



Oklahoma Comprehensive Demand Program Portfolio

2022 Annual Report

In Accordance with Annual Reporting Requirements

Oklahoma Corporation Commission Utility Rules

165:35-41-7

July 1, 2023

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1.0 Executive Summary

Oklahoma Gas and Electric Company (“OG&E” or “Company”) is submitting its Comprehensive Demand Program Portfolio Annual Report for 2022. This report is required to be submitted with the Oklahoma Corporation Commission (“OCC” or “Commission”) by July 1, 2023, pursuant to the Annual Reporting Requirements in OAC 165:35-451-7.

On July 8, 2021, OG&E filed a comprehensive portfolio of energy efficiency programs with the Oklahoma Corporation Commission for Program Years 2022-2024. This portfolio was approved by OCC Order No. 723207 in Cause No. PUD 202100121 on February 1, 2022. The focus of this report will be on the first Program Year (“PY2022”), spanning from January 1, 2022 to December 31, 2022, of the implementation cycle.

Below is a summary of the 2022 Demand Program Portfolio results.

2022 Summary of Results	Projected (Filed)	Actual	% Achieved
Expenses (with Labor)	\$39,004,972	\$36,805,975	94%
Net Energy Savings (kWh)	170,407,432	185,050,738	109%
Net Demand Savings (kW)	34,357	32,209	94%

Cost Effectiveness - TRC	1.49	2.55
Cost Effectiveness - PACT (UCT)	1.45	3.21
Cost Effectiveness - RIM	0.32	0.47
Cost Effectiveness - PCT	7.23	7.41
Cost Effectiveness - SCT	2.07	4.67

Levelized Cost per kWh	\$0.033	\$0.027
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2.0 Demand Programs

OG&E offered customers four programs. Two of these programs were offered to residential customers, one to commercial/industrial and an educational program to all customers one for residential/commercial/industrial. The programs offered are the:

1. Home Energy Efficiency Program (“HEEP”)
2. Weatherization Residential Assistance Program (“WRAP”)
3. Commercial Energy Efficiency Program (“CEEP”)
4. Education Program (“EP”)

2.1 Demand Program Details

Program	Date Program was started or revised	Number of projects*	Actuals		
			Program Expenditure	Verified Net Energy Savings	Verified Net Demand Savings
HEEP	January 2010	167,662	\$11,849,578	46,729,917	8,062
WRAP	January 2008	3,383	\$6,119,760	11,613,073	3,130
CEEP	January 2013	844	\$17,888,316	126,707,748	21,017
Total		162,806	\$35,857,654	185,050,738	32,209

**The HEEP Number of projects includes lighting packages, (i.e., 71,280 packages were distributed to the Food Banks).*

Program	Date Program was started or revised	Number of Potential Customers	Customer Category	Number of Projects Completed in 2021
HEEP	January 2010	696,033	Residential Customers	167,662
WRAP	January 2008	150,841	Low Income Residential Customers	3,383
CEEP	January 2013	119,471	Commercial/Industrial Customers	844
Education	January 2010	815,504	All Customers	30

2.2 Summary of Demand Program Costs

Projected

Program	Projected Program Costs (Filed)						
	Administrative	Inducements	Education & Marketing	Program Delivery	EM&V	Allocated Labor	Total
HEEP	\$178,518	\$6,368,213	\$122,651	\$4,762,571	\$377,388	\$260,000	\$12,069,340
WRAP	\$150,000	\$5,473,114	\$150,000	\$100,000	\$200,000	\$170,000	\$6,243,114
CEEP	\$150,000	\$9,702,517	\$130,000	\$7,200,000	\$450,000	\$230,000	\$17,862,517
Education	\$0	\$0	\$0	\$800,000	\$0	\$80,000	\$880,000
Planning	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Research & Development	\$1,950,000	\$0	\$0	\$0	\$0	\$0	\$1,950,000
Total	\$2,428,518	\$21,543,844	\$402,651	\$12,862,571	\$1,027,388	\$915,000	\$39,004,972

Actual

Program	Actual Program Costs						
	Administrative	Inducements	Education & Marketing	Program Delivery	EM&V	Allocated Labor	Total
HEEP	\$179,870	\$6,774,883	\$86,969	\$4,349,247	\$292,099	\$166,510	\$11,849,578
WRAP	\$146,790	\$5,457,158	\$236,245	\$13,400	\$144,622	\$121,545	\$6,119,760
CEEP	\$160,104	\$9,732,640	\$102,928	\$7,170,528	\$446,595	\$275,521	\$17,888,316
Education	\$0	\$0	\$0	\$656,740	\$0	\$131,574	\$788,314
Planning	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Research & Development	\$134,416	\$0	\$0	\$0	\$0	\$25,592	\$160,007
Total	\$621,179	\$21,964,681	\$426,142	\$12,189,915	\$883,316	\$720,741	\$36,805,975

2.3 Summary of Energy and Demand Savings

Projected

Program	Projected (Filed)	
	Energy Savings (kWh)	Demand Savings (kW)
HEEP	41,477,443	7,006
WRAP	10,934,952	3,810
CEEP	117,995,037	23,541
Total	170,407,432	34,357

Actuals

Program	Actuals			
	Gross Energy Savings (kWh)	Gross Demand Savings (kW)	Verified Net Energy Savings (kWh)	Verified Net Demand Savings (kW)
HEEP	65,572,402	10,959	46,729,917	8,062
WRAP	11,525,832	3,092	11,613,073	3,130
CEEP	132,083,202	21,990	126,707,748	21,017
Total	209,181,436	36,040	185,050,738	32,209

2.4 Summary of Cost Effectiveness and Incentives

Projected

Cost Effectiveness Tests - Projected (Filed)					
Program	TRC	UCT/PACT	RIM	PCT	SCT
HEEP	1.89	1.60	0.31	12.51	2.94
WRAP	1.40	1.28	0.41	3.76	2.04
CEEP	1.31	1.42	0.31	6.65	1.61
Total	1.49	1.45	0.32	7.23	2.07

Projected Incentive	\$5,558,246
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Actuals

Cost Effectiveness Tests - Actuals					
Program	TRC	UCT/PACT	RIM	PCT	SCT
HEEP	2.97	3.12	0.50	9.47	6.40
WRAP	2.42	2.00	0.50	4.93	3.67
CEEP	2.46	3.84	0.45	7.24	4.44
Total	2.55	3.21	0.47	7.41	4.67

Actual Incentive	\$5,496,895
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3.0 Summary of Demand Portfolio Impacts

3.1 Summary of the Cumulative Portfolio Impacts

Program Year	Actual Costs	Filed Savings (kWh)	Verified Net Actual Savings (kWh)
2011	\$18,201,000	45,492,000	60,743,000
2012	\$14,515,000	45,492,000	65,902,000
2013	\$40,939,000	90,315,000	82,315,000
2014	\$47,352,000	137,112,000	103,076,000
2015	\$42,336,000	143,917,000	100,412,000
2016	\$33,342,000	95,524,000	133,011,000
2017	\$37,587,000	96,994,000	147,479,000
2018	\$37,225,000	92,349,000	173,918,000
2019	\$35,111,399	158,009,167	155,696,390
2020	\$33,964,158	158,085,474	168,539,038
2021	\$35,474,777	158,160,901	170,956,762
2022	\$36,805,975	170,407,432	185,050,738

3.2 Summary of the Portfolio Levelized Costs

Program	Levelized cost/kWh
Demand Portfolio	0.027
HEEP	0.031
WRAP	0.059
CEEP	0.022
Residential Sector	0.037
Commercial Sector	0.022

*Demand Portfolio includes Planning, Regulatory, and R&D Costs

3.3 Summary of Demand Portfolio Funding and Energy Savings

Demand Portfolio Funding (DPF)	Total Annual Electric Revenue (TAER)	% DPF/TAER
\$36,805,975	2,798,903,345	1.3%

Demand Portfolio Energy Savings (DPES) MWh	Total Annual Energy Sales (TAES) MWh	% DPES/TAES
185,051	27,295,200	0.678%

3.4 Summary of the Portfolio Lost Revenues

The PY2022 projected Lost Net Revenues (Filed) was \$14,006,158. Actual Lost Net Revenues amounted to \$14,867,973.

3.5 Utilities Annual Growth

Year	Annual Metered Growth Rate		Average Growth Rate		
	Energy	Demand	Residential	Commercial	Industrial
2020	24,590,220	6344	8,742,115	5,704,487	7,442,630
2021	25,095,563	6765	8,822,705	6,114,316	7,394,728
2022	27,295,200	7351	9,617,976	7,179,624	7,592,560
Average Growth Rate (2020-2022)	2.0%	2.5%	2.4%	4.5%	0.4%

3.6 Reduced Emissions and Water Consumption at Generation

2022	SO ₂		NO _x		CO ₂ e		Fresh Water	
Portfolio	48.2	Tons	98.4	Tons	131,688	Tons	24.7	million gallons
Factors	0.5	lb/MWh	1	lb/MWh	1,313	lb/MWh	123.1	gallons/MWh

Customer Avoided Water purchase

In PY2022 residential water savings measures reduced residential customers' water consumption by 58,300,382 gallons. The water bill savings associated with the reduction in water consumption are applied as Non-Energy Benefits ("NEBs") in the AEG cost benefit analysis.

4.0 Details of Demand Programs

4.1 Weatherization Residential Assistance Program

The OG&E Weatherization Residential Assistance Program is a program designed for low-income residential customers. Customers can enroll in the program by calling the OG&E call center or by logging on to OG&E's website ([OG&E - Weatherization \(ogee.com\)](https://www.ogee.com)). This program allows the customer to participate in measures to assist in managing energy consumptions and therefore cost. OG&E residential customers are eligible to apply for WRAP if they own, rent, or lease their single-family home, duplex, or mobile home; have incomes at or below \$60,000; or are owners of multifamily units whose rental units are 66% occupied by hard-to-reach customers pursuant to OAC 165:35-41-3 definition of "Hard-to-reach customers." WRAP is designed to improve the thermal envelope of the dwelling, thereby decreasing the amount of energy consumed and improving the comfort and safety of the home.

In 2022, weatherization topped the 150 million kWh saved mark over the life of the program.

OG&E partnered with Central Oklahoma Habitat for Humanity to enable these non-profit agencies to provide weatherization services to qualified OG&E customers. Additional homes were weatherized through a joint program made possible with funding from OG&E and Oklahoma Natural Gas ("ONG").

In 2022, OG&E weatherized 3,383 homes at an average cost of \$1,607 per home. OG&E and ONG jointly weatherized 344 homes. One challenge and possible opportunity is that while the customers may be eligible for WRAP, the home may not qualify due to program restrictions for health and safety reasons. For example, OG&E will not weatherize a home that has unvented combustion space heaters or open flame heaters as its main source of heat. The challenge is to determine how to fix or modify these homes so that they can be weatherized safely, and still be cost effective. Through the WRAP enhancement R&D pilot; explained in detail in section 4.5, WRAP introduced the Repair to Qualify ("RTQ") option that allowed the program to perform low-cost repairs on customer's homes, which then met the requirements for the homes to receive weatherization as well.

4.2 Home Energy Efficiency Program

The Home Energy Efficiency Program consists of five program channels to access the residential customer market. The Residential Solutions channel addresses single-family and multi-family homes with efficient lighting, envelope, and other mechanical system measures. The heating,

ventilation, and air conditioning (“HVAC”) Tune-up channel addresses HVAC units across all segments of the residential market. The Consumer Products channel offers rebates on lighting and other household equipment at retail point-of-purchase and food pantries for residential customers. The School Outreach, a.k.a. LivingWise™, channel offers educational materials and kits with energy saving measures for students to take home and install. The Positive Energy New Home Construction channel addresses new residential homes constructed with comprehensive energy efficient standards.

The residential solutions channel experienced over 2,000 face-to-face interactions with OG&E customers in their homes or apartments, while supplying them with direct install materials and education on what Energy Efficiency means. The knowledge and value of Energy Advisors and Senior Field Representatives was expanded by each of them acquiring BPI certifications. The effort is more in line with industry standards and grows the possibilities of what both single-family and multi-family channels can offer OG&E customers.

The residential HVAC channel team made it a priority to recruit more customers in the multi-family sector by increasing the amount of A/C tune ups performed in apartments. 2023 has a healthy pipeline with two trade allies dedicated solely to multi-family tune-ups.

PY2022 measure highlights include 822 multi-family units received direct install materials consisting of LEDs, advanced power taps, and water measures. There were 1,215 in-home assessments completed, with 88 of those being performed virtually, 534 attic insulation rebates, 401 window submissions, one EV-Level2 charger submission, 1,976 HVAC tune-ups completed, with 19 trade allies participating. 3,905 Air & Duct sealing projects in multi-family units were performed along with 248 rebates for new A/C units. In Consumer Products there were seven measures available – 89 smart thermostats, 1,239,523 total LED bulbs (300,192 of those bulbs distributed to Food Banks), 16,239 advanced power strips (4,992 of those power strips distributed to Food Banks), 1,640 bathroom ventilation fans, 652 A/C window units, 506 room air purifiers, 1,323 water dispensers discounted through eight different retailer companies with 137 locations represented. The Consumer Products channel increased Foodbank participation this year due to an increased need of about 40 percent. The LivingWise™ Schools Outreach channel distributed 14,856 kits to teachers and students.

1,460 Positive Energy Homes were constructed with 46 builders participating. Of those homes, 72 qualified for the Ground Source Heat Pump Bonus and two for the Electric Vehicle Ready Bonus. In PY2022, Positive Energy New Home Construction redesigned the program and launched a tiered structure as well as a multi-family component. The tiered structure consists of two categories, homes larger than 1800 square feet and homes equal to or smaller than 1800 square feet, each with three levels based on kWh saved. The revamped tiered structure

was well received by home builders and raters alike.

Positive Energy New Home Construction

Program	Homes	Program Savings	
	Number of Homes	Energy Savings (kWh)	Demand Savings (kW)
Positive Energy New Home Construction	1,460	2,448,002	843

Program	Actual Program Costs						
	Administrative	Inducements	Education & Marketing	Program Delivery	EM&V	Allocated Labor	Total
Positive Energy New Home Construction	\$32,632	\$1,218,437	\$15,778	\$799,723	\$52,993	\$30,209	\$2,149,773

Program	Cost Effectiveness Tests - Actuals				
	TRC	PACT	RIM	PCT	SCT
Positive Energy New Home Construction	1.30	1.50	0.50	2.56	2.44

In addition, for both residential and commercial customers, OG&E planned to implement a proactive LED lighting replacement incentive on streetlights or security lights. PY2022 was used to establish the internal processes and procedures. The actual implementation of the rebates will occur in 2023 and 2024, which will cover the \$177.58 conversion charge that customers would incur by replacing their streetlight or security light prior to burnout.

4.3 Commercial Energy Efficiency Program

The Commercial Energy Efficiency Program consists of six channels of customer participation opportunities. The Commercial & Industrial Solutions (“C&I Solutions”) channel targets prescriptive and custom measures for commercial customers. The HVAC Replacement & Tune Up channel offers tune-ups for HVAC systems. The Schools and Government Efficiency (“SAGE”) channel is designed to overcome the barriers that are unique to that market segment. Small

Business Midstream (“Midstream”) discounts efficient lighting at point-of-purchase. Small Business Direct Install (“SBDI”) targets small businesses for turn-key efficiency solutions. Continuous Energy Improvement (“CEI”) targets large customers and provides operational, behavioral and other low/no-cost energy-saving opportunities. Additions to the CEEP program in this portfolio include commercial cooking measures and the Fleet Electrification Management (“FEM”), which supports customers in navigating how to transition from a traditional internal combustion engine fleet to an electric vehicle fleet.

CEEP delivered the most savings it has ever achieved in the history of OG&E commercial programs in 2022 coming in at over 108% of its gross annual goal. The SBDI, CEI and Midstream channels finished well beyond expectations by greatly exceeding their annual gross goals by 130%, 125.5% and 142%, respectively.

In PY2022, 167 different customers participated with 2,101 HVAC units tuned up; 13 trade allies completed the work. OG&E provided incentives to 19 school districts, and 11 city, state, and municipal customers, using 11 trade allies. There were 2,491 projects using 18 distributors in the Midstream channel, plus 208 projects for Small Business with 19 trade allies. Large C&I had 123 customers participate with 25 trade allies completing 212 projects. CEI partnered with 12 school districts and 21 industrial customers which accounted for over 174 buildings. The commercial cooking pilot finished 17 kitchen projects and paid \$38,600 in inducements. Supply store participation will be expanded in 2023. FEM partnered with 1 school, 3 municipals, and 1 industrial/commercial customer to create Fleet Electrification Roadmaps for 5 fleets and over 250 vehicles. The portfolio of future opportunities includes additional complex projects, more comprehensive measures, new custom measures, and new vertical markets.

4.4 Education Program

The Education Program goal is to help customers make informed decisions about long-term energy efficiency and encourage participation in programs that will assist them in managing their energy costs. The Education Program provides presentations to all customer classes, helping them to make informed decisions about energy use. This program was able to actively engage with residential customers and communities across the OG&E service territory. Similarly, the C&I sector received educational services tailored to their needs. Roughly 30 community events were held in 2022 at various locations across the service territory.

The Education Program with the assistance of CLEAResult, was able to host an in-person National Energy Education Development (NEED) workshop at Oklahoma City Public Schools. 32 Teachers from the District were able to attend and take part in a series of hands-on STEAM based experiments and exercises. The teachers also received NEED *Science of Energy*

experiment kits for classroom use. Nineteen science and energy teachers attended the live NEED conference in New Mexico for a week of training with energy professionals. The winning teachers were chosen using an essay competition titled “What does energy efficiency and saving energy mean to you.”

#	Name of Group	Group Size	#	Name of Group	Group Size
1	City Center Food Bank	500	16	Trunk or Treat Lee Elementary	250
2	ICF Company EE day	250	17	NEED Teacher Conference - NM	19
3	Tinker Earth Day	300	18	NEED Teachers In-state Conference	36 (Live)
4	Tishomingo Fan Giveaway	100	19	Foundations (2) – New Hire Program OGE	116
5	Durant Fan Giveaway	120	20	Boys and Girls Club Event	110
6	Hope House Food Pantry	65	21	Sunbeam Family Services Event	200
7	HBSML Grand Opening	200	22	Teacher store Ardmore	300
8	Arts Festival	500	23	Teacher store Ft. Gibson	320
9	State Fair Senior Day	200	24	Teacher store El Reno	150
10	Love County Senior event	65	25	Teacher store Poteau	200
11	Grand Senior Center Moore	120	26	Teacher store Shawnee	320
12	Marietta Chamber Event	45	27	Teacher store Alva	145
13	NW OKC Homeowners Association	40	28	Teacher store Sapulpa	260
14	Perry Publishing Turkey Giveaway	400	29	Teacher store Tishomingo	160
15	Trunk or Treat Garden Community School Event	300	30	Teacher store Woodward	185

Progress has also been made on new ways the programs will be marketed to customers during the 2022-2024 portfolio. Segmentation and external market research were conducted to identify customer personas showing their needs, wants, and attitudes to help shape the right communications and product offerings, and to foster the next phase of DSM programs. A product dashboard was developed to measure product engagement and customer demographics to align marketing and program resources. Customer experience maps were created and implemented to enhance communication and experience elements for customers related to programs and services. Last, an analytics workbench was established by partnering with Bidgely, Inc., which cultivates a foundation to provide insights and tools to analyze customer usage metrics.

Phase 1 of the analytic workbench project is complete. It contains visualization and output to share with stakeholders, a foundation for all future enhancements, load disaggregation, and enables target marketing. Phase 2 contains the onboarding of seasonal and triggered personal emails to align proactive email alerts for optimal customer experience. It includes next best interactions for Oklahoma residents, rate comparisons that provide alternate bill amounts calculated using the proposed rate structure and the last twelve months consumption patterns, and personalized suggestions including a tip library on OGE.com. Examples include, using a

pressure cooker, washing laundry with cold water, switching to LED lights, and unblocking air vents. During Phase 3, a marketplace website will be available to help customers purchase energy efficient items like smart thermostats. A digital, personalized Home Energy Report will also be supplied to customers to enhance their next best interaction. Phase 4 will begin in 2023, continuing into 2024, which will include bill itemization and disaggregation to track usage and spending to provide personal, actionable, and relevant insights to customers. A similar homes bill comparison report will be developed to showcase customer's usage in the context of similar homes to motivate them to become more efficient than their neighbors. It will include smart home clustering to ensure accurate comparisons. Phase 4 will conclude with offering a call center tool that provides disaggregated insights to representatives and customers.

4.5 Research and Development

The R&D program approved by the Oklahoma Corporation Commission in Case No. PUD 202100121 as part of the current 2022-2024 demand portfolio includes four projects:

1. Utility-scale battery pilot to manage electric vehicle supply equipment ("EVSE") rapid charging loads ("Battery Pilot")
2. Managed flexible load technology pilot ("Flex Load Pilot")
3. WRAP enhancement pilot ("WRAP Pilot")
4. Schools renewable technology pilot ("Schools Pilot")

The Battery Pilot is a continuation of the utility-scale battery pilot from the last portfolio approved in Cause No. PUD 201800074. In that previous pilot, OG&E established the control mechanisms necessary to test and efficiently manage the fast-charging scenarios. OG&E has been successful in the controlled lab environment in identifying the most efficient battery dispatch methods while establishing the foundation for operational safety, grid interoperability, and grid security. Through this project, OG&E is determining how Battery Energy Storage Systems (BESS) can safely and securely operate and support Level 3 charging stations on highway corridors or at commercial fleet charging facilities in a manner that offsets demand (capacity or kW) while also improving load factor on the associated circuit(s).

The Flex Load Pilot is evaluating the ability of new technologies (such as internet connected electronic devices and dynamic control algorithms) and behavior-oriented rate structures and program designs to encourage customers to shift load.

The WRAP Pilot is assisting underserved and hard to reach customers with minor repairs needed at their homes so that they can become qualified and eligible to participate in OG&E's weatherization program.

The Schools Pilot is assessing how utilizing varying solar and energy storage technologies can result in peak demand reduction, increased usage of clean energy, reduced waste of energy, and improved operational costs, combining the most effective technologies, rates, and applications with related curriculum materials being made available to the students.

Project #1 – Utility-Scale Battery Pilot

The Battery Pilot seeks to provide a deeper understanding of the potential dispatch and impact of batteries in real-world applications as an EE measure, battery safety and how to manage it, and how batteries can be integrated into OG&E’s distribution system. The pilot hypothesis is:

1. Battery storage technology deployed in a real-world field environment can be safely and securely operated to support level-3 charging stations on highway corridors or commercial fleet applications in a manner that offsets demand (capacity or kW) while also improving the load factor on the associated circuit(s).

OG&E continues to conduct the Battery Pilot by exploring deployment and dispatch of batteries for demand response and attendant energy cost savings associated with electric vehicle (“EV”) charging.

2022 activities and results included:

- Performed BESS sizing analyses to determine and confirm optimal performance and cost to meet project requirements.
 - **Result:** BESS basis of design selected at 600KW/600kWh to coincide with minimum NEVI requirements. The BESS is sized to meet minimum demand from EV chargers and may be augmented to support for expansion up to ~ 1,500KW.
- Analyzed and developed conceptual communications and controls architecture for utility-scale integration, dispatch, and control of project assets including the BESS, EVSE, and renewable energy generation.
 - **Result:** The conceptual communication and controls architecture design will be utilized as the blueprint for detailed engineering design for systems dispatch. The design will incorporate safety and security measures to manage the BESS, offset EV charger demand, and inject clean, renewable, energy (when available) via OGE SCADA and DERMS
- Conducted analyses on potential project implementation sites and developed ranking matrix to inform on most suitable site candidates.

- **Result:** List of eight potential sites analyzed and ranked for further analysis and review as site implementation candidates.
- Generated conceptual and preliminary engineering design plans for deployment of a utility-scale BESS, paired with Level 3 EVSE at a commercial site in OG&E's service territory.
 - **Result:** Developed one-line engineering diagram and site layout plan at a commercial site along a highway corridor in OG&E's service territory. The engineering design incorporated BESS and EVSE equipment as well as balance of system components and point of interconnection to OG&E's distribution system.
- Developed and initiated plans to deploy a fully integrated, field-ready BESS at the ATL that will reflect the realistic conditions, equipment, controls, and operational characteristics of future systems that will be deployed to serve OG&E customers.
 - **Result:** The system components will be sized and designed to meet the minimum requirements of the National Electric Vehicle Infrastructure (NEVI) program, with the intention of redeploying the asset at a commercial site once NEVI funding becomes available
- Developed and implemented project plan to commence the engineering, procurement, and construction for Phase 2 of the project.
 - **Result:** The project plan has been enacted and will be utilized to guide the project timeline and track progress, milestones, and deadlines.

Overall results:

- Continued to observe battery cost trends in light of previous conclusion that battery systems must drop below the installed cost of the laboratory demonstration system (~\$1000/kWh). Anticipate that the cost threshold will be achieved within the next 2-3 years.
- Results completed in the OG&E Advanced Technologies Lab proved the ability of the batteries and control systems to offset demand from the level 3 EV charging stations.

Project #2 – Managed Flexible Load Electric Device Technology Pilot

This Flex Load Pilot is examining the ability of smart hardware, software, and behavioral-based tariff designs to collectively deliver value to customers and the grid by participating in more effective, efficient, or cleaner grid operation. Specifically, it is investigating the capabilities of applying smart control algorithms to electric devices to procure peak demand reduction, clean energy, fuel savings, and/or overall system capacity savings. A variety of algorithms and smart technologies are being tested to develop a better understanding of how to optimize effective, clean, and efficient use of flexible electro-technologies through smart controls.

This R&D project was initiated in 2022, and the pilot hypothesis is:

1. Smart-electro-technologies coupled with behavioral pricing mechanisms will result in increased customer participation in more efficient and/or cleaner use of energy.

2022 activities and results included:

- Planned and revised the documented scope, boundaries, deliverables, objectives, and requirements of the project, establishing and ensuring that everyone involved in the project has a clear understanding of what will be included in the project and what will not.
 - **Result:** Developed a program charter that documents Pilot Program Designs, Stakeholders, Project Budget, Data Needs, Testing Approach, and timeline. Incorporated success factors from similar utility programs along with their program implementation approach
- Identified and evaluated the appropriate technologies and tools required to support the successful execution of this project.
 - **Result:** Conducted technology research based on other utility programs and current OEM landscape and capabilities. Developed comparative analysis of technology for managed water heating from: Savant, Aquanta, and GE and for managed charging from: EnelX, Charge Point, and Ev.energy with a focus on telematics. Established control system approach for both lab and field tests.
- Selected the target project technologies, considering available commercial technology options and determined the best-fit solutions to achieve project objectives within the lab and field.

- **Result:** Confirmed the control system (Savant) and water heating device (GE Smart Tank) for the water heating pilot. Confirmed ev.Energy as control system and ChargePoint as EVSE equipment for the EV managed charging pilot. Both will incorporate WattTime clean energy forecasts as control signals.
- Developed the project budget scope evaluating the costs associated with project activities, such as equipment, labor, materials, and other expenses.
 - **Result:** Refined budget based on selected technologies and vendor pricing including hardware, services, and software fees.
- Developed use cases to detail the special situations and scenarios to be tested by each technology for the defined goals of the program. This includes the functional requirements and interactions of the system from the user's perspective and required features and functionalities.
 - **Result:** Confirmed use cases (clean energy price signal, demand response control signal, customer behavioral response) and established initial test plan/ approach for each use case. All use cases were evaluated and scrutinized primarily from three points of view; benefit to the grid, benefit to the customer, and benefit to the environment.
- Designed the testing methodologies, outlining the strategies and techniques that will be employed to ensure the quality and reliability of the project deliverables. This includes defining equipment test(s), test scenarios, testing tools and resources, and establishing the overall testing approach.
 - **Result:** Defined scenarios and tests to be done for each technology and use case both in the lab and in the field for comparison/baselining purposes.
- Designed the OG&E Advanced Technologies Lab test system to fully understand the configurations and data surrounding both the water heaters and EVSE hardware, along with a design for how the location, control, and monitoring needed to be developed for field deployment.
 - **Result:** Confirmed capabilities and functional gaps of lab technologies to emulate sending of control signals, and monitoring of devices in the field. Identified required integration points required for lab technologies to exchange data between systems to validate device performance.

- Constructed the Lab test system
 - **Result:** Installed water heaters, flow meters, control valves, temperature sensors and software controllers for the water heating system; installed initial EVSE, and software for the control and monitoring of lab equipment for the EV charging project.
- Executed initial Lab system tests
 - **Result:** Conducted initial tests of use cases with manual integration of data between systems/ devices. Validated functional gaps and integration needed to fully test each use case. Gained further understanding of customer’s potential use of flexible load technologies based on lab-based assumptions.

Overall results:

- Results completed in the OG&E Advanced Technologies Lab indicated that applying smart-electro-technologies coupled with smart control algorithms can procure peak demand reduction, clean energy, fuel savings, and/or overall system capacity savings
- Continued to observe cost trends in EVs and EVSE in order to understand distribution system infrastructure needs in relationship to forecasted EV adoption.

Project #3 – WRAP Enhancement Pilot

Two initiatives will be pursued for this R&D pilot: Repair-to Qualify (“RTQ”) and offering Enhanced Measures designed to increase the value customers will receive in the WRAP offering making it more accessible to under-served and hard-to-reach participants. Historically, 25% of the WRAP disqualifications related to minor repairs. The pilot will handle minor restorations, including but not limited to: Health and safety, Flue, HVAC, and roof flashing repairs.

The enhanced measures not currently included in WRAP are HVAC Tune-ups, repairs, and replacements, window AC replacements with mini-splits or Air Source Heat Pumps, and Water Heater Load Controls. This pilot seeks to offer these measures to enhance health, safety, and comfort for customers, as well as, to reduce energy use and costs.

2022 activities and results include:

The RTQ pilot added 141 homes to the program and 288,561 evaluated kWh savings. The repairs total cost \$64,597 and the administrative cost was \$8,306. An additional 34 homes that

were qualified under the pilot did not make it in the PY2022 WRAP program but are expected to participate in 2023.

Project #4 – Schools Renewable Technology Pilot

Like different commercial segments, schools are becoming increasingly interested in renewable energy technologies to help them lower their energy costs and carbon footprint. School budgets are typically limited, and with a wide variety of technologies and applications available, it can be difficult for schools to know which renewable energy solutions (e.g., solar and battery technologies) are most effective. Through this pilot, OG&E will test program components that target schools in underserved or disadvantaged communities. Specifically, this demonstration pilot will seek to try several combinations of technologies, rates, funding sources, and applications. It will also assess how solar and energy storage technologies can reduce peak demand, provide clean energy, reduce energy waste, realize societal benefits, and lower operating costs. OG&E's key objective for this pilot is to demonstrate the capability of renewable energy technology to deliver overall value to the school/education segment.

2022 activities and results include:

Continuing to negotiate contracts to ensure that all facets of the pilot are covered between the contractor, the school, and OG&E. OG&E, in tandem with the selected school, planned a groundbreaking ceremony in January of 2023 to kick off the project. While the pilot has had a delayed start, there are plans to ramp up installation with the goal to have it completed in 2023.

5.0 Implementers

Below is a table that identifies all implementers involved in the Demand Programs.

Company	Name	Business Address	Business Email Address	Business Phone Number
Skyline Energy Solutions	Jamie O'Bryant	PO Box 718, Pauls Valley, OK	skylineenergy@yahoo.com	(405) 238-7800
Frontier Associates LLC	Jean Krausse	1515 S. Capital of Texas Hwy Suite 110, Austin, TX	admin@frontierassoc.com	(512) 372-8778
CLEARresult	Jeremy Sims	117 NW 8th St., Oklahoma City, OK 73102	jeremy.sims@clearresult.com	(405) 507-3017
AM Conservation	Lee Moran	6650 Echo Ave Suite A Reno, NV 89506	lmoran@AMConservation.com	(775) 685-6134

6.0 High Volume Electricity User Opt-Out

High Volume Electricity User Opt-Out - Energy Efficiency - All Customers

Metric	Total Electric Sales	Eligible to Opt-Out	% of Eligible Opt-Out	Opted Out	% of Opted Out
Electric Sales (GWh)	27,242	10,828	40%	7,864	29%
Number of Customers		11,118		2,940	

High Volume Electricity User Opt-Out - Energy Efficiency - Municipal & State

Metric	2022		
	Opt-Out Eligible	Chose to Opt-Out of EE Programs	% Opt-Out
2022 Electric Sales (GWh)	2,851	402	14%
Number of Accounts	15,819	786	5%

7.0 Attachments

7.1 AEG Evaluation Measurement and Verification with Cost-Effectiveness Report

AEG

Oklahoma Gas & Electric (OG&E) Oklahoma Comprehensive Demand Program Portfolio Evaluation for 2022

Prepared for: OG&E

By: Applied Energy Group, Inc.

Date: June 15, 2023

AEG Key Contact: Abigail Nguyen



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EXECUTIVE SUMMARY

This document summarizes the portfolio evaluation of Oklahoma Gas and Electric’s (OG&E) Oklahoma Comprehensive Demand Program Portfolio in 2022, fulfilling the requirements outlined in Title 165: Oklahoma Corporation Commission, Chapter 35., Electric Utility Rules Subchapter 41., Demand Programs 165:35-41-7.

In 2022, OG&E successfully operated the Comprehensive Demand Program Portfolio, spending 94% of budgeted expenditures and achieving:

- 109% of net energy savings goals,
- 94% of net demand reduction goals, and
- 1.32 cost-effectiveness under the TRC Test.

Table ES-1 provides a summary of the portfolio evaluation findings.

Table ES-1 OG&E Portfolio Evaluation Summary

Savings	Gross Savings			Net Savings				
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	Lifetime
Energy (kWh)	209,181,436	208,820,127	100%	170,407,432	185,050,738	109%	89%	2,012,358,031
Demand (kW)	36,040	36,106	100%	34,357	32,209	94%	89%	n/a

The portfolio includes three programs and, collectively, fourteen delivery channels. Table ES-2 below lists the programs, program channels, and corresponding implementers.

Table ES-2 OG&E Oklahoma Programs and Channels

Program	Channel	Implementer
Home Energy Efficiency Program (HEEP)	Residential Solutions (RSOL)	CLEAResult (CR)
	Residential HVAC Replacement & Tune-up (Res HVAC)	
	Consumer Products (CPS)	
	Positive Energy – New Home Construction (PE-NHC)	
	LivingWise® Schools Outreach (LivingWise)	AM Conservation
Weatherization Residential Assistance Program (WRAP)		Skyline Energy Solutions (Skyline)
Commercial Energy Efficiency Program (CEEP)	Commercial and Industrial Solutions (CIS)	CLEAResult (CR)
	Schools and Government Efficiency (SAGE)	
	Small Business Direct Install (SBDI)	
	Small Business Midstream (Midstream)	
	C&I HVAC Replacement & Tune-up (C&I HVAC)	
	Continuous Energy Improvement (CEI)	
	Retro-commissioning (RCx)	
Networked Lighting Controls (NLC)		

Table ES-3 provides corresponding summaries of the evaluated energy savings, and Figure ES-1 shows the program distribution of energy savings. Notably, CEEP is the highest contributor to energy savings.

Table ES-3 OG&E Portfolio Evaluation Impacts – Energy Savings

Program	Gross Energy Savings (kWh)			Net Energy Savings (kWh)				
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	Lifetime
HEEP	65,572,402	66,313,616	101%	41,477,443	46,729,917	113%	70%	618,450,644
WRAP	11,525,832	11,613,073	101%	10,934,952	11,613,073	106%	100%	183,794,347
CEEP	132,083,202	130,893,439	99%	117,995,037	126,707,748	107%	97%	1,210,113,040
Total	209,181,436	208,820,127	100%	170,407,432	185,050,738	109%	89%	2,012,358,031

Figure ES-1 OG&E Portfolio Energy Savings Summary

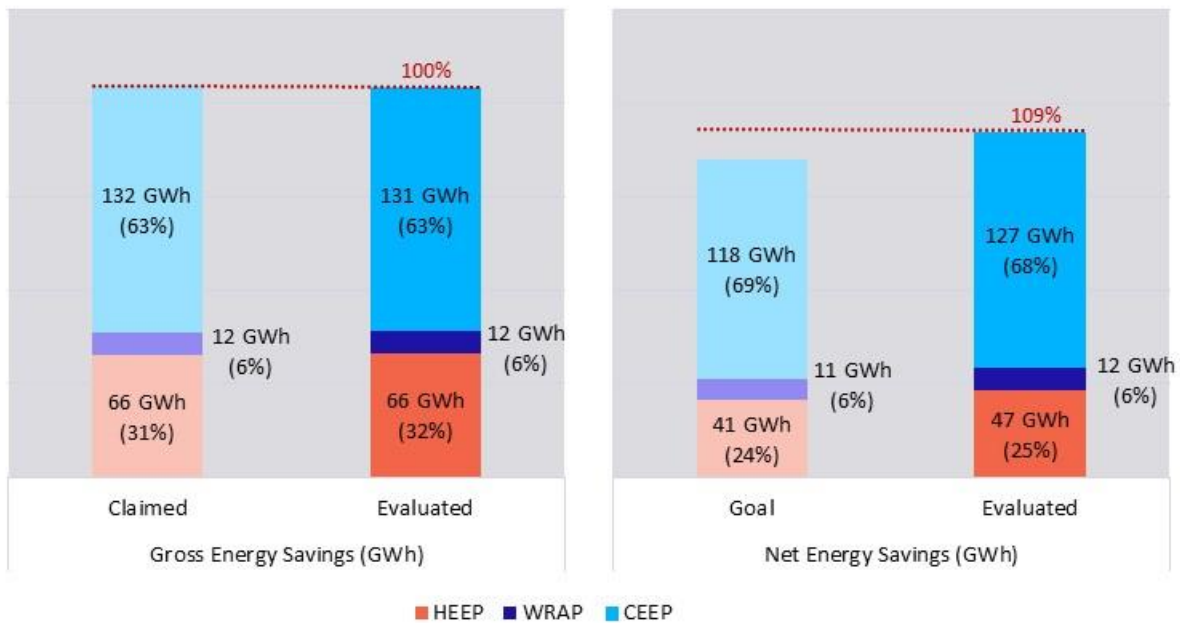


Table ES-4 provides corresponding summaries of the evaluated demand reductions, and Figure ES-2 shows the program distribution of demand reductions. Again, CEEP is the highest contributor to demand reductions.

Table ES-4 OG&E Portfolio Evaluation Impacts – Annual Demand Reduction

Program	Gross Demand Reduction (kW)			Net Demand Reduction (kW)			
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio
HEEP	10,959	11,071	101%	7,006	8,062	115%	73%
WRAP	3,092	3,130	101%	3,810	3,130	82%	100%
CEEP	21,990	21,905	100%	23,541	21,017	89%	96%
Total	36,040	36,106	100%	34,357	32,209	94%	89%

Figure ES-2 OG&E Portfolio Demand Reduction Summary

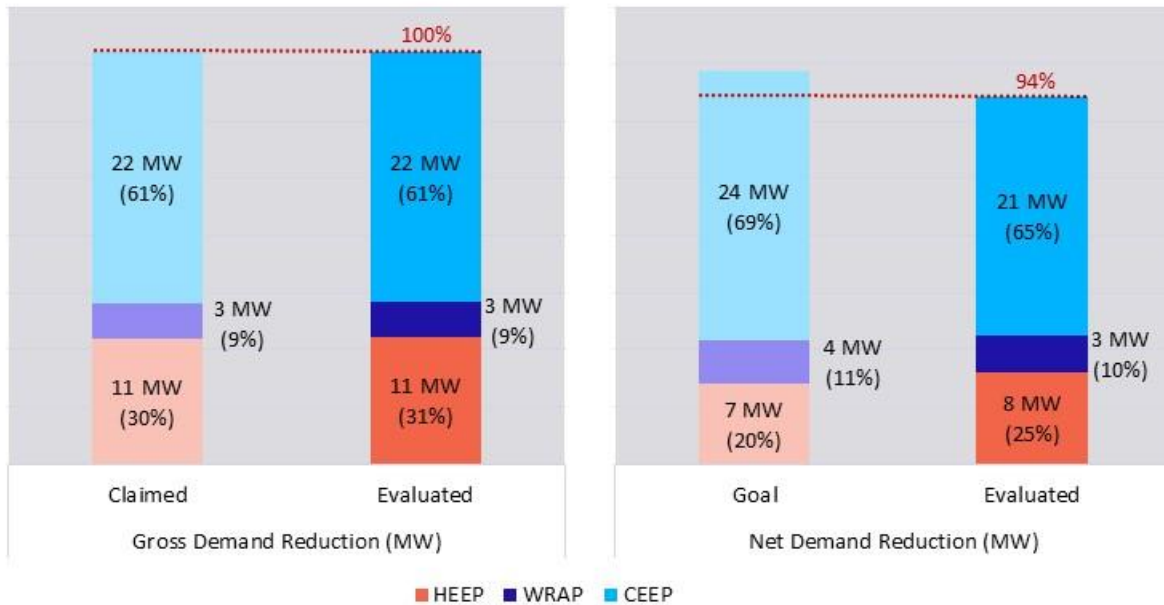


Table ES-5 shows the summary of budgeted and actual expenditures. OG&E spent \$36,805,975 in 2022, equivalent to 94% of the planned budget.

Table ES-5 Summary of Budgets and Actual Spend

Program	Budgeted Spend	Actual Spend	% Attained
HEEP	\$12,069,340	\$11,849,578	98%
WRAP	\$6,243,114	\$6,119,760	98%
CEEP	\$17,862,517	\$17,888,316	100%
Energy Education	\$880,000	\$788,314	90%
R&D	\$1,950,000	\$160,007	8%
Planning	\$0	\$0	n/a
Total	\$39,004,972	\$36,805,975	94%

Table ES-6 shows the results of the cost-effectiveness analysis. Four out of five CE tests show HEEP, WRAP, CEEP, and the overall portfolio as cost-effective, achieving an overall TRC of 2.55 with \$75,319,155 in TRC net benefits. Note that the RIM test is below 1, which is expected and typical. The cost-effectiveness approach and assumptions are detailed in [Appendix C](#).

Table ES-6 Cost-Effectiveness Estimates and TRC Net Benefits Summary¹

Program	TRC	PACT/ UCT	RIM	PCT	SCT	TRC Net Benefits
HEEP	2.97	3.12	0.50	9.47	6.40	\$26,417,664
WRAP	2.42	2.00	0.50	4.93	3.67	\$8,703,101
CEEP	2.46	3.84	0.45	7.24	4.44	\$41,146,711
Energy Education	-	-	-	-	-	-\$788,314
R&D	-	-	-	-	-	-\$160,007
Planning	-	-	-	-	-	\$0
Overall	2.55	3.21	0.47	7.41	4.67	\$75,319,155

Key Evaluation Findings and Recommendations

The impact and process evaluation of the 2022 Oklahoma Comprehensive Demand Program Portfolio resulted in the following key recommendations. Further detail is provided in program-specific sections.

- **For HEEP RSOL and WRAP, air infiltration and duct sealing savings in multifamily buildings are likely overstated.** The AR TRM V9 states that these measures apply to all residential applications but bases savings on assumptions for a single family home. AEG has accepted the 2022 TRM savings but will apply adjustments to the evaluated savings next year.

 - The RSOL channel relied heavily on multifamily air infiltration and duct sealing, making up 78% of 2022 claimed energy savings. As a result, the substantial growth RSOL experienced in 2022 may be overstated. The RSOL channel grew significantly in 2022, increasing by 159% (energy) and 95% (demand) relative to 2021.
 - For WRAP, the implications of this finding are less substantial, making up 26% of 2022 claimed energy savings.

Recommendations: For 2023 claimed savings, apply a reduction factor (69%) to the TRM savings until a billing analysis can establish a more definitive adjustment. As part of the 2023 evaluation, AEG will perform a billing analysis of 2022 participants to estimate an appropriate adjustment factor for multifamily air infiltration and duct sealing measures.
- **For HEEP and WRAP, prepare for lighting savings to diminish significantly by July 25, 2023.** The EISA-backstop provision became effective July 25, 2022, and AEG typically assumes a one-year product sell-through.

 - For HEEP LivingWise, lighting measures comprise approximately 19% of 2022 energy savings. In the fall, tier 1 smart strips were added to replace the anticipated LED savings phase-out. Program managers are encouraged to continue exploring additional measures in the kit, such as re-including the LED nightlight and adding a tier 2 smart strip.

Recommendations: Consider leveraging the HEW survey to collect data on baseline wattage, i.e., lightbulb wattage replaced by kit measures, which can be used to establish the actual energy baseline.

 - For HEEP CPS, the EISA-backstop provision is a more significant concern since lighting measures comprise 92% of CPS energy savings and 61% of HEEP energy savings.

¹ Energy Education, Research & Development (R&D), and Planning are portfolio overhead costs, which are included only in the overall (portfolio) CE analysis.

Recommendations: Collect data showing retailers' existing product stock of non-EISA-backstop compliant bulbs to establish appropriate baselines. Also, consider extending offered rebates for other commonly featured measures such as dehumidifiers, occupancy-sensing wall switches, water heater pipe wrap, weatherization measures (e.g., air sealing and outlet and switch gaskets), and electric vehicle (EV) charging accessories.

