifying window replacement must have invoice dated between January 1 and December 15 of the current program year. Completed rebate application, invoice and documentation showing U-factor, SHGC and Measurements (in inches) must be submitted no later than 30 days after window installation.

A valid invoice includes the installation date, products purchased, quantity purchased, price and payment made in full. The window replacement invoice must also specify all required information, including the customer name, address of installation, phone number, contractor name, business name, address and phone number. All information on the invoice must match the information on the rebate application or the application will not be processed. OG&E reserves the right to conduct random inspections to verify installation of the rebated equipment at the installation address listed on the form. **Failure to complete all information will result in denial of rebate.**

DO NOT INCLUDE REBATE APPLICATION WITH YOUR OG&E ELECTRIC BILL.

OG&E reserves the right to inspect installations before issuing a rebate. OG&E reserves the right to conduct random inspections to verify installation of the rebated equipment at the installation address listed on the form. If the residence does not have the qualifying material or work installed, the homeowner may be required to pay back the rebate and the contractor will be deemed ineligible to offer rebates to future customers. OG&E reserves the right to amend or suspend this program without notice.

LIMITATIONS OF LIABILITY; INDEMNIFICATION

In no way shall Oklahoma Gas and Electric Company be liable for, and Customer hereby agrees to indemnify, defend and hold harmless Oklahoma Gas and Electric Company, its subsidiaries or affiliates, and their respective employees, Officers and directors, from and against any and all liability, loss, damage, cost or expense, including attorney's fees, that may be caused by, due to, occasioned by, or otherwise arising out of the installation, operation, mis-operation, or use of customer's installed materials and installations.

Customer acknowledges and agrees that in no event shall any statement, representation, or lack thereof, either express or implied, Oklahoma Gas and Electric Company, relieve the customer of exclusive responsibility for the Customer's systems. Specifically, Oklahoma Gas and Electric Company approval of the rebate application, payment of the rebate, or any Oklahoma Gas and Electric Company inspection of the qualifying materials and installations shall not be construed as confirming or endorsing the materials or installation or its operating or maintenance procedures nor as a warranty or guarantee as to the safety, reliability, or durability of the materials or installation.

Oklahoma Gas and Electric Company is not responsible for items lost or delayed in the mail, or any rebate delayed due to incomplete or incorrect information on the rebate application and/or invoice.

Oklahoma Gas and Electric Company is not responsible for any taxes that may be imposed as a result of your receipt of any rebate.

QUALIFYING CUSTOMERS

- This program is available only to OG&E residential customers in Arkansas who own or rent a permanent foundation, single family home.
- Multi-family structures do not qualify for this rebate.
- Program is available only to retro-fit (existing) homes with electric central air conditioning.
- Program excludes new home residential construction, garages, sheds, workshops, basement and doors.

QUALIFYING INSTALLATION

All windows must be installed by professional window company. All rebate forms need to have a copy of the invoice and detailed specifications for the windows installed.

WHERE TO SUBMIT REBATE APPLICATION AND INVOICE by email or mail to:

residential.ar@oge.com
OG&E AR Residential Rebates
3600 Old Greenwood Road, Ste. 1
Fort Smith, AR 72903

Please allow 6 to 8 weeks after receipt of all documents for the rebate to be processed. Make a copy of all receipts and documentation for your records before submitting for rebate. If you have any questions about your rebate, please call us toll-free at 844-413-3065 or email residential.ar@oge.com.



ATTIC AND WALL INSULATION REBATE

FUND AVAILABILITY IS LIMITED. SUBMISSION OF APPLICATION DOESN'T GUARANTEE REBATE PAYMENT.

SECTION 1. CUSTOMER INFORMATION (please print)

OG&E Account Number:		Customer Email Address:	
Customer Name (as shown exactly on OG&E electric bill):		Customer Daytime Phone:	
Service Address:			
City:	State: AR	ZIP Code:	County:
Mailing Address (if different than installation address):		City:	State: ZIP Code:

SECTION 2. ALTERNATE REBATE RECIPIENT (please print)

Name:		Daytime Phone:	
Mailing Address:		City:	State: ZIP Code:

I (Customer Signature) _____ authorize the above party to receive the rebate check.

SECTION 3. INSTALLING CONTRACTOR INFORMATION (please print)

Contractor Name:		Business Name:		Contractor Phone:	
Contractor Address:		City:	State:	ZIP Code:	

SECTION 4. ATTIC INSULATION INFORMATION (to be provided by installing contractor, include invoice)

1. What date was the project completed? _____
2. What is the central HVAC type? (circle one) **A/C with Gas Heat** **A/C with Electric Heat** **A/C with Heat Pump** **Gas Heat (no A/C)**
3. What was the existing insulation type? _____ **Existing R-value** _____ **Existing inches** _____
4. Square feet being insulated: _____ **Must be area over conditioned living space excluding area over garages, barns or sheds**
5. Installed insulation type: _____ **Installed R-value** _____ **Installed inches** _____ **Final R-value** _____

SECTION 5. WALL INSULATION INFORMATION (to be provided by installing contractor, include invoice)

1. What date was the project completed? _____
2. What is the central HVAC type? (circle one) **A/C with Gas Heat** **A/C with Electric Heat** **A/C with Heat Pump** **Gas Heat (no A/C)**
3. Square feet being insulated: _____ **Must be no existing insulation in walls.**
4. Installed insulation type: _____ **Installed R-value** _____

Rebate amount: Attic Insulation – \$0.15/square foot, Wall Insulation – \$0.50/square foot

I hereby certify that the information listed above is accurate and true. I understand the information submitted is subject to audit and onsite verification may be required prior to payment of rebate. The verification inspection is for record purposes only and does not guarantee the quality of the work performed. **I also understand that submission of the rebate application does not guarantee a rebate. The program will end when funds are depleted. I understand that all the guidelines have been followed (see Rebate Rules and Guidelines).** I also understand that Oklahoma Gas and Electric Company is not liable for any work performed. REBATE APPLICATION AND INVOICE MUST BE SUBMITTED WITHIN 30 DAYS OF INSTALLATION DATE. Contractor and homeowner signatures are required. Make a copy of all receipts and documentation for your records before submitting for rebate.

Installing Contractor: _____ **Homeowner:** _____
 (Signature) (Signature)
Date: _____ **Date:** _____

Please return completed rebate form and contractor invoice by email or mail to:

Email: residential.ar@oge.com | **Mail:** OG&E AR Residential Rebates, 3600 Old Greenwood Road, Ste. 1, Fort Smith, AR 72903

FOR REBATE OFFICIAL USE ONLY. DO NOT WRITE IN THIS AREA.

DATE INSTALLED _____ DATE RECEIVED _____ REBATE AMOUNT _____ PROCESSED BY _____

REBATE DETAILS

- Rebate applies only to OG&E Arkansas customers with an active residential account.
- Rebates are \$0.15/square foot for attic insulation and \$0.50 for wall insulation.
- Rebate will not exceed contractor invoice amount.
- Rebates are issued in the form of checks, not utility bill credits.
- Only one (1) rebate request per service address.
- Rebate Application and Invoice must be received within 30 days of installation of insulation.
- OG&E is not responsible for inaccurate information.
- Funding for this program is limited to funds availability.