- For WRAP, inefficient bulbs likely still exist in the homes of WRAP participants. The program only installs general-purpose bulbs, but there is likely the opportunity for specialty bulbs such as reflectors, candelabras, globes, etc. Because of sell-through, halogen bulbs will remain an eligible baseline until July 2023. After that, the baseline will be 45 lumens/watt if baseline bulb data is not collected.

Recommendations: Consider expanding the eligible list of LED bulbs to include specialty bulbs. Continue to install LED bulbs in homes but collect the baseline bulb type or existing wattage. Ideally, the contractor will take a picture of the existing bulb at a reasonable frequency and will remove existing bulbs from customers' homes.

- **The HEEP LivingWise channel evaluation found significantly higher savings, with realization rates at 162% (energy) and 152% (demand).**

- AEG used the Home Energy Worksheet (HEW) data for estimating water heating measure savings that depend on the number of occupants and the total number of aerators and showerheads in the home. Homes with school-aged children have more occupants than the average home size in the AR TRM.
- AEG made methodological changes to LED ISR assumptions. LEDs tend to get installed, and AEG estimated LED ISR using the three-year ISR trajectory in the Uniform Methods Project (UMP).²

Recommendations: For claimed savings, consider re-estimating the per-kit claimed savings using AEG's proposed methodology, which incorporates industry-best practices, all products in the kit, and actual home characteristics. AEG can work with AM Conservation to ensure our methodologies and assumptions are aligned and reasonable.

- **For CEEP CIS, there is uncertainty around horticultural lighting project claimed hours of use and dimming schedule.**

- Horticultural lighting projects comprised 38% of the total evaluated energy savings. Customers list their growing and dimming schedules by incentivized fixture as part of the application process.
- AEG found in our site visits that growers often change their operations throughout the year as their businesses expand or they try new growing techniques. The customer's application and AEG site visits are snapshots of operation schedules and not necessarily average yearly estimates.
- The current application does not capture dimming schedules accurately because it is hard to estimate without data. As the plants grow, they need different amounts of light, which means that growers adjust the output or the distance away from the plants. These can substantially impact total usage and savings, but it is difficult to quantify without data.

Recommendations: Consider conducting a metering study to determine hours of use and dimming schedules. Horticultural lighting in energy efficiency is new. A metering study would add accuracy to the savings estimates and make moving these projects from the custom path to the prescriptive path easier.

- **For CEEP CIS and SAGE, new construction lighting projects claimed savings used inconsistent baseline lighting power density (LPD) methodologies.** AEG found that individual projects had mixed baseline LPD methodologies. AEG adjusted this in our evaluated savings, which led to more accurate and higher savings.

² Dimetrosky, S.; Parkinson, K.; Lieb, N. (2017). *Chapter 6: Residential Lighting Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68562. <http://www.nrel.gov/docs/fy17osti/68562.pdf>.

Recommendations: Use only one baseline LPD method (the space-by-space or whole-building method) within projects. Do not mix methods, as that leads to inaccurate savings. For example, if the whole-building methodology is used, offices within manufacturing facilities or warehouses can use the “office” building type, while the rest of the facility can use the manufacturing or warehouse building types.

- **The NTG analysis produced conflicting findings.**

- The benchmarking analysis found that 2021 NTG adjustment ratios are mostly comparable to other jurisdictions, despite some programs showing a wider range of NTG ratios.
- On the other hand, the survey-based approach for Res HVAC, C&I HVAC, and PE-NHC produced lower NTG adjustment ratios relative to 2021. We used methods consistent with 2021 methods, and channel operations or delivery methods did not substantially change in 2022.

Recommendations: AEG will consider re-launching surveys for all three channels. In 2023, AEG will also explore other methodologies for PE-NHC.

- **For WRAP, there is an opportunity to install cost-effective and relatively high-satisfaction water heating measures in homes with electric water heating.**

- Many income-qualified and non-income-qualified programs across the country, low-flow showerheads and aerators comprise a large part of the portfolio. Customer satisfaction and in-service rates are generally high, and they are cost-effective.

Recommendations: Consider re-introducing low-flow showerheads (1.5 GPM—handheld and standard), low-flow kitchen aerators (1.5 GPM or lower), and low-flow bathroom aerators (1.0 GPM or lower) to homes with electric water heaters.

- **Trade allies would like the option to receive inducements via direct deposit.** Many of the trade allies across most CEEP channels indicated they would like to have the option of receiving payment via direct deposit. While payments were generally dispersed quickly, sometimes, there were delays. Direct deposits could potentially help speed up the process.

Recommendations: Consider offering trade allies a direct deposit option as an alternative to a mailed inducement check.

Overview of Methods

The **impact evaluation** has three objectives: (1) estimate evaluated gross savings, (2) estimate evaluated net savings, and (3) test program cost-effectiveness. We used a combination of evaluation activities to produce a customized approach appropriate to each program and channel. Figure ES-3 shows the evaluation activities performed in the 2022 evaluation and maps each activity to the corresponding objective. Table ES-7 summarizes the impact evaluation activities performed for each program and channel. We include detailed descriptions of each activity in [Appendix A](#).

Figure ES-3 Impact Evaluation Activities

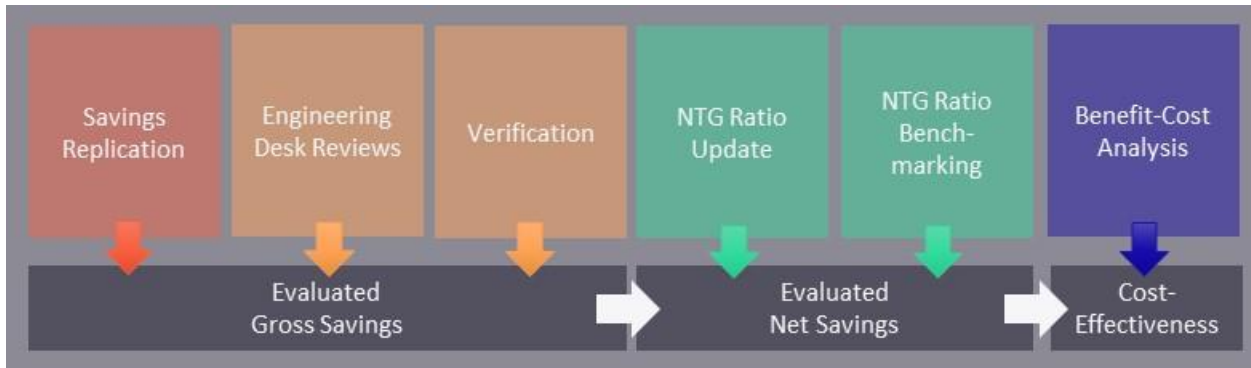


Table ES-7 Impact Evaluation Activities by Program and Channel

Program/Channel	Savings Replication	Eng. Desk Review	Verification	NTG Ratio Update	NTG Ratio Benchmarking	Benefit-Cost Analysis
HEEP						
RSOL	√	√	√		√	√
LivingWise		√	√		√	√
Res HVAC	√	√	√	√	+	√
CPS	√	√	√		√	√
PE-NHC		√		√	+	√
WRAP						
WRAP	√	√	√			√
CEEP						
C&I Solutions		√	√		√	√
SAGE		√	√		√	√
SBDI		√	√		√	√
Midstream	√	√	√		√	√
CEI		√			√	√
C&I HVAC	√	√	√	√	+	√

AEG’s approach to **process evaluations** is to provide quantifiable, actionable results that can be replicated over time to measure progress toward the program’s goals. AEG’s analysis collectively contributes to developing actionable recommendations to capitalize on program strengths, overcome program weaknesses, streamline program data collection and tracking, and increase program key performance indicators (KPIs). Similar to the impact evaluation, we used a combination of activities to produce a customized approach appropriate to each program and channel. Figure ES-4 lists the typical evaluation activities performed in a process evaluation. Table ES-8 summarizes the process evaluation activities performed for each program and channel.

We include detailed descriptions of each activity in [Appendix A](#).

Figure ES-4 Process Evaluation Activities



Table ES-8 Process Evaluation Activities by Program and Channel

Program/Channel	Program Manager Interview	Implementer Interview	Trade Ally Survey/ Interview	Participant Survey/ Interview	Non participant Survey/ Interview ³	Cycle Time Analysis
HEEP						
RSOL	√	√				√
LivingWise	√	√				
Res HVAC	√	√	√	√		
CPS	√	√				
PE-NHC	√	√		√		
WRAP						
WRAP	√	√	√	√		
CEEP						
C&I Solutions	√	√	√			√
SAGE	√	√	√			√
SBDI	√	√	√			√
Midstream	√	√				
CEI	√	√				
C&I HVAC	√	√	√	√		√

As applicable, we developed a **sampling plan** to efficiently execute each analysis while maintaining a +/- 10% error margin at a 90% confidence level. For activities that require customer interaction, such as surveys, interviews, and onsite, we reviewed the selected sample with OG&E staff to ensure that participants are not currently included in other OG&E surveys (i.e., avoid survey fatigue). We include detailed descriptions of the sample design in [Appendix B](#).

³ Under a separate engagement in 2022, AEG conducted a market evaluation that included surveys with nonparticipants. For that reason, we did not conduct additional nonparticipant surveys. AEG will work with OG&E to identify if nonparticipant surveys are necessary for the 2023 or 2024 evaluations.



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1

INTRODUCTION

This report documents the portfolio evaluation of Oklahoma Gas and Electric’s (OG&E) Oklahoma Comprehensive Demand Program Portfolio in 2022. OG&E is submitting this report to fulfill the requirements outlined in Title 165: Oklahoma Corporation Commission, Chapter 35., Electric Utility Rules Subchapter 41., Demand Programs 165:35-41-7.

Evaluation Objectives

The evaluation has the following key objectives:

- Perform an **impact evaluation** that estimates evaluated (1) gross savings and (2) net savings for both energy (kWh) and peak demand (kW) and tests (3) cost-effectiveness at each program level.
- Perform a **process evaluation** to provide quantifiable, actionable results that OG&E can replicate over time to measure progress toward the program’s goals

Program Overview

OG&E portfolio includes three programs and, collectively, fourteen delivery channels. The table below lists the programs, program channels, and corresponding implementers.

Table 1-1 OG&E Oklahoma Programs and Channels

Program	Channel	Implementer
Home Energy Efficiency Program (HEEP)	Residential Solutions (RSOL)	CLEAResult (CR)
	Residential HVAC Replacement & Tune-up (Res HVAC)	
	Consumer Products (CPS)	
	Positive Energy – New Home Construction (PE-NHC)	AM Conservation
LivingWise® Schools Outreach (LivingWise)	AM Conservation	
Weatherization Residential Assistance Program (WRAP)		Skyline Energy Solutions (Skyline)
Commercial Energy Efficiency Program (CEEP)	Commercial and Industrial Solutions (CIS)	CLEAResult (CR)
	Schools and Government Efficiency (SAGE)	
	Small Business Direct Install (SBDI)	
	Small Business Midstream (Midstream)	
	C&I HVAC Replacement & Tune-up (C&I HVAC)	
	Continuous Energy Improvement (CEI)	
	Retro-commissioning (RCx)	
Networked Lighting Controls (NLC)		

We provide detailed descriptions of each channel within the program-specific sections of this report.

Report Structure

The remainder of this report is structured as follows:

- Section 2 – Portfolio-level evaluation results, key findings, and recommendations

Section 3 – HEEP evaluation results, key findings, and recommendations

Section 4 – WRAP evaluation results, key findings, and recommendations

Section 5 – CEEP evaluation results, key findings, and recommendations

We also provide supplemental information in the appendices:

Appendix A – Detailed Methodologies

Appendix B – Sample Design and Extrapolation

Appendix C – Portfolio Cost-Effectiveness

Key Report References

Glossary of Terms

We provide a glossary of terms used throughout this report. We use the primary terms used by the US DOE NREL Uniform Methods Project and provide other industry-accepted terminology as a reference.

Projected savings. Values reported by a program implementer or administrator before the efficiency activities are complete.

Gross savings. Changes in energy consumption that result directly from program-related actions taken by participants in an energy efficiency program, regardless of why they participated.

Claimed (gross) savings. Values reported by a program implementer or administrator after the activities are complete. I.e., ex-ante savings, reported savings, ex-ante gross savings, reported gross savings.

Evaluated (gross) savings. Values reported by an independent, third-party evaluator after the efficiency activities and impact evaluation are complete (i.e., ex-post evaluation estimated savings, ex-post savings, ex-post gross savings, verified gross savings).

Gross Realization Rate. The ratio of evaluated and claimed gross savings (i.e., realization rate).

Net savings. Change in energy use attributable to a particular energy efficiency program. These changes may implicitly or explicitly include the effects of factors such as free ridership, participant and nonparticipant spillover, and induced market effects (i.e., evaluated net savings, verified net savings).

Net-to-gross (NTG) analysis. Estimation of the NTG ratio, which is the net savings as a fraction of gross savings.

Free-ridership. The program savings attributable to free-riders (program participants who would have implemented a program measure or practice in the absence of the program).

Spillover. Additional savings that are due to program influences beyond those directly associated with the program and not claimed or credited to the program. Spillover occurs when customers (participants or nonparticipants) adopt energy efficiency measures or take other efficiency actions independently or outside the program.

Deemed Savings. An estimate of energy savings or energy demand savings outcome (gross savings) for a single unit of an installed energy efficiency measure. This estimate has been developed from data sources and analytical methods widely accepted for the measure and applies to the situation being evaluated (i.e., Stipulated Values).

Acronyms

The table below provides a summary of acronyms used throughout this report.

Table 1-2 Report Acronyms

Acronym	Definition
AC	Air Conditioner
AEG	Applied Energy Group
AR	Arkansas
ASHP	Air Source Heat Pump
C&I	Commercial & Industrial
C&I HVAC	Commercial and Industrial HVAC Replacement & Tune-up
CAC	Central Air Conditioner
CEI	Continuous Energy Improvement
CFM	Cubic Feet per Minute
CIS	Commercial and Industrial Solutions
COP	Coefficient of Performance
CPS	Consumer Products
CR	CLEARResult
DI	Direct Install
DLC	DesignLight Consortium
DOE	Department of Energy
DSM	Demand Side Management
EBTU	Express Building Tune-Up
EE	Energy Efficiency
EER	Energy Efficiency Ratio
EISA	Energy Independence and Security Act of 2007
EPA	Environmental Protection Agency
ES	ENERGY STAR
EUL	Estimated Useful Life
EV	Electric Vehicle
GHG	Greenhouse Gas Emissions
GPM	Gallons per Minute
GWh	Gigawatt-hour
HEEP	Home Energy Efficiency Program
HERS	Home Energy Rating System
HEW	Home Energy Worksheet
HP	Heat Pump
HSPF	Heating Seasonal Performance Ratio
HVAC	Heating, Ventilation, and Air Conditioning
IECC	International Energy Conservation Code
IL	Illinois

Acronym	Definition
ISR	In-service Rate
kW	Kilowatt
kWh	Kilowatt-hour
LED	Light-emitting-diode
LivingWise	LivingWise Schools Outreach
LPD	Lighting-power-density
MF	Multifamily
Midstream	Small Business Midstream
MN	Minnesota
MW	Megawatt
NLC	Networked Lighting Controls
NTG	Net-to-Gross
OG&E	Oklahoma Gas & Electric
OK	Oklahoma
PA	Pennsylvania
PACT/UCT	Program Administrator Cost Test
PE-NHC	Positive Energy - New Home Construction
QA	Quality Assurance
R&D	Research & Development
RCx	Retro-commissioning
Res HVAC	Residential HVAC Replacement & Tune-up
RIM	Ratepayer Impact Measure Test
ROB	Replace-on-Burnout
RR	Realization Rate
RSOL	Residential Solutions
RTQ	Repair-to-Qualify
SAGE	Schools and Government Efficiency
SBDI	Small Business Direct Install
SCT	Societal Cost Test
SEER	Season Energy Efficiency Ratio
SF	Single Family
Skyline	Skyline Energy Solutions
TRC	Total Resource Cost
TRM	Technical Resource Manual
UMP	Uniform Methods Project
WH	Water Heater
WI	Wisconsin
WRAP	Weatherization Residential Assistance Program

2

OKLAHOMA COMPREHENSIVE DEMAND PROGRAM PORTFOLIO

This section summarizes the portfolio-level evaluation findings for the Oklahoma Comprehensive Demand Program Portfolio 2022 program year. We also include recommendations based on our findings and a summary of our net-to-gross analysis.

Key Evaluation Findings

The impact evaluation established total portfolio evaluated energy savings of 208,820,127 kWh, which amounts to a 100% realization rate, and evaluated demand savings of 36,106 kW, which amounts to a 100% realization rate. The portfolio achieved 109% of its net energy savings goals and 94% of its net demand reduction goals. Table 2-1 provides a summary of the portfolio evaluation findings.

Table 2-1 OG&E Portfolio Evaluation Summary

Savings	Gross Savings			Net Savings				Lifetime
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	
Energy (kWh)	209,181,436	208,820,127	100%	170,407,432	185,050,738	109%	89%	2,012,358,031
Demand (kW)	36,040	36,106	100%	34,357	32,209	94%	89%	n/a

Table 2-2 and Table 2-3 provide the corresponding summaries of the evaluated energy savings and demand reductions, respectively.

Table 2-2 OG&E Portfolio Evaluation Impacts – Energy Savings

Program	Gross Energy Savings (kWh)			Net Energy Savings (kWh)				Lifetime
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	
HEEP	65,572,402	66,313,616	101%	41,477,443	46,729,917	113%	70%	618,450,644
WRAP	11,525,832	11,613,073	101%	10,934,952	11,613,073	106%	100%	183,794,347
CEEP	132,083,202	130,893,439	99%	117,995,037	126,707,748	107%	97%	1,210,113,040
Total	209,181,436	208,820,127	100%	170,407,432	185,050,738	109%	89%	2,012,358,031

Table 2-3 OG&E Portfolio Evaluation Impacts – Annual Demand Reduction

Program	Gross Demand Reduction (kW)			Net Demand Reduction (kW)			
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio
HEEP	10,959	11,071	101%	7,006	8,062	115%	73%
WRAP	3,092	3,130	101%	3,810	3,130	82%	100%
CEEP	21,990	21,905	100%	23,541	21,017	89%	96%
Total	36,040	36,106	100%	34,357	32,209	94%	89%

Figure 2-1 and Figure 2-2 show the program distribution of energy savings and demand reductions, respectively. Notably, CEEP is the highest contributor to energy savings and demand reductions.

Figure 2-1 OG&E Portfolio Energy Savings Summary

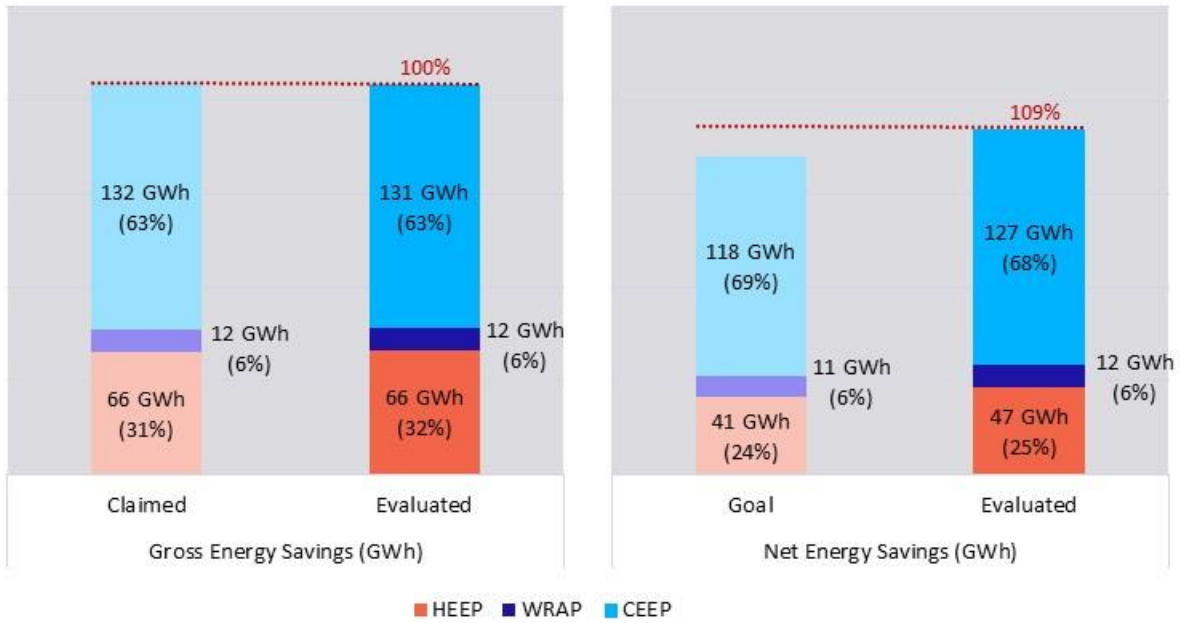


Figure 2-2 OG&E Portfolio Demand Reduction Summary

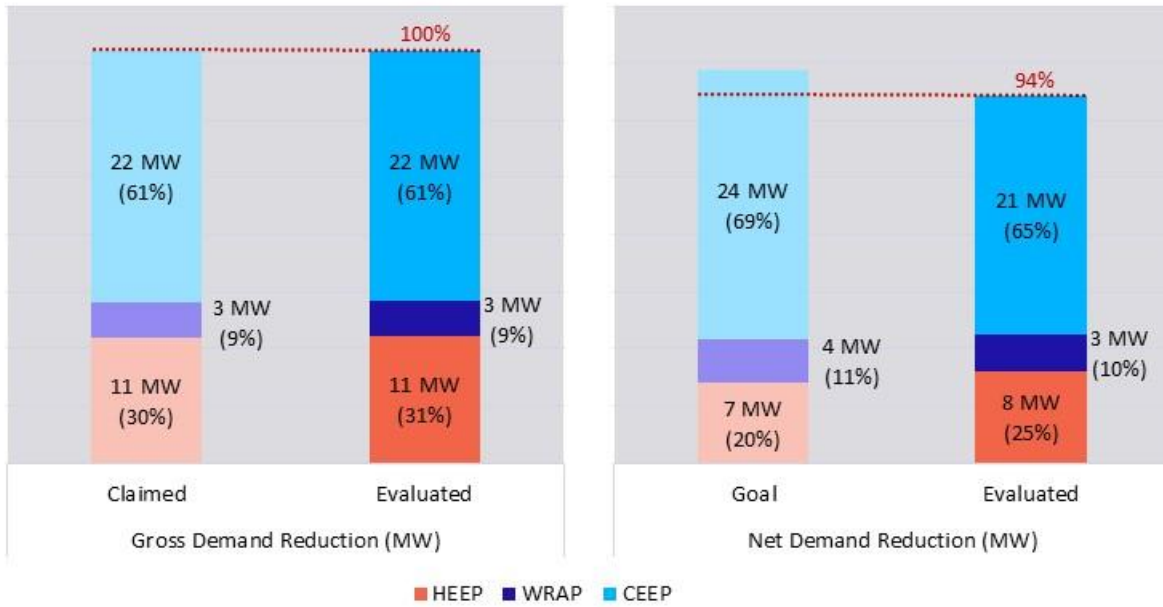


Table 2-4 shows the summary of budgeted and actual expenditures. OG&E spent \$36,805,975 in 2022, equivalent to 94% of the planned budget.

Table 2-4 Summary of Budgets and Actual Spend

Program	Budgeted Spend	Actual Spend	% Attained
HEEP	\$12,069,340	\$11,849,578	98%
WRAP	\$6,243,114	\$6,119,760	98%
CEEP	\$17,862,517	\$17,888,316	100%
Energy Education	\$880,000	\$788,314	90%
R&D	\$1,950,000	\$160,007	8%
Planning	\$0	\$0	n/a
Total	\$39,004,972	\$36,805,975	94%

Table 2-5 shows the results of the cost-effectiveness analysis. Four out of five CE tests show HEEP, WRAP, CEEP, and the overall portfolio as cost-effective, achieving an overall TRC of 2.55 with \$75,319,155 in TRC net benefits. Note that the RIM test is below 1, which is expected and typical. The cost-effectiveness approach and assumptions are detailed in [Appendix C](#).

Table 2-5 Cost-Effectiveness Estimates and TRC Net Benefits Summary⁴

Program	TRC	PACT/ UCT	RIM	PCT	SCT	TRC Net Benefits
HEEP	2.97	3.12	0.50	9.47	6.40	\$26,417,664
WRAP	2.42	2.00	0.50	4.93	3.67	\$8,703,101
CEEP	2.46	3.84	0.45	7.24	4.44	\$41,146,711
Energy Education	-	-	-	-	-	-\$788,314
R&D	-	-	-	-	-	-\$160,007
Planning	-	-	-	-	-	\$0
Overall	2.55	3.21	0.47	7.41	4.67	\$75,319,155

Net-to-Gross Analysis

AEG recommended a prospective approach, updating NTG adjustment ratios only once per program cycle. Consequently, we used the 2021 NTG adjustments to all channels and programs in the 2022 evaluation. This year's NTG analysis consisted of two components:

- **Benchmarking Analysis.** For all programs and channels, AEG performed a benchmarking analysis, comparing the current NTG ratios used in similar programs around the region or country. AEG used the findings from this analysis to formulate recommendations for current and future NTG analyses.
- **NTG Ratio Update.** We used a survey-based approach⁵ for three channels: Res HVAC, C&I HVAC, and PE-NHC. AEG made considerable efforts to remain consistent with previous survey-based approaches to establish appropriate comparisons to 2021 NTG ratios. We discuss program/channel-specific surveys in respective program/channel sections.

⁴ Energy Education, Research & Development (R&D), and Planning are portfolio overhead costs, which are included only in the overall (portfolio) CE analysis.

⁵ This self-report approach (surveys and interviews) started with gross estimates of savings adjusted for NTG factors, such as savings (1) from free riders, participants not influenced by the program, and (2) from spillover, nonparticipants influenced by the program, but savings were not reported.

The overall NTG analysis has the following key findings:

- The benchmarking analysis found that [2021 NTG adjustment ratios are mostly comparable to other jurisdictions](#), despite some programs showing a wider range of NTG ratios.
- [The survey-based approach for Res HVAC, C&I HVAC, and PE-NHC produced lower NTG adjustment ratios relative to 2021](#). As mentioned above, we used methods consistent with 2021 methods, and channel operations or delivery methods did not substantially change in 2022. Note that C&I HVAC only received ten responses.

For the 2023 evaluation, we recommend the following:

- AEG will [consider re-launching surveys for Res HVAC and C&I HVAC](#). For C&I HVAC, we will make significant efforts to collect more responses.
- AEG will [explore other ways of estimating NTG for PE-NHC](#). As part of this effort, we will investigate methods used in other jurisdictions examined during the benchmarking analysis.
 - We will also consider collecting responses from other builders not interviewed in 2022.

For the 2023 evaluation, we have the following channels planned for NTG Ratio Updates: RSOL, LivingWise, CIS, SAGE, and Midstream.

- For CIS, we recommend estimating the NTG adjustment for custom and prescriptive paths separately.

Table 2-6 and Table 2-7 summarize the NTG analysis findings for HEEP and CEEP, respectively. WRAP is an income-qualified program with a stipulated net-to-gross ratio of 100%. We did not conduct a free ridership analysis or spillover savings analysis for WRAP, and net savings are equal to gross savings.

Table 2-6 HEEP NTG Summary

Channel	2021 Ratios applied to 2022		2022 Analysis	
	kWh	kW	Survey Output	Findings
RSOL	85%	76%	n/a	Comparable to other jurisdictions
LivingWise	100%	100%	n/a	Comparable to other jurisdictions
Res HVAC	96%	89%	79%	Survey output is ~10% lower HVAC tune-up measure is ~91% in other jurisdictions
CPS	61%	63%	n/a	Comparable to other jurisdictions
PE-NHC	88%	88%	76%	Survey output is ~12% lower The 2021 ratio is comparable with some jurisdictions (80-90%), while other jurisdictions have ~50%
Overall (Weighted)	70%	73%		

Table 2-7 CEEP NTG Summary

Channel	2021 Ratios applied to 2022		2022 Analysis	
	kWh	kW	Survey Output	Findings
CIS	100%	97%	n/a	Custom path – Comparable to other jurisdictions Prescriptive path – Comparable with some jurisdictions (90-100%), while other jurisdictions are between 60-70%
SAGE	100%	100%	n/a	Comparable with some jurisdictions (90-10%), while other jurisdictions are ~40% or ~60%
SBDI	100%	100%	n/a	Comparable with some jurisdictions (90-100%), while other jurisdictions are between 60-70%
Midstream	88%	88%	n/a	Comparable to other jurisdictions
CEI	100%	100%	n/a	Comparable to other jurisdictions
C&I HVAC	99%	99%	86%	Survey output is ~13% lower; Survey had very low response The 2021 ratio is comparable to other jurisdictions
Overall (Weighted)	97%	96%		

Recommendations

The impact and process evaluation of the 2022 Oklahoma Comprehensive Demand Program Portfolio resulted in the following key recommendations. Further detail is provided in program-specific sections.

- **For HEEP RSOL and WRAP, air infiltration and duct sealing savings in multifamily buildings are likely overstated.** The AR TRM V9 states that these measures apply to all residential applications but bases savings on assumptions for a single family home. AEG has accepted the 2022 TRM savings but will apply adjustments to the evaluated savings next year.

 - The RSOL channel relied heavily on multifamily air infiltration and duct sealing, making up 78% of 2022 claimed energy savings. As a result, the substantial growth RSOL experienced in 2022 may be overstated. The RSOL channel grew significantly in 2022, increasing by 159% (energy) and 95% (demand) relative to 2021.
 - For WRAP, the implications of this finding are less substantial, making up 26% of 2022 claimed energy savings.

Recommendations: For 2023 claimed savings, apply a reduction factor (69%) to the TRM savings until a billing analysis can establish a more definitive adjustment. As part of the 2023 evaluation, AEG will perform a billing analysis of 2022 participants to estimate an appropriate adjustment factor for multifamily air infiltration and duct sealing measures.
- **For HEEP and WRAP, prepare for lighting savings to diminish significantly by July 25, 2023.** The EISA-backstop provision became effective July 25, 2022, and AEG typically assumes a one-year product sell-through.

 - For HEEP LivingWise, lighting measures comprise approximately 19% of 2022 energy savings. In the fall, tier 1 smart strips were added to replace the anticipated LED savings phase-out. Program managers

are encouraged to continue exploring additional measures in the kit, such as re-including the LED nightlight and adding a tier 2 smart strip.

Recommendations: Consider leveraging the HEW survey to collect data on baseline wattage, i.e., lightbulb wattage replaced by kit measures, which can be used to establish the actual energy baseline.

- For HEEP CPS, the EISA-backstop provision is a more significant concern since lighting measures comprise 92% of CPS energy savings and 61% of HEEP energy savings.

Recommendations: Collect data showing retailers' existing product stock of non-EISA-backstop compliant bulbs to establish appropriate baselines. Also, consider extending offered rebates for other commonly featured measures such as dehumidifiers, occupancy-sensing wall switches, water heater pipe wrap, weatherization measures (e.g., air sealing and outlet and switch gaskets), and electric vehicle (EV) charging accessories.

- For WRAP, inefficient bulbs likely still exist in the homes of WRAP participants. The program only installs general-purpose bulbs, but there is likely the opportunity for specialty bulbs such as reflectors, candelabras, globes, etc. Because of sell-through, halogen bulbs will remain an eligible baseline until July 2023. After that, the baseline will be 45 lumens/watt if baseline bulb data is not collected.

Recommendations: Consider expanding the eligible list of LED bulbs to include specialty bulbs. Continue to install LED bulbs in homes but collect the baseline bulb type or existing wattage. Ideally, the contractor will take a picture of the existing bulb at a reasonable frequency and will remove existing bulbs from customers' homes.

- **The HEEP LivingWise channel evaluation found significantly higher savings with realization rates at 162% (energy) and 152% (demand).**

- AEG used the Home Energy Worksheet (HEW) data for estimating water heating measure savings that depend on the number of occupants and the total number of aerators and showerheads in the home. Homes with school-aged children have more occupants than the average home size in the AR TRM.
- AEG made methodological changes to LED ISR assumptions. LEDs tend to get installed, and AEG estimated LED ISR using the three-year ISR trajectory in the Uniform Methods Project (UMP).⁶

Recommendations: For claimed savings, consider re-estimating the per-kit claimed savings using AEG's proposed methodology, which incorporates industry-best practices, all products in the kit, and actual home characteristics. AEG can work with AM Conservation to ensure our methodologies and assumptions are aligned and reasonable.

- **For CEEP CIS, there is uncertainty around horticultural lighting project claimed hours of use and dimming schedule.**

- Horticultural lighting projects comprised 38% of the total evaluated energy savings. Customers list their growing and dimming schedules by incentivized fixture as part of the application process.
- AEG found in our site visits that growers often change their operations throughout the year as their businesses expand or they try new growing techniques. The customer's application and AEG site visits are snapshots of operation schedules and not necessarily average yearly estimates.
- The current application does not capture dimming schedules accurately because it is hard to estimate without data. As the plants grow, they need different amounts of light, which means that growers adjust the output or the distance away from the plants. These can substantially impact total usage and savings, but it is difficult to quantify without data.

⁶ Dimetrosky, S.; Parkinson, K.; Lieb, N. (2017). *Chapter 6: Residential Lighting Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68562. <http://www.nrel.gov/docs/fy17osti/68562.pdf>.

Recommendations: Consider conducting a metering study to determine hours of use and dimming schedules. Horticultural lighting in energy efficiency is new. A metering study would add accuracy to the savings estimates and make moving these projects from the custom path to the prescriptive path easier.

- **For CEEP CIS and SAGE, new construction lighting projects claimed savings used inconsistent baseline lighting power density (LPD) methodologies.** AEG found that individual projects had mixed baseline LPD methodologies. AEG adjusted this in our evaluated savings, which led to more accurate and higher savings.

Recommendations: Use only one baseline LPD method (the space-by-space or whole-building method) within projects. Do not mix methods, as that leads to inaccurate savings. For example, if the whole-building methodology is used, offices within manufacturing facilities or warehouses can use the “office” building type, while the rest of the facility can use the manufacturing or warehouse building types.

- **The NTG analysis produced conflicting findings.**
 - The benchmarking analysis found that 2021 NTG adjustment ratios are mostly comparable to other jurisdictions, despite some programs showing a wider range of NTG ratios.
 - On the other hand, the survey-based approach for Res HVAC, C&I HVAC, and PE-NHC produced lower NTG adjustment ratios relative to 2021. We used methods consistent with 2021 methods, and channel operations or delivery methods did not substantially change in 2022.

Recommendations: AEG will consider re-launching surveys for all three channels. In 2023, AEG will also explore other methodologies for PE-NHC.

- **For WRAP, there is an opportunity to install cost-effective and relatively high-satisfaction water heating measures in homes with electric water heating.**
 - Many income-qualified and non-income-qualified programs across the country, low-flow showerheads and aerators comprise a large part of the portfolio. Customer satisfaction and in-service rates are generally high, and they are cost-effective.

Recommendations: Consider re-introducing low-flow showerheads (1.5 GPM—handheld and standard), low-flow kitchen aerators (1.5 GPM or lower), and low-flow bathroom aerators (1.0 GPM or lower) to homes with electric water heaters.

- **Trade allies would like the option to receive inducements via direct deposit.** Many of the trade allies across most CEEP channels indicated they would like to have the option of receiving payment via direct deposit. While payments were generally dispersed quickly, sometimes, there were delays. Direct deposits could potentially help speed up the process.

Recommendations: Consider offering trade allies a direct deposit option as an alternative to a mailed inducement check.

3

HOME ENERGY EFFICIENCY PROGRAM (HEEP)

The Home Energy Efficiency Program (HEEP) is a multipronged program that encourages Oklahoma residential customers to reduce energy consumption by implementing energy-efficient upgrades in their homes. Multiple channel offerings provide homeowners with targeted choices to participate aimed at improving customer engagement, measure adoption (e.g., LED lighting), and program savings. The program consists of the following five delivery channels:

- Residential Solutions (RSOL)
- LivingWise® Schools Outreach (LivingWise)
- Residential HVAC Replacement and Tune-Up (Res HVAC)
- Consumer Products (CPS)
- Positive Energy – New Home Construction (PE-NHC)

We provide detailed descriptions of each channel in each corresponding subsection.

HEEP – Key Evaluation Findings and Recommendations

The impact evaluation established HEEP evaluated energy savings of 66,313,616 kWh, which amounts to a 101% realization rate, and evaluated demand savings of 11,071 kW, which amounts to a 101% realization rate. HEEP achieved 113% of its net energy savings goals and 115% of its net demand reduction goals.

Table 3-1 provides a summary of the HEEP impact evaluation findings. Table 3-2 and Table 3-3 provide the corresponding channel-level summaries of the evaluated energy and demand savings. We discuss the overall key findings below and the corresponding recommendations.

Table 3-1 HEEP Impact Evaluation Summary

Savings	Gross Savings			Net Savings				
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	Lifetime
Energy (kWh)	65,572,402	66,313,616	101%	41,477,443	46,729,917	113%	70%	618,450,644
Demand (kW)	10,959	11,071	101%	7,006	8,062	115%	73%	n/a

Table 3-2 HEEP Energy Savings Summary by Channel

Channel	Gross Energy Savings (kWh)			Net Energy Savings (kWh)		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
RSOL	12,261,396	12,061,009	98%	10,251,858	85%	170,543,083
LivingWise	2,258,978	3,650,501	162%	3,650,501	100%	37,457,357
Res HVAC	3,393,347	3,454,808	102%	3,316,616	96%	38,348,751
CPS	44,893,412	44,365,477	99%	27,062,941	61%	332,933,418
PE-NHC	2,765,270	2,781,821	101%	2,448,002	88%	39,168,035
Total HEEP	65,572,402	66,313,616	101%	46,729,917	70%	618,450,644

Table 3-3 HEEP Demand Reduction Summary by Channel

Channel	Gross Demand Reduction (kW)			Net Demand Reduction (kW)	
	Claimed	Evaluated	RR	Evaluated	NTG Ratio
RSOL	1,904	1,990	105%	1,512	76%
LivingWise	259	394	152%	394	100%
Res HVAC	1,704	1,705	100%	1,517	89%
CPS	6,132	6,024	98%	3,795	63%
PE-NHC	959	958	100%	843	88%
Total HEEP	10,959	11,071	101%	8,062	73%

Figure 3-1 and Figure 3-2 show the HEEP channel distribution of energy savings and demand reductions, respectively. Notably, RSOL, CPS, and Res HVAC are the highest contributors to energy savings and demand reductions.

Figure 3-1 HEEP Energy Savings Summary

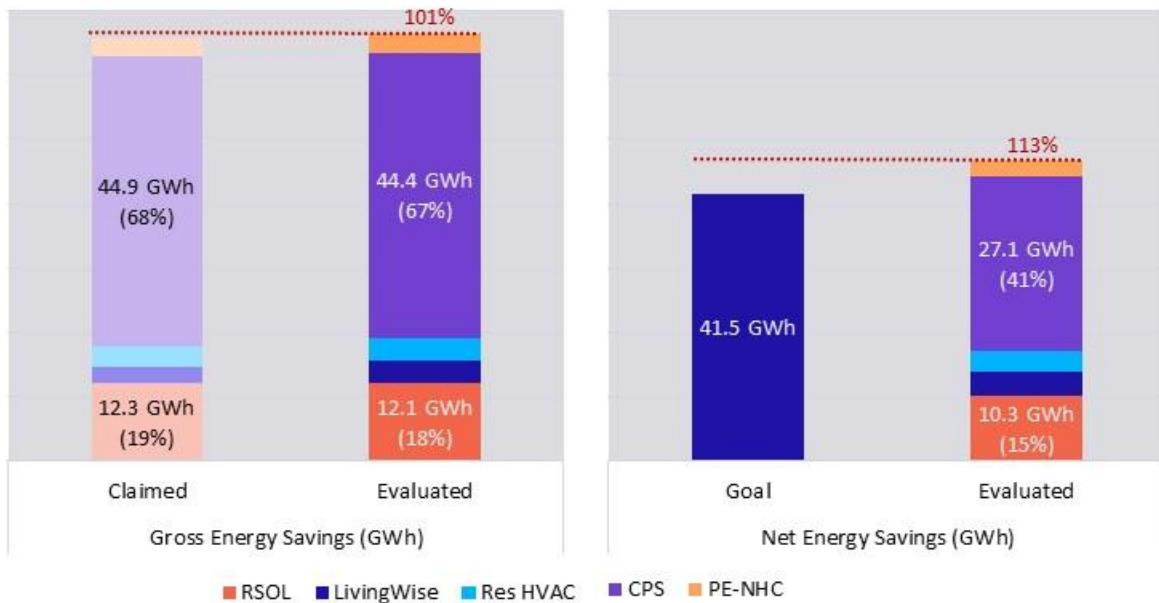
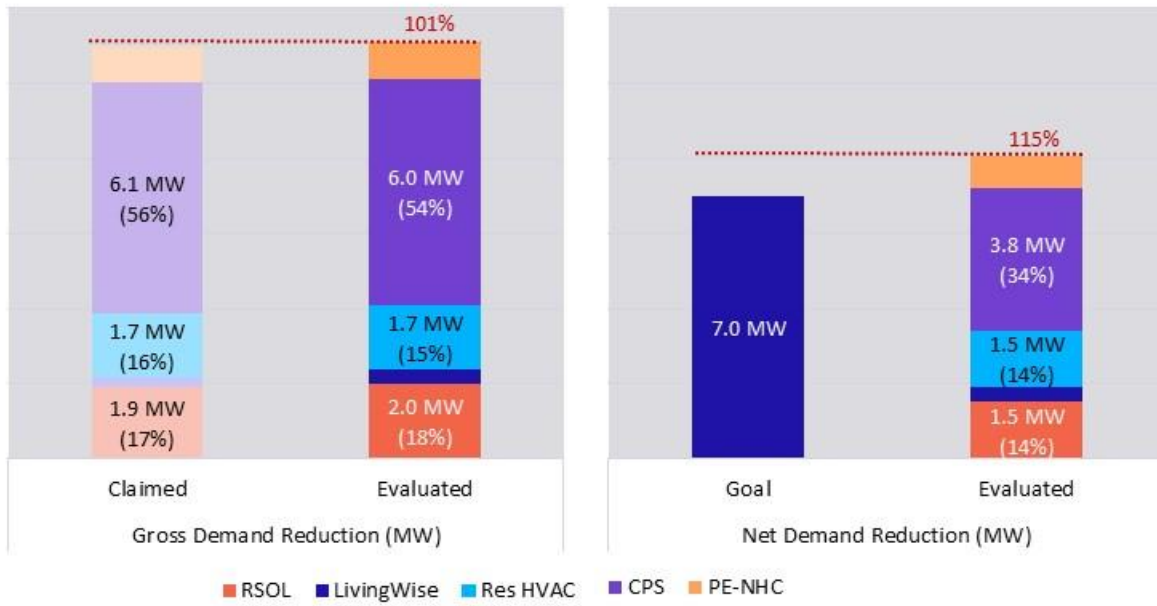


Figure 3-2 HEEP Demand Reduction Summary



The evaluation key findings and recommendations for the HEEP program are discussed below. We provide further detail for each HEEP delivery channel in the corresponding channel subsections.

- **The RSOL channel grew significantly in 2022; however, multifamily air infiltration and duct sealing savings may be overstated.**

 - In 2022, the RSOL channel increased by 159% (energy) and 95% (demand) relative to 2021.
 - As a result, overall channel savings may be overstated since it relied heavily on multifamily homes, making up 83% of 2022 energy savings and 51% of 2022 demand savings.
 - AEG found that the AR TRM V9 is likely overstating air infiltration and duct sealing savings in multifamily buildings. The AR TRM V9 states that these measures apply to all residential applications but bases savings off assumptions for a single family home. AEG has accepted the 2022 TRM savings but will apply adjustments to the evaluated savings next year.

Recommendations: For claimed savings, apply a reduction factor (69%) to the TRM savings until a billing analysis can establish a more definitive adjustment. As part of the 2023 evaluation, AEG will perform a billing analysis on 2022 participants to estimate an appropriate adjustment factor for multifamily air infiltration and duct sealing measures.
- **The LivingWise channel evaluation found significantly higher savings with 162% (energy) and 152% (demand) realization rates.**

 - AEG used the Home Energy Worksheet (HEW) data for estimating water heating measure savings that depend on the number of occupants and the total number of aerators and showerheads in the home. Homes with school-aged children have more occupants than the average home size in the AR TRM.

- AEG made methodological changes to LED ISR assumptions. LEDs tend to get installed, and AEG estimated LED ISR using the three-year ISR trajectory in the Uniform Methods Project (UMP).⁷

Recommendations: For claimed savings, consider re-estimating the per-kit claimed savings using AEG's proposed methodology, which considers industry-best practices, all products in the kit, and actual home characteristics. AEG can work with NEF to ensure our methodologies and assumptions are aligned and reasonable.
- **Prepare for lighting savings to diminish significantly by July 25, 2023. The EISA-backstop provision became effective July 25, 2022, and AEG typically assumes a one-year product sell-through.**
 - For LivingWise, lighting measures comprise approximately 19% of 2022 energy savings. In the fall, tier 1 smart strips were added to replace the anticipated LED savings phase-out. Program managers are encouraged to continue exploring additional measures in the kit, such as re-including the LED nightlight and adding a tier 2 smart strip.

Recommendations: Consider leveraging the HEW survey to collect data on baseline wattage, i.e., lightbulb wattage replaced by kit measures, which can be used to establish the actual energy baseline.
 - For CPS, the EISA-backstop provision is a more significant concern since lighting measures comprise 92% of CPS energy savings and 61% of HEEP energy savings.

Recommendations: Collect data showing retailers' existing product stock of non-EISA-backstop compliant bulbs to establish appropriate baselines. Also, consider extending offered rebates for other commonly featured measures such as dehumidifiers, occupancy-sensing wall switches, water heater pipe wrap, weatherization measures (e.g., air sealing and outlet and switch gaskets), and electric vehicle (EV) charging accessories.
- **AEG's NTG updates for Res HVAC and PE-NHC resulted in lower NTG ratios than in PY2021—even though we used the same approach.**
 - AEG's Res HVAC NTG result in PY2022 was 79% compared to 96% in PY2021. Benchmarking showed that, for HVAC tune-up measures, the average NTG was around 91%.
 - AEG's PE-NHC NTG result in PY2022 was 76% compared to 88% in PY2021. Benchmarking showed that residential new construction programs have NTG ratio ranging from around 50% to around 90%.
 - NTG ratios are heavily dependent on self-reported survey results, which can vary substantially between years—as AEG found.
 - AEG will explore other NTG methodologies for PE-NHC in PY2023, and we will consider re-launching Res HVAC's survey as well.
- **Several data collection improvements can increase the accuracy of savings estimates.**
 - For RSOL water heating measures, consider collecting the existing counts per home of kitchen aerators, bathroom aerators, showerheads, and occupants per home to improve the per-unit estimates. Currently, the database only shows how many units were installed, but it does not show if all the existing units were replaced.
 - For LivingWise, consider collecting data on baseline water heater temperatures, number of bathroom faucets and shower heads, and the number of occupants per home.

⁷ Dimetrosky, S.; Parkinson, K.; Lieb, N. (2017). *Chapter 6: Residential Lighting Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68562. <http://www.nrel.gov/docs/fy17osti/68562.pdf>.

HEEP – Evaluation Methods

Impact Evaluation Approach. Table 3-4 summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

- We conducted verification using a web survey (emailed to participants). For the Residential HVAC, verification was performed alongside the participant survey under the process evaluation.
- We used the 2021 NTG adjustments to estimate 2022 net evaluated savings. We conducted an NTG benchmarking analysis for all channels and an NTG update survey (alongside the participant survey) for Residential HVAC and PE-NHC.

We include detailed descriptions of each activity in [Appendix A](#).

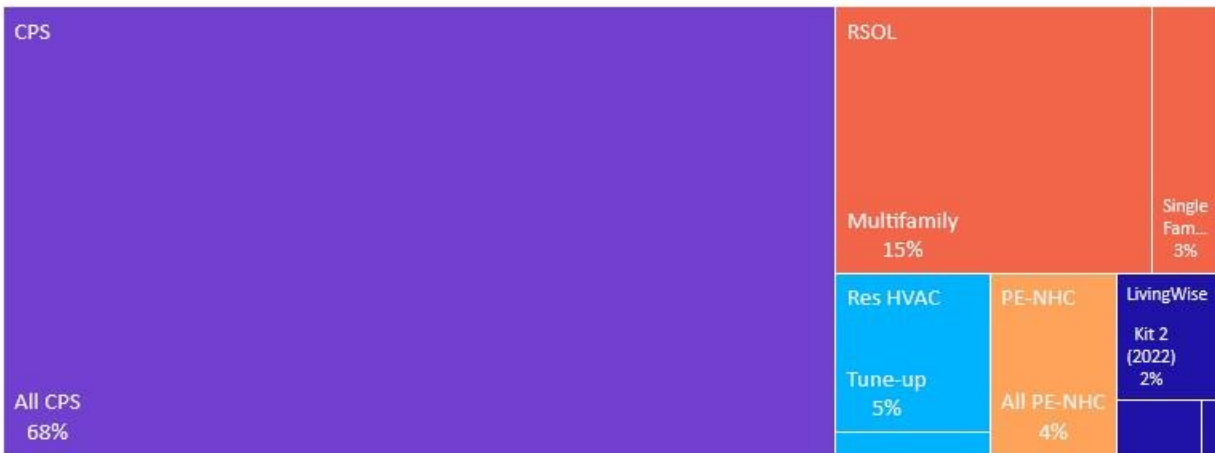
Table 3-4 HEEP Impact Evaluation Activities

Program/Channel	Savings Replication	Eng. Desk Review	Verification	NTG Ratio Update	NTG Ratio Bench-marking	Benefit-Cost Analysis
HEEP						
RSOL	√	√	√		√	√
LivingWise		√	√		√	√
Res HVAC	√	√	√	√	+	√
CPS	√	√	√		√	√
PE-NHC		√		√	+	√

AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We stratified the HEEP participation by channel and, as appropriate, additional criteria. We also defined the sample frame unit as appropriate to each channel, which most often is one account number or one household. We discuss the stratified sampling approach in each corresponding subsection and also include detailed descriptions of the sample design in [Appendix B](#).

Because the sample frame unit is not uniform throughout the HEEP channels, we illustrate HEEP strata distribution using claimed savings, as shown in Figure 3-3.

Figure 3-3 HEEP Claimed Energy Savings Distribution by Channel and Stratum



Process Evaluation Approach. Table 3-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

Table 3-5 HEEP Process Evaluation Activities

Program/Channel	Program Manager Interview	Implementer Interview	Trade Ally Survey/ Interview	Participant Survey/ Interview	Non participant Survey/ Interview ⁸	Cycle Time Analysis
HEEP						
RSOL	√	√				√
LivingWise	√	√				
Res HVAC	√	√	√	√		
CPS	√	√				
PE-NHC	√	√		√		

AEG designed the process evaluation to examine both internal program processes and participant response to the HEEP program. The focus of the process evaluation activities was to understand operations, assess overall effectiveness, and identify areas for improvement. We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and appropriate channel implementer to gather their impressions of the program/channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG administered participant surveys/interviews for the Res HVAC and PE-NHC channels. AEG conducts participant surveys for each channel once during the 3-year program cycle.

Residential Solutions (RSOL)

This program channel promotes EE by providing homeowners with low-cost home assessments, direct-install measures, community and educational outreach, and inducements for home retrofits. The channel also provides technical resources to contractors and other trade allies, who are integral to delivery. The inducements encourage participation by decreasing the upfront costs of assessments and energy-efficiency upgrades to the envelope and mechanical systems in customers’ homes.

Participant Eligibility. RSOL is targeted at all of OG&E’s Oklahoma residential customers. Customers that participate are assumed to be non-income-qualified customers, as income-qualified customers participated in WRAP.

Key Channel Elements are as follows:

- **Customer engagement.** Various customer intake channels will be made available through this channel, including phone, email, and web.
- **Contractors or OG&E representatives.** These individuals will be available to participants and potential participants in the channel to provide information on the benefits and costs of energy efficiency upgrades.

⁸ Under a separate engagement in 2022, AEG conducted a market evaluation that included surveys with nonparticipants. For that reason, we did not conduct additional nonparticipant surveys. AEG will work with OG&E to identify if nonparticipant surveys are necessary for the 2023 or 2024 evaluations.

They will 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 needs.

- **Inducement application.** Applications will be developed for the customer and submitted to the channel implementer, CLEAResult, for installed eligible measures. CLEAResult will conduct a QA/QC review of all applications to ensure that all required information and documentation have been provided.
- **Inducement payment.** Trade allies will receive payment checks directly from the channel for approved applications of installed eligible equipment and measures. Customers may receive payment checks on a case-by-case basis if necessary and within the established channel guidelines.

Table 3-6 RSOL 2022 Participation by Measure

Measure	No. of Homes	
	Multi-family	Single Family
Air Infiltration	2,151	-
Duct Seal	1,754	-
Aerator	1,287	69
Advanced Power Strips	844	988
LED	770	907
Showerhead	689	65
ENERGY STAR Windows	-	408
Attic Insulation	-	534
ENERGY STAR Doors	-	32
Level 2 EV Charger	-	1
Total Unique Homes	2,158	2,217

Table 3-6 shows the measures implemented in 2022. A list of eligible measures for RSOL can be found in Appendix C of OG&E 2022-2024 Demand Program Plan for Oklahoma.

RSOL – Key Evaluation Findings

The **impact evaluation** established RSOL evaluated energy savings of 12,061,009, which amounts to a 98% realization rate, and evaluated demand savings of 1,990, which amounts to a 105% realization rate. Table 3-7 provides a summary of the RSOL impact evaluation findings. We discuss the impact evaluation key findings below.

Table 3-7 RSOL Impact Evaluation Summary

Savings	Gross Energy Savings			Net Energy Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	12,261,396	12,061,009	98%	10,251,858	85%	170,543,083
Demand (kW)	1,904	1,990	105%	1,512	76%	n/a

- **Multifamily air infiltration and duct sealing savings may be overstated.** AEG found that the AR TRM V9 is likely overstating air infiltration and duct sealing savings in multifamily buildings. AEG has accepted the 2022 TRM savings but will adjust the savings next year. For 2023 claimed savings, AEG recommends applying a reduction factor (69%) to the TRM savings until a billing analysis can take place in 2023.
 - The AR TRM V9 states that these measures apply to all residential applications but bases air infiltration savings off a modeled single family home.
 - The AR TRM V9 uses measured differences in duct leakage and engineering equations to estimate duct sealing savings. However, the AR TRM V9 only has single family heating and cooling hours. Hours of use differ between multifamily and single family homes. It is also likely that the ducts are shared between some units, which dilutes the per-apartment-unit savings.

- Most measure categories had high ISRs (90% or above), but water heating measures had relatively low ISRs at 69%. Water heating measures make up a small proportion of overall savings, so the effect on the channel was minimal. However, we will monitor water heating measure ISRs in future program years.

The **process evaluation** resulted in the following key findings:

- The Residential Solutions savings grew significantly in 2022, with 159% (energy) and 95% (demand) increases relative to 2021.⁹
 - Residential Solutions was able to leverage its virtual audit to provide more flexibility for participants.
 - The channel was able to grow during a time when lighting savings are deteriorating.
 - The new air and duct sealing measures have been very well received. A majority of multifamily participants received air sealing (65%) and duct sealing (53%) measures through the new air and duct seal component.
- Convincing multifamily customers that there is no cost associated with participating can be challenging.

RSOL – Recommendations

The **impact evaluation recommendations** are as follows:

- Claimed savings for air infiltration and duct sealing in multifamily buildings should apply the multifamily reduction factor (69%) until AEG can perform a billing analysis. There is a risk that the dominant measures in the channel are overstated. AEG recommends using a conservative assumption until we perform a billing analysis.
 - Reporting detailed home types will help identify which projects are at risk. Homes should be reported such as (1) Single family detached, (2) Single family attached, (3) Manufactured, Multifamily—duplex or triplex, (4) Multifamily—low-rise, and (5) Multifamily—high-rise.
- Consider sending installation reminders to customers. LEDs and advanced power strips had high ISRs (95% and 89%, respectively), but water heating measures had lower ISRs (69%). Reminders could improve the ISRs for all measures that need to be installed.
- Consider collecting the counts per home of existing kitchen aerators, bathroom aerators, showerheads, and occupants to improve the per-unit savings of water heating measures. On average, if all an individual home's aerators and showerheads are retrofitted with low-flow varieties, then collecting and reporting the existing fixture counts will increase the per-unit savings compared to the savings calculated using the AR TRM defaults. Currently, the database shows how many showerheads or aerators were replaced but not the total number of existing showerheads and aerators in the home.
 - Aerator and showerhead savings are calculated on a per-unit and total fixture per-home basis, which is replaced by default assumptions in the absence of actual data. For example, if a home with one standard kitchen aerator, two standard bathroom aerators, and two standard showerheads, receives all low-flow equipment, then the TRM-calculated savings would be lower compared to the actual usage of the home.
 - The AR TRM, by default, assumes 3.86 total aerators per home and 2.53 total showerheads per home. The AR TRM total fixture defaults are divided by the per-showerhead or aerator unit savings. In this example, if there are two showerheads in a home but the AR TRM default total number of showerheads are used, per-showerhead savings are divided by 2.53 instead of 2 showerheads—artificially lowering the savings.

⁹ Savings may potentially be overstated since energy savings relied heavily on multifamily homes, making up 83% of 2022 savings. Multifamily demand reductions make up 51% of 2022 savings.

- Essentially, the TRM defaults in that example assume that not all the home's water heating measures were retrofitted, which lowers the savings. Collecting these inputs improves the accuracy of the savings and increases the savings.
- Likewise, if there are more than 2.53 occupants per home, the savings estimate will increase and be more accurate.

The **process evaluation recommendations** are as follows:

- When administering participant surveys in 2023:
 - Collect information about ISRs among participants who self-installed measures,
 - Compare the experience and satisfaction of participants who received virtual audits with those who received on-site audits, and
 - Compare the experience and satisfaction of participants who had Energy Advisor installations versus those who self-installed measures.

RSOL – Impact Evaluation

Evaluation Approach. Table 3-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). Note the following:

- AEG conducted verification surveys online to collect ISRs.
- AEG used the 2021 NTG adjustments in the RSOL channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2023.

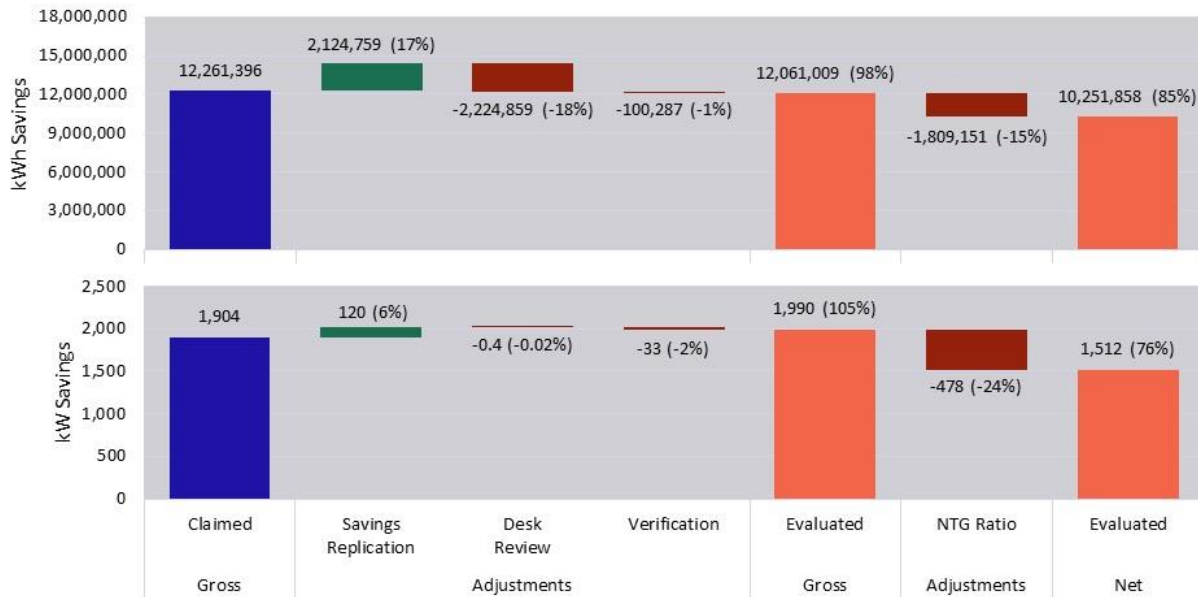
AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We defined the sample frame unit as one account number or one home and stratified the RSOL participant population using the following criteria:

- **Home type** (multifamily v. single family) — measure distributions, home sizes, and total savings are generally homogenous within each home type. I.e., total savings generally correlates to square footage, and single family homes tend to be larger than multifamily units, on average.

Note that claimed savings did not explicitly report home type, but AEG inferred home type by flags in the data (e.g., measures such as showerheads and LEDs had “MF” in the reported measure name).

Evaluation Adjustments. Figure 3-4 presents a summary of the impact evaluation adjustments from each activity. We discuss the drivers of each adjustment below.

Figure 3-4 RSOL Summary of Adjustments by Activity



- **Savings Replication.** AEG’s savings replication increased savings by 17% (energy) and 6% (demand), using the reported inputs and following the AR TRM V9. Duct sealing savings replication drives the increase in savings, but we also found differences in air infiltration, attic insulation, LEDs, and ENERGY STAR windows.
 - **Duct sealing.** AEG followed the AR TRM V9, used reported heating and cooling types, and the difference in duct leakage at 25 Pascals. We adhered to the minimum requirements for pre-leakage described in the AR TRM.
 - Overall, these increased the savings.
 - **Air infiltration.** AEG followed the AR TRM V9, used reported heating and cooling types, and the difference in leakage at 50 Pascals. We made assumptions about the maximum pre-leakage values when data was not reported, although we ultimately accepted the pre-leakage values and did not adjust them. Our assumptions¹⁰ were conservative and likely did not reflect the actual characteristics of all homes in the channel. Even with conservative assumptions, most homes would not need adjusting pre-leakage values.
 - Overall, we found a slight increase in savings.
 - **Attic insulation.** AEG used the reported savings inputs (e.g., heating and cooling types, baseline and added insulation values, and square footage of insulation) to replicate savings. We used the AR TRM V9 default savings values per square foot of insulation and linearly interpolated values not in the table. AEG calculated different savings using the reported savings inputs and AR TRM V9 default savings values.
 - Overall, we found a slight decrease in savings.

¹⁰ Specifically, our assumptions about shielding and square footage were likely conservative. We assumed “normal shielding” and used the average square feet of all homes in Oklahoma (per RECS 2020 data) since square feet were not reported.

- **LED Lighting.** AEG did not use an ISR in our savings replication and applied the ISR in the verification step. It appears as if the claimed savings used 97% ISR.
 - Overall, we found a slight increase in savings.
- **ENERGY STAR Windows.** AEG used the reported heating and cooling types, window type, and square footage of windows. We used the AR TRM V9 default savings values per square foot of windows.
 - Overall, we found a slight decrease in savings.
- **Desk Review.** AEG found that the documentation matched the database and made minor changes to the projects in our desk review sample. The biggest driver for the difference in desk review savings is adding the “duct correlation factor” for duct sealing in electric resistance heated homes, per the 2021 evaluation report.¹¹ Doing so brought the average desk review savings closer to the claimed savings, but some projects still had differences.
- **Verification.** AEG’s online survey found that ISRs are high for all measures, giving a weighted average that is lower but close to 100%. The verification step slightly decreased savings.
- **Net-to-Gross.** AEG applied to the NTG adjustments from the 2021 evaluation. We benchmarked the previous evaluation results with similar programs and found that the previous results are similar to those in other jurisdictions.

Stratum-Level Findings. Table 3-8 and Table 3-9 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and RSOL overall. At the channel level, the impact evaluation findings are at 1.3% precision (kWh) and 1.9% precision (kW) at the 90% confidence level.

Note that the *Multifamily* stratum kW savings has no associated absolute and error precision because the strata did not have adjustments from desk review and verification activities. The adjustments for this stratum were based on the savings replication activity performed at the census.

Table 3-8 RSOL Energy Savings Summary by Stratum

Stratum	No. of Homes	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Multifamily	2,217	10,273,568	10,368,467	101%	90,742	0.9%
Single Family	2,158	1,987,828	1,692,542	85%	137,073	7.1%
Total	4,375	12,261,396	12,061,009	98%	152,484	1.3%

Table 3-9 RSOL Demand Reduction by Stratum

Stratum	No. of Homes	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Multifamily	2,217	941	1,134	120%	-	-
Single Family	2,158	963	856	89%	37.9	4.6%
Total	4,375	1,904	1,990	105%	37.2	1.9%

Figure 3-5 shows the stratum distribution of the GWh savings and MW savings. Notably, multifamily homes comprised 84% of evaluated energy savings and 58% of evaluated demand reduction

¹¹ ADM. Oklahoma Gas & Electric (OG&E) Oklahoma Demand Program Evaluation for 2021. May 5, 2022. [OG&E 2021 Demand Program Annual Report \(oklahoma.gov\)](https://www.ogee.com/~/media/OG&E/2022%20Demand%20Program%20Annual%20Report/oklahoma.gov).

Figure 3-5 RSOL Claimed and Evaluated Savings by Stratum



Measure-Level Findings. For evaluation activities that use a sampling approach, we perform the sample expansion at the stratum level. In other words, we extrapolate the findings from our sampled projects by stratum and apply realization rates to all other projects in the corresponding stratum. Therefore, we do not officially calculate savings at the measure level. Still, projects are comprised of measures, which can lend to measure-level findings.

Table 3-10 and Table 3-11 show extrapolated findings summarized by measure, for the multifamily and single family strata, respectively. Again, the measure-level realization rates account for the iterative adjustments from the savings replication, desk review, and verification activities, and the table mainly illustrates the savings distribution between measures in the RSOL channel.

Table 3-10 RSOL Multifamily Savings by Measure

Measure	No. of Homes	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
Duct Seal	1,754	8,843,458	9,167,110	104%	807	1,007	125%
Air Infiltration	2,151	683,520	579,440	85%	48	49	102%
Showerhead	689	300,972	249,097	83%	31	31	100%
Advanced Power Strips	844	212,722	176,017	83%	22	25	116%
LED	770	154,613	132,012	85%	25	13	54%
Aerator	1,287	78,283	64,791	83%	8	8	100%
Total	2,158	10,273,568	10,368,467	101%	941	1,134	120%

Table 3-11 RSOL Single Family Savings by Measure

Measure	No. of Homes	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
Attic Insulation	534	1,182,429	975,032	82%	739	650	88%
LED	907	322,911	299,749	93%	41	40	99%
Advanced Power Strips	988	245,673	221,058	90%	29	28	96%
Energy Star Windows	408	196,525	160,499	82%	146	130	89%
Showerhead	65	28,762	25,880	90%	3	3	96%
Aerator	69	5,646	5,080	90%	1	1	96%
Energy Star Doors	32	5,706	5,084	89%	5	5	100%
Level 2 EV Charger	1	177	159	90%	<1	<1	96%
Total	2,217	1,987,828	1,692,542	85%	963	856	89%

Table 3-12 shows RSOL’s net lifetime kWh savings by measure. Duct seal comprised 80% of lifetime energy savings.

Table 3-12 RSOL Net Lifetime Energy Savings by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
Duct Seal	15	140,256,784
Attic Insulation	17	16,575,551
Air Infiltration	9	5,417,768
LED	11	4,587,466
Advanced Power Strips	8	3,375,136
Energy Star Windows	17	2,728,484
Showerhead	9	2,337,303
Aerator	8	593,902
Energy Star Doors	17	86,427
Level 2 EV Charger	13	2,031
Total	14.6	175,960,851

RSOL – Process Evaluation

Evaluation Approach. Table 3-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

- For Residential Solutions, AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult program manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG conducted a cycle time analysis to explore the time it takes from installation to payment.
- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for RSOL is scheduled for 2023.

Channel Performance. Table 3-13 shows how RSOL performance changed from 2021 to 2022. Energy savings (kWh) increased by 159%, and demand reduction (kW) increased by 95% compared to the previous program

year. The channel also significantly increased its contribution to HEEP, now closer to 20% of overall HEEP compared to approximately 10% of HEEP in 2021.

Table 3-13 RSOL Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of HEEP	Claimed	Share of HEEP	
Energy (kWh)	4,729,162	7%	12,261,396	19%	159%
Demand (kW)	976	9%	1,904	17%	95%

Channel Operations. To participate, single-family customers complete a home review either online using OG&E’s HEETracker or through CLEAResult’s call center, after which the customer is offered a no-cost in-home assessment by an Energy Advisor. The Energy Advisor installs LEDs, advanced power strips, faucet aerators¹², and showerheads¹³ at no cost to the participant, provides education about energy efficiency, and provides information about other inducements that OG&E offers for measures such as ENERGY STAR windows and doors, attic insulation, and more.

In response to the COVID-19 pandemic, Residential Solutions began offering virtual audits as an alternative to on-site audits. After completing the virtual audit customers could schedule an Energy Advisor visit to install measures or request that the direct install measures be mailed for self-install.

CLEAResult solicits multifamily participation by reaching out to apartment complexes and marketing the benefits of no-cost energy-efficient direct-install measures consisting of LEDs, advanced power strips, low-flow showerheads, and low-flow faucet aerators. The multifamily portion of the channel added the Air and Duct Seal component in 2022 which includes blower door tests and duct blasting to test for performance and efficiency. Energy Advisors may then install additional no-cost weatherization measures. Eighty-three percent of the channel’s 2022 savings are from multifamily units.

RSOL Customer Participation Process

Single Family

- Customers contact OG&E call center or participate in a virtual audit.
- Energy Advisor conducts no-cost in-home assessment.
- Energy Advisor installs no-cost measures and provides energy efficiency education and information about other OG&E inducements.

Multifamily

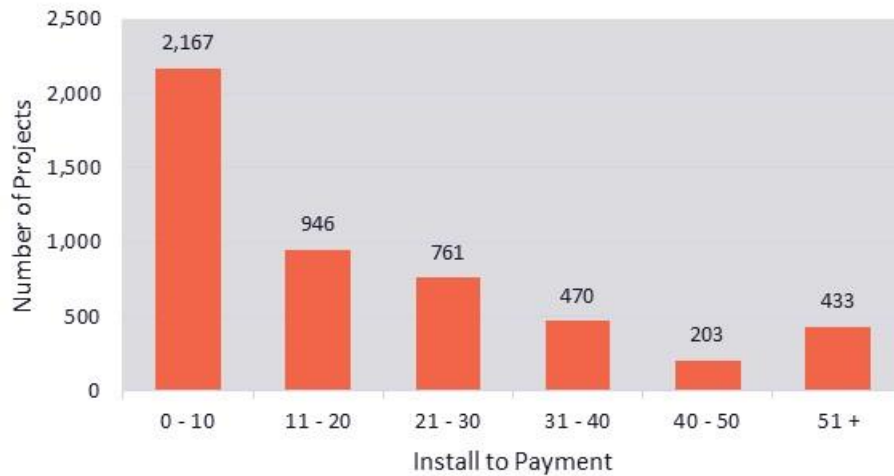
- CLEAResult solicits property owners.
- Energy Advisors installs no-cost measures in all units.
- Energy Advisor conducts blower door tests and duct blasting.
- Energy Advisor installs additional no-cost weatherization measures as needed.

Cycle Time Analysis. AEG conducted a cycle time analysis to explore the time it takes from installation to payment. One project was excluded from the analysis because it had an install date later than the payment date. Figure 3-6 shows the distribution of install-to-payment days. Forty-four percent of projects receive payment within 10 days of installation. The average number of install-to-payment days for all projects was 22 days.

¹² For homes with electric hot water heaters.

¹³ For homes with electric hot water heaters.

Figure 3-6 RSOL Number of Days from Install to Payment



Channel Effectiveness. As mentioned above, in 2022, OG&E began conducting blower door tests and duct blasting during multifamily on-site audits and offering direct-install weatherization measures according to the results of those performance tests. OG&E and CLEAResult pushed to promote this new Air Duct and Seal component via email, social media campaigns, bill inserts, and other promotions, including offering a no-cost smart plug. **The Air Duct and Seal campaign was highly effective with multifamily participants, wherein 65% received air sealing and 53% received duct sealing.**

According to implementer staff, **the team also further embraced virtual audits, which are now more common than on-site audits for single-family participants.** Virtual audits make the home review process more efficient but place the burden of responsibility to install on the participants who choose to receive the measures (LEDs, power strips, showerheads, and faucet aerators) by mail.

CLEAResult staff acknowledged growing pains with respect to new OG&E management and contracting. The biggest challenges were primarily administrative and internal, i.e., contractual tasks related to delays that did not affect the channel’s day-to-day operation.

Otherwise, **the most significant delivery challenge was convincing multifamily customers there were no costs associated with participating,** an obstacle that utilities commonly face while administering no-cost direct-install multifamily programs.

LivingWise® Schools Outreach (LivingWise)

This program channel consists of direct outreach through partnerships with local schools. The implementer, AM Conservation, recruits fifth-grade teachers to sign up and participate on the LivingWise website. The channel is provided at no cost to the schools, teachers, parents, or students. The participant process is described as follows:

- Energy-saving kits and educational materials are provided to fifth-grade students explaining how they can improve EE at home.
- Teachers work directly with the program team to use the teaching aids and distribute the direct-install kits to their students.
- Students take the kits home and install the measures with the assistance of their parents while completing the accompanying educational materials.

- After completing the curriculum, the students receive a Schools Outreach wristband and a certificate of achievement for participating in the channel.
- The students also receive a home energy worksheet (HEW) to fill out at home and return to their teacher. Teachers receive the completed survey responses and submit them to the channel implementer.

The 2022 evaluation covers two kits. The kits distributed in the fall (Kit 2) are slightly different than those distributed in the spring (Kit 1). The program added advanced power strips (smart strips) and removed the LED night light in the fall (Kit 2). Table 3-14 lists the measures included in each kit.

Table 3-14 LivingWise 2022 Kit Iterations and Contents

Kit 1	Kit 2
9W LED (2 units) LED nightlight Low flow bathroom aerator Low flow kitchen aerator Low flow showerhead Water heater setback (behavioral recommendation)	9W LED (2 units) Tier 1 smart strip Low flow bathroom aerator Low flow kitchen aerator Low flow showerhead Water heater setback (behavioral recommendation)

Note that a small remainder of the 2021 program did not get reported in the 2021 evaluation. These kits contain the same measures listed under Kit 1. We included these kits in 2022 evaluation, referred to as *Kit 1 – 2021*. Table 3-15 summarizes the channel participation included in the 2022 evaluation.

Table 3-15 LivingWise Participation by Kit Iteration and Year

Stratum	No. of Student Kits	No. of Teacher Kits
Kit 1 - 2021	1,110	33
Kit 1 - 2022	5,385	155
Kit 2 - 2022	7,985	188
Total	14,480	376

LivingWise – Key Evaluation Findings

The **impact evaluation** established LivingWise evaluated energy savings of 3,650,501 kWh, which amounts to a 162% realization rate, and evaluated demand savings of 394 kW, which amounts to a 152% realization rate. Table 3-16 provides a summary of the LivingWise impact evaluation findings. We discuss the impact evaluation key findings below.

Table 3-16 LivingWise Impact Evaluation Summary

Savings	Gross Energy Savings			Net Energy Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	2,258,978	3,650,501	162%	3,650,501	100%	37,457,357
Demand (kW)	259	394	152%	394	100%	n/a

- **Claimed savings were low.** AEG found higher evaluated savings due to utilizing Home Energy Worksheets (HEWs) data for water heating measures and making methodological changes to LED ISRs.

- Water heating measure savings depend on the number of occupants and the total number of aerators and showerheads in the home. Homes with school-aged children have more occupants than the average home size in the AR TRM.
- LEDs tend to get installed, and AEG estimated LED ISR using the three-year ISR trajectory in the Uniform Methods Project (UMP).¹⁴
- **Claimed savings include teacher kits.** Typically, teacher kit savings are not claimed since most teachers are repeat participants. AEG used a conservative approach and excluded teacher kits from evaluated savings.
- **The tier 1 smart strip in Kit 2 – 2022 increased the per-kit savings by about 123 kWh.** The tier 1 smart strip had a high ISR (71%) and was successfully implemented into the channel.
- **Additional savings were from measures not in the AR TRM.** AEG estimated additional kit savings from the LED nightlight and water heater setback measures. AEG used the 2021 PA TRM¹⁵ for the algorithms and used HEW data and AR TRM-specific inputs such as interactive effects and groundwater temperature.

The **process evaluation** resulted in the following key findings:

- **The channel's savings increased in 2022 relative to 2021.** Both kWh and kW savings increased by 75%.
- **Advanced power strips were added in the fall to replace the anticipated LED savings phase-out.** A significant portion of savings comes from LED bulbs included in the kit. As savings for LEDs phases out, other measures will need to replace those savings.
- **Teacher retention is a growing challenge for the channel.** Two-thirds of participating teachers said they would not recommend the program to colleagues.
- **The channel receives positive feedback from teachers and parents.** However, a little over half of students' report working on the program with their families, leaving room for improvement.

LivingWise – Recommendations

The **impact and process evaluation recommendations** are as follows:

- **Consider re-estimating the per-kit claimed savings using AEG's proposed methodology.** AEG's methodology incorporates industry-best practices, all products in the kit, and actual home characteristics. It is more accurate than the default savings in the AR TRM.
 - AEG can work with AM Conservation to ensure our methodologies and assumptions are aligned and reasonable.
 - Consider reporting per-unit savings for all measures.
- **Consider claimed savings for teacher kits** to account for repeat participation. We have two options to consider:
 - Exclude teacher kits from claimed savings, or
 - Use ISR assumptions specific to teachers to account for repeat participation (i.e., receiving duplicate measures).
- **Continue exploring additional measures in the kit, such as re-including the LED nightlight and adding a tier 2 smart strip.** AEG found that the LED nightlight added about 20 kWh in savings per kit, and the tier 1 smart

¹⁴ Dimetrosky, S.; Parkinson, K.; Lieb, N. (2017). *Chapter 6: Residential Lighting Evaluation Protocol, The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures*. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-68562. <http://www.nrel.gov/docs/fy17osti/68562.pdf>.

¹⁵ Pennsylvania Public Utility Commission. *Technical Reference Manual Volume 2: Residential Measures—State of Pennsylvania*. Revised February 2021.

strips added about 100 kWh to the kit. The LED nightlight was removed from the kit because savings were not quantified in the AR TRM, but AEG used another TRM, so it should be added back in. Likewise, tier 1 smart strips were successful, which may indicate that tier 2 smart strips could be successful.

- [Continue putting LEDs in the kit but consider specialty LEDs \(such as reflectors\) and collect baseline bulb information.](#) The EISA-backstop has lowered the replace-on-burnout baseline for most LEDs, but inefficient bulbs still exist.
 - Continue to encourage students to replace inefficient bulbs.
 - Halogen or incandescent specialty bulbs are more likely to be present in students' homes. The channel should target replacing those bulbs.
 - Add questions to the HEW that help students identify the wattage of the bulb they replaced, which roughly corresponds to LEDs, fluorescent bulbs, halogen, and incandescent bulbs. For example:
 - 15W or less
 - 16W to 20W
 - 21W to 45W
 - 46W to 60W
 - 61W to 75W
 - 76W or more
- [Consider adjusting survey questions for more accurate evaluated savings.](#)
 - Add a question that determines the initial temperature of the water heater prior to the setback, such as:
 - 121 to 124 degrees Fahrenheit
 - 125 to 129 degrees Fahrenheit
 - 130 to 134 degrees Fahrenheit
 - 135 to 140 and above degrees Fahrenheit
 - Directly ask the total number of bathroom faucets in the home and the total number of showerheads in the home. Currently, we are using a HEW results on the number of half and full bathrooms as a proxy bathroom aerators and showerheads. We assume that each bathroom has one aerators and each full bathroom has one showerhead. There is likely some variation which the current iteration of the HEW is not capturing.
 - Extend the number of occupants per home. Currently, the HEW data has response options that go up to "7 and above." Extending options to include up to "10 and above" can increase the accuracy of savings estimates.
- [Conduct additional research with participating teachers](#) to better understand why a third of teachers would not recommend the program.
- [Consider additional encouragement to complete the HEW](#) to improve the precision and confidence of the results.

LivingWise – Impact Evaluation

Evaluation Approach. Table 3-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

- The verification adjustment includes both the desk review and survey results. We used the survey data to provide the inputs for calculating per-unit savings at the household level. The survey data also incorporates measure-level ISRs.
 - We used HEW survey data for our verification. We did not field an additional survey.
- AEG used the 2021 NTG adjustments in the LivingWise channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2023.

We stratified the channel participants by kit and year to account for unreported kits distributed in 2021.

Evaluation Adjustments. Figure 3-7 summarizes impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 3-7 LivingWise Summary of Adjustments by Activity



- **Savings Replication.** AEG attempted a savings replication but was missing key pieces of data that coincided with project time constraints. In 2023, we will work with AM Conservation to address the data requirements for this analysis.
- **Desk Review.** AEG did not conduct a desk review analysis separate from verification because there was no documentation besides the data in the database. Adjustments derived typically in desk reviews are reflected in the verification step.
- **Verification.** AEG analyzed the HEW survey and adjusted the methodology for several measures in the kits, which drove the increase in savings. The methodology updates are as follows:
 - For **low-flow aerators and showerheads**, AEG used the actual occupants per home and the actual number of faucets and showerheads per home instead of the TRM defaults.
 - This increased the savings.

- For **LED measures**, AEG used the UMP’s three-year trajectory for ISRs. The UMP’s suggested methodology assumes that 24% of uninstalled LEDs get installed each year for two years after receiving bulbs.
 - This increased the savings
- For **LED nightlights and water heater setbacks**, AEG estimated savings with HEW data, algorithms from the 2021 PA TRM, and inputs from the AR TRM V9.
 - These increased the savings as claimed savings did not account for these measures in the kits.
- **Net-to-Gross.** AEG applied to the NTG adjustments from the 2021 evaluation. We benchmarked the previous evaluation results with similar programs and found that the previous results are similar to those in other jurisdictions.

Stratum-Level Findings. Table 3-17 and Table 3-18 show the evaluated savings and the corresponding precision at the 90% confidence level for each kit and LivingWise overall. At the program level, the impact evaluation findings are at 11.6% precision (kWh) and 11.5% precision (kW) at the 90% confidence level. The relative precision for both energy and demand savings are above the minimum industry standards of 10% at 90% confidence (i.e., 90/10), which can be improved by increased survey response.

Table 3-17 LivingWise Energy Savings Summary by Stratum

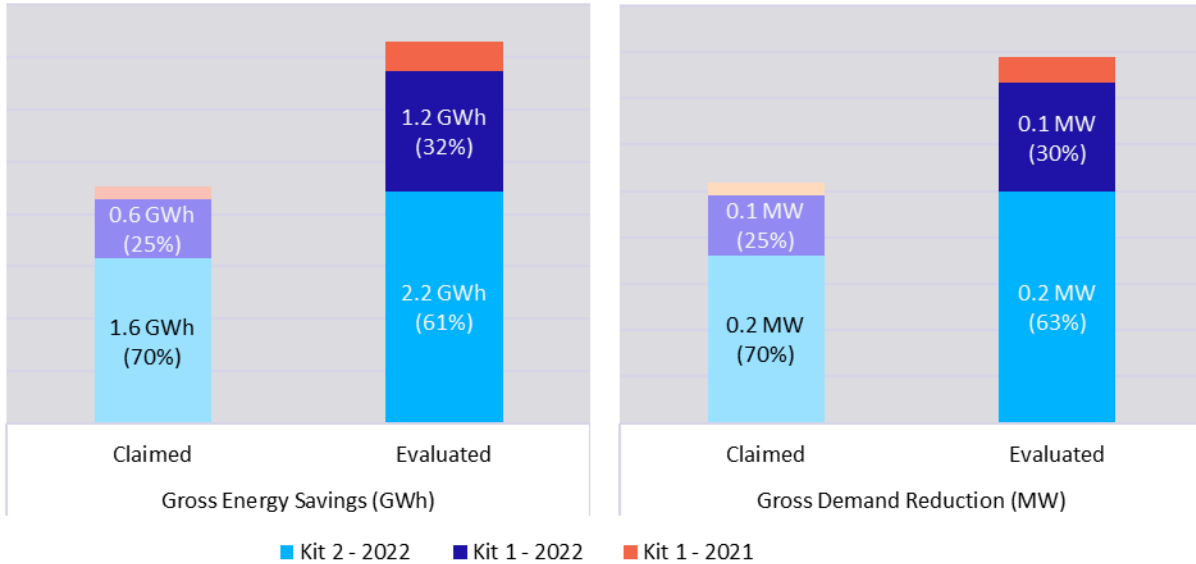
Stratum	No. of Kits	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Kit 1 - 2021	1,110	117,398	277,143	236%	30,072	10.9%
Kit 1 - 2022	5,385	569,013	1,158,924	204%	110,002	9.5%
Kit 2 - 2022	7,985	1,572,567	2,214,433	141%	435,858	19.7%
Total	14,480	2,258,978	3,650,501	162%	575,932	11.6%

Table 3-18 LivingWise Demand Reduction Summary by Stratum

Stratum	No. of Kits	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Kit 1 - 2021	1,110	13	28	210%	3.1	11.1%
Kit 1 - 2022	5,385	65	117	180%	11.4	9.8%
Kit 2 - 2022	7,985	181	250	138%	46.5	18.6%
Total	14,480	259	394	152%	45.2	11.5%

Figure 3-8 shows the distribution of GWh savings and MW savings by stratum. Notably, *Kit 2 – 2022* comprised 61% of evaluated energy savings and 63% of evaluated demand reduction due to the larger number of distributed kits and the addition of tier 1 smart strips.

Figure 3-8 LivingWise Claimed and Evaluated Savings by Stratum



Measure-Level Findings. Table 3-19, Table 3-20, and Table 3-21 show each iteration of stratum-evaluated per-unit electric energy, electric demand, gas energy, gas demand, and gallon savings.

Table 3-19 LivingWise Kit 1 – 2021 Per-Unit Savings

Measure	Qty per Kit	Evaluated Savings per Kit				
		kWh	kW	Therms	Peak Therms	Gallons
LED bulb	2	51.6	0.01	-0.3	<0.01	-
LED nightlight	1	21.7	<0.01	-0.1	<0.01	-
Bathroom faucet aerator	1	20.7	<0.01	1.0	<0.01	489
Kitchen faucet aerator	1	37.7	<0.01	1.9	0.01	919.80
Showerhead	1	115.7	0.01	5.6	0.02	2,606.61
Water heater setback	1	2.5	<0.01	3.4	0.01	-
Total	7	249.7	0.03	11.4	0.03	4,016

Table 3-20 LivingWise Kit 1 – 2022 Per-Unit Savings

Measure	Qty per Kit	Evaluated Savings per Kit				
		kWh	kW	Therms	Peak Therms	Gallons
LED bulb	2	41.7	0.01	-0.3	<0.01	-
LED nightlight	1	18.7	<0.01	-0.1	<0.01	-
Bathroom faucet aerator	1	18.5	<0.01	0.5	<0.01	396
Kitchen faucet aerator	1	33.1	<0.01	1.5	<0.01	738.54
Showerhead	1	101.0	0.01	4.2	0.01	2,028.27
Water heater setback	1	2.2	<0.01	2.8	0.01	-
Total	7	215.2	0.02	8.6	0.03	3,163

Table 3-21 LivingWise Kit 2 – 2022 Per-Unit Savings

Measure	Qty per Kit	Evaluated Savings per Kit				
		kWh	kW	Therms	Peak Therms	Gallons
LED bulb	2	37.9	0.01	-0.2	<0.01	-
Tier 1 power strip	1	106.7	0.01	<0.01	<0.01	-
Bathroom faucet aerator	1	16.4	<0.01	1.0	<0.01	423
Kitchen faucet aerator	1	30.0	<0.01	1.9	0.01	783.27
Showerhead	1	84.0	0.01	6.2	0.02	2,289.90
Water heater setback	1	2.2	<0.01	3.6	0.01	-
Total	7	277.3	0.03	12.5	0.04	3,496

Table 3-22 and Table 3-23 shows the average measure ISRs and average electric water heater saturation, respectively. Note that these averages were not used to directly calculate measure and kit savings since AEG extrapolated the HEW sample results at the household level. AEG’s approach accounts for the in-home correlation of measure ISRs.

Table 3-22 LivingWise Average Measure ISRs

Measure	Kit 1 - 2021	Kit 1 - 2022	Kit 2 - 2022
9W LED bulb ¹⁶	74%	69%	75%
LED nightlight	70%	64%	n/a
Tier 1 power strip	n/a	n/a	71%
Bathroom faucet aerator	34%	29%	35%
Kitchen faucet aerator	34%	29%	39%
Showerhead	43%	38%	45%
Water heater setback	23%	20%	28%

¹⁶ Average ISR of both LEDs shown. We apply the ISR of each individual bulb but are reporting the average for simplicity.

Table 3-23 LivingWise Average Electric Water Heater Saturation

Stratum	Average Electric WH Saturation
Kit 1 – 2021	43%
Kit 1 – 2022	46%
Kit 2 – 2022	34%

Table 3-24 shows the net lifetime savings by measure. Showerheads and tier 1 power strips comprised 59% of net lifetime energy savings.

Table 3-24 LivingWise Net Lifetime Energy Savings by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
Showerhead	10	13,431,042
Tier 1 power strip	10	8,519,039
LED bulb	12.5	7,308,006
Kitchen faucet aerator	10	4,600,122
Bathroom faucet aerator	10	2,536,580
LED nightlight	8	997,605
WH setback	2	64,963
Total	10.3	37,457,357

LivingWise – Process Evaluation

Evaluation Approach. Table 3-5 above summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

- In June and July 2022, AEG conducted separate, comprehensive interviews with the OG&E program manager and the AM Conservation program manager to gather their impressions of the program’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AM Conservation conducts annual surveys with participating teachers, students, and parents. In 2022, AM Conservation received completed surveys from 40 teachers, 1,989 students, and 8 parents.