REBATE APPLICATION DETAILS

Qualifying insulation installation must have an invoice dated between January 1 and December 15, 2022.

A valid invoice includes the installation date, products purchased, quantity purchased, price and payment made in full. The insulation invoice must also specify all required information, including the customer name, address of installation, phone number, contractor name, business name, address and phone number. All information on the invoice must match the information on the rebate application or the application will not be processed. **Failure to complete all information may result in denial of rebate.**

DO NOT INCLUDE REBATE APPLICATION WITH YOUR OG&E ELECTRIC BILL.

OG&E reserves the right to inspect installations before issuing a rebate. If the residence does not have the qualifying material or work installed, the homeowner may be required to pay back the rebate and the contractor will be deemed ineligible to offer rebates to future customers. OG&E reserves the right to conduct random inspections to verify installation of the rebated equipment at the installation address listed on the form. OG&E reserves the right to amend or suspend this program without notice.

LIMITATIONS OF LIABILITY; INDEMNIFICATION

In no way shall Oklahoma Gas and Electric Company be liable for, and Customer hereby agrees to indemnify, defend and hold harmless Oklahoma Gas and Electric Company, its subsidiaries or affiliates, and their respective employees, Officers and directors, from and against any and all liability, loss, damage, cost or expense, including attorney's fees, that may be caused by, due to, occasioned by, or otherwise arising out of the installation, operation, mis-operation, or use of customer's installed materials and installations.

Customer acknowledges and agrees that in no event shall any statement, representation, or lack thereof, either express or implied, Oklahoma Gas and Electric Company, relieve the customer of exclusive responsibility for the Customer's systems. Specifically, Oklahoma Gas and Electric Company approval of the rebate application, payment of the rebate, or any Oklahoma Gas and Electric Company inspection of the qualifying materials and installations shall not be construed as

confirming or endorsing the materials or installation or its operating or maintenance procedures nor as a warranty or guarantee as to the safety, reliability, or durability of the materials or installation.

Oklahoma Gas and Electric Company is not responsible for items lost or delayed in the mail, or any rebate delayed due to incomplete or incorrect information on the rebate application and/or Invoice.

Oklahoma Gas and Electric Company is not responsible for any taxes that may be imposed as a result of your receipt of any rebate.

QUALIFYING CUSTOMERS

- This program is available only to OG&E Arkansas customers who own or rent a permanent foundation single family home.
- Multi-family structures do not qualify for this rebate.
- Home must have functional central air conditioning.
- Program excludes new home residential construction, garages, sheds, workshops, basement, doors and homes without functional central air conditioning installed.

QUALIFYING INSTALLATION

- Attic insulation must be installed between conditioned (air conditioned living space below ceiling) and unconditioned areas (attic) to qualify.
- Wall insulation must be installed in the wall cavity between exterior wall and conditioned space to qualify.
- All insulation must be installed by a professional insulation company, to the manufacturer's specifications and meet all state and local codes and federal regulations.
- All insulation must be new materials and have R-value stated on the packaging material.
- Existing attic insulation must be less than 8 inches depth or R-23.
- Total finished attic insulation must be greater than 12 inches in depth or R-38.
- There must be no existing insulation in wall cavity to qualify.
- Total finished wall insulation must be R-13 or greater.

WHERE TO SUBMIT REBATE APPLICATION AND INVOICE

Please return completed rebate form and contractor documentation by email:

residential.ar@oge.com

or mail to:

OG&E AR Residential Rebates,
3600 Old Greenwood Road, Ste 1
Fort Smith, AR 72903

Please allow 6 to 8 weeks after receipt of all documents for the rebate to be processed. Make a copy of all receipts and documentation for your records before submitting for rebate. If you have any questions about your rebate, please call us toll-free at **844-413-3065** or email **residential.ar@oge.com**.





We Energize Life

<Full name>
<Street address>
<City, state ZIP>

Enjoy the Great Indoors

Dear <First name>,

The weather inside is always delightful with OG&E's Weatherization Program. Sign up today and we'll send a trained crew to install a variety of weatherization improvements throughout your home—at **no additional cost to you.**

The program has already helped thousands of our customers lower their energy costs and improve their home's year-round comfort. To qualify, you must be a current OG&E residential customer who owns or rents a single-family home or duplex.*

Your improvements may include:

- **Adding attic insulation** to lower energy costs and improve year-round comfort
- **Air sealing, caulking and weatherstripping** to reduce energy waste, allergens and outside noise
- **Sealing around doors and windows** to reduce drafts and save energy
- **Installing LEDs** to save on energy and maintenance costs



A more efficient home is in the forecast. To see which upgrades you qualify for, sign up now at oge.com/weatherization or give us a call at **844-413-3065**.

Sincerely,

Your friends at OG&E

**Certain limitations and state-mandated guidelines may apply. Home must be at least 10 years old. Weatherization services are available to rental properties if an eligible customer lives in the home and has approval from the property owner.*



OG&E Weatherization Program

LOOKS LIKE ANOTHER BEAUTIFUL DAY INSIDE



The weather inside is always delightful with OG&E’s Weatherization Program. Enroll today to receive energy-saving weatherization improvements at no additional cost to you.

Your home improvements may include:

- Adding attic insulation to lower energy costs and improve year-round comfort
- Air sealing, caulking and weatherstripping to reduce energy waste, allergens and outside noise
- Sealing around doors and windows to reduce drafts and save energy
- Installing LEDs to save on energy and maintenance costs

Eligibility

This program is open to current OG&E Arkansas or AOG residential customers who own or rent a single-family home or duplex.*

**Certain limitations and state-mandated guidelines may apply. Home must be at least 10 years old. Weatherization services are available to rental properties if an eligible customer lives in the home and has approval from the property owner.*

Valued up to

\$3,000

Enroll now at
oge.com/weatherization or
 contact us to get started.

844-413-3065
ogehvac@clearresult.com

FPO SPACE FOR
CONTRACTOR LOGO



OG&E.com

Programa de Climatización de OG&E

OTRO HERMOSO DÍA EN CASA



El clima en el interior de su hogar siempre será agradable con el Programa de Climatización de OG&E. Inscríbese hoy mismo para recibir mejoras de climatización que le ayudarán a ahorrar energía sin costo adicional.