Channel Performance. Table 3-25 shows LivingWise’s claimed energy savings and demand reduction increased by 75% in 2022, relative to 2021. The channel also saw a slight increase in its contribution to HEEP relative to 2021.

Table 3-25 LivingWise Claimed Savings – 2021 v. 2022

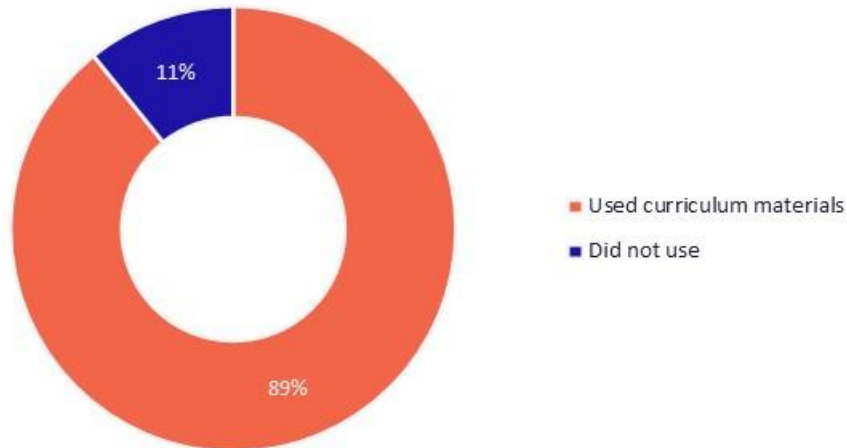
Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of HEEP	Claimed	Share of HEEP	
Energy (kWh)	1,287,855	2%	2,258,978	3%	75%
Demand (kW)	148	1%	259	2%	75%

Channel Operations. LivingWise is a fifth-grade education-based program that achieves energy savings by providing participating students with a take-home kit that includes energy efficiency and water-saving measures. Teachers are provided with curriculum materials that comply with Oklahoma standards. AM Conservation administers surveys to students, parents, and teachers. They also administer pre- and post-program quizzes to measure student learning.

Teachers are primarily recruited via email. AM Conservation does some direct telephone outreach when necessary and has also promoted the program on social media.

The curriculum is widely adopted by participating teachers. Figure 3-12 shows that almost all teachers (89%) reported using the curriculum materials provided by the program.

Figure 3-9 LivingWise Percent of Teachers Who Used Curriculum Materials



Barriers to Participation. According to AM Conservation, the largest barrier to participation is teacher turnover. This barrier is a relatively recent problem. In the past, the channel relied heavily on long relationships with teachers. But now that more teachers are retiring/leaving the profession or changing grades, they don't have as large of a base of returning customers.

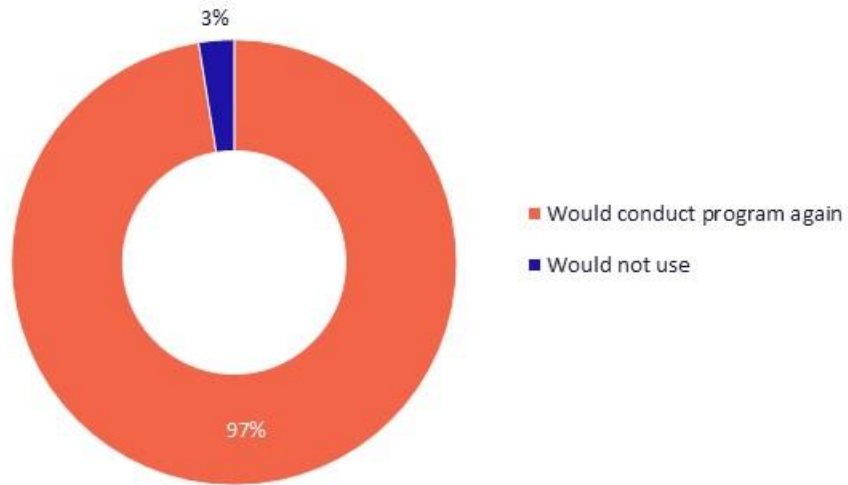
"We had repeat offenders in the past, but that is dwindling. Teachers are also changing grades, and this is a 5th grade program." – Program Implementer

The implementer has also noticed that teachers have been busier than ever and are harder to engage as a result.

Channel Effectiveness. The implementer has a very strong relationship with OG&E that was built over time. As a result, the channel functions extremely well. He did, however, express concern about replacing the savings achieved by LEDs.

Despite the new challenges with teacher retention, the implementer reported that they still have a large number of teachers with whom they have long-term relationships. According to the surveys administered by AM Conservation, the program is very well-received by parents, teachers, and students. The eight parents who completed the survey gave very favorable responses about the program. Almost all of the participating teachers say they would use the program again, as shown in Figure 3-10.

Figure 3-10 LivingWise Percent of Teachers Who Would Use Program Again



Almost all teachers said, they would use the program again, despite a surprising proportion of teachers (67%) saying they would not recommend the program to a colleague (Figure 3-11).

Figure 3-11 LivingWise Percent of Teachers Who Would Recommend Program

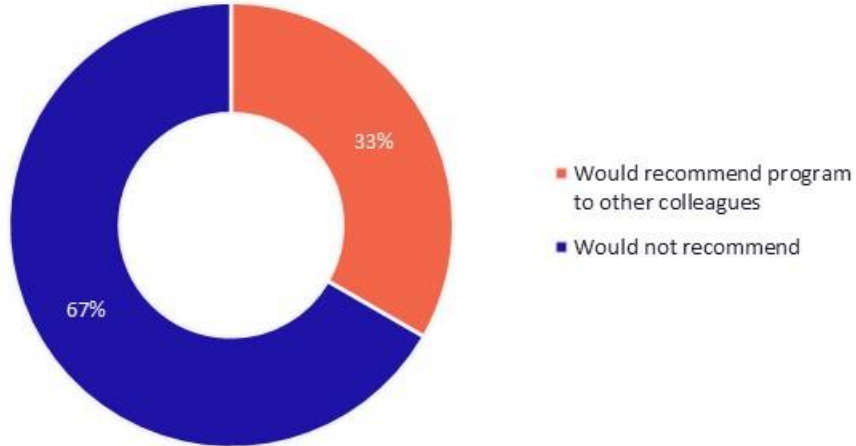
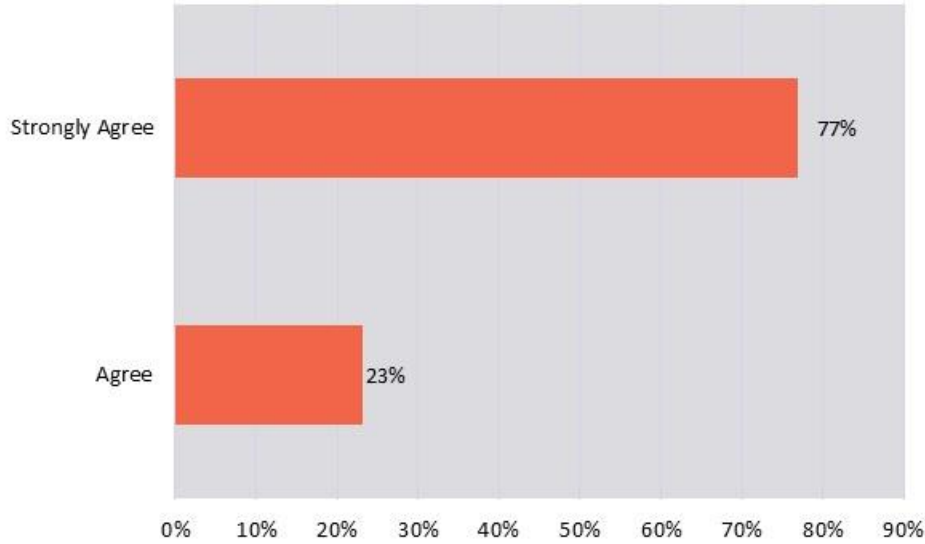


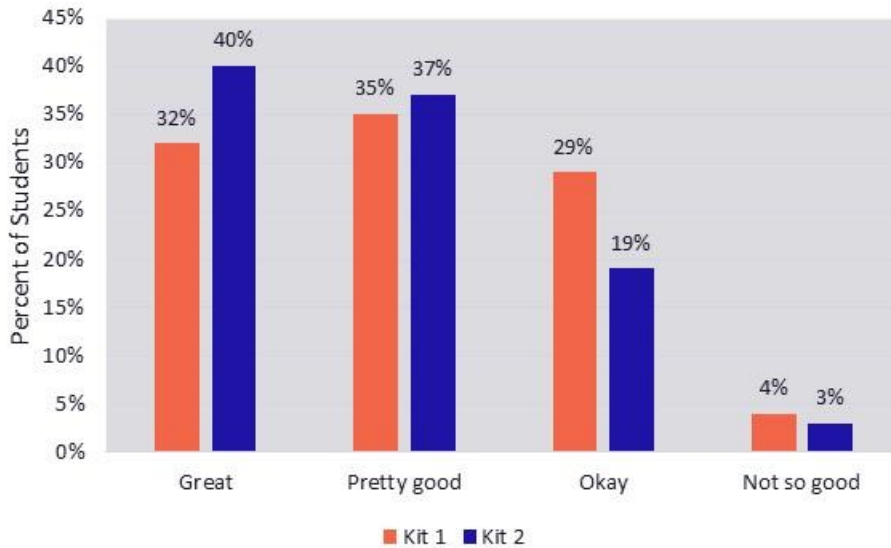
Figure 3-12 shows results from the teacher survey administered by AM Conservation. All the participating teachers who responded agreed or strongly agreed that the products in the kit were easy for students to use.

Figure 3-12 LivingWise Products in Kits Were Easy for Students to Use



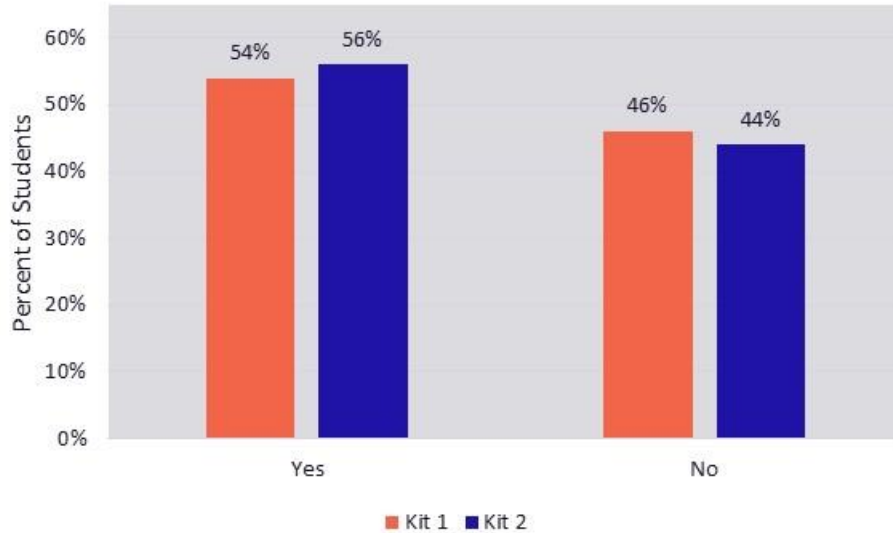
The majority of students rated the LivingWise program as very good or pretty good, with more students who received kits during the fall semester rating the program favorably (Figure 3-13).

Figure 3-13 LivingWise Student Rating of LivingWise Program



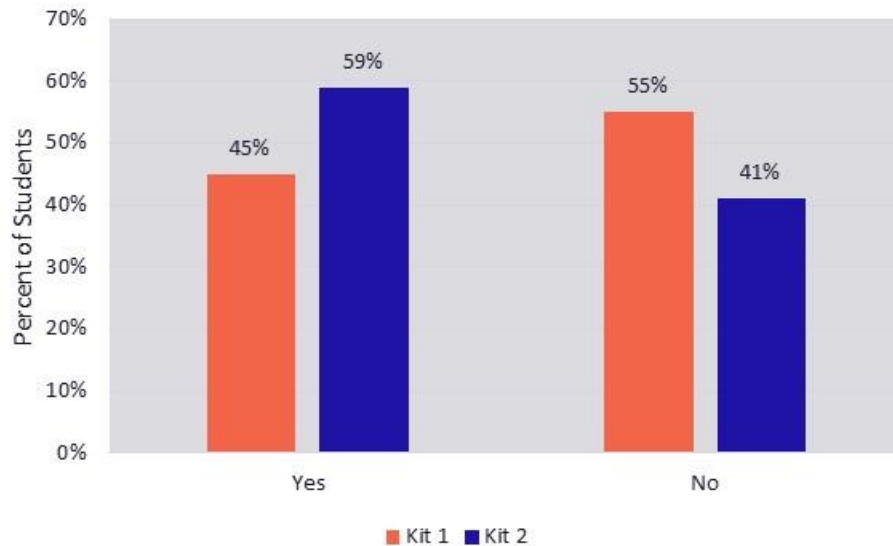
More than half of the students said they worked with their families on the program, as shown in Figure 3-14. Responses did not differ significantly by the type of kit students received.

Figure 3-14 LivingWise Percent of Students Who Worked on the Program with their Family



The version of the kit received did appear to impact families' energy use. Figure 3-15 shows that students who received kits during the fall semester were more likely to say that their families changed the way they used energy.

Figure 3-15 LivingWise Percent of Students Who Said Family Changed the Way They Use Energy



Customer Feedback. The teacher survey did not directly ask why teachers would not recommend the program. However, when asked what teachers would change about the program, more than half of the teachers who said they wouldn't recommend the program also said they wouldn't change anything about the program.

The remaining teachers had the following suggestions and comments:

- Make sure the website content matches the books,
- The pre- and post-curriculum quizzes and home activity surveys are too time-consuming,
- Add a word search and more hands-on projects,
- Put information in more kid-friendly terms,
- Include coupons for faucet aerator and/or showerhead instead of actual fixtures for people with gold plumbing fixtures, and
- Provide digital presentations (e.g., PowerPoint) of chapters.

Residential HVAC Replacement and Tune-Up (Res HVAC)

This channel focuses on energy savings by optimizing existing HVAC units and replacing HVAC systems that have failed. This offering is designed as a market-driven approach that utilizes local HVAC contractors for the completion of the work.

Customer-requested HVAC tune-ups or unit replacements will be completed through a network of participating contractors. When customers contact the HEEP program, the implementer, CLEAResult, will refer them to available contractors or schedule an appointment for them. Contractors will complete the tune-up or HVAC unit replacement, the data collection on system performance, and the paperwork required to submit the applicable channel rebate forms. Once the application has passed the channel requirements review, it will be processed, and the rebate will be paid directly from OG&E to the contractor.

Table 3-26 lists out the available measures in the Res HVAC channel and the corresponding inducements.

Table 3-26 Res HVAC Measures

Measure	Inducement
A/C tune-up	Up to \$200
New HVAC system	Up to \$3,000
First pound of new compatible refrigerant	Full cost

Res HVAC – Key Evaluation Findings

The **impact evaluation** established Res HVAC evaluated energy savings of 3,454,808 kWh, which amounts to a 102% realization rate, and evaluated demand savings of 1,705 kW, which amounts to a 100% realization rate. Table 3-27 provides a summary of the Res HVAC impact evaluation findings. We discuss the impact evaluation key findings below.

Table 3-27 Res HVAC Impact Evaluation Summary

Savings	Gross Energy Savings			Net Energy Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	3,393,347	3,454,808	102%	3,316,616	96%	38,348,751
Demand (kW)	1,704	1,705	100%	1,517	89%	n/a

- **Quality and consistency.** AEG found the claimed methodology sound. For most measures, we made no changes. We made minor changes to a handful of measures.
- **We assumed that geothermal heat pumps in a replace-on-burnout scenario should have a standard air source heat pump as the baseline.** The AR TRM V9 and the vast majority of other TRMs assume that

standard air source heat pumps are the baseline for geothermal heat pumps. Claimed savings derive a “baseline” geothermal heat pump, but AEG followed the AR TRM’s guidance.

- [The NTG update produced lower adjustment ratios relative to 2021.](#) However, the benchmarking analysis showed that HVAC tune-up measures have approximately 91% NTG adjustment ratios in other jurisdictions, which is comparable to 2021.

The **process evaluation** resulted in the following key findings:

- [The HVAC channel effectively educates customers about the importance of HVAC tune-ups](#) and facilitates their decisions to participate
 - Most customers either do not realize they need to maintain their HVAC systems or do not understand how to do so.
 - Although customer education and communication efforts are generally successful, there is room for improvement.
- [Customers and Trade Allies are highly satisfied with their experiences.](#)
- [For Trade Allies, the opportunity cost of traveling long distances makes it difficult to serve rural and hard-to-reach customers.](#)
- [The channel savings have decreased since 2021.](#)
 - Increasing the eligibility period from 5 years to 10 years since the last tune-up through the program has negatively affected program participation.

Res HVAC – Recommendations

The **impact evaluation recommendations** are as follows:

- [Use the federal standard air source heat pumps as the baseline for geothermal heat pumps in a replace-on-burnout scenario.](#) AEG will continue to use federal standard air source heat pumps as geothermal heat pumps’ baseline in future program years. This assumption aligns the channel with most other jurisdictions, industry best-practices, and simplifies the channel.
- [Relaunch the participant survey to collect more responses for the NTG update.](#)

The **process evaluation recommendations** are as follows:

- To improve participant education and satisfaction, [provide additional \(optional\) training and/or leave-behind materials to Trade Allies](#) so they can better educate customers about program processes and HVAC system maintenance.
- To provide better coverage to rural and hard-to-reach customers, [provide larger inducements to Trade Allies based on distance and reimburse for costs of gas/travel.](#)

Res HVAC – Impact Evaluation

Evaluation Approach. Table 3-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). Note the following:

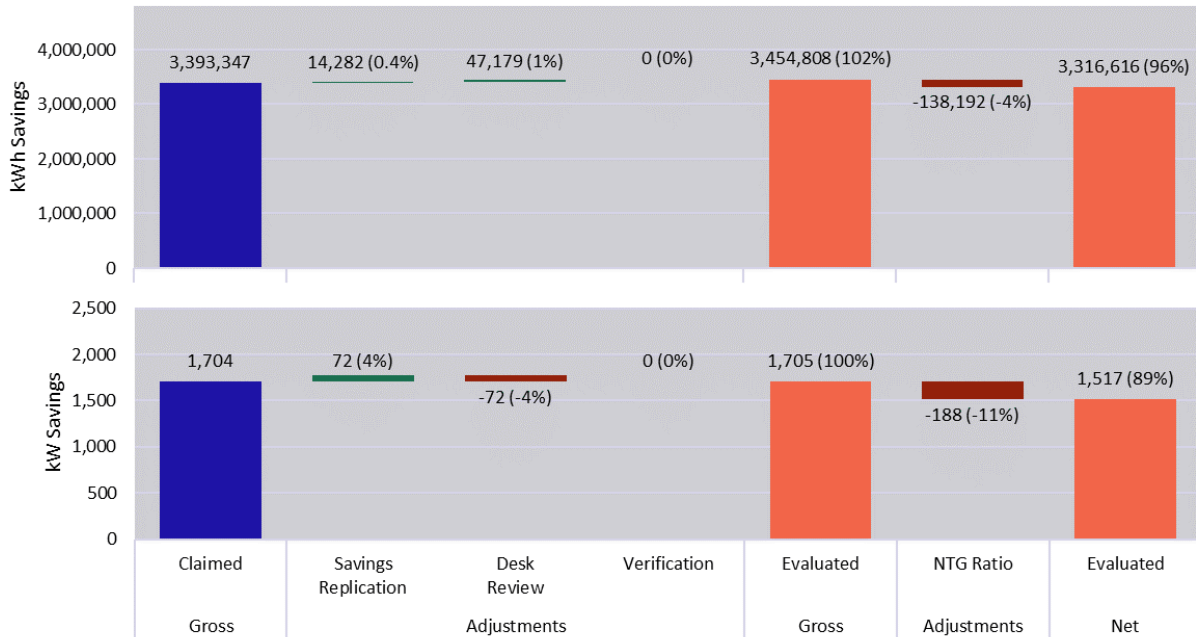
- In addition to the savings replication, we conducted an engineering review of the savings and matched the claimed efficiencies and capacities of replace-on-burnout equipment to the AHRI database. We did not conduct desk reviews on a sample of projects as there was no additional documentation besides the data provided in the database.
- Verification was performed alongside the participant survey under the process evaluation.

- AEG used the 2021 NTG adjustments in the Res HVAC channel. AEG conducted an NTG update analysis (also in the participant survey) and NTG benchmarking with similar programs.

The savings replication and engineering review activities were conducted at the census. We used a stratified sampling approach for the Verification activity, stratifying the population by measure category: (1) HVAC tune-ups and (2) replace-on-burnout equipment.

Evaluation Adjustments. Figure 3-16 presents a summary impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 3-16 Res HVAC Summary of Adjustments by Activity



- **Savings Replication.** AEG’s savings replication increased savings slightly. We did not find major issues with any measures, and the energy savings differences are due to rounding. Replace on burnout’s claimed demand savings did not report the EER of the efficient unit. AEG used 2021 PA TRM SEER-to-EER adjustment to determine the EER based on the reported efficient SEER.¹⁷
- **Desk Review.** AEG used air-source heat pumps as the baseline for geothermal heat pumps, which increased the savings. AEG also found minor differences in claimed efficiencies and capacities and in the AHRI data.
- **Verification.** AEG’s online survey found that all measures were installed and operating. I.e., we found an ISR of 100% and made no verification adjustments.
- **Net-to-Gross.** AEG applied to the NTG adjustments from the 2021 evaluation. We conducted NTG research incorporated in the participant survey but need further research to establish updated NTG adjustments for 2023.

Stratum-Level Findings. Table 3-28 and Table 3-29 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and Res HVAC overall. Note that each stratum savings has no

¹⁷ Pennsylvania Public Utility Commission. *Technical Reference Manual State of Pennsylvania Volume 2: Residential Measures*. Revised February 2021. Section 2.2.21.

associated absolute and error precision because the strata did not have adjustments from verification activities. The adjustments for each stratum were based on the savings replication and desk review activities performed at the census.

Table 3-28 Res HVAC Energy Savings Summary by Stratum

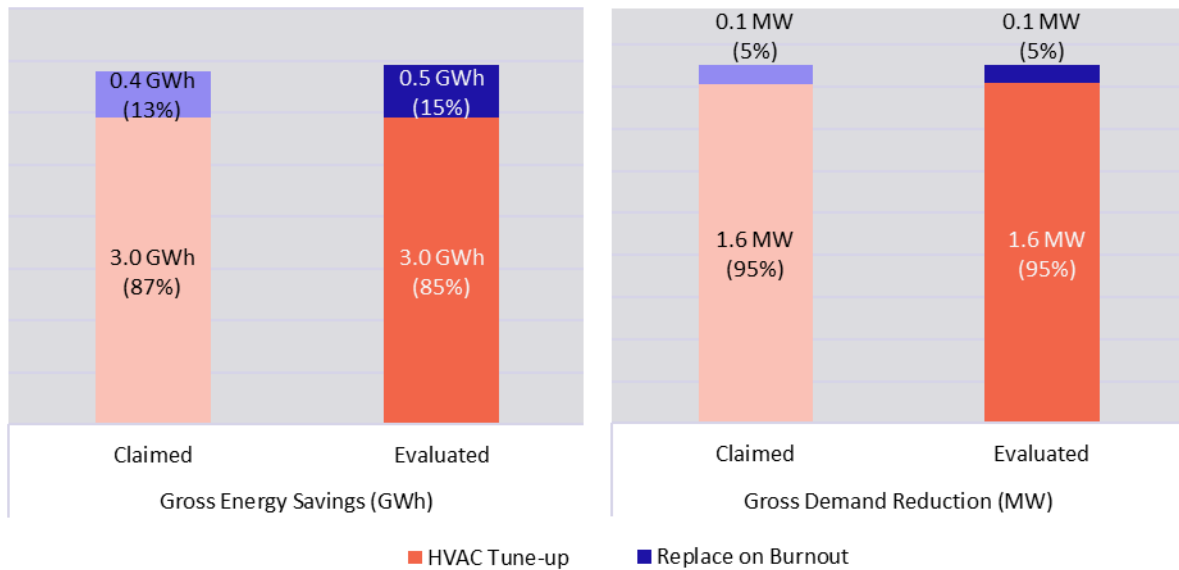
Stratum	No. of Projects	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
HVAC Tune-up	1,976	2,954,714	2,950,949	100%	-	0%
Replace on Burnout	248	438,633	503,859	115%	-	0%
Total	2,224	3,393,347	3,454,808	102%	-	0.00%

Table 3-29 Res HVAC Demand Reduction Summary by Stratum

Stratum	No. of Projects	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
HVAC Tune-up	1,976	1,615	1,615	100%	-	0%
Replace on Burnout	248	90	90	100%	-	0%
Total	2,224	1,704	1,705	100%	-	0.00%

Figure 3-17 shows the claimed and evaluated GWh and MW savings at the stratum level. The HVAC Tune-up stratum comprised 85% of evaluated energy savings and 95% of evaluated demand reduction. AEG discussed the main drivers of each stratum above.

Figure 3-17 Res HVAC Claimed and Evaluated Savings by Stratum



Measure-Level Savings. Table 3-30 shows the *Replace on Burnout* stratum’s measure-level claimed and evaluated energy savings and demand reduction. Note that *HVAC Tune-up’s* stratum is only composed of one measure.

Table 3-30 Res HVAC Savings Summary by Measure

Measure	No. of Homes	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
CAC Replacement	190	245,137	247,055	101%	43	43	100%
Geothermal Replacement	33	112,932	181,580	161%	43	44	101%
Heat Pump Replacement	24	76,565	71,404	93%	3	3	97%
Dual Fuel Heat Pump Replacement	1	3,999	3,821	96%	-	-	N/A
Total	248	438,633	503,859	115%	90	90	100%

- AEG used air-source heat pumps as the baseline for geothermal heat pumps, per the AR TRM V9. Claimed savings estimated a baseline geothermal heat pump.
 - This increased the savings.
- AEG found slight differences in the AHRI efficiencies and capacities for CACs, heat pumps, and dual-fuel heat pumps.
 - For CACs, this difference increased the savings.
 - For heat pumps and dual-fuel heat pumps, this decreased the savings.

Table 3-31 shows each measure’s lifetime kWh savings. Using EULs consistent with the AR TRM, we find that HVAC tune-ups contribute the most to the channel’s lifetime savings.

Table 3-31 Res HVAC Net Lifetime Savings Summary by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
HVAC Tune-up	10	28,329,114
CAC Replacement	19	4,506,275
Geothermal Replacement	25	4,357,914
Heat Pump Replacement	16	1,096,760
Dual Fuel Heat Pump Replacement	16	58,688
Total	11.6	38,348,751

Net-to-Gross Analysis. As part of the participant survey, AEG assessed NTG scores for Res HVAC in 2022. AEG also performed a benchmarking analysis to compare NTG scores of similar programs in other jurisdictions.

Table 3-32 shows the findings from the overall NTG analysis by measure. The resulting NTG scores assessed from the participant survey are approximately 10% lower relative to 2021 scores. However, the benchmarking analysis showed that HVAC tune-up measures have approximately 91% NTG adjustment ratios in other jurisdictions, which is comparable to 2021.

Table 3-32 Res HVAC NTG Results

Measure	2022 NTG Survey Update	2022 Benchmarking Analysis	2021 NTG Score (kW)
HVAC Tune-Up	79%	~91%	89%
Replace on Burnout	79%	n/a	89%

The remainder of this section describes the process for determining NTG scores and presents those results for participants who received HVAC system tune-ups and installed new HVAC equipment. Questions were asked to all survey respondents unless noted otherwise.

AEG used several criteria to determine the likelihood that a participant was a free rider. The final free ridership was calculated as follows:

$$\text{Free Ridership} = \text{Intent} * \text{average}(\text{Plans and Likelihood}) * \text{Timing}$$

The first criterion, *Intent*, was based on a participant's financial ability to pay for efficient measures:

Would you have been able to make the financial investment to {purchase new energy-efficient HVAC equipment/tune up your HVAC equipment} if the rebate was not available?

- Respondents who reported they were unable to afford the efficiency measure without a rebate were deemed not to be free riders and assigned an *Intent* score of 0.
- For all others, AEG assigned an *Intent* score of 1 and asked an additional series of questions to gauge each respondent's prior *Plans* to implement the measure, the *Likelihood* they would have implemented the measure without the channel, and the effect of the channel on the likely *Timing* of the implementation of the measure:

Before learning about the program, did you have plans to {tune up or service your HVAC equipment/complete the HVAC improvements} for which you received a discount or rebate through this program?

New HVAC system installations: *Did you install more-efficient HVAC equipment than you would have if you had not received a rebate through the HVAC channel?*

AEG assigned *Plans* scores of 1 according to the following criteria. Responses that did not meet these criteria were assigned *Plans* scores of 0:

Existing HVAC system tune-ups: *respondents who answered "Yes" to the first question*

New HVAC system installations: *respondents who answered "Yes" to the first question and "No" to the second question.*

AEG then assessed respondents' *Likelihood* of implementing the measure in the absence of the channel:

Using a scale where 1 means not at all likely and 5 means very likely, how likely is it that you would have {tuned up or serviced your HVAC equipment/purchased the same energy-efficient HVAC equipment} if the rebate was not available?

Based on the responses to the question above, AEG assigned a *Likelihood* score as follows:

- 1 (Not at all likely) = 0
- 2 = .25
- 3 = .5
- 4 = .75
- 5 (Very likely) = 1

AEG then assessed the channel's effect on the *Timing* of implementation:

Did you {tune up your HVAC equipment/purchase the new energy-efficient HVAC equipment} sooner than you would have if the rebate had not been available?

When might you have {tuned up or serviced your HVAC equipment/purchased the same energy-efficient HVAC equipment} if you had not participated in the HVAC channel?

Based on the responses to the questions above, AEG assigned a *Timing* score as follows:

- If the respondent answered “No” to the first question, AEG assigned a *Timing* score of 0.
- If the respondent answered “Yes” to the first question, then:
 - If the respondent answered “zero to six months” for the second question, AEG assigned a *Timing* score of 0.5.
 - If the respondent answered “seven to 12 months” for the second question, AEG assigned a *Timing* score of 0.25.
 - If the respondent answered “more than one year” for the second question, AEG assigned a *Timing* score of 0.

Res HVAC – Process Evaluation

Evaluation Approach. Table 3-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

- For Residential HVAC, AEG conducted separate, comprehensive interviews with the OG&E program manager and the CLEAResult manager, and eight of the 26 participating Trade Allies that participated in the channel in the first half of 2022 to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- In January 2023, AEG administered an online survey to all participating customers with valid email addresses (794 participants). One hundred and twenty-nine participants responded to the survey in full, a response rate of 16%. The survey covered topics such as awareness, motivation, and satisfaction, and AEG used results to estimate the HVAC channel’s net-to-gross (NTG) ratio.

Channel Performance. Table 3-33 Res HVAC’s claimed energy savings and demand reduction decreased by 79% and 39% relative to 2021, respectively. The channel also saw decreases in its contribution to HEEP relative to 2021.

Table 3-33 Res HVAC Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of HEEP	Claimed	Share of HEEP	
Energy (kWh)	16,096,584	24%	3,393,347	5%	-79%
Demand (kW)	2,783	27%	1,704	16%	-39%

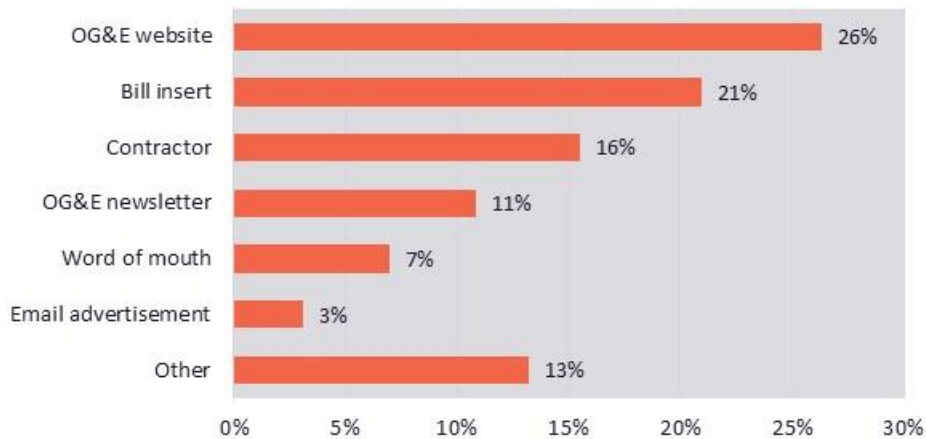
Channel Operations. The channel is administered primarily through contractors (Trade Allies), who reach out to interested customers, complete and submit applications through the iManifold online platform, and schedule and complete the work. CLEAResult also markets the channel using bill inserts, social media campaigns, radio commercials, and direct emails to target people who have not had their air conditioners tuned up in the last 5 to 10 years.

CLEAResult staff train Trade Allies up front and make themselves readily available for questions, typically responding the same day, often within hours. All Trade Allies interviewed by AEG expressed happiness with

their relationships with CLEAResult. CLEAResult’s marketing efforts provide plentiful leads to the Trade Ally network.

Figure 3-18 below shows how participants learned about the Res HVAC program (n=129). **More than half of the participants learned about the channel directly from OG&E** through its website (26%), bill inserts (16%), or OG&E’s Currents newsletter (11%). Sixteen percent of respondents learned about it from their contractor. Two percent were repeat Res HVAC participants.

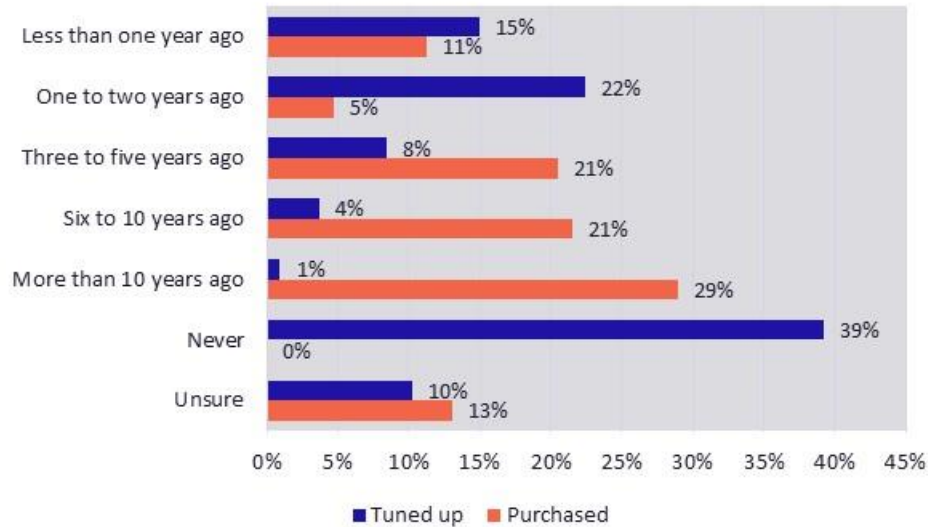
Figure 3-18 Res HVAC Primary Source of Participant Awareness



Two Trade Allies reported that **the Res HVAC channel successfully “gets customers off the fence” who otherwise might not commit to a tune-up**. It can be a challenge for Trade Allies to convince customers of the legitimacy of the offer and that tune-ups are an investment in the efficacy of their HVAC systems. **Most customers are not educated about their systems and are unaware they need to tune them up in the first place, which attests to the success of the offering**. Sixty-three percent of respondents did not plan to tune up their systems prior to participating, and 60% could not have made the investment without financial assistance via inducements from OG&E (n=107).

Figure 3-19 below shows that half of the survey respondents said their HVAC system was installed six or more years ago (n=107). While 37% of all respondents had gotten their HVAC systems serviced within the last two years, 39% had never gotten their HVAC systems serviced prior to participating in the HVAC channel.

Figure 3-19 Res HVAC Timing of HVAC System Purchase and Previous Tune-Up/Servicing



Among the 22 respondents who purchased and installed new HVAC systems, 14 (64%) replaced existing working equipment, while 8 (36%) replaced failed equipment. Six respondents (27%) received follow-up appointments for quality assurance. They were all very satisfied or somewhat satisfied with their follow-ups, and two of the six said it left them more satisfied with their participation experience.

The channel has positively impacted and helped build the customer bases of the businesses of all interviewed Trade Allies. One Trade Ally said having more information to provide customers about tune-ups could be beneficial. Sometimes customers expect Trade Allies to perform repairs, which is not what tune-ups accomplish.

Barriers to Participation. OG&E changed eligibility requirements for tune-up participants, as recommended by the previous evaluator. Half of the interviewed Trade Allies were not aware of the new eligibility requirements, increasing the duration between tune-ups from 5 to 10 years. This change can be expected to reduce access for repeat participants. However, because funding limitations constrain the annual number of participants, this change should create more access for customers whose HVAC systems are in greater need of a tune-up, such as first-time participants and customers with older, less-efficient systems. Three survey respondents recommended that OG&E reduce the time between tune-ups for repeat participants.

AEG conducted a limited benchmarking analysis to determine the eligibility requirements of other U.S. HVAC tune-up programs. Table 3-34 shows that all five benchmarked programs reviewed require that a customer has not participated in the tune-up program in the last five years or less. Four of the five programs, however, offer a lower inducement amount than OG&E.

Table 3-34 Eligibility Requirements of HVAC Tune-Up Programs in the U.S.

Utility	Years since Last Tune Up	Inducement Amount
El Paso Electric	5 years	\$200
First Energy	3 years	\$50
PSO	1 year	\$75
DTE	5 years	\$75
Com Ed	3 years	\$35

The U.S. Environmental Protection Agency (EPA) is phasing out certain coolants, affecting which customers are eligible to participate based on system age. It is a challenge that one Trade Ally said he has been trying to reconcile for participants with older systems.

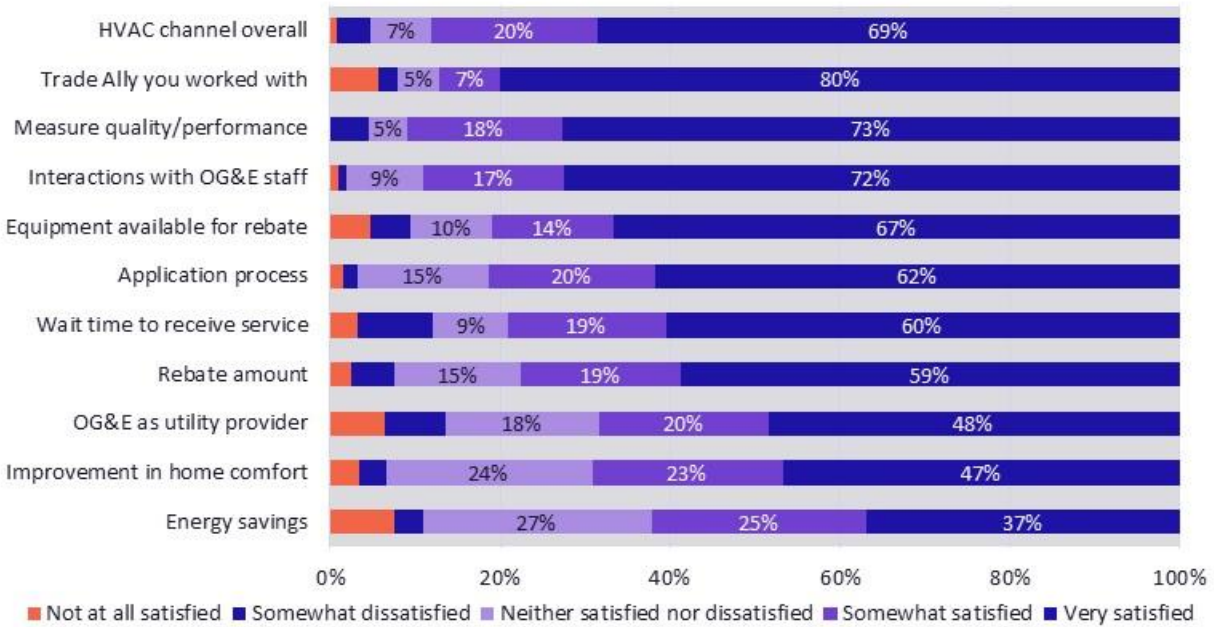
OG&E also acknowledged its struggles to connect with and serve rural/hard-to-reach customers due to a lack of Trade Ally availability. Rural customers can be an hour’s drive away or more, resulting in two or more hours of transit for one job, whereas multiple tune-ups can be completed in that time in an urban/more-populated locale. One Trade Ally recommended increasing inducements for contractors to reimburse them for travel, making the opportunity cost of completing rural jobs worthwhile. One survey respondent reportedly had to wait for service because there were no Trade Allies to serve his or her area:

“[Suggestion for Improvement] More providers in the area. I had to wait for a provider to join the program.” – recommendation from survey respondent who was very satisfied overall.

One Trade Ally noted that funding reserved for tune-ups could run out early in the year.

Customer Feedback. Using a 5-point scale ranging from not at all satisfied to very satisfied, AEG asked respondents to rate their satisfaction with various elements associated with participation. As shown in Figure 3-20, nearly 90% of respondents were very satisfied or somewhat satisfied with the HVAC channel overall, and Trade Allies received the highest satisfaction rating of any HVAC channel element. Respondents were less satisfied with their energy savings and improvement in home comfort – although a majority were at least somewhat satisfied.

Figure 3-20 Res HVAC Participant Satisfaction



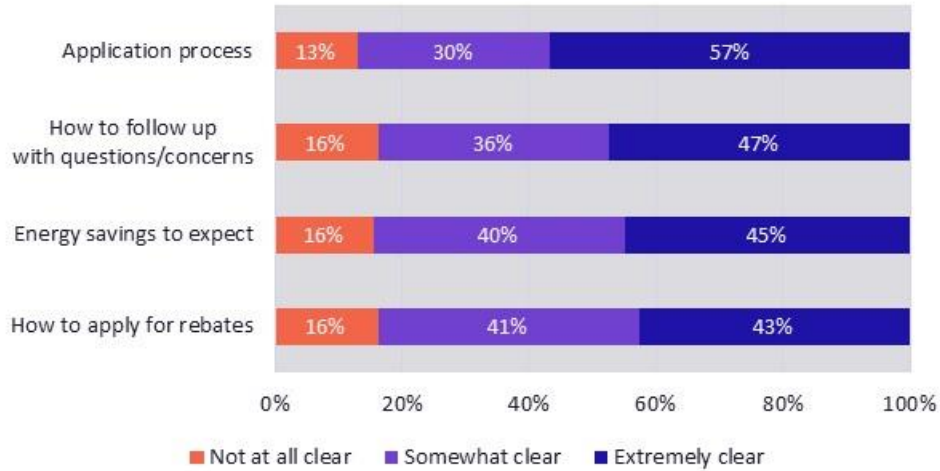
Respondents provided an average rating of 8.9 to rate the likelihood that they would recommend the HVAC channel to someone else, using a 1-to-10 scale. Eighty-six percent of respondents providing a rating of 8 or higher (n=129). Ninety-five percent of respondents said they would very likely or somewhat likely to make additional energy efficiency upgrades to their homes in the future (n=129).

As shown in Figure 3-21, most survey respondents thought the Res HVAC channel information was at least somewhat clear. However, small percentages (13% - 26%) said it was not at all clear how to apply for rebates, how the application process works, how to follow up with questions or concerns, and what to expect from their tune-ups or new equipment in terms of energy savings (n=129).

Similarly, although 92% of respondents said program information on what to expect from the Res HVAC channel was very helpful or somewhat helpful, there is room for improvement. Twenty-one percent said their understanding of how to maintain their HVAC systems properly did not improve (n=107). In terms of general communication, one respondent didn't know if he or she received the rebate at all, which resulted in the participant being somewhat dissatisfied overall.

Seven survey respondents recommended that OG&E conduct more advertising and provide more consumer education. Six of these seven respondents were very satisfied with the HVAC channel overall.

Figure 3-21 Res HVAC Participant Process Satisfaction



Trade Ally Challenges. Two Trade Allies discussed issues with inflation. One said he noticed customers gravitating toward less-efficient options, and another acknowledged the rising costs of refrigerant and travel (gasoline).

Because of supply chain issues, equipment that once took a couple of days to become available now has turnaround times ranging from a few days to a few months. Regarding issues that arise on-site, some tune-ups can take several hours, and some HVAC systems cannot be serviced at all. Both of which can be upsetting to participants. Three survey respondents said their Trade Allies forgot to install or did not have correctly sized filters for their HVAC systems.

One Trade Ally said iManifold can be cumbersome and does not always function properly.

Consumer Products (CPS)

The Consumer Products (CPS) channel provides customers with instant, point-of-purchase inducements on select ENERGY STAR-qualified products and appliances at various retail locations. This channel also works with food banks to offer ENERGY STAR-qualified LED bulbs to patrons.

The goal is to provide a pathway for customers to get energy-efficient products into their homes outside of a contractor-driven installation. This channel aims to intervene after a customer has decided to purchase a new appliance or product, when the opportunity to educate them is limited.

The CPS channel targets purchasing decisions, aiming to influence customers towards buying higher-efficiency equipment and products. Marketing collateral on special pricing and benefits associated with higher efficiency appliances and products is displayed at the physical or digital location of purchase. Customers can compare options and benefits, but the inducements are meant to buy down the price to a level where the decision to purchase the

Table 3-35 CPS 2022 Participation by Measure

Measure	Rebated Measures
ENERGY STAR Interior LEDs	1,239,243
Advanced Power Strips	16,239
Bathroom Ventilating Fan	1,640
Water Dispenser	1,323
Window AC Replacement	652
Room Air Purifier	506
Smart Thermostat	89
Total	1,259,692

efficient option is relatively straightforward and can be guided largely by price alone. Inducements are provided upstream, midstream, and downstream for various technologies.

Table 3-35 shows the measures implemented in 2022. A list of eligible measures for CPS can be found in Appendix C of OG&E 2022-2024 Demand Program Plan for Oklahoma.

CPS – Key Evaluation Findings

The **impact evaluation** established CPS evaluated energy savings of 44,365,477 kWh, which amounts to a 99% realization rate, and evaluated demand savings of 6,024 kW, which amounts to a 98% realization rate. Table 3-36 provides a summary of the CPS impact evaluation findings. We discuss the impact evaluation key findings below.

Table 3-36 CPS Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	44,893,412	44,365,477	99%	27,062,941	61%	332,933,418
Demand (kW)	6,132	6,024	98%	3,795	63%	n/a

- **LEDs drove the channel’s savings, but LEDs’ savings will decline as the EISA-backstop is effective and existing stock dwindles.**¹⁸ AEG assumes a year of sell-through of non-EISA-backstop bulbs which means that as of July 25, 2023, we will assume that the baseline for LEDs will be an EISA-backstop bulb or a bulb with 45 lumens/watt.
 - The DOE expanded the definition of general service lamps to include lamps such as 3-way lamps, incandescent reflector lamps, and decorative lamps. These lamps are no longer excluded from the EISA-backstop.
- **We found methodological differences in claimed savings for ENERGY STAR air purifiers, water dispensers, and bathroom ventilator fans.** AEG found that ENERGY STAR air purifiers and water dispensers overstated savings. The effect on the channel savings was small as LEDs comprised the vast majority of savings.
 - All claimed air purifier savings assumed energy savings of 1,168 kWh. AEG followed the AR TRM V9 and used ENERGY STAR data to calculate the savings for each incentivized air purifier model.
 - Claimed water dispenser savings used the 2016 PA TRM. Water dispensers were removed from the most recent update of the PA TRM. Several sources exist for estimating water dispenser savings, but AEG used ENERGY STAR’s percent savings assumption over conventional models—22%.¹⁹
 - Claimed bathroom ventilating fan savings used the default values in the IL TRM V10.²⁰ AEG used the baseline values from the IL TRM V10, actual ENERGY STAR data for CFM and efficiencies, and LEDs’ hours of use in this report.

The **process evaluation** resulted in the following key findings:

- **The CPS channel savings grew in the last year.**
 - The channel has a strong retailer network with 175 participating stores.

¹⁸ US Department of Energy. “Energy Conservation Program: Energy Conservation Standards for General Service Lamps.” 10 CFR Part 30. Vol. 87, No. 89. May 9, 2022.

¹⁹ Environmental Protection Agency. “Water Coolers.” https://www.energystar.gov/products/water_coolers.

²⁰ Illinois TRM Technical Advisory Committee. 2022 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 10.0. Section 5.3.9. September 24, 2021. https://www.ilsag.info/wp-content/uploads/IL-TRM_Effective_010122_v10.0_Vol_3_Res_09242021.pdf.

- Through its food bank component, the channel delivered 23% of LEDs and 30% of advanced power strips.
- The CPS channel drives the majority of residential participation and energy savings, primarily through LED sales. The channel makes up approximately 68% of HEEP's claimed energy savings.
- CPS does not yet feature an online marketplace component, which would expand access and increase participation and savings.
- OG&E and CLEAResult encountered administrative hurdles related to rebranding marketing collateral.

CPS – Recommendations

The **impact evaluation recommendations** are as follows:

- Prepare for lighting savings to diminish significantly by July 25, 2023. The EISA-backstop provision became effective July 25, 2022, and AEG typically assumes a one-year product sell-through. The Department of Energy also expanded the definition of general service lamps to include most types of specialty lamps.
 - AEG will allow non-EISA-backstop compliant bulbs to be the baseline after July 25, 2023, if data shows retailers still have existing product stock. However, without contrasting evidence, AEG will assume that the EISA-backstop is in effect on July 25, 2023.
- Update the claimed savings for ENERGY STAR air purifiers, water dispensers, and bathroom ventilator fans. AEG found that ENERGY STAR air purifiers and water dispensers overstated savings.
 - AEG's suggested methodology is more accurate as it uses the actual efficiencies and CFMs and is internally consistent with the rest of the evaluation. The IL TRM assumes the hours of use of non-continuous ventilating fans are consistent with the IL TRM's estimated lighting hours of use for interior lamps. AEG uses the accepted lighting hours of use of 960.61 hours to be consistent with the rest of the evaluation.

The **process evaluation recommendations** are as follows:

- In developing an online marketplace, consider offering rebates for other commonly featured measures such as dehumidifiers, occupancy-sensing wall switches, water heater pipe wrap, weatherization measures (e.g., air sealing and outlet and switch gaskets), and electric vehicle (EV) charging accessories.

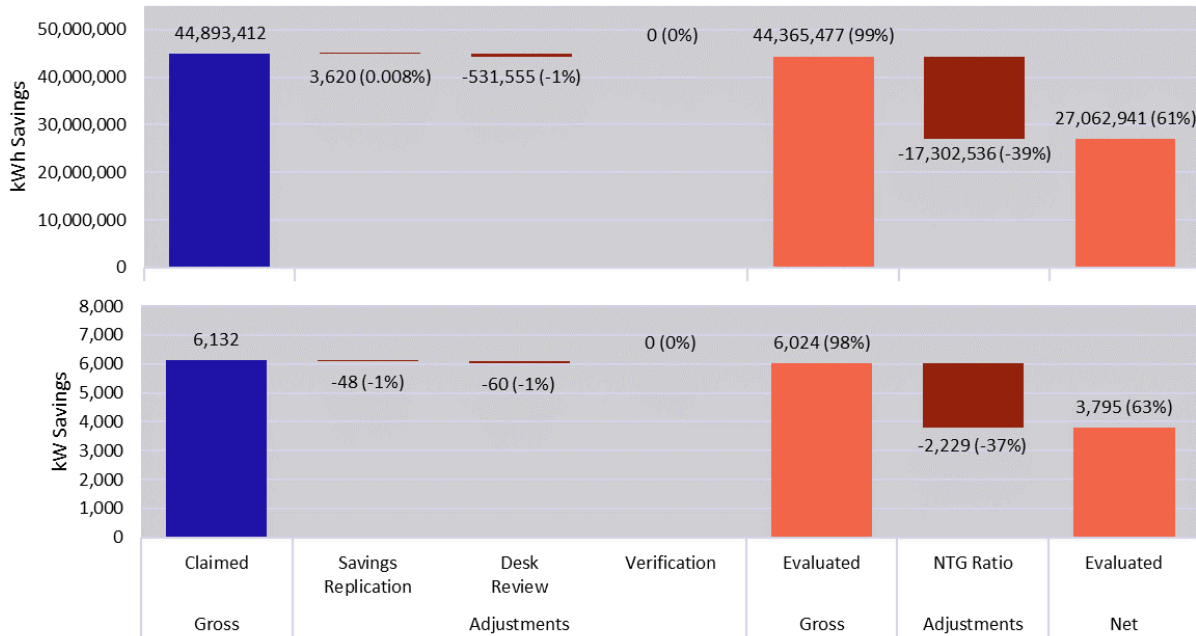
CPS – Impact Evaluation

Evaluation Approach. Table 3-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

- The savings replication and desk review activities were conducted at the census.
- AEG used the 2021 NTG adjustments in the CPS channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2024.

Evaluation Adjustments. Figure 3-22 presents a summary impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 3-22 CPS Summary of Adjustments by Activity



- **Savings Replication.** AEG’s savings replication decreased savings slightly due to rounding. We did not find any major issues with any of the measures.
- **Desk Review.** AEG adjusted the methodology for ENERGY STAR air purifiers, water dispensers, bathroom ventilating fans, and smart thermostats.
 - For **air purifiers**, AEG used ENERGY STAR data for each model in the channel and the methodology in the AR TRM V9.
 - This lowered the savings.
 - For **water dispensers**, AEG updated the savings methodology to source from ENERGY STAR²¹ instead of the 2016 PA TRM²².
 - This lowered the savings.
 - For **bathroom ventilating fans**, AEG used the actual CFM and efficiencies of each unit in the channel. We updated the hours of use to be internally consistent with this evaluation.
 - This lowered the savings.
 - For **smart thermostats**, AEG used the logic of the AR TRM V9 to derive smart thermostats savings for climate zones 6 and 9. The AR TRM V9 only provides default savings for climate zones 7 and 8. We also used the store's location as a proxy for a customer’s location and climate zone. Also, note that the AR

²¹ Environmental Protection Agency. “Water Coolers”. https://www.energystar.gov/products/water_coolers.

²² Pennsylvania Public Utility Commission. *Technical Reference Manual State of Pennsylvania*. Errata update February 2017.

TRM V9 assumes no peak demand reduction for smart thermostats, and AEG applied no demand savings.

- This was a minor change that slightly lowered the savings.
- **Verification.** AEG did not conduct a verification survey for CPS. We used default ISR values in the AR TRM, which is reflected in the desk review adjustment.
- **Net-to-Gross.** AEG applied to the NTG adjustments from the 2021 evaluation. We benchmarked the previous evaluation results with similar programs and found that the previous results are similar to those in other jurisdictions. We will conduct NTG research in 2023, which will apply to the 2024 evaluation.

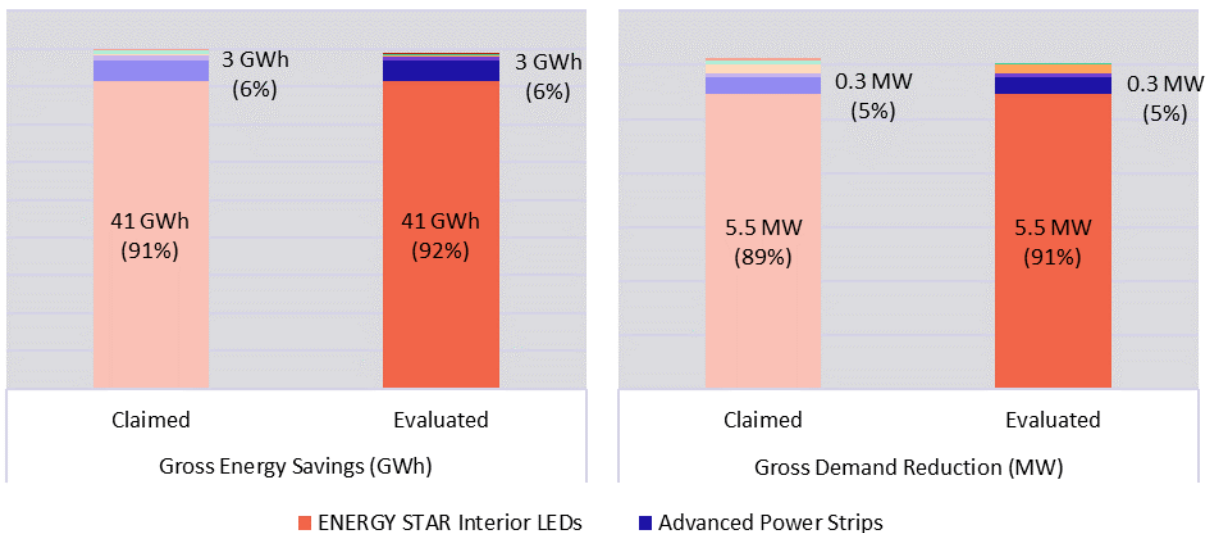
Measure-Level Findings. Table 3-37 shows CPS measure-level claimed and evaluated savings. ENERGY STAR Interior LEDs comprised 92% of the total evaluated energy savings, advanced power strips comprised 6% of the evaluated savings, and all other measures comprised 2% of the total savings.

Table 3-37 CPS Savings Summary by Measure

Measure	Rebated Counts	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
ENERGY STAR Interior LEDs	1,239,243	40,676,694	40,730,916	100%	5,461	5,464	100%
Advanced Power Strips	16,239	2,718,409	2,718,409	100%	309	309	100%
Bathroom Ventilating Fan	1,640	48,968	36,732	75%	6	4	63%
Water Dispenser	1,323	637,421	497,469	78%	71	56	78%
Window AC Replacement	652	148,697	148,697	100%	173	173	100%
Room Air Purifier	506	591,514	163,883	28%	67	19	28%
Smart Thermostat	89	71,708	69,372	97%	46	-	0%
Total	1,259,692	44,893,412	44,365,477	99%	6,132	6,024	98%

We discuss the measure-level findings above (Evaluation Adjustments). Overall, ENERGY STAR interior LEDs drove the overall program savings and realization rate. Figure 3-23 shows the distribution of claimed and evaluated savings of the channel measures.

Figure 3-23 CPS Claimed and Evaluated Savings by Measure



Finally, Table 3-38 shows each measure’s lifetime kWh savings. Using EULs consistent with the AR TRM, we find that LEDs and advanced power strips contribute the most to the lifetime savings.

Table 3-38 CPS Net Lifetime Savings Summary by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
ENERGY STAR Interior LEDs	13	310,573,231
Advanced Power Strips	10	16,582,292
Bathroom Ventilating Fan	19	425,728
Water Dispenser	10	3,034,559
Window AC Replacement	11	952,404
Room Air Purifier	9	899,716
Smart Thermostat	11	465,487
Overall	12.3	332,933,418

CPS- Process Evaluation

Evaluation Approach. Table 3-5 above summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

- For CPS, AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult program manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for CPS is scheduled for 2024.

Program Performance. Table 3-39 CPS’s claimed energy savings and demand reduction increased by 7% and 2% relative to 2021, respectively. The channel also saw comparable contributions to HEEP relative to 2021.

Table 3-39 CPS Claimed Savings– 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of HEEP	Claimed	Share of HEEP	
Energy (kWh)	41,896,993	64%	44,893,412	68%	7%
Demand (kW)	5,992	57%	6,132	56%	2%

Channel Operations. The CPS channel operates like a traditional midstream point-of-purchase discount program. When customers purchase a qualifying measure at participating retailers, they receive an immediate discount at the time of purchase. [One-hundred seventy-five retailers participate in the program.](#) The program also provides no-cost LED lighting through the [Regional Food Bank of Oklahoma](#). Twenty-one percent of the measures incentivized are distributed through the food bank.

CPS relies heavily on efficient lighting measures, specifically LEDs. To this extent, the program did not meaningfully change in 2022. However, program staff has anticipated the U.S. Department of Energy’s enforcement of the EISA-backstop provision, which will dramatically undercut energy savings.

Because of this eventuality, program staff is beginning to brainstorm [ways to replace the disappearing lighting energy savings](#).

CPS Customer Participation Process

- Customer visits participating retailer.
- Customer purchases eligible measure and receives point of purchase discount.
- Retailer provides sales information to CLEAResult.
- CLEAResult pays inducement to retailer.

- They reported receiving ideas for and interest in new measures, including smart thermostats and other home appliances.
- To expand visibility and access, program staff discussed pursuing an online marketplace through which customers can purchase discounted items, an alternative gaining popularity among similar upstream programs.

However, much like other energy efficiency programs nationally, instituted changes will likely fall short of sufficiently closing the gap in savings created by lighting measures. To compensate, **OG&E may need to reduce its savings goals in the short-term** as it devises ways to recapture the savings vacated by lighting measures.

Channel Effectiveness. The channel works hard to **ensure customers know they are getting a discount on products because of OG&E.** Signage is branded with the utility logo and uses phrases such as “specially priced by the utility company.” Although the channel is turn-key, CLEAResult and OG&E collaborate on marketing materials. In 2022, OG&E began to rebrand, including hiring new marketing staff. The rebrand affected all marketing efforts and required all collateral to be updated.

One delivery change that has been well received is **the discontinuation of in-store tabling events, replacing them with TVs displaying an informational video that plays on a loop.** CLEAResult reported positive feedback from retailers about the video.

Positive Energy – New Home Construction (PE-NHC)

The PE-NHC channel is designed to work with builders and contractors and induce them to include energy efficient practices and measures when constructing new homes within the OG&E Oklahoma territory.

The program standards manual establishes comprehensive standards that address heightened performance requirements attached to the building envelope, attic insulation, fenestration, and mechanical systems, which a third-party Home Energy Rating System (HERS) rater must verify. Inducements are paid to contractors that successfully meet or exceed all the minimum requirements defined by the program standards manual. Inducements are tiered in 3 categories based on increasing levels of achievement.

PE-NHC- Key Evaluation Findings

The **impact evaluation** established PE-NHC evaluated energy savings of 2,781,821 kWh, which amounts to a 101% realization rate, and evaluated demand savings of 958 kW, which amounts to a 100% realization rate. Table 3-40 provides a summary of the PE-NHC impact evaluation findings. We discuss the impact evaluation key findings below.

Table 3-40 PE-NHC Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	2,765,270	2,781,821	101%	2,448,002	88%	39,168,035
Demand (kW)	959	958	100%	84264%	88%	n/a

- **Quality and consistency.** AEG made no changes to most of the homes in our desk review sample.
- **Not all homes are meeting all the channel’s requirements, but this did not affect the savings as the models already accounted for this.** Thirteen (13) of the 24 homes in our sample did not fully meet at least one of the channel’s requirements. In all cases, they came close.
- **The NTG update produced lower adjustment ratios relative to 2021.** The benchmarking analysis showed that the 2021 NTG adjustment ratio is comparable in some jurisdictions (between 80-90%), while other jurisdictions are around 50%.

The **process evaluation** resulted in the following key findings:

- **The PE-NHC channel performance improved in 2022 relative to 2021.** Energy savings increased by 62% and demand savings increased 66%.
- **Builders are enthusiastic about the program and plan to continue participating.**
 - The builders have a good relationship with CLEAResult.
 - The program has influenced the way homes are built in Oklahoma, installing various measures to make homes more efficient.
 - The new inducement structure has been well-received.
- **The new home construction market is facing several challenges**, including high-interest rates and increases in the costs of products and equipment.
 - Fewer homes are expected to be built in 2023.
 - The rising costs have already led to some efficiency cuts by one builder and may lead to more.
- **The lack of HERS raters is potentially a barrier to getting more builders to participate.**
- **The new multifamily portion has not yielded any participants**, and the tracking data makes it hard to identify the building type.

PE-NHC – Recommendations

The **impact and process evaluation recommendations** are as follows:

- **Encourage builders to meet all of the channel's energy efficiency requirements for all builds.** Our desk reviews found that not all homes met all the channel's requirements, such as minimum levels of ceiling insulation, foundation insulation, and duct leakage.
 - AEG did not adjust the evaluated savings, as the models correctly accounted for the actual home characteristics. However, builders should meet all the requirements to participate in the channel.
- **Work with builders to help them promote the lower operating costs of high-efficiency homes** to offset the higher selling prices. For example, show comparisons of monthly costs, including mortgage and utility costs for high-efficiency versus low-efficiency homes.
- **Create a team of participating HERS raters dedicated to the OG&E program.**
 - Consider offering training and/or inducements for HERS raters.
 - Promote becoming a HERS rater as a career choice.
- **Clearly identify multifamily homes** in the tracking data.
- **Work with AEG to explore alternative NTG measuring options.**

PE-NHC- Impact Evaluation

Evaluation Approach. Table 3-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

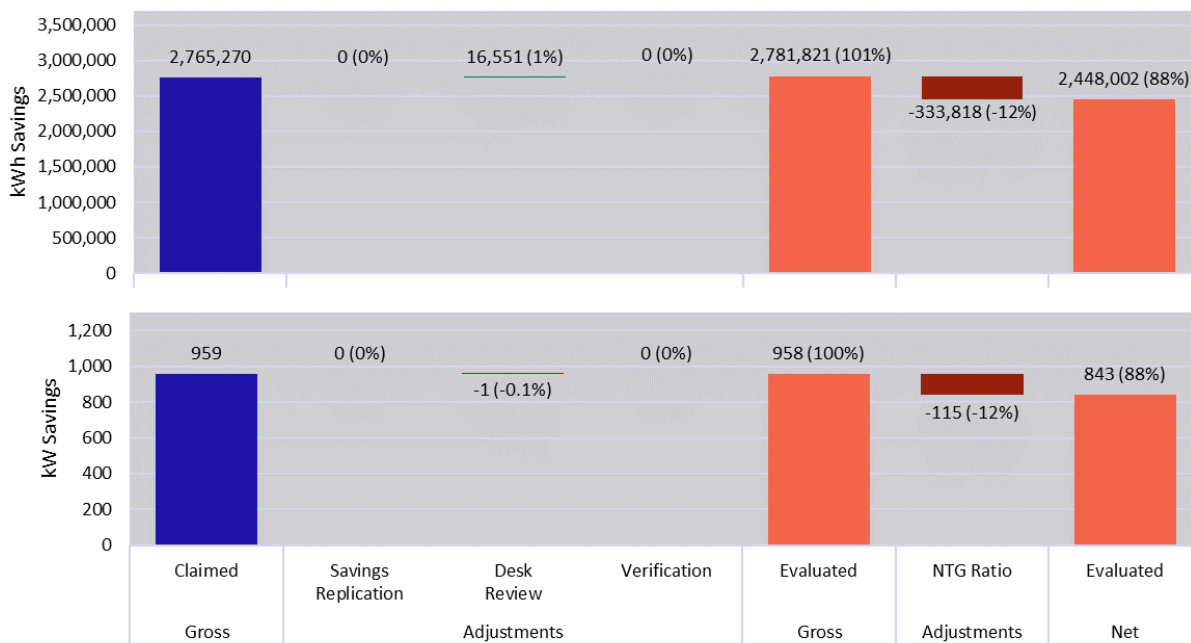
- We did not conduct a savings replication, as all homes were modeled individually.

We conducted desk reviews on a sample of as-built models in Ekotrope against claimed savings.

- In 2022, only single family homes or duplexes were built in the program, so we did use a stratified sampling approach. We anticipate using a stratified sampling approach as multifamily homes/complexes participate in PE-NHC.
- We did not conduct formal verification. We shadowed a few HERS raters as they performed their HERS ratings. However, given the lag time between the HERS rating and participation conclusion, the homes visited by AEG staff will fall under the 2023 reporting period.
- AEG used the 2021 NTG adjustments in the PE-NHC channel. AEG conducted an NTG update analysis (alongside the participant survey) and NTG benchmarking with similar programs.

Evaluation Adjustments. Figure 3-24 presents a summary of impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 3-24 PE-NHC Summary of Adjustments by Activity



- **Savings Replication.** AEG did not conduct savings replication for PE-NHC, as all home savings were modeled individually.
- **Desk Review.** AEG found no difference between claimed savings and the HERS report savings in 22 of the 24 sampled homes. Two projects had final HERS reports that did not match the claimed savings. Both instances showed minor differences, resulting in very small adjustments.
- **Verification.** AEG shadowed HERS raters as they were rating homes attempting to qualify for the channel. Because of the process lag time, these homes will qualify for the 2023 reporting period. We did not formally quantify verification in 2022. We found that the HERS raters performed their jobs well and independently. Our experience shadowing HERS raters gave us no reason to believe the HERS reports are biased.
- **Net-to-Gross.** AEG applied to the net-to-gross values from the 2021 evaluation. We conducted NTG update and research this year, but that we will continue to investigate results that will apply to 2023.

Sample Expansion Findings. Table 3-41 shows the evaluated savings and the corresponding precision at the 90% confidence level for PE-NHC overall. We found evaluated energy savings of 2,781,821 kWh and evaluated demand reduction of 958 kW, which correspond to an energy realization rate of 101% and a demand realization rate of 100%. At the channel level, the impact evaluation findings are at 1% precision (kWh) and 2% precision (kW) at the 90% confidence level.

Table 3-41 PE-NHC Energy Savings Summary by Stratum

Savings	No. of Projects	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Energy (kWh)	1,460	2,765,270	2,781,821	101%	26,645	1%
Demand (kW)	1,460	959	958	100%	19	2%

AEG did find that 13 of 24 sampled homes did not meet at least one of the channel’s requirements. In all cases, the as-built homes came close to meeting the requirements but failed at least one required test. Overall, these homes were much more efficient than the baseline home, and the models accounted for each home’s actual characteristics, which did not affect savings. Table 3-42 shows the summary of failed tests. These homes did not meet the requirements for duct leakage, ceiling insulation, or foundation insulation. The failed tests included one home with vaulted ceilings that had R-29 insulation, a home’s duct leakage per square foot was calculated as 0.05, and foundation insulation was rated at R-4.7.

Table 3-42 PE-NHC Summary of Failed Tests

Test	Single Family Channel Requirement	Unit	No. of Homes Failed
Duct leakage to outside building envelope	≤ .04	CFM25 per sq. ft.	4
Ceiling insulation	≥ 38 (flat ceilings) ≥ 30 (vaulted ceilings)	R-Value	4
Foundation insulation	≥ 5	R-Value	5
Total			13

AEG assessed savings at the whole-home level, but for lifetime savings, we used EULs from the AR TRM and reported measure categories savings for a weighted whole-home EUL. Table 3-43 shows the measure categories, the EUL from the AR TRM, and the net lifetime energy savings.

Table 3-43 PE-NHC – EUL by Measure Category, Weight, and Net Lifetime Savings

Measure Category	Estimated Useful Life (EUL)	Weight (Based on Claimed Savings)	Net Lifetime Energy Savings (kWh)
Cooling equipment	16	50%	-
Lighting and appliances	13	29%	-
Heating equipment	12.5	21%	-
Water heater	19	0%	-
Whole Home (Rounded)	16	100%	39,168,035

Net-to-Gross Analysis. AEG estimated a free ridership probability for each builder based on the average of the three scores: (1) Program Components, (2) Program Influence, and (3) No Program, weighted by each builder’s number of houses rebated. This methodology, shown in the equation below, was used in prior evaluations

$$\text{Free Ridership} = 1 - \text{Average}(\text{Program Components Score}, \text{Program Influence Score}, \text{No Program Score})$$

The NTG update produced lower adjustment ratios relative to the 2021 ratio of 88%. The benchmarking analysis showed that the 2021 NTG adjustment ratio is comparable in some jurisdictions (between 80-90%), while other jurisdictions are around 50%. Table 3-44 summarizes the net-to-gross results for the interviewed builders.

Table 3-44 PE-NHC Net-to-Gross Scores by Builder

Builder	Builder Weight	Program Component Score	Program Influence Score	No Program Score	Spillover	Net-to-Gross
Builder 1	5%	100%	25%	50%	0%	58%
Builder 2	6%	100%	100%	100%	0%	100%
Builder 3	2%	100%	100%	100%	0%	100%
Builder 4	38%	100%	0%	100%	0%	67%
Builder 5	41%	100%	50%	100%	0%	83%
Builder 6	1%	100%	0%	20%	0%	40%
Builder 7	0%	100%	0%	50%	0%	50%
Builder 8	2%	100%	0%	100%	0%	67%
Builder 9	1%	100%	25%	50%	0%	58%
Builder 10	4%	100%	0%	100%	0%	67%
Total Weighted NTG						76%

Each component of the *Free Ridership* score is described below.

The [Program Component Score](#) was calculated based on how influential various PE-NHC factors were in the builders’ decisions to construct efficient homes. Specifically, interview respondents were asked to rate the influence of the following factors on their decisions to build efficient homes on a scale ranging from 1 to 5.

Component 1: Technical assistance or information from Program staff

Component 2: Technical assistance or information from HERS raters

Component 3: The rebates provided by the Program

Component 4: Program informational materials.

A score was assigned to each of the ratings, as shown below. The *Program Components Score* was calculated as equal to the highest-rated component.

- 1 (Not at all influential) = 0
- 2 = 25%
- 3 = 50%
- 4 = 75%
- 5 (Extremely influential) = 100%

The [Program Influence Score](#) was based on respondents’ ratings of how likely they would have been to build efficient homes if PE-NHC did not provide the rebate and information. Specifically, builders were asked:

Using a scale where 1 means “not at all likely and 5 means “very likely,” how likely is it that you would have built any homes in OGE’s service territory that met the program’s efficiency standards if the program was not available?

The *Program Influence Score* was assigned as follows:

- 1 (Not at all likely) = 100%

- 2 = 75%
- 3 = 50%
- 4 = 25%
- 5 (Very likely) = 0%

No Program Score. Builders were asked a series of questions about the number of homes that their firm would have likely built that met construction standards without the PE-NHC channel:

Now, thinking about your history of working with the program, if the program had never been available, would you have built fewer or the same number of homes in [YEAR] to the OG&E efficiency standards?

[IF FEWER] You said that you would have built fewer homes that met the efficiency standards of the program if the program had never been available.

What percent of those homes would you have built to those same standards if the program had never been available?

These questions were intended to capture the PE-NHC's influence on the builder's efficient construction practices. The goal was to separate the available rebates' effects and PE-NHC's prior educational efforts on the builder's current construction practices. A critical component of PE-NHC is increasing builders' skills and knowledge of efficient construction. Using efficient construction techniques may lead to long-term changes in building practices.

The *No Program Score* was developed based on the percentage of homes that the builder reports would have been built if the channel had never been available. Specifically:

1 – % Homes Built in the absence of the Channel

In general, free ridership questions are challenging for participants to answer because they rely on a counterfactual, asking customers what they would have done in different circumstances. The *No Program Score* questions were particularly difficult for the builders to answer and required much prompting from the interviewer.

Participant Spillover Methodology. Builders were asked if they completed any efficient homes inside the service territory that did not receive a PE-NHC inducement and the channel's influence on the decision to complete those additional homes to estimate participant spillover impacts. No builders interviewed built high-efficiency homes in OG&E's service territory without receiving the rebate.

PE-NHC- Process Evaluation

Evaluation Approach. Table 3-5 above summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

- In June and July 2022, AEG conducted separate, comprehensive interviews with the OG&E program manager and the CLEAResult program manager to gather their impressions of the channel's implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG conducted in-depth interviews with 10 of 22 builders who participated in the program in the first two quarters of 2022. The interviews discussed the current new home construction market and program participation experiences and asked questions to estimate the channel's NTG ratio.

Channel Performance. Table 3-45 shows PE-NHC's claimed energy savings and demand reduction increased by 62% and 66% relative to 2021, respectively. The channel also saw slight increases in contributions to HEEP relative to 2021.

Table 3-45 PE-NHC – Claimed Savings 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of HEEP	Claimed	Share of HEEP	
Energy (kWh)	1,711,179	3%	2,765,270	4%	62%
Demand (kW)	579	6%	959	9%	66%

Channel Operations. Participating builders work with a third-party HERS rater to create energy models for participating homes. These energy models use certified energy modeling software to determine a home’s savings. In 2022, PE-NHC changed to a tiered inducement structure. There are now three levels of inducements based on the kWh savings driven by the home’s square footage and determined by the HERS rater. They also added a multifamily component that incentivizes multifamily homes (up to 4 stories) at a flat rate based on a reference home. In 2022, PE-NHC did not have any multifamily participants.

Builders install a variety of equipment and measures to get the HERS rating they need for the OG&E inducement. Equipment installed routinely includes:

- Low e windows,
- 2x6 exterior construction,
- Spray foam,
- Ductwork in conditioned space,
- Super seal techniques,
- Proper venting,
- House wrap,
- Proper placement of equipment,
- Tankless water heater system,
- R44 insulation,
- Higher efficiency HVAC system,
- LED lights, and
- Geothermal heat pumps and solar on high-end houses.

PE-NHC Customer Participation Process

- Builder enrolls in program and completes participation agreement.
- Builder constructs homes, installing a variety of energy efficiency measures.
- Builder identifies a HERS rater to create an energy model for the home.
- Rater conducts pre-dry wall and final home inspections.
- Rater submits home to CLEAResult with energy model and rating.
- CLEAResult reviews energy model and documentation.
- CLEAResult sends inducement to builder.

Barriers to Participation. The channel is facing several challenges, including the state of the new home construction market (higher interest rates, higher costs of products and equipment, and supply chain issues), the availability of HERS raters, and limitations on fuel switching in Oklahoma.

According to participating builders, [the new home construction market has been hot recently but has cooled off in late 2022 due to rising interest rates](#). As a result, it is taking longer to sell newly constructed homes, and new home construction permits have decreased. Customers are buying fewer homes, and builders are building fewer homes.

“For over two years, we did not have a completed project to sell. Right now, we have three finished homes available” – participating builder.

“Building permits are down 60-80% in Oklahoma” – participating builder.

In addition to the rising interest rates, [homes are becoming more expensive to build due to increases in product and equipment costs](#). Builders cited concrete, HVAC systems, and insulation as products that have had significant price increases.

“Our price has gone up \$80,000 - \$90,000, and at the same time, interest rates have gone up. Customers are getting about half the house for the money from a year ago.” -- participating builder

Supply chain issues were more of a problem for builders earlier in the year. Most builders interviewed felt that this problem has eased in recent months.

The changes described above have not impacted high efficiency homes. In particular, these issues are affecting the entire new home construction market. One builder felt that, **in some ways, these price pressures have helped market high efficiency homes because it has made reducing operating costs a key selling point.**

Most of the builders said they are committed to continuing to offer high efficiency homes and estimated that about 50% of the builders in OG&E's service territory focus on high efficiency. One builder, however, said he has recently **offered a more affordable series of homes in response to customer price sensitivity that includes a lower SEER HVAC system and a standard tank instead of a tankless water heater.**

All of the participating builders interviewed expect 2023 to be a slow year. They think Interest rates will continue to rise, but supply chain issues will loosen up because people will not build as many homes.

One builder pointed out that these issues mainly affect the affordable and mid-range home market.

"Homes in the \$800,000 or higher range, the higher end product, that market has not slowed down at all. It's the homes that are under half a million that are driven by the monthly payment." – participating builder.

Most builders have a good relationship with their HERS raters and consider them a valued member of their team but finding a good rater has taken time (for some builders). These builders had frustrations with previous raters that did not submit the paperwork correctly and caused delays or cost them rebate dollars.

The Program Manager feels that HERS raters are stretched thin and may be a barrier to getting additional builders to participate. She would like to have raters more integrated with the channel and have a team of raters committed to OG&E.

The program implementer also cited the **limitations on fuel switching in Oklahoma** as a barrier to the program. As a result of these limitations, the program is unable to incentivize air source heat pumps specifically.

Participant Satisfaction. Interaction with CLEAResult vary by builder, but **all the builders had positive feedback about the program implementer and her responsiveness to questions and issues.** One builder was particularly complimentary.

"She is so passionate about this program. Very, very, passionate. She wants a better world, and a lot less energy being used. She is all about trying to educate and get builders on board." – participating builder

For the most part, builders either were not aware of the tiered inducement or were very positive about it. Only one builder had a negative comment about the inducement.

"We got hammered on the geothermal side. It went from a per-ton price to a fixed price. We install bigger units on our higher-end homes and get a lower rebate. We also had homes in the prior year that carried over and lost \$20,000 as a result." - participating builder

"[The new tiered inducement structure] works better for us so far." – participating builder

"It obviously rewards those that perform a little bit better than those that are just getting by. Having a better HERS rating than other builders and getting a better [inducement] is better than the old way." – participating builder

One builder says he has learned a lot in the program and now understands the various reasons a home could get a lower HERS rating. It has made him more meticulous in his building practices. But there was also some confusion among other builders about why HERS ratings were lower than expected.

“Where is the home facing, what direction? Did we really, really insulate behind the fireplace? Did we really, really, seal the plenum? Every building technique is important. It all goes into that score.” – participating builder

“We almost always get the highest tier rebate, but every once in a while, a home with the same square footage and equipment will test out lower and get a lower [inducement]. Not sure why.” – participating builder

All builders interviewed said they plan to continue participating in the program.

4

WEATHERIZATION RESIDENTIAL ASSISTANCE PROGRAM (WRAP)

The Weatherization Residential Assistance Program (WRAP) achieves energy savings by improving comfort and reducing energy costs for OG&E Oklahoma’s residential customers. The program design ensures the greatest benefit to the customers while achieving cost-effective energy savings. OG&E contracts with Skyline Energy Solutions (Skyline) to implement WRAP.

Participant Eligibility. Residential customers can apply for WRAP if they own, rent, or lease their single-family home, duplex, or mobile home and have household incomes at or below \$60,000. Property owners of multi-family units whose rental units are 66% occupied by hard-to-reach customers, pursuant to OAC 165:35-41-3 definition of “hard-to-reach customers,” are also eligible to apply. Some restrictions may prevent a customer from participating, including but not limited to an unvented space heater or open flame heater as a main heat source.

Key Program Elements are as follows:

- **Customer Verification (pre-screening and pre-qualification).** Customers interested in the program will receive initial outreach to confirm them as pre-screened eligible customers within the service territory. After confirmation, the customer will schedule an assessment of the home and undergo the pre-qualification assessment. This assessment ensures that participants meet the health and safety, economic, and technical requirements.
- **A comprehensive assessment of the customer’s home.** Once the customer is prequalified, they will schedule a comprehensive audit of the home, during which Skyline develops a recommended action plan for weatherization upgrades for the homeowner.
- **Installation of a set of weatherization measures.** The trade ally and customer review the recommended action plan for the customer’s home and decide on what upgrades to be completed.

Table 4-1 shows the measures implemented in 2022. A list of eligible measures for WRAP can be found in Appendix C of OG&E 2022-2024 Demand Program Plan for Oklahoma.

Repair-to-Qualify (RTQ) Initiative. Under OG&E’s Innovation / Research and Development (R&D) support services, WRAP launched the RTQ Initiative to reduce the disqualification rate and increase participation, especially among hard-to-reach and resource-strained customers. The WRAP program has a historical 50% disqualification rate, of which 25% are due to minor repairs. This initiative covers the cost of minor repairs required to qualify a home for the current WRAP program. This initiative covered the

Table 4-1 WRAP 2022 Participation by Measure

Measure	No. of Homes	
	Multi-family	Single Family
Air Infiltration	687	2,665
Duct Sealing	636	2,523
Carbon Monoxide Detectors	273	2,437
LEDs	515	2,102
Attic Insulation	103	959
Smoke Detector	8	145
Water Heater Pipe Wrap	105	25
Water Heater Jackets	1	3
ES Windows	-	3
ES Ceiling Fan	-	2
AC Tune-up	71	-
Total Unique Homes	690	2,693

cost of minor repairs up to \$1,000. The repairs may include flue, roof flashing, HVAC, and health and safety repairs.

WRAP – Key Evaluation Findings

The **impact evaluation** established WRAP evaluated energy savings of 11,613,073 kWh, which amounts to a 101% realization rate, and evaluated demand savings of 3,130 kW, which amounts to a 102% realization rate. WRAP achieved 106% of its net energy savings goals and 82% of its net demand reduction goals.

Table 4-2 provides a summary of the WRAP impact evaluation findings. We discuss the impact evaluation key findings below.

Table 4-2 WRAP Impact Evaluation Summary

Savings	Gross Savings			Net Savings				
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	Lifetime
Energy (kWh)	11,525,832	11,613,073	101%	10,934,952	11,613,073	106%	100%	183,794,347
Demand (kW)	3,092	3,130	102%	3,810	3,130	82%	100%	N/A

- Quality and consistency.** AEG’s engineering desk reviews found that the claimed inputs and savings in the database matched the documentation. The database is populated automatically based on the implementer’s interactions (site visits, attempts to schedule site visits, etc.) with WRAP’s customers, which yields accurate results in the database. We also found that the implementer collected and reported all inputs required to calculate savings.
- AR TRM V9 update led to slightly higher savings.** WRAP claimed savings uses assumptions from the AR TRM V6. AEG’s evaluated savings uses the AR TRM V9—the most recent TRM at the time of the evaluation. Overall, most measures are similar between TRMs, but following the AR TRM V9 leads to slightly higher savings.
- ISRs are high, but customers are not always aware of the weatherization measures they received.**
 - AEG’s survey found that most participants did not uninstall the measures they received from the program.
 - However, AEG also found that about 10% of WRAP survey respondents who received air infiltration or duct sealing measures said they did not receive air filtration or duct sealing measures. We considered that customers may be unfamiliar with the terminology used in the survey or simply did not realize they had received these weatherization measures. We performed a secondary review of project documentation corresponding to these responses and confirmed that these customers received these measures. AEG did not incorporate survey responses for the projects with appropriate documentation.
- Multifamily air infiltration and duct sealing savings may be overstated.** AEG found that the AR TRM V9 is likely overstating air infiltration and duct sealing savings in multifamily buildings.²³ AEG recommends a reduction factor (69%) until a billing analysis²⁴ can take place in 2023.
 - The AR TRM V9 bases air infiltration savings off a modeled single family home, and multifamily buildings are not an appropriate application for the AR TRM’s modeled savings.
 - The AR TRM V9 uses measured differences in duct leakage and engineering equations to estimate duct sealing savings. However, the AR TRM V9 only has single family heating and cooling hours. The hours

²³ This does not apply to duplexes, triplexes, and manufactured homes—which are included in AEG’s “multifamily” stratum. We are specifically referring to low-rise apartment buildings.

²⁴ We will review the feasibility of performing a billing analysis for WRAP. We will conduct a billing analysis for this issue in HEEP’s Residential Solutions channel, which can be used as a proxy for WRAP.

of use differ between multifamily and single family homes, and it is likely that the ducts are shared between some units, which dilutes the per-apartment-unit savings.

- [Replace-on-burnout LED savings are going away due to EISA in 2023, but inefficient bulbs are likely to be found in customers' homes.](#) The EISA-backstop will reduce the baseline for replace-on-burnout LED bulbs to 45 lumens/watt in June 2023. However, LEDs replacing existing bulbs can claim the actual existing bulb wattage—halogen or incandescent, which means that LED savings can likely remain in the program until the existing stock of inefficient bulbs is exhausted.
- [There are opportunities to install additional low-cost and high-savings measures common to many other income-qualified and residential programs in other jurisdictions.](#) Through WRAP, customers do not receive low-flow showerheads, low-flow kitchen aerators, low-flow bathroom aerators, and advanced power strips. Similar programs in other jurisdictions successfully use these measures to meet savings goals.

The [process evaluation](#) resulted in the following key findings:

- [Participants were highly satisfied with their program experience](#), despite not seeing immediate returns with respect to energy savings and utility bill savings.
 - A small percentage of survey respondents expressed hesitation about participating, but program staff, including the contractor, assuaged those fears and left those participants very satisfied with their participation.
- [The 2022 program year started later than usual](#), potentially contributing to kW goals not being met. The newest 2022-2024 portfolio was not approved until February 2022, which delayed the program from the typical January start.
- The program [discontinued the attic ventilation measure](#) for lack of cost-effectiveness.
- The program is [unable to help customers with open-fire heating units](#) due to state restrictions on fuel switching.

WRAP – Recommendations

The [impact evaluation recommendations](#) are as follows:

- [Air filtration and duct sealing savings in multifamily buildings are likely overstated.](#) AEG recommends that Skyline apply a ratio of single-family savings to multifamily building savings, 69% on a per-square-foot basis (based on a study in MN).²⁵
 - In 2023, AEG will do a billing analysis of 2022 HEEP Residential Solutions and/or WRAP²⁶ participants and calibrate the billing analysis results to the engineering estimates.
- Consider [re-introducing low-flow showerheads](#) (1.5 GPM—handheld and standard), [low-flow kitchen aerators](#) (1.5 GPM or lower), and [low-flow bathroom aerators](#) (1.0 GPM or lower) to homes with electric hot water heaters.
 - Across many income-qualified and non-income-qualified programs across the country, these measures comprise a large part of the portfolio. Customer satisfaction and in-service rates are generally high, and they are cost-effective.

²⁵ Minnesota Department of Commerce. *Demonstrating the Effectiveness of an Aerosol Sealant to Reduce Multi-Unit Dwelling Envelope Air Leakage*. December 30, 2016. Found online: [Demonstrating the Effectiveness of an Aerosol Sealant to Reduce Multi-Unit Dwelling Envelope Air Leakage \(state.mn.us\)](#).

²⁶ We will review the feasibility of performing a billing analysis for WRAP.