Las mejoras en su hogar pueden incluir:

- Añadir aislamiento al ático para reducir los costos de energía y aumentar la comodidad durante todo el año
- Sellado de fugas de aire, enmasillado y colocación de burletes (cintas protectoras) para reducir el desperdicio de energía, alérgenos y ruido exterior
- Sellado alrededor de puertas y ventanas para reducir las corrientes de aire y ahorrar energía
- Instalación de focos LED para ahorrar energía y costos de mantenimiento

Elegibilidad

Este programa es elegible para clientes residenciales actuales de OG&E Arkansas o AOG quienes sean dueños o renten una casa unifamiliar o dúplex.*

**Pueden aplicarse ciertas limitaciones y normas exigidas por el estado. La propiedad debe tener al menos 10 años de antigüedad. Los servicios de climatización están disponibles para propiedades en renta si el cliente elegible vive en el hogar y cuenta con la aprobación del propietario.*

Con un valor
de hasta

\$3,000

Inscríbese hoy mismo en
[oge.com/weatherization](https://www.ogenergy.com/weatherization)
o contáctenos
para comenzar.

844-413-3065
ogehvac@clearresult.com

FPO SPACE FOR
CONTRACTOR LOGO

OG&E
Energía para la Vida

OGE.com

aog
ENERGY FOR LIFE

INSTANT REBATES FOR SMALL BUSINESS LONG-TERM SAVINGS

LEDS

LED Pin-Base CFL Direct Replacement Lamp **\$5**

LED REFLECTORS

R/BR30 **\$3** PAR16 **\$5**

R/BR20 **\$3** PAR30 **\$4**

R/BR40 **\$3** MR16 **\$5**

PAR20 **\$5** PAR38 **\$4**

LED LINEAR FIXTURES

2X2 LED Linear Fixture **\$20**

2X2 LED Linear Fixture w/ Integrated Sensor **\$25**

2X4 LED Linear Fixture **\$30**

2X4 LED Linear Fixture w/ Integrated Sensor **\$35**

LED WALL PACK/FLOOD/POLE MOUNT

LED Wall Pack/Flood 7W-29W **\$20**

LED Wall Pack/Flood 30W-80W **\$50**

LED Wall Pack/Flood 80W+ **\$80**

LINEAR

LED 8' Tube **\$12**

LED T8 Replacement **\$3**

LED T5 Replacement **\$5**

Funds are limited and available on a first-come, first-served basis.

LED LOWBAY/HIGHBAY

LED Lowbay/Highbay 30W-60W **\$65**

LED Lowbay/Highbay 61W-100W **\$75**

LED Lowbay/Highbay 100W+ **\$100**

OTHER REBATES

LED Downlight/Trim Kit **\$8**

Wall Sensor **\$20**

Ceiling Sensor **\$30**

Ask our sales staff for more details.

DISTRIBUTOR LOGO AREA

Sample Company Name
XXX-XXX-XXXX
samplecompanyname.com

Contact us for more information:

ogemidstreamar@clearesult.com or
oge.com/ceep or call: 479-462-7624



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OG&E.com

CONTINUOUS ENERGY IMPROVEMENT



INDUSTRIAL

OG&E's Continuous Energy Improvement (CEI) Program helps facility managers identify and implement low-cost energy efficiency projects. Rather than piecemeal equipment updates, CEI focuses on everyday behavioral and operational changes to continually enhance the safety, quality and productivity of your entire facility.

This holistic approach helps instill a culture of efficiency across all levels of your organization—leading to sustained, long-term energy and cost savings.

Benefits of CEI:

- Identify low- and no-cost energy-saving opportunities.
- Forecast and track performance through statistical energy models.
- Network and learn best practices from other participants.
- Continually improve through one-on-one coaching, technical tools and educational resources.
- Maximize savings with support from OG&E's full portfolio of commercial programs.
- Receive an incentive of \$0.02 per annual kWh saved.

"The CEI program fit perfectly with the core values of OU Medicine in the area of stewardship. The program tied in seamlessly with our sustainability efforts on campus and reinforced the use of continuous improvement methods to develop a robust energy program for our hospitals."

Joshua Ashlock, MBA, CHFM, CHC
Director of Facilities Engineering
OU Medical Center

"The OG&E Continuous Energy Improvement (CEI) Program has really benefited Johnson Controls by helping us achieve our corporate continuous improvement energy goals. Involvement in the CEI Program, especially in the group workshops, has helped us build a strong JCI Energy Team as well as enabled us to build teamwork by inclusion of others across our plant in saving energy. After a successful first year, we look forward to partnering again with OG&E and continuing to save energy through the CEI Program."

Matt Truitt
UPG EHS Manager -
Building Efficiency
Johnson Controls



OG&E

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HOW CONTINUOUS ENERGY IMPROVEMENT WORKS



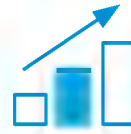
Ongoing series of cohort workshops



Customized energy engineering



Optimizing existing equipment and operations



Energy performance tracking



Customized on-site and virtual support

TYPICAL PROJECTS

Operational

Review & optimize building controls

Lighting level adjustments

Support staff training and engagement

Teacher and student training and empowerment

Compressed air systems optimization

Scheduling optimization

Behavioral

Adjust HVAC setpoints

Employee energy engagement

Energy-saving preventative maintenance measures

Turn off idle equipment

Decrease energy waste

Efficient scheduling and communications

READY TO GET STARTED?

Contact us today at

Ethan Townsend

SEM Coach

479.883.3401

ethan.townsend@clearesult.com



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OGE.com

CONTINUOUS ENERGY IMPROVEMENT



SCHOOLS

OG&E's Continuous Energy Improvement (CEI) Program helps facility managers identify and implement low-cost energy efficiency projects. Rather than piecemeal equipment updates, CEI focuses on everyday behavioral and operational changes to continually enhance the safety, quality and productivity of your entire facility.

This holistic approach helps instill a culture of efficiency across all levels of your organization—leading to sustained, long-term energy and cost savings.

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- Network and learn best practices from other participants.
- Continually improve through one-on-one coaching, technical tools and educational resources.
- Maximize savings with support from OG&E's full portfolio of commercial programs.
- Receive an incentive of \$0.02 per annual kWh saved.

"OG&E/CLEAResult has been a tremendous partner with Mustang Schools! We try to tap into every program that is offered in order to reduce our energy costs and be the best possible stewards of our taxpayers' dollars."

Mustang Public Schools
Alan Green
 Chief Operations Officer



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HOW CONTINUOUS ENERGY IMPROVEMENT WORKS



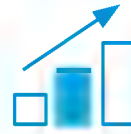
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Customized energy engineering



Optimizing existing equipment and operations



Energy performance tracking



Customized on-site and virtual support

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Operational

Review & optimize building controls

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Employee energy engagement

Energy-saving preventative maintenance measures

Turn off idle equipment

Decrease energy waste

Efficient scheduling and communications

READY TO GET STARTED?

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SEM Coach

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ethan.townsend@clearesult.com



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2022 PARTICIPATING CONTRACTORS SMALL BUSINESS

Burgess NRG

Dane Burgess
479-650-0000
dburgess@clearnrgsolutions.com

Matlock Electric

Mark Hoskins
501-786-0563
mark@matlock-electric.com

SmartSwitch

David Bryant
214-796-1140
smartswitchledsolutions@gmail.com

Solomon LED

Daniel Yoo
214-998-3233
solomonled3@gmail.com

Vibrant Solutions

Rob Sult
479-212-0428
vibrantsolutionsled@gmail.com



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OGE.com



BIG SAVINGS FOR YOUR SMALL BUSINESS

AVAILABLE INCENTIVES

Planning an energy efficiency project? Get with the program. Our Small Business Efficiency Program offers incentives that can cover up to 90 percent of the cost of a project.