- Consider collecting data on the number of showers per home, the number of bathroom faucets per home, and the number of residents in the home. Doing so will yield more accurate (and potentially higher) savings than the AR TRM defaults.
- Consider [implementing tier 1 or tier 2 advanced power strips](#) in the program. The opportunity for savings is high in homes with entertainment centers and/or home offices.
 - Many other income-qualified and non-income-qualified programs are successfully implementing these measures.
 - Make sure the customer has a use for it, understands it, and would like it. If all of those are true, other evaluations have shown that the expected ISR should be high (80% to 95%).
 - Collect data on install location (entertainment center or home office) of the advanced power strip.
 - In general, participants are eligible to receive a maximum of two advanced power strips per home. There are rarely more than two entertainment centers or home offices in a home.
 - In general, to qualify, there should be at least three devices plugged into an existing power strip.
- Consider [expanding the eligible list of LED bulbs](#) to include specialty bulbs and continue to install LED bulbs in homes but [collect the baseline bulb type or existing wattage](#).
 - The program only installs general-purpose bulbs, but there is likely the opportunity for specialty bulbs such as reflectors, candelabras, globes, etc.
 - AEG assumes that halogen bulbs will remain an eligible baseline until July 2023 (because of sell-through). After that, if baseline bulb data is not collected, the baseline will be 45 lumens/watt.
 - The contractor should identify existing bulbs and record the actual wattage or bulb type in the database. Ideally, a picture of the existing bulb will be taken at a reasonable frequency.
 - The contractor should remove existing bulbs from customers' homes.
- Consider [updating claimed savings to the most recent version of the AR TRM, V9.1](#) for 2023. AEG will use AR TRM V9.1 in 2023 as the basis for our analysis.
 - The TRMs are mostly similar, but some measures (such as air infiltration, attic insulation, WH jackets, and WH pipe wrap) had significant changes.

The **process evaluation recommendations** are as follows:

- To improve participant education and satisfaction, [provide \(additional\) leave-behind materials for participants](#) to better educate participants about program processes, energy-saving tips and habits, and other rebate opportunities.
- Consider [re-introducing attic ventilation as an offering](#). No-cost programs typically do not achieve cost-effectiveness. WRAP's main purpose should be providing service to underserved customer segments.

WRAP – Impact Evaluation

Evaluation Approach. Table 4-3 summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

- Verification for WRAP was performed alongside the participant survey under the process evaluation.
- WRAP is an income-qualified program and has a stipulated net-to-gross ratio of 100%. We did not conduct a free ridership analysis or spillover savings analysis for WRAP, and net savings are equal to gross savings.

We include detailed descriptions of each activity in [Appendix A](#).

Table 4-3 WRAP Impact Evaluation Activities

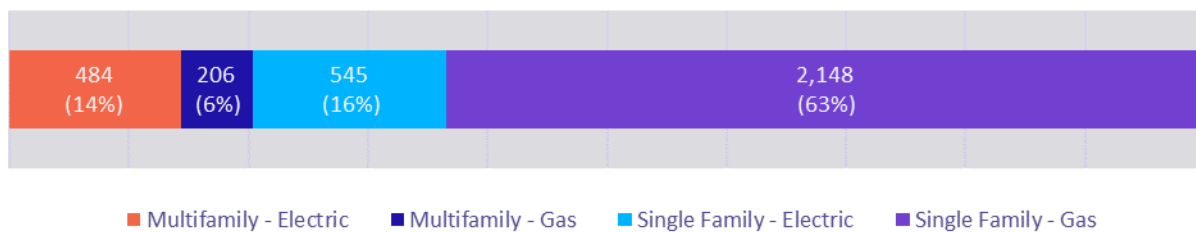
Program/Channel	Savings Replication	Eng. Desk Review	Verification	NTG Ratio Update	NTG Ratio Bench-marking	Benefit-Cost Analysis
WRAP						
WRAP	√	√	√			√

AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We defined the sample frame unit as one account number or one household and stratified the WRAP participant population by:

- Home type (multifamily v. single family), which is a driver of household energy loads²⁷, and
- Space heating fuel type (electric v. gas), which is a key input in the total electrical load.

Figure 4-1 shows the WRAP participant distribution by stratum. We include detailed descriptions of the sample design in [Appendix B](#).

Figure 4-1 WRAP Participant Distribution by Stratum



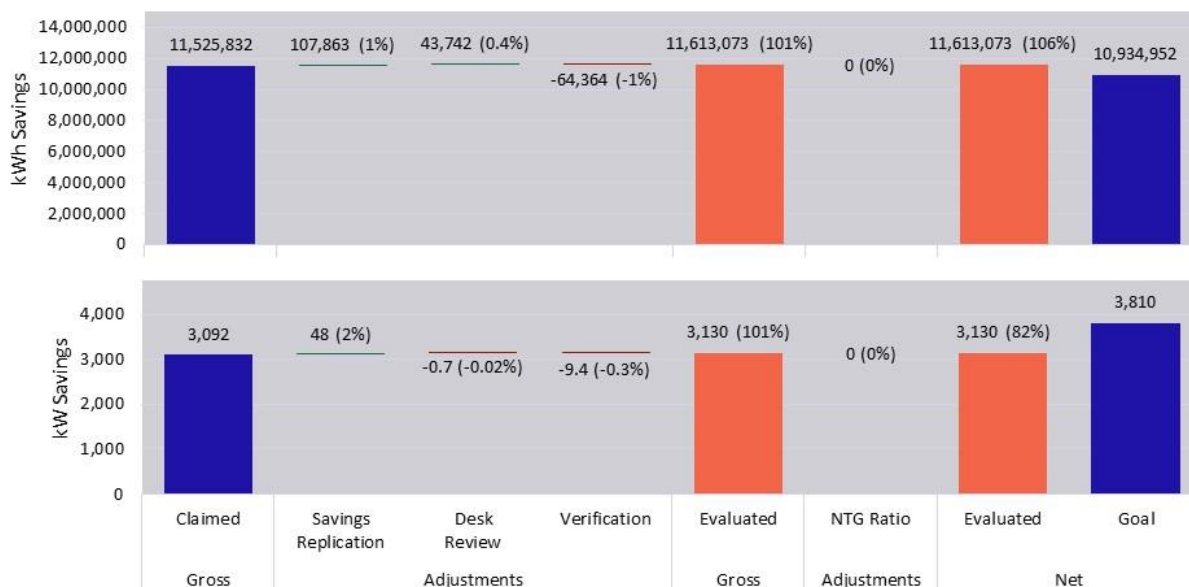
We present the impact evaluation findings as follows:

- Evaluation adjustments from each activity,
- Stratum-level findings, including confidence and precision,
- Measure-level findings, and
- Repair-to-Qualify Initiative 2022 performance.

²⁷ Generally speaking, homes' square footage drives the total energy load. Single family homes tend to be larger than multifamily homes—which, in terms of square footage, includes manufactured homes.

Evaluation Adjustments. Figure 4-2 presents a summary of impact evaluation adjustments from each activity. We discuss the driver(s) of each adjustment below.

Figure 4-2 WRAP Summary of Adjustments by Activity



- **Savings Replication.** Claimed savings followed the AR TRM V6, while AEG followed the AR TRM V9, using the data reported in the database to complete the savings replication. Overall, the differences were minor, but there were key differences for some measures:
 - **Air infiltration, attic insulation, and ES windows.** The AR TRM V9 uses a modeled approach for these measures (deemed savings per square foot depending on the heating and cooling type). The deemed savings values changed slightly between AR TRM V6 and V9.
 - Air infiltration decreased slightly.
 - Attic insulation increased slightly.
 - ES windows increased slightly.
 - **WH jacket and WH pipe insulation.** Between the AR TRM V6 and V9, these measures changed drastically.
 - WH jacket decreased greatly.
 - WH pipe insulation increased greatly.
 - **ES ceiling fans** is not a measure in the AR TRM V9. Therefore, AEG used the IL TRM V10,²⁸ ENERGY STAR standards,²⁹ and federal appliance standards.³⁰

²⁸ IL TRM Technical Advisory Committee. 2022 Illinois Statewide Technical Reference Manual for Energy Efficiency Version 10.0 Volume 3: Residential Measures. September 24, 2021. Section 5.3.15. <https://www.ilsag.info/wp-content/uploads/IL-TRM-Effective-010122-v10.0-Vol-3-Res-09242021.pdf>.

²⁹ EPA. ENERGY STAR Program Requirements for Residential Ceiling Fans and Ceiling Fan Light Kits V4.0. June 15, 2018. https://www.energystar.gov/sites/default/files/ENERGY%20STAR%20Ceiling%20Fans%20and%20Ceiling%20Fan%20Light%20Kits%20Version%204.0-Program%20Requirements_0_0.pdf.

³⁰ DOE. 2022-02 Technical Support Document: Energy Efficiency Program For Consumer Products And Commercial And Industrial Equipment: Ceiling Fans. February 6, 2022. <https://www.regulations.gov/document/EERE-2021-BT-STD-0011-0015>.

- Overall, AEG’s analysis showed a slight decrease in savings.
- **Desk Review.** We made no changes related to the inputs of each measure. We found that for our sample, the documentation matched the database. Changes in the desk review sample reflect the minor calculation differences from the savings replication.
- **Verification.** AEG fielded an online survey to verify that customers received the measures and that some measures, such as LEDs, were currently installed. Overall, AEG found the measure ISRs to be quite high, resulting in a small decrease in the overall savings. Our survey did find that some customers were unaware of the extent of weatherization measures (such as air infiltration and duct sealing) they received. However, AEG did not adjust the results based on this finding, as documentation showed that customers received these measures. Weatherization measures are not necessarily readily visible to the customer, or they were unaware of the language used in the survey.³¹
- **Net-to-Gross.** WRAP is an income-qualified program with a stipulated net-to-gross ratio of 100%. We did not conduct a free-ridership analysis or spillover savings analysis for WRAP, and net savings are equal to gross savings.

Stratum-Level Findings. Table 4-4 and Table 4-5 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and WRAP overall. At the program level, the impact evaluation findings are at 0.7% precision (kWh) and 0.3% precision (kW) at the 90% confidence level.

Note that the *Multifamily – Gas* stratum has no associated absolute and error precision because the strata did not have adjustments from desk review and verification activities. The adjustments for this stratum were based on the savings replication activity performed at the census.

Table 4-4 WRAP Energy Savings Summary by Stratum

Stratum	No. of Homes	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Multifamily - Electric	484	2,867,925	2,806,031	98%	11,610	0.4%
Multifamily - Gas	206	319,030	320,415	100%	-	-
Single Family - Electric	545	4,586,103	4,657,227	102%	48,594	1.0%
Single Family - Gas	2,148	3,752,773	3,829,401	102%	71,828	1.9%
Total	3,383	11,525,832	11,613,073	101%	81,940	0.7%

Table 4-5 WRAP Demand Reduction Summary by Stratum

Stratum	No. of Homes	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Multifamily - Electric	484	296	297	100%	2.0	0.7%
Multifamily - Gas	206	179	186	104%	-	-
Single Family - Electric	545	514	525	102%	3.2	0.6%
Single Family - Gas	2,148	2,103	2,122	101%	8.8	0.4%
Total	3,383	3,092	3,130	101%	8.8	0.3%

Figure 4-3 shows the GWh savings and MW savings by stratum to illustrate the strata distribution on the overall program. Notably:

- The *Single Family – Electric* stratum comprises 16% of total serviced homes but makes up 40% of the electric energy savings.

³¹ I.e., some customers will likely not examine their ductwork in enough detail to determine that they have been sealed through the program.

- The *Single Family – Gas* stratum makes up 68% of the total demand reduction due to the high proportion of cooling in the population and the stratum’s large nominal size.

Figure 4-3 WRAP Claimed and Evaluated Savings by Stratum

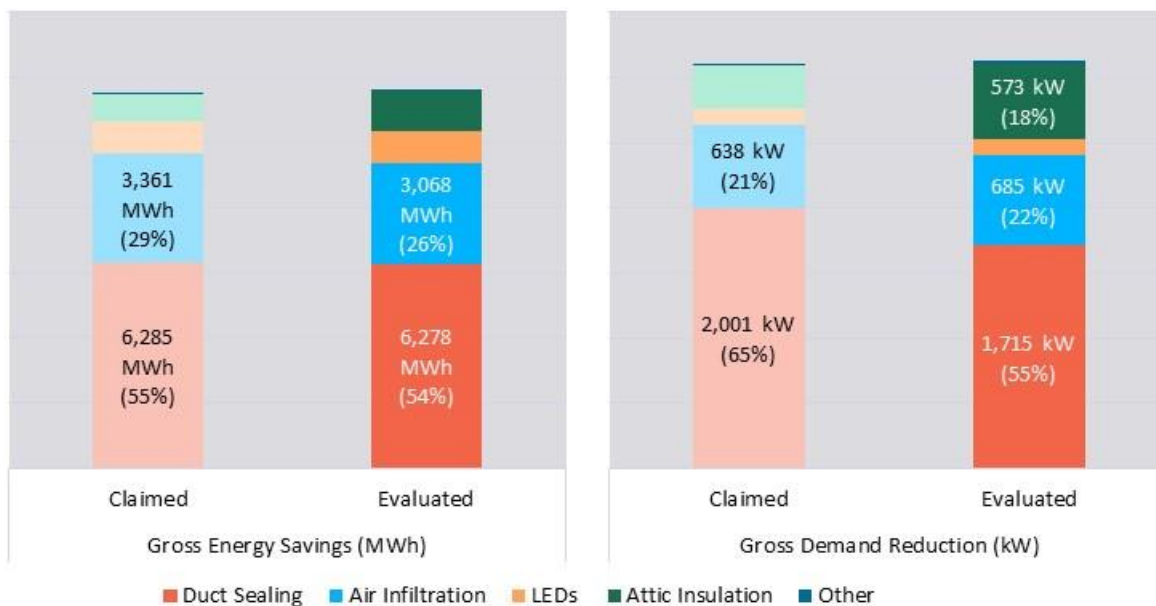


Measure-Level Findings. For evaluation activities that use a sampling approach, we perform the sample expansion at the stratum level. In other words, we extrapolate the findings from our sampled projects by stratum and apply realization rates to all other projects in the corresponding stratum. Therefore, we do not officially calculate savings at the measure level. Still, projects are comprised of measures, and we do have measure-level findings. Table 4-6 shows extrapolated findings summarized by measure, and Figure 4-4 shows the GWh savings and MW savings by measure. Note that carbon monoxide and smoke detectors do not have claimed or evaluated savings and are excluded from the table.

Table 4-6 WRAP Savings Summary by Measure

Measure	No. of Homes	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
Air Infiltration	3,352	3,361,151	3,067,960	91%	638	685	107%
Duct Sealing	3,159	6,284,623	6,278,254	100%	2,001	1,715	86%
LEDs	2,617	977,753	997,248	102%	125	126	102%
Attic Insulation	1,062	849,959	1,197,137	141%	325	573	176%
Water Heater Pipe Wrap	130	7,415	26,007	351%	1	3	343%
Water Heater Jackets	4	1,322	188	14%	<1	<1	14%
ES Windows	3	808	3,728	461%	-	2	n/a
ES Ceiling Fan	2	479	404	84%	-	<1	n/a
AC Tune-up	71	42,321	42,146	100%	2	26	1269%
Total	3,383	11,525,832	11,613,073	101%	3,092	3,130	101%

Figure 4-4 WRAP Claimed and Evaluated Savings by Measure

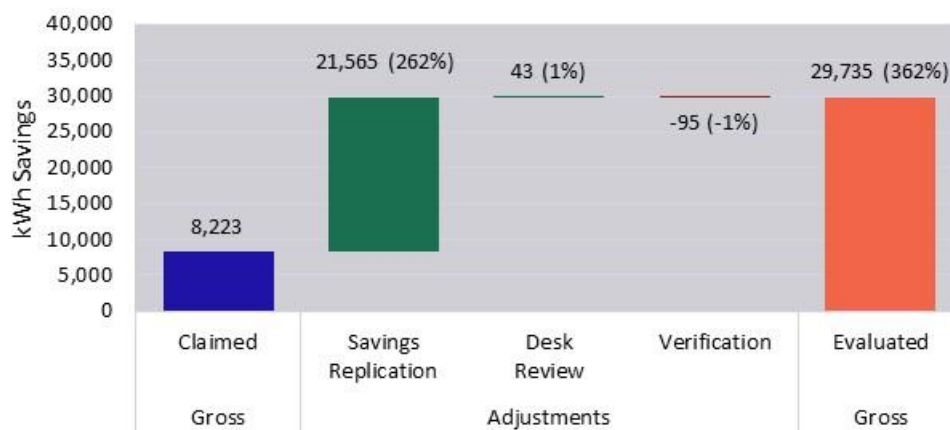


As illustrated in Figure 4-4, air infiltration, duct sealing, LEDs, and attic insulation made up 99% of evaluated energy savings and 99% of evaluated demand savings. These measures’ realization rates inherently drive the overall realization rate.

- **Duct sealing** had an energy realization rate close to 100%. The differences were minor and likely due to rounding.
 - For demand, AEG found that claimed savings were not using the coincidence factor in the AR TRM.
- For **LEDs**, AEG used the actual interactive effect based on the heating and cooling type of the customer. It appears that claimed savings used “unknown heating and cooling type” for all projects that include LED measures.
- For **air infiltration** and **attic insulation**, AEG used the current version of the AR TRM (V9) and claimed savings used V6. Savings are modeled on a per-square-foot basis, and the TRM update caused the change. Air infiltration and attic insulation had different realization rates (91% and 141% for energy, respectively), but the specific measure distribution in the program caused the effects to cancel out in 2022.

Two other measures that make up less than 1% of overall savings but had large realization rates were WH pipe wrap and ES windows. Figure 4-5 isolates these measures from the program and shows where the changes occur, mostly at the savings replication step.

Figure 4-5 WRAP Summary of Adjustments – WH Pipe Wrap & ES Windows



- Both measures had TRM updates in the AR TRM V9 compared to V6, but the WH pipe wrap had major methodological changes.
- For ES Windows, there was one instance where a home with gas space heat and window AC units had no claimed kWh savings. We applied kWh savings to be consistent with the other gas space heat and window AC unit home. Moreover, we are assuming that the window AC load is comparable to a home’s load with central AC with respect to the deemed savings.
- Also, note that AC tune-up’s demand realization rate was 1,279%, which was due to a decimal-place error in the claimed savings.

Finally, Table 4-7 shows each measure’s lifetime kWh savings. Using EULs consistent with the AR TRM, we find that duct sealing, air infiltration, and attic insulation measures are the most significant contributors to the overall net lifetime energy savings.

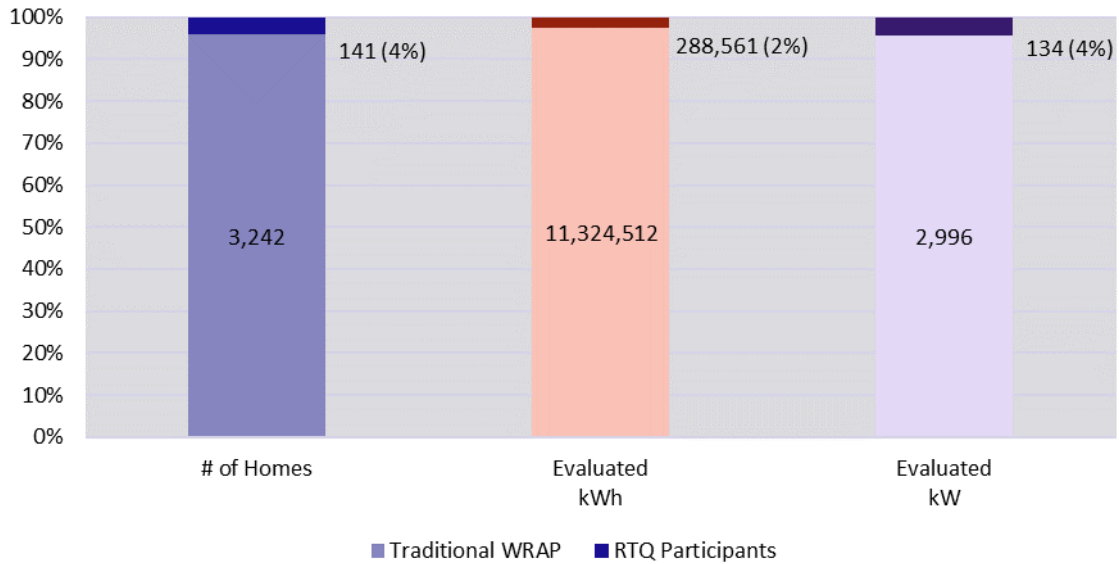
Table 4-7 WRAP Net Lifetime Savings Summary by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
Duct Sealing	18.0	113,008,574
Air Infiltration	11.0	33,747,557
Attic Insulation	20.0	23,942,745
LEDs	12.5	12,465,601
Water Heater Pipe Wrap	13.0	338,094
AC Tune-up	5.0	210,732
ES Windows	20.0	74,564
ES Ceiling Fan	10.0	4,041
Water Heater Jackets	13.0	2,439
Overall	15.8	183,794,347

Repair-to-Qualify Initiative. The Repair-to-Qualify (RTQ) Initiative covers the cost of minor repairs to customers’ homes that would otherwise disqualify them from the program. After receiving the required repairs, customers

become eligible to participate in WRAP. Figure 4-6 shows the RTQ Initiative’s contribution to the overall program performance in 2022.

Figure 4-6 WRAP Repair-to-Qualify Initiative – 2022 Performance



[The RTQ Initiative added 141 homes to the program and 288,561 kWh and 134 kW in additional evaluated energy and demand savings.](#) The RTQ repairs total cost \$64,597, and the administrative cost was \$8,306, summarized in Table 4-8. Note that an additional 34 homes in the RTQ Initiative did not make it to 2022 WRAP but are expected to participate in 2023.

Table 4-8 WRAP RTQ Cost Summary in 2022

Cost Type	Total Cost	Cost per Home
Labor and materials	\$64,597	\$369
Administration	\$8,306	\$47
Total	\$72,902	\$417

WRAP – Process Evaluation

Evaluation Approach. Table 4-9 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

Table 4-9 WRAP Process Evaluation Activities

Program/Channel	Program Manager Interview	Implementer Interview	Trade Ally Survey/ Interview	Participant Survey/ Interview	Non participant Survey/ Interview ³²	Cycle Time Analysis
WRAP						
WRAP	√	√	√	√		

AEG designed the process evaluation to examine both internal program processes and participant responses to the WRAP program. The focus of the process evaluation activities was to understand operations, assess overall effectiveness, and identify areas for improvement. We performed the following activities:

- In July 2022, AEG conducted a comprehensive interview with Skyline’s program manager to gather impressions of the program’s implementation activities, performance, delivery issues, and opportunities for improvement.
- In December 2022 and January 2023, AEG administered an online survey to the 535 participating customers with valid email addresses. Seventy-seven participants responded to the survey in full, with a response rate of 14%. The survey covered topics such as awareness, motivation, and satisfaction. AEG also included verification questions, which are included under the impact evaluation. We provide detailed descriptions of the sample design in [Appendix B](#).

Program Performance. WRAP slightly surpassed its energy savings goal but fell short of its demand reduction goal. Table 4-10 summarizes the WRAP claimed savings compared to the goal³³ for 2022. Table 4-11 shows that WRAP claimed savings decreased from 2021 to 2022.

Table 4-10 WRAP Claimed Versus Goal

Savings	Goal	Claimed	% of Goal
Energy (kWh)	10,934,952	11,525,832	105%
Demand (kW)	3,810	3,092	81%

Table 4-11 WRAP Claimed Savings – 2021 v. 2022

Claimed Savings	2021	2022	% Diff.
Energy (kWh)	12,544,560	11,525,832	-8.1%
Demand (kW)	3,237	3,092	-4.5%

³² Under a separate engagement in 2022, AEG conducted a market evaluation that included surveys with nonparticipants. For that reason, we did not conduct additional nonparticipant surveys. AEG will work with OG&E to identify if nonparticipant surveys are necessary for the 2023 or 2024 evaluations.

³³ Program goals are established for net savings. However, gross claimed, and net claimed savings are equal since WRAP is an income-qualified program with a stipulated net-to-gross ratio of 100%.

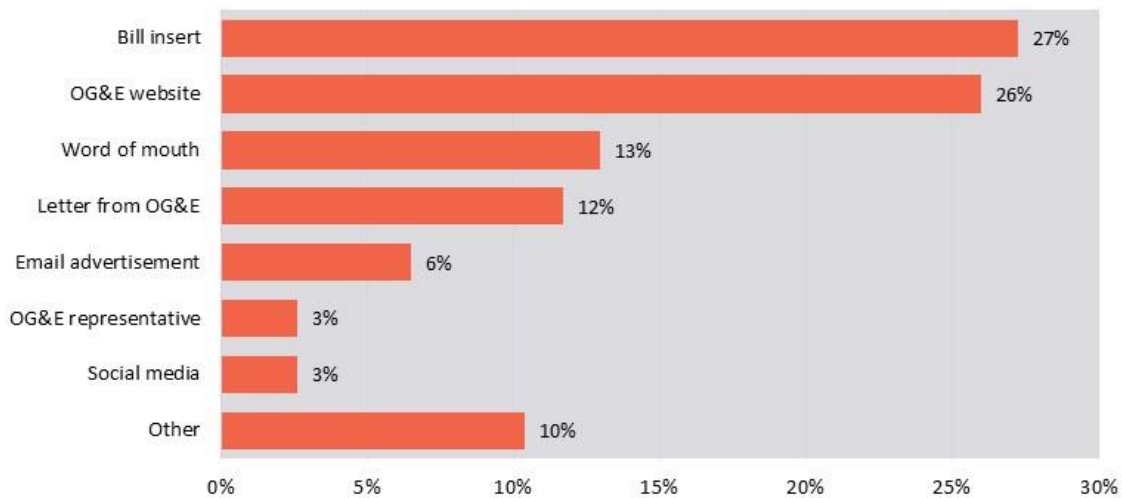
Channel Operations. The WRAP program conducts assessments and installs energy-efficient measures for income-qualified customers at no cost. OG&E markets the program through mail, bill inserts, email blasts, and social media. Interested customers call OG&E’s customer service center or sign up online, which kicks off the WRAP participation process described in the box to the right. Skyline enters data collected into EnerTrek, a demand side management (DSM) program tracking software system.

WRAP Customer Participation Process

- Customer contacts OG&E or signs up online.
- Skyline contacts customer to prequalify home.
- Skyline conducts energy assessment of qualified homes.
- Skyline provides customer with measure recommendations.
- Trade Ally installs measures at no charge to customer.
- Customer receives 12-month to-do list of energy saving tips/habits.

Most participants learned about WRAP directly from OG&E. Figure 4-7 shows participant awareness is driven by OG&E via bill inserts (27%), OG&E’s website (26%), or a letter from OG&E (12%). Word of mouth also drives a moderate amount of program awareness (13%). “Other” responses include community events, Social Service Agencies, online searches, and television, radio, and print media advertisements.

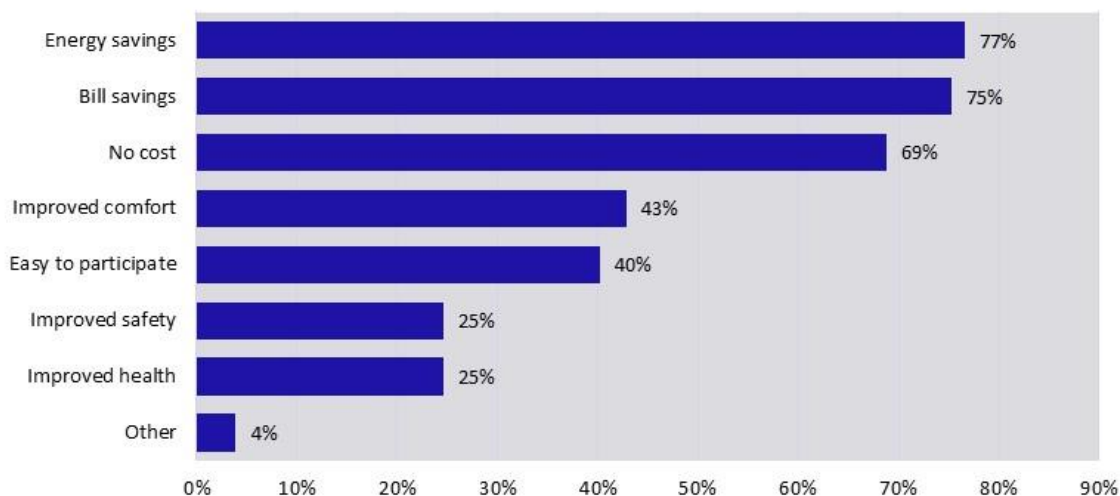
Figure 4-7 WRAP Primary Source of Participant Awareness



Customer sign-ups were split almost 50-50 between the customer service center (50%) and OG&E’s website (49%), according to survey results (n=72). One respondent signed up at a community event. Almost all respondents said signing up was either very easy (86%) or somewhat easy (12%).

Respondents were motivated largely by energy savings (77%), bill savings (75%), and the opportunity to participate for no upfront out-of-pocket cost (69%). Figure 4-8 shows the elements of the WRAP program experience that encouraged them to sign up (multiple responses were allowed).

Figure 4-8 WRAP Motivations for Participation



[Five survey respondents \(6%\) expressed reservations about the WRAP program prior to participating.](#) Three were wary of hidden costs, and two were skeptical of the quality of work that would be completed by program contractors. One respondent, who previously participated in 2018 and had a bad experience, was thoroughly impressed by her experience in 2022:

“An OG&E rep asked me about the program again in 2022. I was reluctant but said OK[...] WOW did they do a great job. They went above and beyond the call. I’m so glad I tried again.” – previously disappointed repeat participant

All five of these respondents reported being very satisfied with the program overall.

Program Delivery. Skyline noted that the program experienced delays in 2022 and got off to a slow start, *“doing now [in July] what should have been done in February.”* [The newest 2022-2024 portfolio was not approved until February 2022, which delayed the program from the typical January start.](#)

In 2022, WRAP implemented the following [changes to measure offerings](#):

- Added duct sealing and health and safety measures,
- Removed measures like refrigerators and window air conditioners for lack of need, and
- Removed attic ventilation for lack of cost-effectiveness.

Skyline is conducting research and development to determine how else it can improve the program. So far, participants have responded well to the addition of duct sealing measures.

[Skyline said they aim to complete assessments a week or so from the time of scheduling, although customer and contractor availability affect this desired timeline.](#) Seventy-three percent (n=59) of survey respondents waited two weeks or less for their assessments to be completed after scheduling them, and 70% (n=65) waited two weeks or less after their assessments for their follow-up appointments.

[The contractor completing the home improvements also leaves information that provides tips and habits to save energy.](#) Ninety-five percent of respondents said the information they received from their contractor was very useful (53%) or somewhat useful (42%). Four percent of respondents said they did not receive any information.

Barriers to Participation. The implementer identified two primary barriers to customer participation:

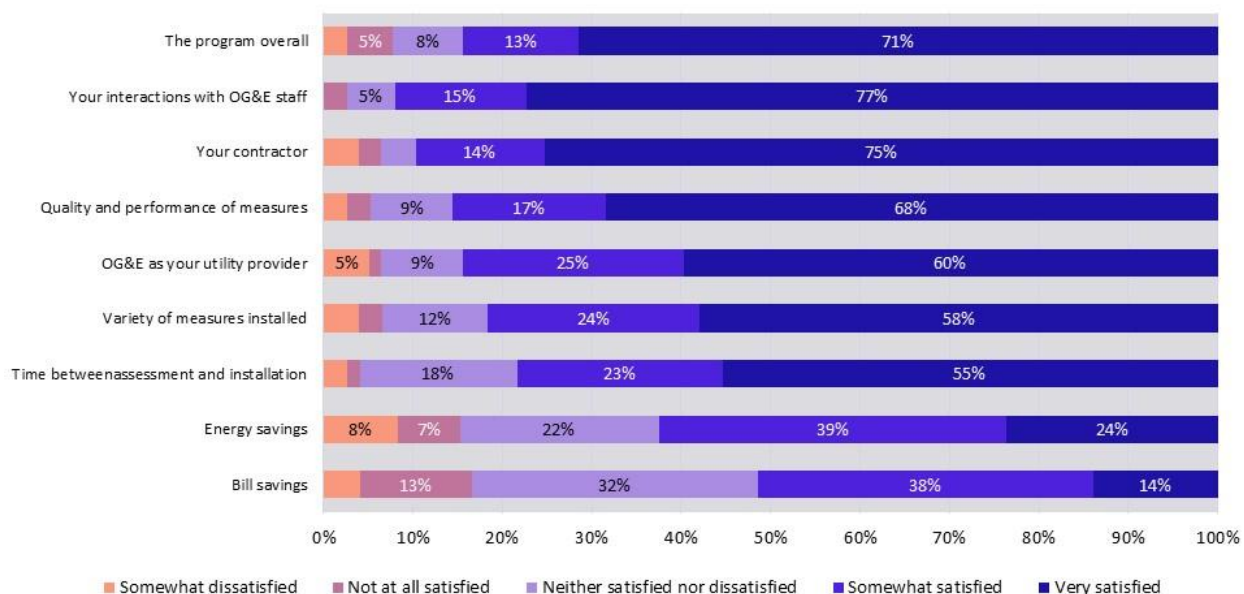
- [Residences with open-fire heating units without ventilation cannot be weatherized or made more air-tight because it is unsafe.](#) Skyline noted that fuel-switching is not permitted by the public utilities commission.
- Certain home situations, such as excess clutter and pets living in unsanitary conditions, can make it unsafe to conduct an assessment or complete improvements.

Skyline attempts to address these barriers by informing disqualified customers about other OG&E programs and rebates.

Participant Satisfaction. Although improved comfort was not a primary source of motivation for survey respondents, [Skyline reported that customers have responded to improved comfort more quickly and frequently than to lower energy bills](#), which is typical because improved comfort can be felt immediately, whereas bill savings may not be realized for a couple of months. At the time of the survey, 73% of respondents said their homes were more comfortable, whereas only 32% of respondents said their energy bills were lower.

[WRAP received high marks overall on participant satisfaction.](#) Eighty-four percent of survey respondents said they were either very satisfied or somewhat satisfied despite reporting relatively low satisfaction with energy savings (63% very satisfied or somewhat satisfied; n=72) and utility bill savings (51%; n=72). Respondents were highly satisfied with their contractor and their interactions with OG&E staff, which are critical to the success of the program. Figure 4-9 shows participant satisfaction with other elements of the WRAP program and the program overall.

Figure 4-9 WRAP Participant Satisfaction with Program Elements



[Survey respondents provided an average rating of 8.7 on their likelihood of recommending the WRAP program to someone else](#), using a scale of 1 (not at all likely) to 10 (very likely). Sixty-one percent of respondents provided ratings of 10, and 84% provided ratings of at least 8.

Customer Feedback. [Thirty-six participants \(47%\) said they wanted other energy-efficient items, but the contractor could not install them.](#) Most popular among those 36 survey respondents were water heater jackets (50%), attic insulation (44%), and water heater pipe insulation (39%).³⁴ As part of their open-ended feedback,

³⁴ Among all 77 respondents: 23%, 21%, and 18%, respectively.

two respondents recommended that the WRAP program offer other types of LEDs (different sizes and wattages), and one respondent recommended adding window sealing to program offerings.

Other miscellaneous feedback received is as follows:

- Four survey respondents reiterated the desire to reduce the wait time between the initial assessment and the installation appointment. Note that all four of these respondents were either very satisfied or somewhat satisfied with their overall program experiences.
- Two respondents recommended asking the contractor to wear disposable shoe covers when entering participants' homes.
- One respondent asked about rebates, specifically for new windows, through other OG&E programs.

5

COMMERCIAL ENERGY EFFICIENCY PROGRAM (CEEP)

The Commercial Energy Efficiency Program (CEEP) is an umbrella-style program approach designed to address the needs of OG&E’s commercial and industrial customer base. Specifically, the program provides a variety of participation channels for all Commercial and Industrial (C&I) customers to participate through targeted paths that address various unique participation barriers and technology challenges. CEEP consists of eight delivery channels:

- Commercial and Industrial Solutions (CIS)
- Schools and Government Efficiency (SAGE)
- Small Business Direct Install (SBDI)
- Small Business Midstream (Midstream)
- *C&I Assessments – Retro-commissioning & Express Building Tune-Ups (RCx & EBTU)*
- HVAC Replacement and Tune-Up (C&I HVAC)
- *Network Lighting Controls (NLCs)*
- Continuous Energy Improvement (CEI)

We provide detailed descriptions of each channel in each corresponding subsection. Note that we evaluated RCx & EBTU and NLCs projects within CIS as custom measures.

CEEP – Key Evaluation Findings and Recommendations

The impact evaluation established CEEP evaluated energy savings of 130,893,439 kWh, which amounts to a 99% realization rate, and evaluated demand savings of 21,905 kW, which amounts to a 100% realization rate. CEEP achieved 107% of its net energy savings goals and 89% of its net demand reduction goals.

Table 5-1 provides a summary of the CEEP impact evaluation findings. Table 5-2 and Table 5-3 provide the corresponding channel-level summaries of the evaluated energy and demand savings. We discuss the overall key findings below and the corresponding recommendations.

Table 5-1 CEEP Impact Evaluation Summary

Savings	Gross Savings			Net Savings				
	Claimed	Evaluated	RR	Goal	Evaluated	% of Goal	NTG Ratio	Lifetime
Energy (kWh)	132,083,202	130,893,439	99%	117,995,037	126,707,748	107%	97%	1,210,113,040
Demand (kW)	21,990	21,905	100%	23,541	21,017	89%	96%	n/a

Table 5-2 CEEP Energy Savings by Channel

Channel	Gross Energy Savings (kWh)			Net Energy Savings (kWh)		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
CIS	43,305,489	43,651,037	101%	43,651,037	100%	524,135,949
SAGE	6,134,026	6,373,345	104%	6,373,345	100%	92,056,410
SBDI	9,909,987	8,781,918	89%	8,781,918	100%	107,276,000
Midstream	34,986,267	34,376,946	98%	30,251,713	88%	425,053,717
CEI	31,671,992	31,664,428	100%	31,664,428	100%	31,664,428
C&I HVAC	6,075,441	6,045,765	100%	5,985,307	99%	29,926,536
Total CEEP	132,083,202	130,893,439	99%	126,707,748	97%	1,210,113,040

Table 5-3 CEEP Demand Reduction by Channel

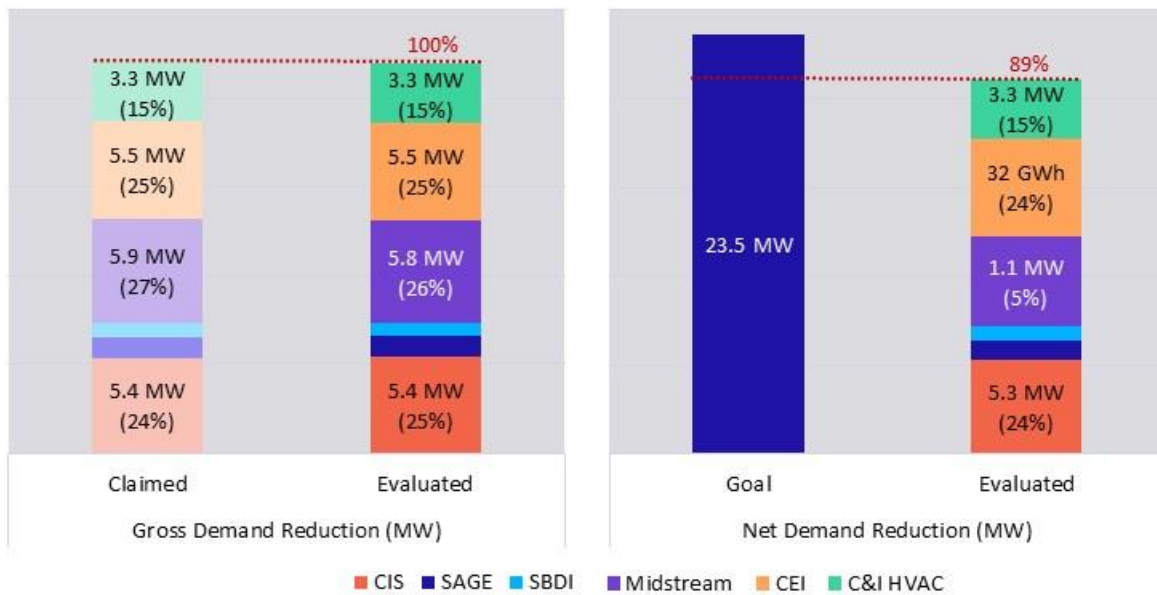
Channel	Gross Demand Reduction (kW)			Net Demand Reduction (kW)	
	Claimed	Evaluated	RR	Evaluated	NTG Ratio
CIS	5,363	5,446	102%	5,282	97%
SAGE	1,198	1,131	94%	1,131	100%
SBDI	768	766	100%	766	100%
Midstream	5,856	5,762	98%	5,070	88%
CEI	5,477	5,475	100%	5,475	100%
C&I HVAC	3,329	3,325	100%	3,292	99%
Total CEEP	21,990	21,905	100%	21,017	96%

Figure 5-1 and Figure 5-2 show the CEEP channel distribution of energy savings and demand reductions, respectively. Notably, CIS, Midstream, and CEI are the highest contributors to energy savings and demand reductions.

Figure 5-1 CEEP Energy Savings Summary



Figure 5-2 CEEP Demand Reduction Summary



The evaluation key findings and recommendations for the CEEP program are discussed below. We provide further detail for each CEEP delivery channel in the corresponding channel subsections.

- **All CEEP channels are performing at a high level.**
 - AEG found from our desk reviews, surveys, and site visits that all channels are performing quite well. Projects are delivered with quality and consistency. Most channels had realization rates around 100%, with the exception of SBDI, which had adjustments unrelated to channel delivery.

- **There is uncertainty around horticultural lighting projects' claimed hours of use and dimming schedule.**
 - For the CIS channel, Horticultural lighting projects comprised 38% of the total evaluated energy savings. Customers list their growing and dimming schedules by incentivized fixture as part of the application process.
 - AEG found in our site visits that growers often change their operations throughout the year as their businesses expand or they try new growing techniques. The customer's application and AEG site visits are snapshots of operation schedules and not necessarily average yearly estimates.
 - The current application does not capture dimming schedules accurately because it is hard to estimate without data. As the plants grow, they need different amounts of light, which means that growers adjust the output or the distance away from the plants. These can substantially impact total usage and savings, but it is difficult to quantify without data.

Recommendations: Consider conducting a metering study to determine hours of use and dimming schedules. Horticultural lighting in energy efficiency is new. A metering study would add accuracy to the savings estimates and make moving these projects from the custom path to the prescriptive path easier.
- **Claimed savings used inconsistent baseline lighting power density (LPD) methodologies within new construction lighting projects.** For new construction lighting projects in CIS and SAGE, AEG found that individual projects had mixed baseline LPD methodologies. AEG corrected this in our evaluated savings, which led to more accurate and higher savings.

Recommendations: Use only one baseline LPD method (the space-by-space or whole-building method) within projects. Do not mix methods, as that leads to inaccurate savings. For example, if the whole-building methodology is used, offices within manufacturing facilities or warehouses can use the "office" building type, while the rest of the facility can use the manufacturing or warehouse building types.
- **Trade allies would like the option to receive inducements via direct deposit.** Many of the trade allies across most CEEP channels we spoke with indicated they would like to have the option of receiving payments via direct deposit. While payments were generally dispersed quickly, some experienced delays and direct deposits could potentially help speed up the process.

Recommendations: Consider offering trade allies a direct deposit option as an alternative to a mailed inducement check.

CEEP – Evaluation Methods

Impact Evaluation Approach. Table 5-4 summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

- AEG conducted savings replication for all channels in which the reported data made it possible.
- Verification included site visits for all custom projects and the largest prescriptive projects. AEG conducted online surveys for all others.
- We used the 2021 NTG adjustments to estimate 2022 net evaluated savings. We conducted an NTG benchmarking analysis for all channels and an NTG update survey (alongside the participant survey) for C&I HVAC.

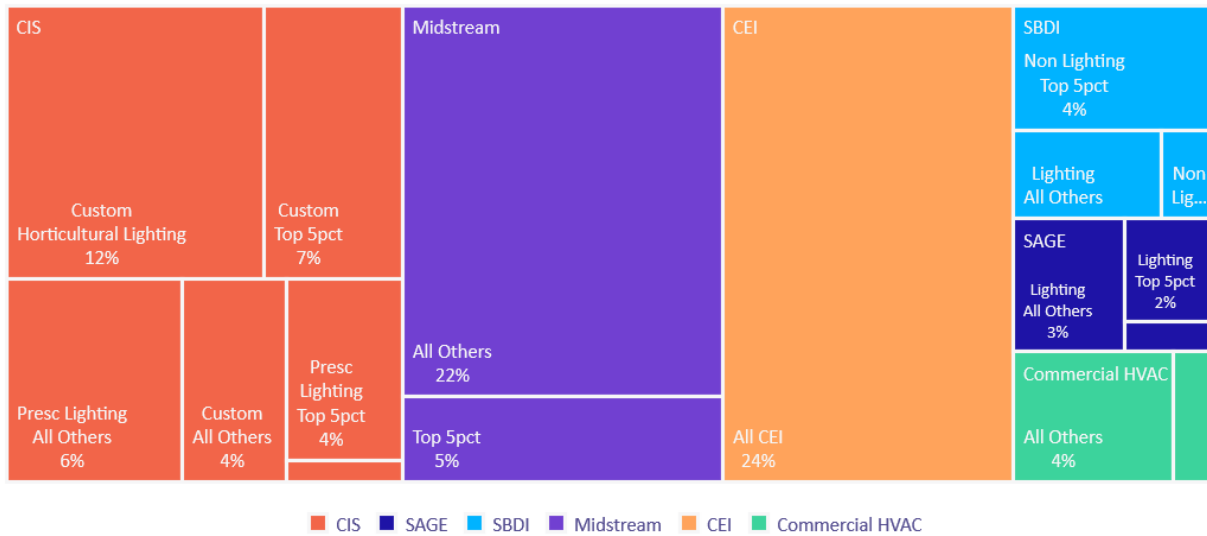
We include detailed descriptions of each activity in [Appendix A](#).