Incentive rates:

- \$0.15/kWh reduced for eligible LED lighting fixtures & tube lamp measures
- \$0.12/kWh reduced for refrigeration door gaskets

ELIGIBLE PROJECTS

Incentives are available for a wide variety of energy efficiency projects, including:

- LED lighting upgrades* (tube lights, bulbs, fixtures)
- Occupancy sensor installations
- LED exit sign retrofits
- Refrigerator door gaskets
- Refrigerator anti-sweat heater controls
- And more!

*LED retrofits must be either DesignLights Consortium™ approved or ENERGY STAR® certified to receive incentives.



We Energize Life

Take control of your energy use—and your bottom line.



To get started, contact a program representative by email at oge.ar.sbdi@clearresult.com

OR CALL
844-413-3065

SMALL BUSINESS EFFICIENCY PROGRAM

OG&E offers energy-efficient solutions for small business customers.



Products and services are provided solely by approved participating Service Providers. OG&E does not sell goods or services in its energy efficiency programs.



PROGRAM BENEFITS

We'll provide everything you need to help your business achieve long-term energy savings, including:

- A no-out-of-pocket cost, no-obligation lighting assessment to identify energy-saving opportunities
- Recommendations and estimates for energy savings, project costs and payback periods
- Installation of approved energy-saving equipment by a local, pre-qualified contractor
- Incentives paid directly to the contractor by the program to reduce your upfront cost

It's with programs like this one that OG&E is able to keep rates among the lowest in the country.

ELIGIBILITY

The program is open to any small commercial customers with a valid OG&E account meter and no more than 100 kW peak demand at any one facility.

Get started today

1. Visit oge.com/business to select a participating contractor.
2. Contact the contractor you selected and provide your customer account number to verify your eligibility.
3. The participating contractor will provide a no-cost walk-through assessment of your facility.
4. Review your energy-saving proposal and sign the customer proposal to approve the recommended measures.
5. The participating contractor will install the approved measures within 60 days of receiving the signed agreement.

TYPICAL PROJECT SCENARIO

To give you an idea of the potential savings available through the program, below is an example of some commonly proposed retrofits. The projected savings and costs for these retrofits are on the right.



Existing interior lighting:

- 32 4 ft. 4-lamp fluorescent fixtures
- 16 60W incandescent bulbs
- 2 exit signs

Interior lighting retrofit:

- 32 4 ft. 36W LED fixtures
- 16 10W LEDs
- 2 LED exit signs

Incentives, actual savings and payback periods vary depending on the equipment installed, building characteristics, energy-use patterns, age of existing equipment, location and other parameters specific to the project.

EXAMPLE PROJECT BY THE NUMBERS

11,638 kWh

total energy savings

3.28 kW

total peak demand savings

\$3,712

estimated incentives

\$1,979

net cost to customer

\$4,712

estimated project cost

1.7 years

project payback

\$1,163.84

estimated annual savings

CONTINUOUS ENERGY IMPROVEMENT



LEARN TO SAVE LIKE AN EXPERT

OG&E's Continuous Energy Improvement (CEI) Program provides tools, training and technical resources that can help you reduce your organization's energy costs by up to 25 percent.

Through workshop sessions and one-on-one coaching, we'll teach you to identify and implement simple, low-cost savings opportunities across your organization. We'll also help you take advantage of incredible financial incentives offered through our Commercial Energy Efficiency Program.

CEI is built on principles of continuous improvement and organizational change, integrating cost-saving and operational excellence initiatives such as Lean and Six Sigma. CEI will help you influence your culture and engage your organization toward wise energy use and reduced energy waste.

From training to mentoring support, our team of energy experts is ready to help you save—all at no financial cost to you.

Benefits

- Energy cost savings
- Identify low-cost energy-saving opportunities and quick payback energy projects
- Statistical energy model(s) for tracking performance and forecasting
- Network with and learn best practices from other participants
- Technical and coaching resources
- Tools and educational materials
- Umbrella support to maximize savings through OG&E programs
- Incentive bonus for low-cost savings (\$0.02 per annual kWh saved)

"The OG&E CEI Program has really benefited Johnson Controls by helping us achieve our corporate continuous improvement energy goals this year. Involvement in the CEI Program, especially in the group workshops, has helped us build a strong JCI Energy Team as well as enabled us to build teamwork by inclusion of others across our plant in saving energy. After a successful first year, we look forward to partnering again with OG&E and continuing to save energy through the CEI Program."

Matt Truitt
UPG EHS Manager
Building Efficiency
Johnson Controls

"The CEI Program fit perfectly with the core values of OU Medicine in the area of stewardship. The program tied in seamlessly with our sustainability efforts on campus and reinforced the use of continuous improvement methods to develop a robust energy program for our hospitals."

Joshua Ashlock, MBA, CHFM, CHC
Director of Facilities Engineering
OU Medical Center



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FIRST YEAR—WORKSHOPS AND ACTIVITIES													
Type	Activity	Timing											
		Initiative Month											
		1	2	3	4	5	6	7	8	9	10	11	12
Workshops	Cohort Kickoff	■											
	Engaging Your Organization in Saving Energy				■								
	Measuring and Modeling Energy Performance						■						
	Technical Forum							■					
	Sustaining Energy Savings/Report Out												■
Individual Events	Site Review/Opportunity Assessment		■										
	Review and Prioritize Opportunities—CEI Plan			■									
	Mid-Year Executive Sponsor Update						■						
	Energy-Saving Engagement Event								■				
	Energy Management Assessment											■	
Other Activities	Monthly Check-in Calls				■	■	■	■	■	■	■	■	■
	Milestones			■	■			■	■				

READY TO GET STARTED?

Contact us today at:

Ethan Townsend

479-883-3401

ethan.townsend@clearesult.com



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OGE.com

OG&E COMMERCIAL ENERGY EFFICIENCY PROGRAM

PROJECT APPLICATION

Oklahoma Gas & Electric is proud to offer the Commercial Energy Efficiency Program (herein referred to as "program") for the purposes of improving the energy efficiency of commercial customers located within its Arkansas service territory. OG&E has contracted with CLEAResult to implement the program.

_____, (herein referred to as "Customer") recognizes that it is a willing participant of the program designed to help reduce energy bills for their facilities, reducing operating costs and improving the usability and comfort of their facilities. This Project Application reflects the binding commitment between your organization and the program and details the commitments of each party in order to improve energy efficiency in your facilities. The execution of this agreement reserves incentive funds for the project detailed herein. Funds are reserved for 90 calendar days. Projects must be completed and submitted no later than December 15th of the current program year.

To participate in the Program, you understand and agree to the following terms:

1. Only project sites served by OG&E are eligible for inclusion on this application.
2. Customer acknowledges that the appropriate Program Manual may be made available and that they will abide by the terms and processes set forth in the Program Manual.
3. Customer will identify a contact person to work with the program throughout the term of this agreement. He or she will work with the program to identify, assess, and implement cost-effective energy efficiency measures.
4. Customer will provide access to facilities for the purposes of pre-inspection and post-inspection for the purpose of energy savings verification.
 - a. For retrofit projects, a pre-installation inspection must pass before any installation work has begun.
 - b. For new construction projects, Customers must submit construction drawings or similar (in electronic, PDF file format) to CLEAResult for review.
5. The program will reserve incentive funds for eligible energy-saving projects and will pay the Customer monetary incentives based on projects completed within the program year. Approval of Project Application forms and resulting reservations of incentive funds are solely within the discretion of the program. Incentive funds estimated in this form are not officially reserved until the program has approved them and notified Customer. Funds are reserved for 90 calendar days. After 90 calendar days, the funds reserved for this project may be redistributed to other projects. A request to waive the 90 calendar day requirement must be submitted in writing to CLEAResult. OG&E may review waiver requests and grant a waiver based on extenuating circumstances.
6. Customer will make its best effort to complete and submit relevant Project Application forms, including necessary supporting documentation, in a timely manner. The project application process is required in order to reserve financial incentives for a project.
7. Customer will allow the program to use Customer's name to promote enrollment to entities, including the general public, potential program participants, utilities, as well as federal, state, or local entities.
8. Customer acknowledges that, as part of its participation in the program, it will maintain eligibility to receive program services and incentives from the date of this Participation Agreement until December 31st of the current program year.
9. Customer agrees to submit to CLEAResult a copy of the original invoice for equipment cost, labor, and other costs associated with the project.
10. If Customer uses internal labor and is therefore not invoiced for labor, Customer will submit to CLEAResult a copy of the equipment invoice and an estimate of internal labor hours spent.
11. The incentive funds offered under the program are limited to a program budget. If the program's budget is fully reserved, Project Application forms will be placed on a waitlist. When/if additional budget becomes available, waitlisted forms will be reviewed based on the date of receipt by CLEAResult.
12. The program is not under any obligation to provide Customer with more incentives than the amount reserved by the Project Application form for any project, even if Customer achieves greater energy savings by the project than what were estimated. However, if budget is available when a project achieves greater energy savings than estimated, the program has the option to pay Customer more than the amount reserved, up to the incentive calculated by the achieved energy savings.

ACCEPTANCE OF AGREEMENT

By signing below, your organization accepts this agreement with the Commercial & Industrial Program sponsored by OG&E. This agreement should be signed by your organization's owner, facilities manager, energy director, or other representative authorized to enter into said agreement.

Customer Signature: _____

Customer Printed Name: _____

Title: _____ Date: _____

CUSTOMER INFORMATION

Application Date:		OG&E Account #:	
Company/Customer Name:			
Contact First Name:		Last Name:	
City:		State:	ZIP Code:
Primary Phone:		Secondary Phone:	
E-mail Address:			
Project Site Address:			
City:		State:	ZIP Code:

PROJECT INFORMATION

Project Name: _____

Project Type: New Construction Retrofit

Facility Type: Manufacturing Warehouse School Government Other _____

Total Weekly Hours of Facility Operation: _____

Please select project type. Check all that apply.

Air Compressor Chiller Pump Fan HVAC

Lighting Motors Refrigeration Controls

Other _____

Briefly describe the project and quantity of proposed installations: _____

What are the estimated installation starting and completion dates:

Start Date: _____ Completion Date: _____

Has an energy savings analysis been conducted on the project? If yes, please complete the following:

kWh Savings: _____ kW Savings: _____

INSTALLATION INFORMATION

Is the installation being conducted by in-house staff or by a Contractor?

In-house staff Contractor Not sure

If a Contractor is used, provide the following information:

Company Name:

Contact First Name:

Last Name:

Mailing Address:

City:

State:

ZIP Code:

Primary Phone:

Secondary Phone:

E-mail Address:

INCENTIVE PAYMENT ACKNOWLEDGEMENT

Customer certifies and acknowledges that the following will be the payee for the incentive of these energy efficient measures, upon completion of the project:

Customer Contractor

Project Payee Tax ID #:

Tax Exempt? Yes No

Project Payee Name:

Mailing Address:

City:

State:

ZIP Code:

FOR OFFICIAL USE

This section to be completed by CLEAResult representative.

Customer Name: _____

Project Name: _____

CLEAResult Representative Name: _____

INCENTIVE AND SAVINGS INFORMATION*

Measure Description	Estimated Savings		Incentive Rate \$/kWh	Estimated Incentive
	kW	kWh		
Estimated Totals				

*The amount listed as the Total Estimated Incentive is based on estimated kWh savings. The actual incentive amount will be based on verified kWh savings.

PROJECT COMPLETION PROCESS

1. PRE-INSTALLATION INSPECTION

A CLEAResult representative conducts a pre-inspection to verify existing conditions and equipment.

2. PROJECT APPLICATION

The Customer submits a Project Application that outlines the final project specifications, estimated savings, and incentive reservation amount. A CLEAResult representative verifies the final project is eligible for incentives and determines the Measurement and Verification (EM&V) requirements.

3. INSTALLATION

The Customer selects a contractor and installs the eligible measures.

4. POST-INSTALLATION INSPECTION

A CLEAResult representative conducts the necessary post-inspections to verify the upgrades.

5. MEASUREMENT & VERIFICATION (M&V)

A CLEAResult representative oversees/conducts any necessary M&V. If using the Deemed Savings method, the representative will calculate the final savings based on the post-installation inspection.

6. PROJECT CLOSEOUT

A CLEAResult representative submits the final project documentation to OG&E for initiation of the incentive payment process. Customer receives incentive payment within 2-4 weeks.

Note: A CLEAResult representative is available to complete a no-cost Walk-through Assessment to aid the Customer in identifying viable energy saving projects.

ENROLLMENT INSTRUCTIONS

Step 1: Complete this Project Application Form

Step 2: Complete a W-9

Step 3: Mail completed form and W-9 to the following:

CLEAResult

3600 Old Greenwood Road, Suite 1

Ft. Smith, AR 72903

-or-

Email to commercial.ar@oge.com



OGE.com

COMMERCIAL ENERGY EFFICIENCY PROGRAMS

PARTICIPATION AGREEMENT

OG&E is proud to offer a variety of no-out-of-pocket-cost energy efficiency programs for our commercial and public sector customers. Along with expert technical and consulting assistance, we provide generous financial incentives to help you achieve your long-term energy goals.

Large Commercial & Industrial Program

As part of our Large Commercial & Industrial Program, we work with businesses to help them save energy and reduce operating costs. From lighting to HVAC retrofits, we'll identify the energy-saving measures that are best for your business.

Schools and Government Program

OG&E provides incentives for energy-efficient upgrades and retrofits to all educational and publicly funded facilities within our service territory. We'll help you secure valuable incentives for each measure and educate staff on how to identify even more energy efficiency opportunities.