Table 5-4 CEEP Impact Evaluation Activities

Program/Channel	Savings Replication	Eng. Desk Review	Verification	NTG Ratio Update	NTG Ratio Bench-marking	Benefit-Cost Analysis
CEEP						
C&I Solutions		√	√		√	√
SAGE		√	√		√	√
SBDI		√	√		√	√
Midstream	√	√	√		√	√
CEI		√			√	√
C&I HVAC	√	√	√	√	+	√

AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We generally stratified participation by channel, claimed savings, and measure category. We also defined the sample frame unit as a project. Figure 5-3 shows the CEEP strata distribution by claimed energy savings. We include detailed descriptions of the sample design in [Appendix B](#).

Figure 5-3 CEEP Claimed Energy Savings Distribution by Channel and Stratum



Process Evaluation Approach. Table 5-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#).

Table 5-5 CEEP Process Evaluation Activities

Program/Channel	Program Manager Interview	Implementer Interview	Trade Ally Survey/ Interview	Participant Survey/ Interview	Non participant Survey/ Interview ³⁵	Cycle Time Analysis
CEEP						
C&I Solutions	√	√	√			√
SAGE	√	√	√			√
SBDI	√	√	√			√
Midstream	√	√				
CEI	√	√				
C&I HVAC	√	√	√	√		√

AEG designed the process evaluation to examine both internal program processes and participant response to CEEP. The focus of the process evaluation activities was to understand operations, assess overall effectiveness, and identify areas for improvement. We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and appropriate channel implementer to gather their impressions of the program/channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG administered participant surveys/interviews for the C&I HVAC channel. AEG conducts participant surveys for each channel once during the 3-year program cycle.

Commercial and Industrial Solutions (CIS)

The CIS channel primarily targets customers with single sites with a demand of over 150 kW or multiple sites with a combined demand over 250 kW. The channel offers in-person and virtual assessments paired with direct installation of low-cost energy efficiency measures and a prescriptive and custom path for customers to participate in the channel.

- The [prescriptive path](#) provides inducements based on the deemed energy savings achieved with the measures installed. Inducements are performance-based and start at \$0.09 per kWh saved, depending on the measure type. Projects under the prescriptive path have an inducement cap of 50% of the project cost.
- The [custom path](#) allows participants to achieve their specific energy efficiency goals by proposing measures and projects that may be outside of the deemed measure list. Proposed measures are evaluated for savings and costs, and the inducement is approved if the project is considered cost-effective. Performance-based inducements are \$0.11 per kWh saved and have an inducement cap of 70% of the total project cost.

Note that we evaluated RCx & EBTU and NLCs projects within CIS as custom measures.

CIS – Key Evaluation Findings

The **impact evaluation** established CIS evaluated energy savings of 43,651,037 kWh, which amounts to a 101% realization rate, and evaluated demand savings of 5,446 kW, which amounts to a 102% realization rate. Table 5-6 summarizes the CIS impact evaluation findings and includes savings from the prescriptive and custom paths. We discuss the impact evaluation key findings below.

³⁵ Under a separate engagement in 2022, AEG conducted a market evaluation that included surveys with nonparticipants. For that reason, we did not conduct additional nonparticipant surveys. AEG will work with OG&E to identify if nonparticipant surveys are necessary for the 2023 or 2024 evaluations.

Table 5-6 CIS Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	43,305,489	43,651,037	101%	43,651,037	100%	524,135,949
Demand (kW)	5,363	5,446	102%	528218%	97%	n/a

- **Quality and consistency.** AEG’s engineering desk reviews found that the claimed inputs and savings in the database matched the documentation. CIS projects have a robust pre- and post-verification process leading to accurate claimed savings. For most projects in our sample, we made no changes. The overall realization rates are slightly greater than 100%, primarily due to minor differences in a few projects.
- **There is uncertainty around horticultural lighting projects’ claimed hours of use and dimming schedule.** Horticultural lighting projects comprised 38% of the total evaluated energy savings. As part of the inducement process, customers submit their lighting and dimming schedule for each incentivized fixture. However, during AEG site visits, we found that growers change their use patterns for individual fixtures as they try new things or expand their businesses.
 - As such, the lighting hours of use and dimming estimates specified in the original application are moment-in-time estimates of the operations and not necessarily accurate yearly averages.
 - Likewise, AEG site visits also provided moment-in-time estimates of the operations.
 - AEG accepted the hours of use and dimming schedules listed by the customers on the applications since it was not possible for AEG to determine accurate yearly average hours of use and dimming schedules from talking to the customer in one site visit.
- **ISRs are 100%.** Verification activities, both surveys and site visits, found that all measures were currently in-service.
- **New construction lighting projects used inconsistent methodologies to determine the baseline lighting density.** The AR TRM V9 lists two options for estimating baseline lighting densities (the whole-building method and the space-by-space method). The two methods should not be mixed within projects. AEG found that most new construction lighting projects mixed baseline lighting density methodologies within one project. When using one methodology consistently (the space-by-space method generally), the savings for these projects slightly increased.

The **process evaluation** resulted in the following key findings:

- **CIS savings grew in the last year**, increasing by 24% (energy) and 33% (demand) relative to 2021. The channel remains a substantial contributor to CEEP, with 33% and 24% of total CEEP energy and demand savings, respectively.
- **Trade Allies are very satisfied with the program** and have a strong relationship with the program implementer. However, some Trade Allies complained about the time it takes to get paid.
- **OG&E account executives work closely with the implementers** to engage customers in the program. The channel attracts repeat customers: 16% of 2022 participants have participated in prior years.
- **The implementer experienced delays in 2022** regarding getting approval for marketing materials.
- **The equipment sourcing and paperwork are too complex** and frustrating for participants to handle independently, according to some Trade Allies.
- **CIS projects typically have long timelines**, with most projects taking more than four months from enrollment to installation.

CIS – Recommendations

The **impact evaluation recommendations** are as follows:

- [Consider conducting a metering study on horticultural lighting projects.](#) Currently, growers estimate their annual hours of use and dimming schedule at the start of the application process. However, AEG found that the rooms and fixture operations can change throughout the year. As such, these initial estimates become less reliable.
 - Horticultural lighting in energy efficiency is new, and not many other jurisdictions have programs with inducement offerings like OG&E.
 - A metering study would add accuracy to the savings estimates of a large portion of the OG&E portfolio and make moving these projects from the custom path to the prescriptive path easier.
 - The current application does not capture dimming schedules accurately because it is hard to estimate without data. As the plants grow, they need different amounts of light, which means that growers adjust the output or the distance away from the plants. These can substantially impact total usage and savings, but it is difficult to quantify without data.
- [Consistently use one method \(space-by-space or whole-building\) for new construction lighting projects; do not mix methods.](#) Baseline lighting methodologies were combined within projects in the new construction lighting projects in the AEG sample. The AR TRM allows both methods, i.e., both are acceptable. Note that the whole building method is overall easier to implement than the space-by-method.
- [For large lighting projects in single-shift manufacturing facilities, ensure that the TRM hours of use reasonably match the actual operating hours of the facility.](#) Specifically for single-shift manufacturing facilities, we found the AR TRM default hours of use are too high.
 - The AR TRM combines the lighting hours of use for one-shift and two-shift manufacturing facilities. The source is based on a metering study, but the facilities in the study were heavily weighted toward two-shift manufacturing facilities. As such, the operating hours for single-shift manufacturing facilities with lighting schedules corresponding to the single shift are overstated.
 - During the AEG site visit of a single-shift manufacturing facility, we confirmed that the actual operating hours were 34% lower than the TRM default hours of use. This specific project was large and adjusting the hours of use led to substantially lower savings.

The **process evaluation recommendations** are as follows:

- [Continue to increase program awareness](#) by working with account executives, marketing to trade associations, and conducting mass marketing about non-lighting measures.
- [Offer trade allies a direct deposit option](#) as an alternative to mailing inducement checks.
- [Conduct quality assurance \(QA\) to ensure program tracking data is clear and correct.](#)
 - It was not immediately clear in the database which projects are on the custom path versus the prescriptive path. Ideally, there would be a flag in the database that clearly labeled if a project was on the custom path or prescriptive path. Custom projects generally have an inducement of \$0.11/kWh, and prescriptive projects generally have an inducement of \$0.09/kWh. Still, those inducement rates can vary with partial payments or if projects reach their maximum inducement.
 - Thirty-five entries recorded the installation date as occurring after the payment date.

CIS – Impact Evaluation

Evaluation Approach. Table 5-4 above summarizes the impact evaluation activities conducted on CIS to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). Note the following:

- Verification included site visits for custom projects and the largest prescriptive projects. AEG conducted online and phone surveys for all other projects.
- AEG used the 2021 NTG adjustments in the CIS channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2023.

AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We defined the sample frame unit as one project and stratified the CIS participant population (as shown in Table 5-7) using the following criteria:

- **Path (Custom v. Prescriptive)** – stratifies projects by the required methodology. Custom projects have inherently different methodologies than prescriptive projects, the latter following the AR TRM V9.
- **Measure Type** – stratifies projects by measure, ensuring that sampled findings logically extrapolate to the population.
- **Project size** – stratifies projects by claimed savings size, minimizing the variation of our sample-extrapolated estimates. An average historical savings threshold determines the Top 5% strata. For custom projects, we included all projects, regardless of measure type, which met the threshold.

We include detailed descriptions of the sample design in [Appendix B](#).

Table 5-7 CIS Stratification

Path	Stratum	No. of Projects
Custom	Custom - Top 5%	5 ³⁶
	Custom - Horticultural Lighting	43
	Custom - All Others ³⁷	14
Prescriptive	Prescriptive - Lighting - Top 5%	4
	Prescriptive - Lighting - All Others	99
	Prescriptive - Non Lighting	44

We present the impact evaluation findings as follows:

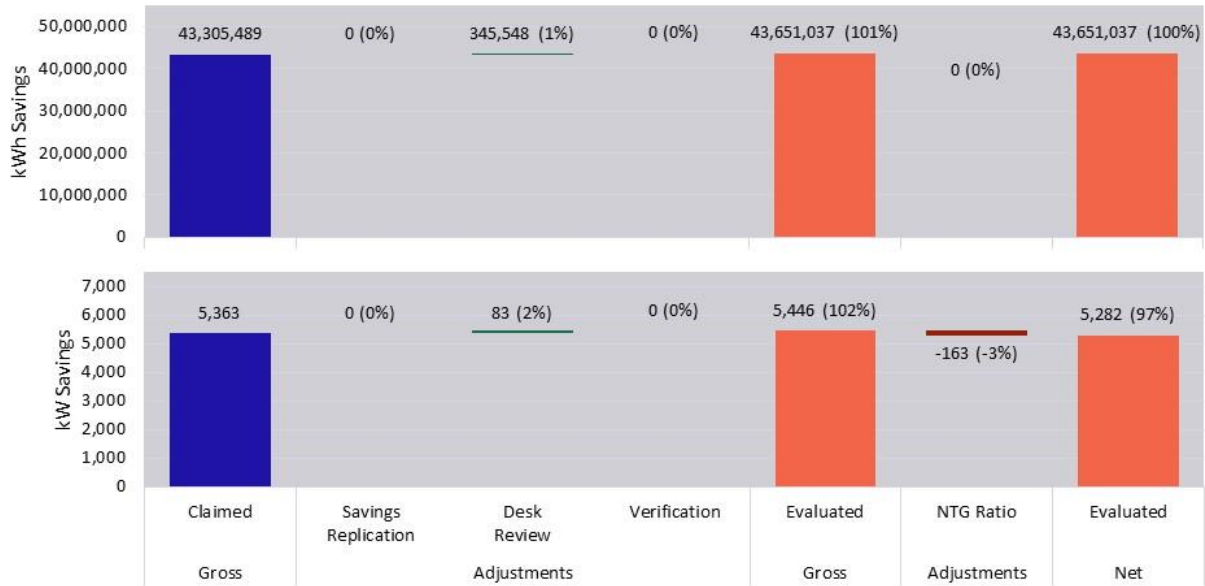
- Evaluation adjustments from each activity,
- Stratum-level findings, including confidence and precision, and
- Measure-level findings.

³⁶ One *Custom - Top 5%* project was initially reported in 2022 but was officially revised due to delays and will be reported in 2023. That project's costs are included in 2022, but the savings and evaluation have been deferred until 2023.

³⁷ *Custom - All Others* include retrocommissioning, VFDs, chiller upgrades, HVAC upgrades, compressed air projects and injection molding machine upgrades.

Evaluation Adjustments. Figure 5-4 presents a summary of impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 5-4 CIS Summary of Adjustments by Activity



- [Savings Replication](#). AEG conducted a savings replication when the data was available to us. However, savings replication must be performed for an entire stratum to extrapolate findings appropriately. Thus, the savings replication adjustments were not applied for CIS projects. The savings replication merely informed us of what was occurring at a global level, and we found no major issues.
- [Desk Review](#). We did not apply adjustments for most projects in our sample. The minor adjustments are as follows:
 - [Horticultural Lighting](#). For some projects, the claimed wattages did not match the cut sheets. In one project, not all the fixtures listed on the application were not correctly accounted for in the calculator. In one project, dimming in some fixtures was not correctly accounted for in the calculator.
 - These slightly increased the savings.
 - [Geothermal Heat Pump](#). We used a standard air source heat pump as the baseline instead of a theoretical gas furnace.
 - This decreased the savings.
 - [Prescriptive Lighting](#). We found that the manufacturer’s reported wattage did not always match the DLC-listed wattage. However, the differences were minor.
 - Using the manufacturer's reported wattages slightly increased the savings.
 - [New Construction Lighting](#). We found that the baseline lighting density methodology was not consistent.
 - This increased the savings.
 - [Retrofit Lighting](#). AEG adjusted the hours of use to the facility operating schedule as the TRM default was much too high and overstated savings
 - This decreased the savings

- **Verification.** AEG conducted site visits for all custom projects, except two³⁸, and all the *Prescriptive – Lighting – Top 5%* projects. We conducted online surveys for all other projects. We found that all claimed measures were installed during our site visits.
- **Net-to-Gross.** AEG applied to the net-to-gross values from the 2021 evaluation. We benchmarked the previous evaluation results with other similar programs and found that the previous results are similar to other programs in other jurisdictions.

Stratum-Level Findings. Table 5-8 and Table 5-9 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and CIS overall. At the channel level, the impact evaluation findings are at 1.0% precision (kWh) and 4.5% precision (kW) at the 90% confidence level.

Table 5-8 CIS Evaluated Energy Savings by Stratum

Stratum	Gross Energy Savings (kWh)				90% Confidence	
	No. of Projects	Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Custom - Top 5%	5	8,682,379	8,673,953	100%	-	-
Custom - Horticultural Lighting	43	16,176,740	16,428,965	102%	445,278	2.8%
Custom - All Others	14	4,847,759	4,749,368	98%	119,993	2.5%
Prescriptive - Lighting - Top 5%	4	4,797,192	4,993,012	104%	-	-
Prescriptive - Lighting - All Others	99	8,240,389	8,250,510	100%	27,589	0.3%
Prescriptive - Non Lighting	44	561,029	555,230	99%	7,136	1.3%
Total	209	43,305,489	43,651,037	101%	431,928	1.0%

Table 5-9 CIS Evaluated Demand Reduction by Stratum

Stratum	Gross Demand Reduction (kW)				90% Confidence	
	No. of Projects	Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Custom - Top 5%	5	921	920	100%	-	-
Custom - Horticultural Lighting	43	2,386	2,521	106%	254	10.4%
Custom - All Others	14	545	512	94%	17	3.4%
Prescriptive - Lighting - Top 5%	4	374	422	113%	-	-
Prescriptive - Lighting - All Others	99	1,064	999	94%	56	5.6%
Prescriptive - Non Lighting	44	72	72	100%	1	1.3%
Total	209	5,363	5,446	102%	244	4.5%

By stratum, the factors that drive the overall realization rate are:

- **Custom – Top 5%.** AEG had slight calculation differences for these projects, including rounding baseline horticultural lighting fixtures to the nearest whole fixture and rounding in retrocommissioning and chilled water projects.
 - These slightly decreased the savings, but the realization rate rounds to 100%.
- **Custom – Horticultural Lighting.** A few projects had fixtures with slightly different rated wattages in the manufacturer’s cut sheets and the claimed savings calculator. Likewise, the claimed savings of one project did not account for all incentivized fixtures in the claimed savings calculator.
 - These slightly increased the savings.

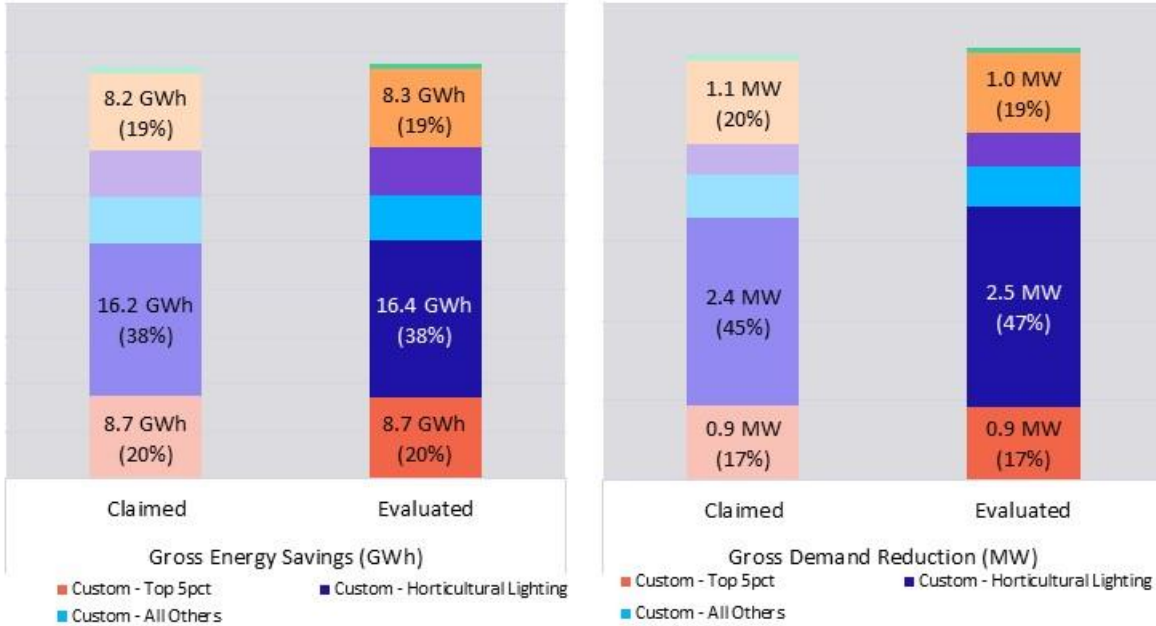
³⁸ We did not go to two sites because they could not be scheduled prior to the filing deadline.

- **Custom – All Others.** In one geothermal heat pump project, AEG used an air-source heat pump as the baseline instead of a theoretical gas furnace. In an air source heat pump project, AEG found slight differences in the calculations.
 - These slightly decreased the savings.
- **Prescriptive – Lighting – Top 5%.** There were several differences for these projects.
 - In all projects, some manufacturer-rated wattages were slightly different from the DLC-rated wattages. Across the entire portfolio, AEG used manufacturer-rated cut sheets whenever possible.
 - Overall, this slightly increased the savings.
 - AEG adjusted the hours of use of one manufacturing facility
 - This decreased the savings.
 - AEG corrected the baseline LPD calculation in new construction projects by using one baseline methodology consistently throughout each project.
 - This increased the savings.
- **Prescriptive – Lighting – All Others.** AEG found minor differences in manufacturer-rated cut sheets compared to DLC-rated cut sheets.
 - Overall, this slightly increased the savings.
- **Prescriptive – Non Lighting.** AEG made one small adjustment to one refrigeration project (savings were not mapped to the appropriate end use) and one small adjustment to a “mixed measures” project.³⁹
 - Overall, this slightly decreased the savings.

³⁹ The “mixed measures” project included HVAC and new construction lighting measures. Instead of splitting the project into multiple stratum, we placed it in the *Prescriptive – Non Lighting* stratum. The issue was that the new construction lighting savings were not being calculated using a consistent baseline methodology—as discussed in the lighting stratum.

Figure 5-5 shows the CIS energy savings by stratum. Custom projects made up 69% of total evaluated energy savings and prescriptive projects made up 31% of total evaluated energy savings.

Figure 5-5 CIS Claimed and Evaluated Savings by Stratum



Finally, Table 5-10 shows the prescriptive path’s EULs and lifetime savings by measure. EULs come from the AR TRM.

Table 5-10 CIS Net Lifetime Savings Summary by Measure

Path	Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
Custom	Horticultural Lighting	9	202,858,703
	HVAC	16	74,833,549
	Other	17	49,996,612
Prescriptive	LED Retrofit ⁴⁰	14	136,083,196
	New Construction Lighting ⁴¹	15	52,939,923
	Refrigeration	8	1,853,051
	HVAC	17	4,777,771
Other	Other	15	793,147
Overall		12.0	524,135,949

CIS – Process Evaluation

Evaluation Approach. Table 5-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). We performed the following activities:

⁴⁰ Includes lighting control savings and EUL.

⁴¹ Includes lighting control savings and EUL.

- AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- We also conducted interviews with six of the 16 Trade Allies that participated in the channel in the first half of 2022.
- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for C&I Solutions is scheduled for 2023.

Program Performance. Table 5-11 shows how the CIS performance has changed since 2021. Energy savings and demand reduction increased by 24% and 33%, respectively, compared to the previous program year. CIS continues to be a leading contributor to CEEP, with 33% and 24% of overall energy and demand savings, respectively.

Table 5-11 CIS Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of CEEP	Claimed	Share of CEEP	
Energy (kWh)	34,944,323	32%	43,305,489	33%	24%
Demand (kW)	4,023	21%	5,363	24%	33%

Channel Operations. According to CLEAResult, much of the channel's growth was due to working closely with OG&E account executives to make the customers aware of the available inducements. Most of the marketing is done through one-on-one visits, although participating Trade Allies introduce some customers to the channel.

The channel is adjusting its focus to custom projects as it moves away from lighting in anticipation of the lighting market being saturated. While the tracking database shows that close to 70% of the channel savings came from custom projects, most of those projects involved horticultural lighting, which is expected to move to the prescriptive path.

One of the channel's successes is the ability to attract repeat customers. AEG compared 2022 to historical program tracking data and found that 28 of the 168 unique customers (16%) who participated in 2022 participated in the CIS channel previously.

Barriers to Participation. The implementer and the Trade Allies whom AEG interviewed thought that lack of knowledge about the channel creates a barrier to participation. One Trade Ally felt the channel should be marketed to trade organizations. The implementer mentioned that there were delays in getting marketing materials approved by OG&E during its rebranding process. That issue appeared to be temporary but did affect the channel’s success in the first half of the program year.

Many Trade Allies feel that identifying needed upgrades and completing the rebate application process is difficult for customers to navigate independently. Three of the Trade Allies interviewed have built their entire business around managing the utility rebate process for their customers.

CIS Customer Participation Process

- Initial customer visit: program explained with a focus on reducing operating costs.
- Trade Ally conducts no-obligation no-cost audit.
- Project proposal, including available inducement, presented to customer.
- Customer signs participation agreement.
- Trade Ally submits program documentation through online portal.
- CLEAResult approves project, conducts pre-inspection.
- Trade Ally completes project.
- CLEAResult conducts post inspection.
- Inducement paid to Trade Ally.

“I would never advise or expect a customer to try to go through this process on their own.” – Participating Trade Ally

“The process can be complicated and time-consuming. Unless you’re an expert like we are – we’ve done it a thousand times, it would be a tedious and frustrating process.” – Participating Trade Ally

Other minor program barriers include occasional issues with the online portal, customer concerns regarding having to sign a participation agreement, and delays in Trade Allies getting paid from the channel. The Trade Allies, frustrated about the delay in payment, felt it was an issue with sending checks through the mail. They would prefer receiving inducements via direct deposit.

Cycle Time Analysis. AEG conducted a cycle time analysis to explore the time it takes from initial customer contact to measure installation to inducement distribution. [The average number of days from enrollment to installation for the remaining projects was 152.](#) Figure 5-6 shows the time from enrollment to installation for CIS projects. Note that we removed twelve projects from this analysis flagged as statistical outliers.

Figure 5-6 CIS Number of Days from Enrollment to Installation

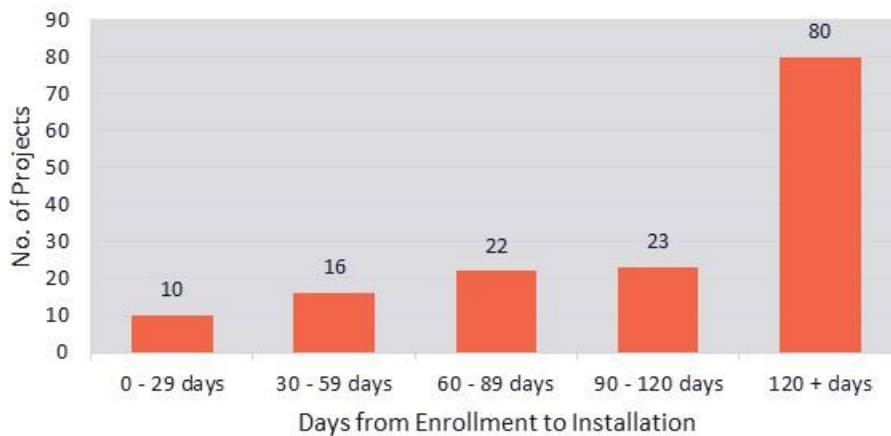
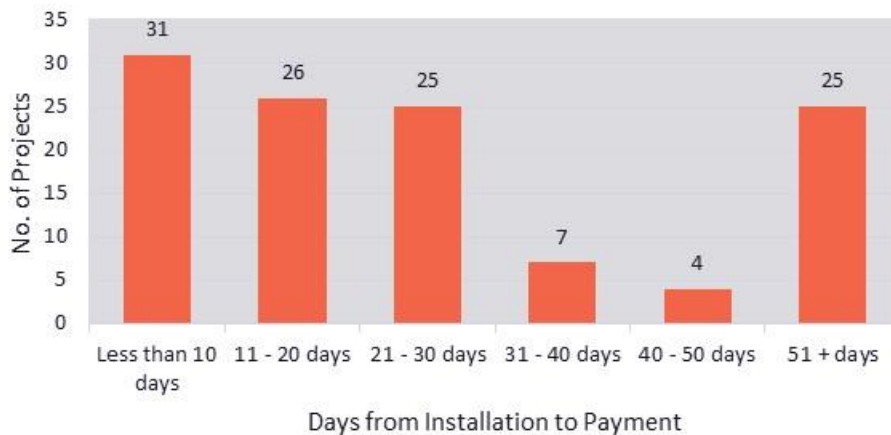


Figure 5-7 shows the time from installation to payment for CIS projects. [The average number of days from installation for payment for the remaining projects was 31 days.](#) Inducements were delivered within 30 days for more than two-thirds of projects, but more than 20% of projects took 51 days or longer. Note that 35 projects were removed from the analysis because they had a payment date earlier than the installation date, and an additional 11 projects were removed because they were considered statistical outliers.

Figure 5-7 CIS Number of Days from Installation to Payment



Channel Effectiveness. The implementer said the channel had low NTG ratios in the past, and it spent significant time and resources working to improve it. They worked with Trade Allies to communicate better with customers about the channel and available inducements, clarifying that applications for completed installations are not eligible for the rebate. They also worked with the evaluation team to improve survey response rates by emailing customers to inform them to expect a survey invitation.

The Trade Allies interviewed feel strongly that the inducements are very important in customers’ final purchasing decisions.

“National Accounts (especially the ones that we work with) are prioritizing projects based on programs that offer rebates, so the idea of free ridership doesn't really exist anymore.” – Participating Trade Ally

Trade Allies feel the channel is good for their business. Customers like it, encouraging customers to replace equipment rather than repair it. All have seen growth in their businesses that they attribute to OG&E programs, and, as mentioned above, some have built their entire business on utility rebate programs.

Channel Satisfaction. The Trade Allies interviewed are very satisfied with the channel and spoke very highly of their relationship with CLEAResult.

“One of the best resources CLEAResult has is their reps. The reps and engineers with CLEAResult make the process smoother and easier and much more accessible.” – Participating Trade Ally

“CLEAResult has been absolutely great. Anytime I need anything, I can email my rep, call him, whatever. If he’s available, he’ll respond very quickly. They are a significant factor in the effectiveness of this program.” – Participating Trade Ally

The Trade Allies also felt that the customer response to the channel is very positive. Occasionally they will run into an issue where customers aren’t happy with the inducement amount or received misleading information from other Trade Allies. But those situations are rare.

Schools and Government Efficiency (SAGE)

The SAGE channel offers EE inducements for educational and publicly funded facilities to overcome barriers to energy improvement that are unique to their market segment, such as conflicting organizational goals, outdated specifications, limited technical knowledge, and counterproductive energy budgeting. Performance-based inducements are \$0.14 per kWh saved and have a cap of 90% of the total project cost.

SAGE – Key Evaluation Findings

The **impact evaluation** established SAGE evaluated energy savings of 6,373,345 kWh, which amounts to a 104% realization rate, and evaluated demand savings of 1,131 kW, which amounts to a 94% realization rate. Table 5-12 provides a summary of the SAGE impact evaluation findings. We discuss the impact evaluation key findings below.

Table 5-12 SAGE Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	6,134,026	6,373,345	104%	6,373,345	100%	92,056,410
Demand (kW)	1,198	1,131	94%	113063%	100%	n/a

- **Quality and consistency.** AEG’s engineering desk reviews found that the claimed inputs and savings in the database matched the documentation. SAGE projects have a robust pre- and post-verification process

leading to accurate claimed savings. For most projects in our sample, we made no changes. The overall realization rates are slightly greater than 100%, primarily due to minor differences in a few projects.

- **ISRs are 100%.** Our surveys and site visits found that all measures were currently in-service.
- **New construction lighting projects used inconsistent methodologies to determine the baseline lighting density.** The AR TRM V9 lists two options for estimating baseline lighting densities (the whole building method and the space-by-space method). The methodologies should not be mixed within projects. AEG found that the new construction lighting projects mixed baseline lighting density methodologies within one project. When using one methodology consistently (the space-by-space method generally), the savings for these projects increased.

The **process evaluation** resulted in the following key findings:

- **OG&E has prioritized helping schools,** resulting in lower energy use for several school buildings in the territory. Trade Allies are very satisfied with the channel and have a strong relationship with OG&E and CLEAResult.
- **Energy savings and demand reductions decreased in 2022 relative to 2021.** The school market, which is responsible for most channel savings, may be saturated.
- **Underserved schools tend to be smaller, more rural, and more budget-constrained,** and Trade Allies are reluctant to serve rural locations.

SAGE – Recommendations

The **impact evaluation recommendations** are as follows:

- **Consistently use one method (space-by-space or whole-building) for new construction lighting projects; do not mix methods.** Baseline lighting methodologies were combined within projects in the new construction lighting projects in the AEG sample. The AR TRM allows both methods, i.e., both are acceptable. Note that the whole building method is overall easier to implement than the space-by-method.
- **Use the actual IECC 2012 values as the baseline for unitary AC and HP equipment.**⁴² The AR TRM cites the IECC 2012 code as the baseline for unitary AC and HP equipment and then recreates the baseline values in a table within the TRM. However, that table in the TRM has errors, and the actual IECC 2012 code should be referenced.
- **For kitchen measures installed in schools, use the average school days per year, 282.5⁴³, instead of the AR TRM default value of 365 operating days per year.** The AR TRM assumes that kitchen equipment is installed in restaurants operating annually. This assumption leads to overstated savings as schools generally do not operate 365 days per year.

The **process evaluation recommendations** are as follows:

- **Celebrate the energy savings accomplishments OG&E has helped facilitate for the schools in their service territory and highlight this success both for public relations and to spur any remaining participation.**
- **Consider a rural community outreach approach.** If the implementer can line up projects in a few buildings in a town or neighboring areas, Trade Allies will be more likely to travel to service these customers.

⁴² IECC Digital Codes. 2012 International Energy Conservation Code. <https://codes.iccsafe.org/content/IECC2012P5/chapter-4-ce-commercial-energy-efficiency>.

⁴³ Public Service Commission of Wisconsin. Wisconsin Focus on Energy 2022 Technical Reference Manual. "Steamer, ENERGY STAR." February 11, 2022. https://assets.focusonenergy.com/production/inline-files/Focus_on_Energy_2022_TRM.pdf.

- [Consider offering enhanced inducements for trade allies serving rural areas and/or reimbursement for travel.](#) Some trade allies are reluctant to serve rural customers because of the increased travel time and offering extra inducements or reimbursements could better serve those customers.

SAGE – Impact Evaluation

Evaluation Approach. Table 5-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

- Verification included site visits for the largest prescriptive projects and online surveys for all other projects.
- AEG used the 2021 NTG adjustments in the SAGE channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2023.

We include detailed descriptions of each activity in [Appendix A](#).

AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We defined the sample frame unit as one project and stratified the SAGE participant population (as shown in Table 5-13) using the following criteria:

- **Measure Type** – stratifies projects by measure, ensuring that sampled findings logically extrapolate to the population.
- **Project size** – stratifies projects by claimed savings size, minimizing the variation of our sample-extrapolated estimates. An average historical savings threshold determines the Top 5% strata, which receives a census sampling approach.

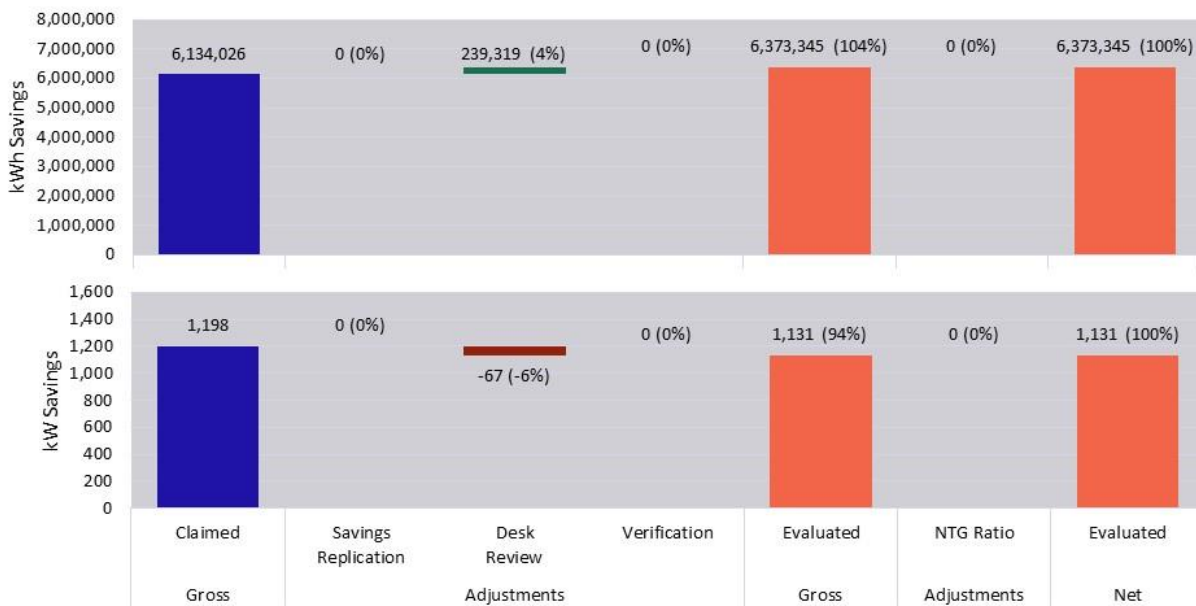
Table 5-13 SAGE Stratification

Stratum	No. of Projects
Lighting - Top 5%	5
Lighting - All Others	43
Non Lighting	4
Total	52

We include detailed descriptions of the sample design in [Appendix B](#).

Evaluation Adjustments. Figure 5-8 presents a summary of impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 5-8 SAGE Summary of Adjustments by Activity



- **Savings Replication.** AEG conducted a savings replication when the data was available to us. However, savings replication must be performed for an entire stratum to extrapolate findings appropriately. Thus, the savings replication adjustments were not applied for SAGE projects. The savings replication merely informed us of what was occurring at a global level, and we found no major issues. One consistent issue we found is that lighting’s claimed demand savings add control savings when no controls are present.
- **Desk Review.** We did not apply adjustments for most projects in our sample. The minor adjustments are as follows:
 - **Lighting.** We found that the manufacturer’s reported wattage did not always match the DLC-listed wattage. However, the differences were minor. We also found that the baseline lighting density methodology was inconsistent for the new construction lighting projects in our sample.
 - This increased the savings.
 - **Lighting Controls.** AEG found claimed savings that included lighting control savings when there were no controls in the project.
 - This decreased demand savings.
 - **HVAC.** We used the actual IECC 2012 efficiency values as opposed to the table in the TRM, which has some errors.
 - This increased the savings.
 - **Kitchen Measures.** We decreased the number of operating days from 365 to 282.5.
 - This decreased the savings.
- **Verification.** AEG conducted site visits for all the *Lighting – Top 5%* projects. We conducted online surveys for all other projects. We found that all claimed measures were installed during our site visits.
- **Net-to-Gross.** AEG applied to the net-to-gross values from the 2021 evaluation. We benchmarked the previous evaluation results with similar programs and found that the previous results are similar to other programs in other jurisdictions.

Stratum-Level Findings. Table 5-14 and Table 5-15 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and SAGE overall. At the channel level, the impact evaluation findings are at 0.09% precision (kWh) and 2.69% precision (kW) at the 90% confidence level.

Table 5-14 SAGE Evaluated Energy Savings by Stratum

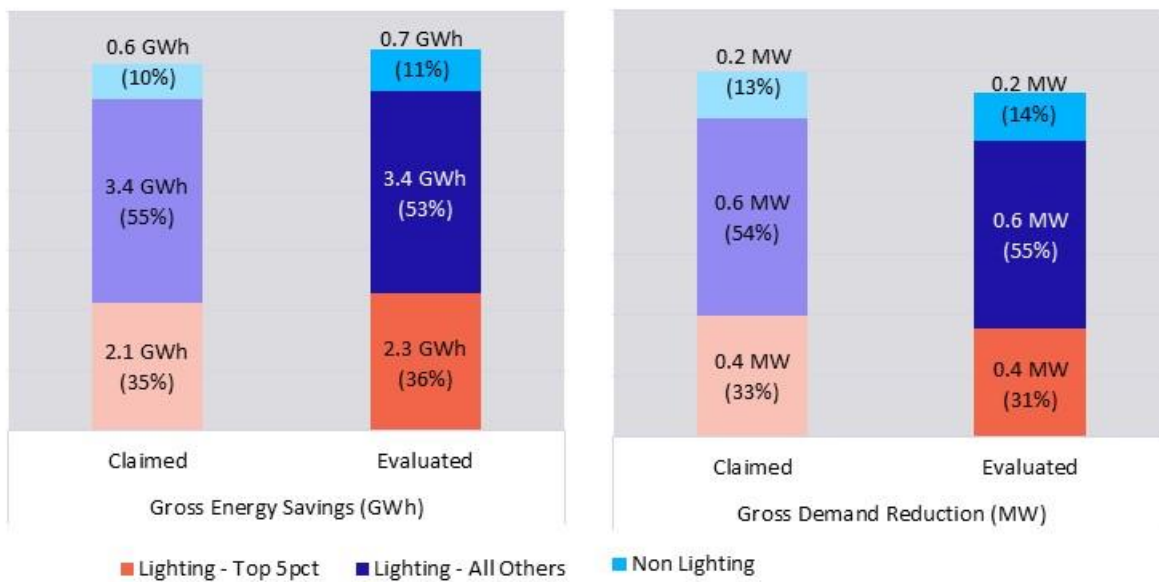
Stratum	No. of Projects	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Lighting - Top 5pct	5	2,140,081	2,278,331	106%	-	0%
Lighting - All Others	43	3,392,720	3,386,759	100%	6,237	0.18%
Non Lighting	4	601,225	708,255	118%	-	0%
SAGE Total	52	6,134,026	6,373,345	104%	6,022	0.09%

Table 5-15 SAGE Evaluated Demand Reduction by Stratum

Stratum	No. of Projects	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Lighting - Top 5pct	5	397	351	88%	-	0%
Lighting - All Others	43	647	620	96%	32	5%
Non Lighting	4	154	160	104%	-	0%
SAGE Total	52	1,198	1,131	94%	30	2.69%

Figure 5-9 shows the SAGE energy and demand savings distribution by stratum. Lighting projects comprise 89% of the total evaluated energy savings and 86% of the total evaluated demand reduction.

Figure 5-9 SAGE Claimed and Evaluated Savings by Stratum



Finally, Table 5-16 shows the net lifetime energy savings. Retrofit and new construction lighting combined for 89% of lifetime energy savings. EULs come from the AR TRM.

Table 5-16 SAGE Net Lifetime Energy Savings by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
LED Retrofit	15	75,537,738
New Construction Lighting	15	6,804,203
Unitary AC	15	5,834,189
Unitary HP	15	242,889
ENERGY STAR Steam Cooker	12	3,637,393
Overall	14.5	92,056,410

SAGE – Process Evaluation

Evaluation Approach. Table 5-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG conducted comprehensive interviews with two of the four participating Trade Allies that participated in the channel in the first half of 2022.
- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for SAGE is scheduled for 2023.

Program Performance. Table 5-17 shows how SAGE performance has changed since 2021. Energy savings and demand reduction decreased by 38% and 23%, respectively, compared to the previous program year.

Table 5-17 SAGE Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of CEEP	Claimed	Share of CEEP	
Energy (kWh)	9,837,975	9%	6,134,026	5%	-38%
Demand (kW)	1,562	8%	1,198	5%	-23%

Channel Operations. The SAGE channel largely mirrors the CIS channel, with inducements set at a larger amount per kWh and a higher cap on total project costs. The target market for the channel is schools, local government buildings, and some non-profit organizations. In 2022, 72% of the channel savings came from schools. The majority of savings are from lighting measures, and the non-lighting measures incentivized in 2022 included central air conditioning, heat pumps, and kitchen steamers.

Barriers to Participation. The most significant barrier to participation in the SAGE channel is that most schools in the service territory have had recent upgrades. One Trade Ally estimated that 75% of the schools in OG&E’s service territory had made recent energy efficiency improvements.

As a result, a significant challenge is trying to find more projects and keep the pipeline full. To exacerbate the issue, the bid process for these projects is long, and board approval and passing bonds also add to the timeline. The decision-making process can take six months to a year, but actual project implementation only takes a month or two.

OG&E would like to focus resources on the smaller, rural, underserved schools in its service territory, but these schools tend to be more budget-constrained. Trade Allies are also very resistant to traveling to more rural areas. One Trade Ally suggested that the channel operates more like the SBDI channel for these smaller, rural schools.

Trade Allies said that, in the past, the channel has run out of money halfway through the program year, which was very frustrating. This issue has improved lately, likely because the market is more saturated, and there is less competition for channel funds.

SAGE Customer Participation Process

- Initial customer visit: program is explained with a focus on reducing operating costs.
- Trade Ally conducts no-obligation no-cost audits.
- Project proposal presented to customer including available inducement.
- Customer signs participation agreement.
- Trade Ally submits program documentation through the online portal.
- CLEAResult approves project, conducts pre-inspection. Projects under 50,000 kWh receive either a pre- or post-inspection, but not both.
- Trade Ally completes project.
- CLEAResult conducts post-inspection.
- Inducement paid to Trade Ally.

Cycle Time Analysis. AEG conducted a cycle time analysis to explore the time it takes from initial customer contact to measure installation to inducement distribution. Figure 5-10 shows the number of days from enrollment to installation for SAGE projects. The program averages 165 days from enrollment to installation. Figure 5-11 shows the number of days from installation to payment, which the program averages at 56 days. Note that seven projects were removed from the analysis because they were considered statistical outliers.