Steps to participate:

1. Sign and submit the participation agreement on the back to enroll.
2. Schedule your pre-installation inspection.
3. You will receive a summary report of findings at your facility, including energy-saving opportunities and potential savings.
4. For all programs, you will sign and submit a project application to define projects to be completed and reserve incentive funds.
5. Complete projects defined in the project application.
6. Notify program administrator of project completion and schedule post-inspection if required.
7. Receive your incentives from OG&E and look forward to future years of energy savings.
8. After completing the project and receiving incentives, you may be contacted by an independent evaluator to verify information gathered by the program and/or to review on-site equipment installation.



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2022 OG&E ACCEPTANCE OF AGREEMENT

OG&E has contracted with CLEAResult to sponsor, promote and administer the Commercial & Industrial, Schools and Government, and Small Business programs. _____ (herein referred to as "participant") recognizes that it is a willing participant of these programs, which are designed to help lower OG&E bills and free up operating dollars.

This participation agreement reflects the voluntary collaboration between your organization and the OG&E-sponsored programs mentioned above. The terms at right and attached as Exhibit A detail the general commitments of the participant in order to improve the energy efficiency of their facilities. Applicable program manuals with additional terms will be available for the participant once the program administrator has selected the appropriate program options for a specific participant.

The program administrator agrees to provide services to the participant with the understanding that the participant will exert its best efforts to implement cost-effective energy efficiency recommendations. Projects submitted to the program must be completed by December 1, 2022 to receive incentive funds and allow time for post-installation inspections.

To participate in these programs, you will need to understand and agree to these terms:

1. Participant acknowledges that the appropriate program manual will be made available and that they will abide by the terms and processes set forth in this document.
2. Participant will identify a contact person to work with the program throughout the term of this agreement. They will work with the program to identify, assess and implement cost-effective energy efficiency measures.
3. The programs will reserve incentive funds for eligible energy-saving projects and will pay the participant monetary incentives based on projects completed within each program year.
4. Participant will make its best effort to complete and submit relevant project application forms, including necessary supporting documentation for each project, in a timely manner. The project application process is required in order to reserve financial incentives for projects.
5. Participant acknowledges that, as part of its participation in this program, it will maintain eligibility to receive program services and incentives from the date of this participation agreement until December 31, 2022.

BY ENDORSING BELOW, YOUR ORGANIZATION ACCEPTS THIS AGREEMENT WITH OG&E

This agreement should be signed by your organization's director, president or similar executive and is valid through the 2022 program year. If participant wishes to end its participation in the program, they may do so at any time by providing the program administrator written notice of their intentions.

Organization:			
Site Name:			
Contact Phone:		Site Address:	
Contact Email:	City:	State:	ZIP Code:
OG&E Account Number:*		Tax ID:	
Type of Project:		Expected Construction Completion Date:	
Incentive will be paid to: Participant: <input type="checkbox"/> Trade Ally:** <input type="checkbox"/>		Incentive Payment Mailing Address:	
Pay to the Order of:	City:	State:	ZIP Code:
First Name:		Last Name:	
Signature:		Date:	

Please sign and email to commercial.ar@oge.com

*If you have more than one account number, please provide a separate list of buildings, physical addresses and account numbers.

**Assignment of funds form required



EXHIBIT A

These Standard Terms and Conditions for Participating Customers and the Customer Participation Agreement (collectively, the "Agreement") are made and entered into by and between CLEAResult Consulting Inc., a Texas corporation and/or an affiliate thereof ("CLEAResult"), and Participant ("Customer") for the purpose of evaluating and installing energy efficient measures ("EEM") under the Program funded by OG&E ("Sponsor"). CLEAResult and Customer may be referred to in this Agreement individually as a "Party" and collectively as the "Parties." The Parties acknowledge and agree that the state regulatory governing body (the "APSC"), Sponsor and Contractor are third party beneficiaries of this Agreement. In consideration of the mutual covenants and agreements set forth below, the adequacy and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

1. **ACCESS AND PARTICIPATION.** Customer agrees to support CLEAResult and Contractor and assign a representative to facilitate services provided under this Agreement. Customer acknowledges its intent to install EEM using Program incentives. Customer agrees to allow CLEAResult and Contractor to access its facilities, energy use and cost information for the purposes of implementing this Agreement. If Customer is a tenant, Customer represents that by signing this document they have obtained the property owner's permission to install EEM under this Agreement. Customer agrees not to use the name or identifying characteristics of Sponsor or its contractors for any advertising, sales promotion, or other publicity of any kind. Customer also confirms that it has not and will not receive rebates, incentives or services for any measures installed under this Program from another program funded by Sponsor. The Program may be modified or terminated without prior notice and this Agreement is subject to modifications by Sponsor.
2. **ELIGIBILITY.** Sponsor determines eligibility of Customers at its sole discretion. CLEAResult may request verification of eligibility requirements at any time during the Program period. Customer agrees to install all EEM provided by CLEAResult under this Program; provided, however, that if Customer does not install all EEM, then it shall return any uninstalled EEM to CLEAResult.
3. **INCENTIVE PAYMENT.** Customer acknowledges that incentives will be paid by Sponsor only if: (a) Customer(s) and installed measure(s) or services meet the Program eligibility requirements and the requirements outlined by the Program; (b) measures are installed in eligible project sites; and (c) measures are installed at a project site that has not received incentives from any other of Sponsor's energy efficiency programs for the same measure(s). Customer understands that Sponsor, in its sole discretion, may withhold incentive payments committed to Customer if a project site is proven ineligible or a project otherwise does not comply with the requirements set forth by the Program. Customer acknowledges that the incentive amount may not exceed the cost of the EEM.
4. **AUDITING, MONITORING AND VERIFICATION.** Customer also agrees to allow CLEAResult, Contractor, Sponsor and the PUC to access its facilities for the purpose of confirming Customer's participation in the Program, inspecting installed EEM, and verifying the energy savings achieved through the Program. Customer agrees to cooperate with CLEAResult, Contractor, Sponsor and the PUC, as necessary. Customer also agrees to remedy any issue arising from auditing and monitoring results at no additional cost within the time frame provided by the Program. Customer understands that any incentives may be withheld if Customer refuses to participate in any required verification within a reasonable period. Customer verifies that all EEM is installed in accordance with all applicable federal, state and local laws and manufacturer's specifications.
5. **CONFIDENTIALITY.** CLEAResult shall keep Customer information confidential. Only Contractor, Sponsor and the PUC shall be granted access to Customer data as needed or required. CLEAResult will not use the name or identifying characteristics of Customer in advertising sales promotion or other publicity without Customer's written approval.
6. **NO WARRANTY.** CLEAResult, SPONSOR AND THE PUC MAKE NO REPRESENTATIONS OR WARRANTIES, AND ASSUME NO LIABILITY WITH RESPECT TO QUALITY, SAFETY, PERFORMANCE, OR OTHER ASPECT OF ANY EEM INSTALLED PURSUANT TO THIS AGREEMENT AND EXPRESSLY DISCLAIM ANY SUCH REPRESENTATION, WARRANTY OR LIABILITY, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT. NOTHING IN THIS AGREEMENT SHALL BE CONSTRUED TO CREATE ANY DUTY TO, ANY STANDARD OF CARE WITH REFERENCE TO, OR ANY LIABILITY TO ANY THIRD PARTY. NEITHER THE PUC, SPONSOR, NOR CLEAResult SHALL BE RESPONSIBLE FOR COSTS OR CORRECTIONS OF CONDITIONS ALREADY EXISTING IN THE FACILITIES INSPECTED WHICH FAIL TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS.
7. **INDEMNIFICATION; LIMIT ON LIABILITY.** CUSTOMER AGREES TO INDEMNIFY THE PUC, SPONSOR AND CLEAResult AGAINST ALL LOSS, DAMAGES, COSTS AND LIABILITY ARISING FROM ANY CLAIMS RELATED TO ANY PRODUCTS INSTALLED OR SERVICES PERFORMED DURING THE INSTALLATION OR MAINTENANCE OF EEM. NEITHER THE PUC, SPONSOR, CLEAResult, NOR CUSTOMER SHALL BE LIABLE TO EACH OTHER FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RELATED TO THIS AGREEMENT.
8. **MISCELLANEOUS.** This Agreement shall be governed by and construed under the laws of the State of Arkansas, without regard to conflict of law rules. The parties agree that all actions, disputes, claims and controversies arising out of or relating to this Agreement or the work performed hereunder will be subject to binding arbitration administered in the county where the Customer is located by the American Arbitration Association under its Commercial Arbitration Rules and judgment on the award may be entered in any court having jurisdiction. Customer shall not assign, delegate or subcontract this Agreement or its duties thereunder, in whole or in part, voluntarily or involuntarily (including a transfer to a receiver or bankruptcy estate) without the prior written permission of CLEAResult. CLEAResult may assign its rights and delegate its duties under this Agreement to any third party at any time without Customer's consent. If any provision of this Agreement is invalid or unenforceable in any jurisdiction, the other provisions in this Agreement shall remain in full force and effect in such jurisdiction and shall be liberally construed in order to effectuate the purpose and intent of this Agreement. The invalidity or unenforceability of any provision of this Agreement in any jurisdiction shall not affect the validity or enforceability of any such provision in any other jurisdiction. The failure of either Party to enforce strict performance by the other of any provision of this Agreement, or to exercise any right available to the Party under this Agreement, shall not be construed as a waiver of such Party's right to enforce strict performance in the same or any other instance. Sections 1 and 4 through 7 shall survive the term of this Agreement.



OG&E SCHOOLS & GOVERNMENT EFFICIENCY PROGRAM



FACT SHEET

Design

OG&E provides incentives for energy-efficient upgrades to all educational and publicly funded facilities within our service territory. We'll help you secure the largest incentives available—which can often cover over 50 percent of the initial project costs. Free educational activities are also available to help administrative personnel identify and quantify energy efficiency opportunities.

Goals

Over the long term, we'll help your organization save money on utility bills, improve comfort and protect the environment through education, increased efficiency and responsible energy consumption.

Implementation

Program representatives will help determine what energy efficiency upgrades will work best for your facility. At your request, our building science team can perform a no-cost walkthrough of your facilities and recommend energy-saving improvements. Your facilities may also be compared to others in a benchmark study.

Recognition

Realizing energy and fiscal savings is worth celebrating. We'll help you publicize your success through a variety of media channels.

Eligibility

All publicly funded facilities located within the OG&E service territory are eligible to participate. Participation is on a first-come, first-served basis now through December 1 of the current program year, or while funds last.

**More ways
to save**



**CONTACT US FOR
MORE INFORMATION:**

**844-413-3065
commercial.ar@oge.com**

OG&E

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MIDSTREAM INSTANT INCENTIVE PARTICIPATING DISTRIBUTOR LOCATIONS

Wholesale Fort Smith

Darrin Newhart
5615 Old Greenwood Rd.,
Fort Smith, AR 72903
479-646-2000
darrinn@netwes.com

CED Keathley

Dusty Donham
7707 South Zero St.,
Fort Smith, AR 72903
479-648-3600
dusty_donham@kpfsm.com

Wholesale Van Buren

Brent Riggins
2700 Kibler Rd.,
Van Buren, AR 72956
479-262-2062
brentr@netwes.com

Locke Supply

Chad Price
1200 South Waldron Rd.,
Suite 120, Fort Smith, AR 72903
479-478-9413
145m@lockesupply.com



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CONTINUOUS ENERGY IMPROVEMENT PROGRAM

CUSTOMER PARTICIPATION AGREEMENT

CUSTOMER INFORMATION

Customer:	Contact Name:	
Address:		
City:	State:	ZIP:
Email:	Office Phone:	Mobile Phone:

PROGRAM OVERVIEW

Continuous Energy Improvement (CEI) (Program), administered by CLEAResult, provides technical assistance, information and incentives to eligible commercial, public sector and industrial customers of Oklahoma Gas and Electric (OG&E) (Sponsor) to install and implement energy-efficient measures. The Program is offered on a first-come, first-served basis from January 1, 2022 through December 31, 2022 while funding lasts.

PROGRAM ELIGIBILITY

Customer confirms that it is an existing commercial, public sector or industrial entity that receives electric distribution services from Sponsor. Customer agrees to provide full and accurate usage data and other information upon request. Customer also agrees to provide access to CLEAResult and Sponsor.

ENROLLMENT INSTRUCTIONS

Step 1: Complete this Customer Participation Agreement

Step 2: Complete a W-9

Step 3: Submit completed Customer Participation Agreement and W-9 to ceep@oge.com:

Also, please email to your local CLEAResult CEI Coach.

CUSTOMER AGREED AND ACCEPTED

I have read and understood the Customer Participation Agreement and the attached Standard Terms and Conditions for Participating Customers and certify that the information I have provided is true and correct.

Signature:	Date:
Name (printed):	Title:

CLEARRESULT AGREED AND ACCEPTED

Signature:	Date:
Name (printed):	Title:



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STANDARD TERMS AND CONDITIONS FOR PARTICIPATING CUSTOMERS

These Standard Terms and Conditions for Participating Customers and the Customer Participation Agreement (collectively, the “**Agreement**”) are made and entered into by and between CLEAResult Consulting Inc., a Texas corporation and/or an affiliate thereof (“**CLEAResult**”), and Customer for the purpose of evaluating and installing energy efficient measures (“**EEM**”) under the Program funded by Sponsor. CLEAResult and Customer may be referred to in this Agreement individually as a “**Party**” and collectively as the “**Parties**.” The Parties acknowledge and agree that the state regulatory governing body (the “**PUC**”), Sponsor, and third-party evaluators acting under the direction of Sponsor are third-party beneficiaries of this Agreement. In consideration of the mutual covenants and agreements set forth below, the adequacy and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

- 1. ACCESS AND PARTICIPATION.** Customer agrees to support CLEAResult and assign a representative to facilitate services provided under this Agreement. Customer acknowledges its intent to install EEM. Customer agrees to allow CLEAResult to access its facilities, energy use and cost information for the purposes of implementing this Agreement. If Customer is a tenant, Customer represents that by signing this document they have obtained the property owner's permission to install EEM under this Agreement. Customer agrees not to use the name or identifying characteristics of Sponsor or its contractors for any advertising, sales promotion, or other publicity of any kind. Customer also confirms that it has not and will not receive rebates, incentives or services for any measures installed under this Program from another program funded by Sponsor. The Program may be modified or terminated without prior notice and this Agreement is subject to modifications by Sponsor.
- 2. ELIGIBILITY.** Sponsor determines eligibility of Customers at its sole discretion. CLEAResult may request verification of eligibility requirements at any time during the Program period.
- 3. INCENTIVE PAYMENT.** Customer acknowledges that incentives will be paid by Sponsor only if: (a) Customer(s) and installed measure(s) or services meet the Program eligibility requirements and the requirements outlined by the Program; (b) measures are installed in eligible project sites; and (c) measures are installed at a project site that has not received incentives from any other of Sponsor's energy efficiency programs for the same measure(s). Customer understands that Sponsor, in its sole discretion, may withhold incentive payments committed to Customer if a project site is proven ineligible or a project otherwise does not comply with the requirements set forth by the Program. Customer acknowledges that the incentive amount may not exceed the cost of the EEM.
- 4. AUDITING, MONITORING AND VERIFICATION.** Customer also agrees to allow CLEAResult, Sponsor, third-party evaluators acting under the direction of Sponsor, and the PUC to access its facilities for the purpose of confirming Customer's participation in the Program, inspecting installed EEM, and verifying the energy savings achieved through the Program. Customer agrees to cooperate with CLEAResult, third-party evaluators, Sponsor and the PUC, as necessary. Customer also agrees to remedy any issue arising from auditing and monitoring results at no additional cost within the timeframe provided by the Program. Customer understands that any incentives may be withheld if Customer refuses to participate in any required verification within a reasonable period. Customer verifies that all EEM is installed in accordance with all applicable federal, state and local laws and manufacturer's specifications.
- 5. CONFIDENTIALITY.** CLEAResult shall keep Customer information confidential. Only Sponsor, the third-party evaluators acting under the direction of Sponsor, and the PUC shall be granted access to Customer data as needed or required. CLEAResult will not use the name or identifying characteristics of Customer in advertising sales promotion or other publicity without Customer's written approval.
- 6. NO WARRANTY.** CLEAResult, SPONSOR AND THE PUC MAKE NO REPRESENTATIONS OR WARRANTIES, AND ASSUME NO LIABILITY WITH RESPECT TO QUALITY, SAFETY, PERFORMANCE, OR OTHER ASPECT OF ANY EEM INSTALLED PURSUANT TO THIS AGREEMENT AND EXPRESSLY DISCLAIM ANY SUCH REPRESENTATION, WARRANTY OR LIABILITY, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NONINFRINGEMENT. NOTHING IN THIS AGREEMENT SHALL BE CONSTRUED TO CREATE ANY DUTY TO, ANY STANDARD OF CARE WITH REFERENCE TO, OR ANY LIABILITY TO ANY THIRD PARTY. NEITHER THE PUC, SPONSOR, NOR CLEAResult SHALL BE RESPONSIBLE FOR COSTS OR CORRECTIONS OF CONDITIONS ALREADY EXISTING IN THE FACILITIES INSPECTED WHICH FAIL TO COMPLY WITH APPLICABLE LAWS AND REGULATIONS.
- 7. INDEMNIFICATION; LIMIT ON LIABILITY.** TO THE EXTENT ALLOWED BY LAW, CUSTOMER AGREES TO INDEMNIFY THE PUC, SPONSOR AND CLEAResult AGAINST ALL LOSS, DAMAGES, COSTS AND LIABILITY ARISING FROM ANY CLAIMS RELATED TO ANY PRODUCTS INSTALLED OR SERVICES PERFORMED DURING THE INSTALLATION OR MAINTENANCE OF EEM. NEITHER THE PUC, SPONSOR, CLEAResult, NOR CUSTOMER SHALL BE LIABLE TO EACH OTHER FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES RELATED TO THIS AGREEMENT.
- 8. MISCELLANEOUS.** This Agreement shall be governed by and construed under the laws of the State of Arkansas, without regard to conflict of law rules. The parties agree that all actions, disputes, claims and controversies arising out of or relating to this Agreement or the work performed hereunder will be subject to binding arbitration administered in the county where the Customer is located by the American Arbitration Association under its Commercial Arbitration Rules and judgment on the award may be entered in any court having jurisdiction. Customer shall not assign, delegate or subcontract this Agreement or its duties thereunder, in whole or in part, voluntarily or involuntarily (including a transfer to a receiver or bankruptcy estate) without the prior written permission of CLEAResult. CLEAResult may assign its rights and delegate its duties under this Agreement to any third party at any time without Customer's consent. If any provision of this Agreement is invalid or unenforceable in any jurisdiction, the other provisions in this Agreement shall remain in full force and effect in such jurisdiction and shall be liberally construed in order to effectuate the purpose and intent of this Agreement. The invalidity or unenforceability of any provision of this Agreement in any jurisdiction shall not affect the validity or enforceability of any such provision in any other jurisdiction. The failure of either Party to enforce strict performance by the other of any provision of this Agreement, or to exercise any right available to the Party under this Agreement, shall not be construed as a waiver of such Party's right to enforce strict performance in the same or any other instance. Sections 1 and 4 through 7 shall survive the term of this Agreement.



OG&E COMMERCIAL ENERGY EFFICIENCY PROGRAM

MEASURES SHEET



The OG&E Commercial Energy Efficiency Program offers financial incentives when energy efficiency measures are implemented at large commercial facilities like yours. We'll provide an energy assessment at **no out-of-pocket cost** to you to help you identify and financially qualify potential energy-saving projects that could even include solutions with little or no cost.

To make reducing your energy costs even easier, we also offer significant incentives for each energy efficiency upgrade installed.

Incentives are available for the following measures:

- HVAC – DX Retrofit
- HVAC – DX New Construction
- Chiller Retrofit
- Chiller New Construction
- LED Lighting Retrofit
- Lighting New Construction
- Vending Misers
- Door Heater Controls
- ECM Evaporator Fan
- Electronic Defrost Controls
- Solid Door Reach-Ins
- Strip Curtains
- Night Covers
- Cooler Door Gaskets
- Lighting Controls
- Lodging Occupancy Controls
- Compressed Air
- Combined Custom Measures
- Retrocommissioning
- Variable Frequency Drives

**More ways
to save**



CONTACT US FOR
MORE INFORMATION:

844-413-3065
commercial.ar@oge.com



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