Figure 5-10 SAGE Number of Days from Enrollment to Installation

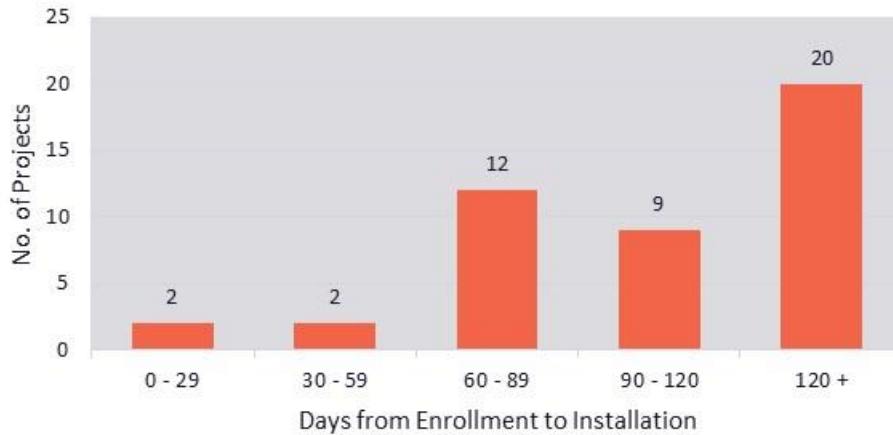
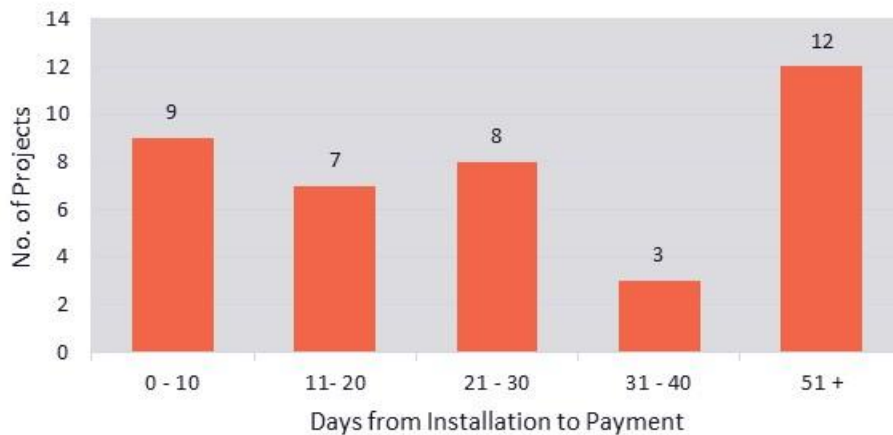


Figure 5-11 SAGE Number of Days from Installation to Payment



Channel Effectiveness. The Trade Allies are very satisfied with the channel, CLEAResult, and OG&E. They receive regular visits from CLEAResult and find them readily available when they have questions. They also feel that customers are very satisfied with the channel, the rebates are very influential in the decision-making process, and the channel is good for their business.

“The rebates are fair, the paperwork is straightforward, and the folks at CLEAResult are very knowledgeable.” – Participating Trade Ally

“We are out there saving these customers a lot of money.” – Participating Trade Ally

“The program is very good for my business. It’s like having a partner.” – Participating Trade Ally

Small Business Direct Install (SBDI)

The SBDI channel is targeted to OG&E small business customers with an annual peak demand under 150 kW or multiple locations with a combined peak demand under 250 kW. The channel drives participation through an extensive contractor network. Contractors provide facility walk-throughs and inducements for prescriptive energy efficiency measures. SBDI participants are also eligible to participate in the CIS channel if the customer’s needs are beyond the scope of services outlined within this channel. Inducements are \$0.15 per kWh saved except for refrigerator door gaskets, which have inducements of \$0.12 per kWh saved. All inducements are capped at 90% of the project cost.

SBDI – Key Evaluation Findings

The **impact evaluation** established SBDI evaluated energy savings of 8,781,918 kWh, which amounts to an 89% realization rate, and evaluated demand savings of 766 kW, which amounts to a 100% realization rate. Table 5-18 provides a summary of the SBDI impact evaluation findings. We discuss the impact evaluation key findings below.

Table 5-18 SBDI Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	9,909,987	8,781,918	89%	8,781,918	100%	107,276,000
Demand (kW)	768	766	100%	766	100%	n/a

- **AEG could not recreate the claimed custom DI weatherstripping saving values.** We used the AR TRM default values, decreasing the savings, while the implementer created custom⁴⁴ estimates for DI weatherstripping projects. The custom savings estimates were about 20% higher than the AR TRM V9 defaults. The implementer stated that the custom values account for Oklahoma wind conditions unaccounted for in the AR TRM.
- **Quality and consistency.** AEG’s engineering desk reviews found that the claimed inputs and savings in the database matched the documentation. SBDI projects have a robust pre- and post-verification process leading to accurate claimed savings. For most projects in our sample, we made no changes. The overall realization rates are driven by adjustments made in the DI weatherstripping measures.
- **ISRs are 100%.** Our surveys and site visits found that all measures were currently in-service.

The **process evaluation** resulted in the following key findings:

- The channel’s energy savings increased by 31% and demand savings decreased by 19% relative to 2021. The channel has not fully recovered from COVID-19.
- **Trade Allies like working with CLEAResult and are satisfied with the program.** They like the mobile field tool and find it very helpful. They also say that the CLEAResult team is very responsive and helpful.
- Trade Allies report a high conversion rate on project proposals.

SBDI – Recommendations

The **impact evaluation recommendations** are as follows:

⁴⁴ AEG was unable to derive these values nor view the implementer’s derivation within the evaluation timeline. As such, we used the AR TRM V9 default values for our evaluated savings.

- [Work with AEG to review the derivation of the custom estimates.](#) AEG will work with CLEARResult to appropriately evaluate the custom savings estimates within the 2023 evaluation timeline.

The **process evaluation recommendations** are as follows:

- [Consider offering low- or no-interest financing to customers.](#)
- [Investigate the potential energy savings for heating wires in walk-in freezers and cooler door hinges.](#)

SBDI – Impact Evaluation

Evaluation Approach. Table 5-4 above summarizes the impact evaluation activities conducted to determine evaluated savings. Note the following:

- Verification included site visits for the largest non-lighting projects and online surveys for all other projects.
- AEG used the 2021 NTG adjustments in the SBDI channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2024.

We include detailed descriptions of each activity in [Appendix A](#).

AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We defined the sample frame unit as one project and stratified the SBDI participant population (as shown in Table 5-19) using the following criteria:

- **Measure Type** – stratifies projects by measure, ensuring that sampled findings logically extrapolate to the population.
- **Project size** – stratifies projects by claimed savings size, minimizing the variation of our sample-extrapolated estimates. An average historical savings threshold determines the Top 5% strata, which receives a census sampling approach.

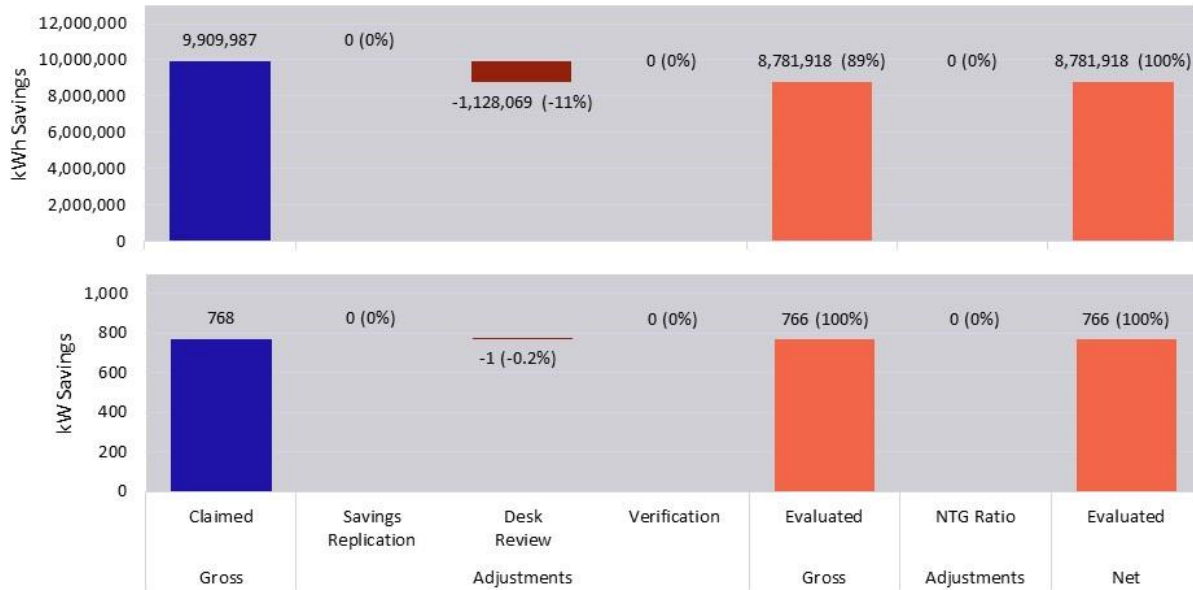
Table 5-19 SBDI Stratification

Stratum	No. of Projects
Lighting	128
Non Lighting - Top 5%	7
Non Lighting - All Others	72
Total	207

We include detailed descriptions of the sample design in [Appendix B](#).

Evaluation Adjustments. Figure 5-12 presents a summary of impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 5-12 SBDI Summary of Adjustments by Activity



- **Savings Replication.** AEG conducted a savings replication when the data was available to us. However, savings replication must be performed for an entire stratum to extrapolate findings appropriately. Thus, the savings replication adjustments were not applied for SBDI projects. The savings replication merely informed us of what was occurring at a global level, and we found no major issues.
- **Desk Review.** The most significant change was that AEG used the AR TRM default savings values for DI weatherstripping. This adjustment significantly reduced the savings.
- **Verification.** AEG conducted site visits for all the *Non Lighting – Top 5%* projects. We conducted online surveys for all other projects. We found that all claimed measures were installed during our site visits.
- **Net-to-Gross.** AEG applied to the net-to-gross values from the 2021 evaluation. We benchmarked the previous evaluation results with other similar programs and found that the previous results are similar to other programs in other jurisdictions.

Stratum-Level Findings. Table 5-20 and Table 5-21 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and SBDI overall. At the channel level, the impact evaluation findings are at 6% precision (kWh) and 9% precision (kW) at the 90% confidence level.

Table 5-20 SBDI Evaluated Energy Savings by Stratum

Stratum	No. of Projects	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Lighting - All Others	128	3,002,192	3,399,563	113%	538,628	16%
Non Lighting - Top 5%	7	5,799,639	4,456,238	77%	-	0%
Non Lighting - All Others	72	1,108,156	926,116	84%	35,231	4%
Total	207	9,909,987	8,781,918	89%	526,567	6%

Table 5-21 SBDI Evaluated Demand Reduction by Stratum

Stratum	No. of Projects	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Lighting - All Others	128	531	573	108%	69	12%
Non Lighting - Top 5%	7	127	96	76%	-	0%
Non Lighting - All Others	72	110	98	89%	5	6%
Total	207	768	766	100%	67	9%

By stratum, the main reasons for the differences in claimed and evaluated savings are:

- **Lighting – All Others.** We found instances where the claimed wattages did not exactly match the manufacturer's cut sheets. Likewise, AEG matched some buildings that do not directly correspond to TRM building types to different building types than claimed.
 - These increased the savings.
- **Non Lighting – Top 5% and All Others.** DI Weatherstripping measures used custom savings estimates that were about 20% more than the values in the AR TRM V9. AEG was unable to recreate the custom estimates within the evaluation timeline.
 - We ultimately used the AR TRM defaults, which reduced the savings.

Figure 5-13 shows the SBDI savings distribution by stratum. *Non Lighting* projects made up 70% of claimed energy savings, wherein DI Weatherstripping measures made up 64% of claimed SBDI energy savings. On the other hand, Lighting projects made up 69% of claimed demand reduction. Consequently, adjustments to DI Weatherstripping measures have a more substantial impact on evaluated energy savings than demand reductions.

Figure 5-13 SBDI Claimed and Evaluated Savings by Stratum



Finally, Table 5-22 shows the net lifetime energy savings by measure. LED retrofits and DI weatherstripping made up 97% of lifetime savings. EULs come from the AR TRM.

Table 5-22 SBDI Net Lifetime Energy Savings by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
LED Retrofit	15	50,590,568
Lighting Controls	8	109,893
DI Weatherstripping	11	53,781,305
Door Gaskets	4	1,184,620
Refrigeration Equipment	12	22,123
Strip Curtains	4	247,789
Other	10	1,339,701
Overall	12.2	107,276,000

SBDI – Process Evaluation

Evaluation Approach. Table 5-5 above summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- We also conducted interviews with six of the 10 Trade Allies that participated in the first half of 2022.
- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for SBDI is scheduled for 2024.

Program Performance. Table 5-23 shows how SBDI performance has changed since 2021. Compared to the previous program year, energy savings increased by 37%, but demand reduction decreased by 19%.

Table 5-23 SBDI Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of CEEP	Claimed	Share of CEEP	
Energy (kWh)	7,255,194	7%	9,909,987	8%	37%
Demand (kW)	952	5%	768	3%	-19%

Channel Operations. This channel is primarily contractor-driven, and CLEAResult has built a strong Trade Ally network for the program, vetting and only using state-licensed contractors to perform the work. The Trade Ally network is trained on a mobile field tool to conduct initial customer assessments. The tool generates a project proposal, which includes recommendations for measures and upgrades.

“Very streamlined program. You plug everything into their tool, and it does all the calculations.” – Participating Trade Ally

Trade Allies report a good working relationship with CLEAResult, which is very responsive to any questions that they have.

“I love the people who work at CLEAResult. They’re extremely helpful. There’s not a question ever unanswered or a concern not heard.” – Participating Trade Ally

CLEAResult also helps develop leads for contractors. They have spent time going into the smaller, rural areas and handing out brochures, and meeting with customers.

Barriers to Participation. The channel has been greatly affected by the economy and COVID-19. The channel was shut down during COVID-19 and took most of 2022 to rebound.

Lack of awareness and financing are also barriers to participation. The implementer would like OG&E to offer on-bill financing. This approach has been very successful for other SBDI programs around the country and would help convince more customers to participate. Trade Allies feel that awareness is the main issue; once customers are aware of the channel, they are very receptive to its offerings.

“Everyone who knows about the channel signs up.” – Participating Trade Ally

One Trade Ally felt that having to use an Apple iPad for the assessment was a barrier. He would prefer to conduct the assessment on paper and enter the information into his PC back at his office.

“I’m an old guy and don’t like to learn new tricks.” – Participating Trade Ally

The length of the payback period can be an issue for customers. Some customers also have difficulty trusting the inducements, which cover up to 90% of the project cost, believing it may be too good to be true.

“With a payback of two years or better, our conversion rate is very high. But costs have gone up a lot. It’s taken those paybacks to 36 months.” – Participating Trade Ally

“Small businesses are paranoid. They have trouble believing it.” – Participating Trade Ally

Channel Satisfaction. Trade Allies are very satisfied with the program and feel that efficiency improvements made in response to COVID-19 have had lasting effects.

“To be honest, I think the program is run better than it was prior to COVID. The program has evolved, doing a lot of things more efficiently and a lot better than pre-COVID.” – Participating Trade Ally

One Trade Ally did have complaints about the time it took to get paid, as discussed in the Cycle Time Analysis section below.

Program Effectiveness. Trade Allies report a high conversion rate on their proposals and feel that few customers would make the improvements without the program.

“I’m almost always able to convert customers from audit to projects.” – Participating Trade Ally

“They might upgrade some of the easy stuff like screw-in bulbs but not other lighting that requires an electrician.” – Participating Trade Ally

They also think the program leads to additional energy savings in the future.

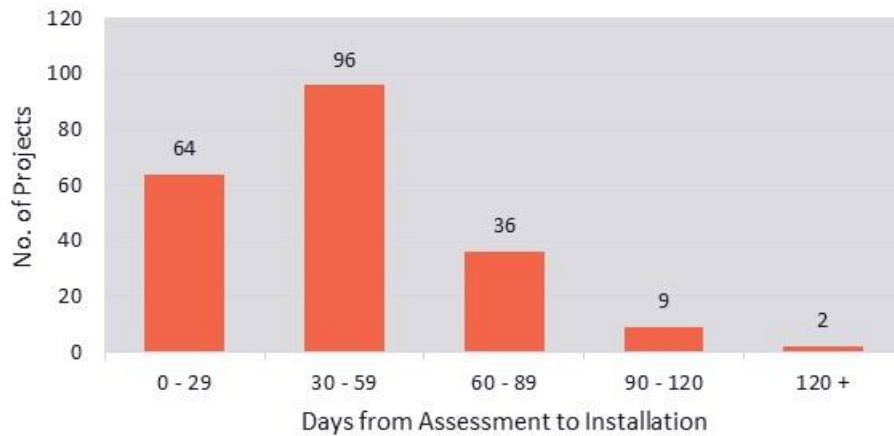
“The rebate program is very helpful in that a restaurant that needed gaskets but either didn’t have it in the budget or didn’t realize the cost savings get their torn gaskets replaced for the first time in many years. When we go back to check on them three to four months later, they are much more inclined to fix other gaskets that have torn. They see the improved efficiency of their coolers/freezers, better temperatures for food safety, etc. Despite not being eligible for rebates for several years, they are very likely to keep gasket maintenance in their budget. That one-time rebate that moved them to action results in years of additional energy savings.” – Participating Trade Ally

The program is also very helpful for Trade Allies business.

“I can tell you right now I wouldn’t have this business if it weren’t for the program. It just wouldn’t happen.” – Participating Trade Ally

Cycle Time Analysis. AEG conducted a cycle time analysis to explore the time it takes from assessment to measure installation to inducement distribution. Figure 5-14 shows the days from assessment to installation for SBDI projects. The projects averaged 44 days from assessment to installation.

Figure 5-14 SBDI Number of Days from Assessment to Installation



As mentioned above, one Trade Ally complained about the time it took to get paid. He said it was sporadic and sometimes could take a couple of weeks to receive a check. The cycle time analysis, however, shows that, on average, this isn't a problem (Figure 5-15). The average time from installation to payment was only three days. Note that 14 projects were removed from the analysis because the payment date was before installation.

Figure 5-15 SBDI Number of Days from Installation to Payment



Recommendations for Improvement. One contractor wants additional inducements for heating wires in walk-in freezers. He explained that when the heating wires fail, it causes ice to build up. Customers are reluctant to replace the wires and chip away at the ice instead. According to this contractor, replacing those wires would save a lot of energy.

He also would like to see inducements for cooler door hinges. Door hinges can cause cooler doors to stay open when they get old. Customers are reluctant to replace them because they view the problem as an employee training issue. If OG&E offered an inducement for hinge replacement, it might convince customers to replace them and save energy.

Small Business Midstream (Midstream)

The Midstream channel offers point-of-sale (POS) inducements for qualified products to OG&E commercial customers through participating local and national distributors. Unlike an upstream design, the Midstream channel collects data on both distributors and purchasers. This program channel offers an opportunity to participate in energy efficiency programs for contractors and end-users who might not otherwise pursue applying through another CEEP channel. Through this channel, financial inducements are paid to the distributor to reduce costs for the end-use customer.

Midstream – Key Evaluation Findings

The **impact evaluation** established Midstream evaluated energy savings of 34,376,946 kWh, which amounts to a 98% realization rate, and evaluated demand savings of 5,762 kW, which amounts to a 98% realization rate. Table 5-24 provides a summary of the Midstream impact evaluation findings. We discuss the impact evaluation key findings below.

Table 5-24 Midstream Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	34,986,267	34,376,946	98%	30,251,713	88%	425,053,717
Demand (kW)	5,856	5,762	98%	5,070	88%	n/a

- For the lighting measures, AEG estimated slightly different savings. AEG found consistent differences in claimed and evaluated lighting savings. The differences were due to the manufacturer’s cut sheets being slightly different than the claimed lumens and wattages. In some cases, minor differences in lumens and wattages can change the baseline fixture wattage as baseline fixture wattage depends on lumens grouped within buckets. This decreased the savings.
- AEG used the recommended 3-year rolling average lighting hours of use from the 2021 evaluation report.⁴⁵ AEG will continue to use those hours in 2023 and 2024. At the end of 2024, we will derive a new, forward-looking 3-year rolling average based on 2022-2024 data, which we recommend using for 2025-2027.
- The AR TRM V9 for ENERGY STAR refrigerators and freezers is outdated. AEG found that the AR TRM V9 does not follow current federal standards.⁴⁶ New ENERGY STAR standards (V5.0)⁴⁷ for commercial refrigerators and freezers went into effect on December 22, 2022, prior to all the channel’s incentivized refrigerator and freezer projects. However, AEG found that the average commercial refrigerator and freezer incentivized through the channel was already compliant with the new ENERGY STAR 5.0 standards prior to the standards being officially in effect. This increased the savings for these measures as the majority of the refrigerators and freezers met ENERGY STAR 5.0 standards and not just ENERGY STAR 4.0 standards.

The **process evaluation** resulted in the following key findings:

⁴⁵ ADM. Oklahoma Gas & Electric (OG&E) Oklahoma Demand Program Evaluation for PY2021. May 5, 2022. [OGE 2021 Demand Program Annual Report \(oklahoma.gov\)](#).

⁴⁶ US Department of Energy. “Energy Conservation Standards and their Effective Dates (2017).” 10 CFR 431.66(e). [https://www.ecfr.gov/current/title-10/chapter-II/subchapter-D/part-431/subpart-C/subject-group-ECFR8115bf7451f830f/section-431.66#p-431.66\(e\)\(1\)](https://www.ecfr.gov/current/title-10/chapter-II/subchapter-D/part-431/subpart-C/subject-group-ECFR8115bf7451f830f/section-431.66#p-431.66(e)(1)).

⁴⁷ US Environmental Protection Agency. “ENERGY STAR Program Requirements Product Specifications for Commercial Refrigerators and Freezers Version 5.0”. November 2022. https://www.energystar.gov/sites/default/files/asset/document/ENERGY%20STAR%20Version%205.0%2028Rev.%20November%20-%202022%29%20Commercial%20Refrigerators%20and%20Freezers%20Specification_0.pdf.

- The Midstream channel savings increased from 2021 to 2022, wherein kWh savings increased by 45% and kW savings increased by 60%. However, the channel’s contribution to CEEP decreased compared to 2021.
- It is extremely easy for customers to participate. They get instant discounts when they make a qualifying purchase. The CLEAResult tool validates customer sales quickly and easily.
- The channel relies almost exclusively on lighting measures.

Midstream – Recommendations

The **impact evaluation recommendations** are as follows:

- Consider reporting the lumens of the efficient fixture and baseline wattage used directly. AEG found minor but consistent calculation differences in our evaluation, and more clear reported data could help identify the issues.
 - The channel data does not report lumens directly but reports efficacy—lumens divided by watts. AEG multiplied the reported wattage by the efficacy to determine the lumens.
 - Likewise, the channel data does not report the baseline wattage used to calculate savings. Directly reporting efficient lumens and baseline wattage would help identify any issues.
- Use the current federal standards and current ENERGY STAR standards for commercial refrigerators and freezers. The AR TRM V9.1 did not fix the issue. When estimating claimed savings use the actual federal standards and actual ENERGY STAR standards.

The **process evaluation recommendations** are as follows:

- Engage more restaurant supply distributors in the channel.
- Consider offering other measures through the program, such as ENERGY STAR induction cooktops.

Midstream – Impact Evaluation

Evaluation Approach. Table 5-4 above summarizes the impact evaluation activities conducted on Midstream to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). Note the following:

- Verification included online participant surveys for all strata.
- AEG used the 2021 NTG adjustments in the Midstream channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2023.

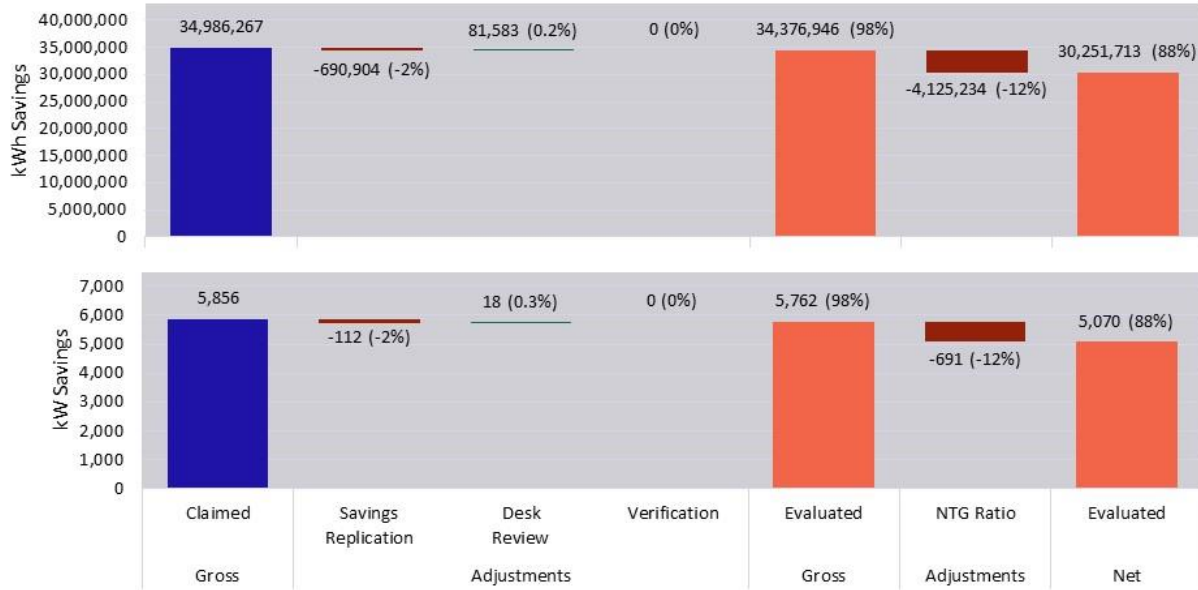
AEG used a stratified random sample for the following activities: Engineering Desk Review and Verification. We defined the sample frame unit as one invoice and stratified the Midstream participant population (as shown in Table 5-25) by project size. We used a historical threshold to identify the projects within top 5% of claimed energy savings. Strata are independent of measure but note that lighting projects made up over 99% of claimed savings.

Table 5-25 Midstream Stratification

Stratum	No. of Invoices
Top 5%	68
All Others	1,887
Total	1,995

Evaluation Adjustments. Figure 5-16 presents a summary of impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 5-16 Midstream Summary of Adjustments by Activity



- **Savings Replication.** AEG conducted a savings replication for all of Midstream’s measures. We used the baseline lighting methodology from 2021, the same methodology used in the claimed savings. However, we found slight differences in the savings replication due to how AEG mapped the efficient lumens to the baseline wattage.
 - These slightly decreased the savings.
- **Desk Review.** We did not apply adjustments for most projects in our sample and only applied minor adjustments when appropriate. Sometimes, we found slightly different wattages and lumens for the installed fixtures, which caused the savings to increase slightly.
- **Verification.** AEG conducted online surveys to determine the channel ISRs. We found that the ISR for all measures was 100%.
- **Net-to-Gross.** AEG applied to the net-to-gross values from the 2021 evaluation. We benchmarked the previous evaluation results with other similar programs and found that the previous results are similar to other programs in other jurisdictions.

Stratum-Level Findings. Table 5-26 and Table 5-27 show the evaluated savings and the corresponding precision at the 90% confidence level for each stratum and Midstream overall. At the channel level, the impact evaluation findings are at 0.23% precision (kWh) and 0.30% precision (kW) at the 90% confidence level.

Table 5-26 Midstream Evaluated Energy Savings by Stratum

Stratum	No. of Projects	Gross Energy Savings (kWh)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Top 5%	68	6,293,729	5,990,382	95%	1,452	0.02%
All Others	1,887	28,692,538	28,386,564	99%	81,102	0.29%
Total	1,955	34,986,267	34,376,946	98%	80,118	0.23%

Table 5-27 Midstream Evaluated Demand Reduction by Stratum

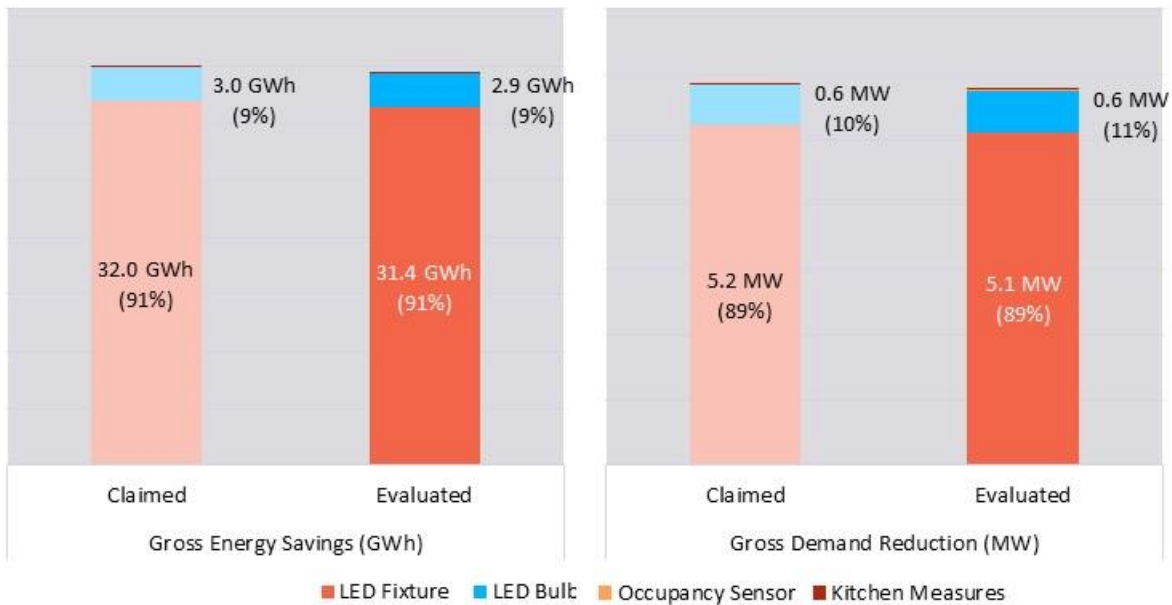
Stratum	No. of Projects	Gross Demand Reduction (kW)			90% Confidence	
		Claimed	Evaluated	RR	Abs. Prec.	Rel. Prec.
Top 5%	68	1,189	1,128	95%	<1	0.03%
All Others	1,887	4,666	4,633	99%	18	0.38%
Total	1,955	5,856	5,762	98%	18	0.30%

Measure-Level Savings. Midstream is comprised of lighting measures and kitchen measures. Table 5-28 shows the evaluated savings by measure category. Figure 5-17 shows Midstream’s distribution of measures. LED fixtures comprised 91% of Midstream’s evaluated energy savings, and LED bulbs made up 9%.

Table 5-28 Midstream Evaluated Savings by Measure

Measure	No. of Invoices	Rebated Measures	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
			Claimed	Evaluated	RR	Claimed	Evaluated	RR
LED Fixture	1,572	43,015	31,969,032	31,382,066	98%	5,227	5,114	98%
LED Bulb	476	47,271	2,974,569	2,941,647	99%	607	634	104%
Occupancy Sensor	5	145	25,683	30,198	118%	17	8	49%
Kitchen Measures	10	11	16,983	23,036	136%	4	5	132%
Total	1,955	90,442	34,986,267	34,376,946	98%	5,856	5,762	98%

Figure 5-17 Midstream Claimed and Evaluated Savings by Measure



The drivers of the differences between claimed and evaluated savings for each measure are as follows:

- **LED fixtures and LED bulbs.** AEG found slight differences in efficient lumens and efficient wattages. Sometimes, this caused the baseline wattage to change as well. Overall, these decreased the savings.
- **Occupancy sensors.** AEG used the average wattage controlled from 2021. For demand reduction, AEG could not precisely determine the difference. There was likely a difference in the claimed savings’ coincidence factor. AEG used the AR TRM default coincidence factor for occupancy sensors of 0.26.

- **Kitchen measures.** There were two categories of kitchen measures: ENERGY refrigerators and freezers and ENERGY STAR steamers.
 - AEG updated the federal standards for commercial refrigerators and freezers. We used the averages from the ENERGY STAR-certified products list for the efficient models. Even though ENERGY STAR V5.0 certifications were not in effect until December 2022, we found that most of the models in the certified products list when the channel incentivized measures were already compliant with the new ENERGY STAR standards, which increased the savings.
 - AEG used averages from the ENERGY STAR-certified products list for ENERGY STAR steamers. This increased the savings compared to the AR TRM default values.

Finally, Table 5-29 shows the net lifetime energy savings for the Midstream channel. LED fixtures and bulbs comprise over 99% of lifetime energy savings.

Table 5-29 Midstream Net Lifetime Energy Savings by Measure

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
LED Fixture	15	414,243,270
LED Bulb	4	10,354,596
Occupancy Sensor	8	212,591
Kitchen Measures	12	243,259
Overall	14.1	425,053,717

Midstream – Process Evaluation

Evaluation Approach. Table 5-5 above summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- The results presented in this section also draw on the OG&E Market Evaluation C&I Baseline Survey that AEG conducted in 2022.
- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for Midstream is scheduled for 2023.

Program Performance. Table 5-30 shows how Midstream performance has changed since 2021. Energy savings and demand reduction increased by 45% and 60%, respectively, compared to the previous program year. Midstream continues to be a leading contributor to CEEP, with 26% and 27% of overall energy and demand savings, respectively.

Table 5-30 Midstream Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of CEEP	Claimed	Share of CEEP	
Energy (kWh)	24,064,601	22%	34,986,267	26%	45%
Demand (kW)	3,656	19%	5,856	27%	60%

Channel Operations. The Midstream channel is designed to provide POS discounts for the commercial sector. The channel has 21 approved participating distributors who are required to have at least one brick-and-mortar location in OG&E’s service territory. The distributors are provided with a Program Partner Central tool that can validate the measure and the customer when the customer purchases the product. The inducement is seamless for customers: they get the discount at purchase and the distributor takes care of all paperwork. There is a monthly cap of \$2,500 per customer per distributor.

Midstream Customer Participation Process

- Customer visits distributor to make purchase.
- Distributors validate customer and measure eligibility with tool.
- Customer receives instant discount at point of purchase.
- Distributor submits sales data to CLEAResult.
- Inducement paid to distributor.

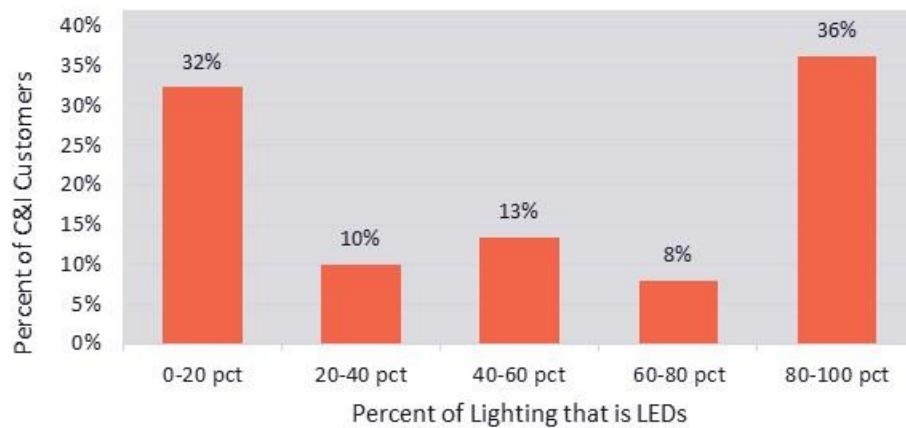
Almost all savings (99.9%) are generated by lighting measures. The remaining 0.1% of savings comes from wall occupancy sensors, ENERGY STAR steam cookers, ENERGY STAR freezers, ceiling occupancy sensors, and ENERGY STAR refrigerators.

Although 21 distributors participated in 2022, five distributors were responsible for 61% of the channel savings. All kitchen measures were provided by one vendor, a restaurant supply company.

Channel Effectiveness. According to CLEAResult the channel struggled with poor NTG ratios in the past. It worked with distributors to communicate more effectively with customers about the channel benefits and saw an improvement in the NTG results.

The channel currently relies almost exclusively on lighting measures. AEG analyzed recent data from OG&E’s Market Evaluation C&I Baseline Survey and found there is still room for growth in LED penetration, and other opportunities may exist in the form of electric cooking and refrigeration measures. Figure 5-18 shows that, per the C&I baseline survey, only 36% of C&I customers reported LED saturation of 80% or more in their facilities.

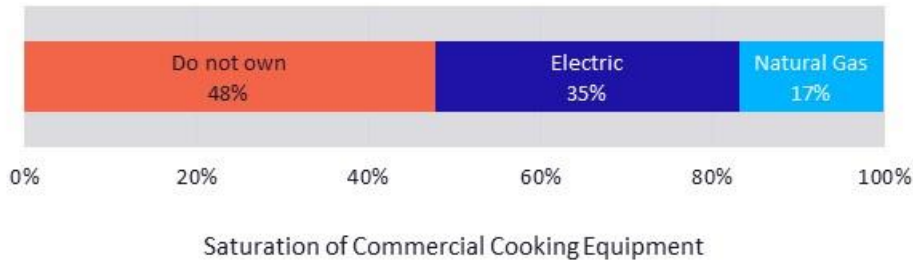
Figure 5-18 C&I Baseline Survey: Proportion of LEDs in C&I Customers⁴⁸



⁴⁸ OG&E 2022 C&I Market Evaluation Baseline Survey

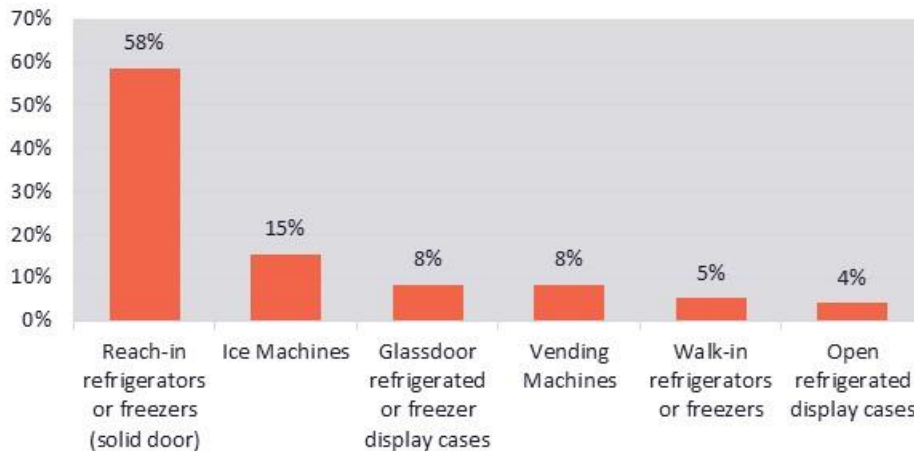
The same survey showed that more than a third of C&I customers have electric cooking equipment (Figure 5-19), indicating an opportunity for additional measures could be added to the channel, such as induction cooktops.

Figure 5-19 C&I Baseline Survey: Saturation of Commercial Cooking Equipment in C&I Customers⁴⁹



More than half of commercial customers have refrigeration (Figure 5-20), illustrating another potential growth opportunity for the channel.

Figure 5-20 C&I Baseline Survey: Saturation of Refrigeration Equipment in C&I Customers⁵⁰



Continuous Energy Improvement (CEI)

The CEI channel works with cohorts of facility and energy management professionals from participating commercial and industrial facilities. The channel works to build momentum behind energy management as a concept and a component of company culture at each facility. After initial no/low-cost opportunities yield results, the channel works with the participants to identify opportunities for longer term capital projects or retro-commissioning opportunities, which are then shuttled through the appropriate program channel.

CEI – Key Findings

The **impact evaluation** established CEI evaluated energy savings of 31,664,428 kWh, which amounts to a 100% realization rate, and evaluated demand savings of 5,475 kW, which amounts to a 100% realization rate. Table 5-31 provides a summary of the CEI impact evaluation findings. We discuss the impact evaluation key findings below.

⁴⁹ OG&E 2022 C&I Market Evaluation Baseline Survey

⁵⁰ OG&E 2022 C&I Market Evaluation Baseline Survey

Table 5-31 CEI Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	31,671,992	31,664,428	100%	31,664,428	100%	31,664,428
Demand (kW)	5,477	5,475	100%	5,475	100%	n/a

- **Quality and consistency.** AEG found that all large C&I models adhered to the established statistical standards. Not all of the individual school models adhered to all the established statistical standards, but that was primarily due to data limitations. On average, all the school models were sufficient and optimized, given the limited data.
- **AEG accepted the end-of-year forecasted savings.** The channel operates in the calendar year, and CLEAResult forecasted final savings and inducements in early Q4. Previously, evaluators determined the difference between forecasted savings and actual savings. AEG found that the differences were marginal and thus accepted the forecasted savings.

The **process evaluation** resulted in the following key findings:

- **CEI energy savings grew in the last year**, increasing by 12% relative to 2021. Demand savings decreased by 7% relative to 2021. The channel remains a substantial contributor to CEEP, with 24% and 25% of total CEEP energy and demand savings, respectively.
- The channel has become more efficient by transitioning from an in-person to a remote model.
- Incentivizing customers twice a year has helped increase participation and engagement. However, participants often lack the staffing resources to complete projects.
- CLEAResult would like to transition from a calendar year to an offset 12-month period (i.e., ending the program year at the end of the third quarter or early in the fourth quarter) to make evaluation easier.

CEI – Recommendations

The **impact and process evaluation recommendations** are as follows:

- **If the channel continues to operate in the calendar year, consider ways to keep customers engaged after they receive final payments.** AEG’s historical analysis showed that the end-of-year forecasted savings are accurate, but there is a chance that customers can become disengaged.
 - Consider sending customers monthly reports during the final months of Q4 to keep them engaged.
 - Consider offering customers extra inducements if they exceed their forecasted savings.
- **Continue to improve the customer experience** by:
 - Continuing to expand and improve digital resources, and
 - Exploring providing customers with a dedicated Energy Manager to help them manage energy efficiency projects. The Energy Manager could be a flexible resource that spends time at each customer site.

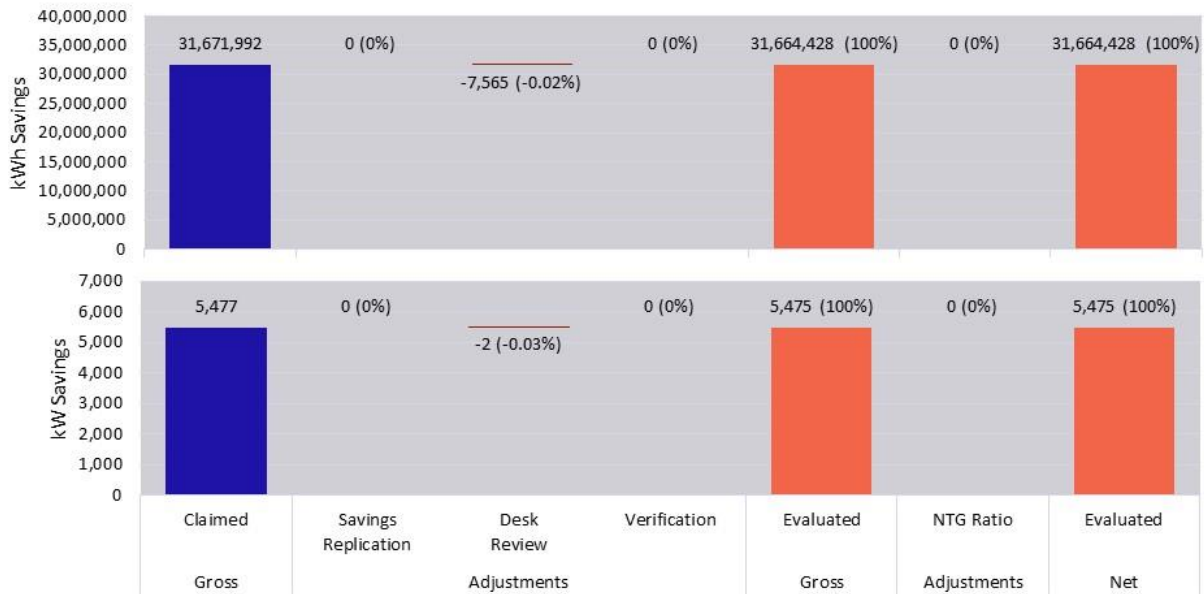
CEI – Impact Evaluation Results

Evaluation Approach. Table 5-4 above summarizes the impact evaluation activities conducted on CEI to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). Note the following:

- Desk Review activities included a baseline model replication of all Large C&I models and a sample of school models, and QA/QC of all 2022 models, data, and inducement checks.
- AEG used the 2021 NTG adjustments in the CEI channel. AEG conducted an NTG benchmarking analysis and will conduct an NTG update in 2024.
- We used a census sampling approach, reviewing all the models. We report results by sector—Large C&I and Schools.

Evaluation Adjustments. Figure 5-21 presents a summary impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 5-21 CEI Summary of Adjustments by Activity



- **Savings Replication.** AEG conducted baseline model replication for all Large C&I models and a sample of Schools models.⁵¹ We found no issues with the baseline models and made no adjustments.
- **Desk Review.** We adjusted the claimed savings for one project. AEG worked with CLEAResult to adjust the savings for this project, but the database did not reflect the updated results. This slightly decreased the savings.
- **Verification.** AEG did not conduct Verification since CLEAResult metered customer usage.
- **Net-to-Gross.** AEG applied to the net-to-gross values from the 2021 evaluation. We benchmarked the previous evaluation results with other similar programs and found that the previous results are similar to other programs in other jurisdictions.

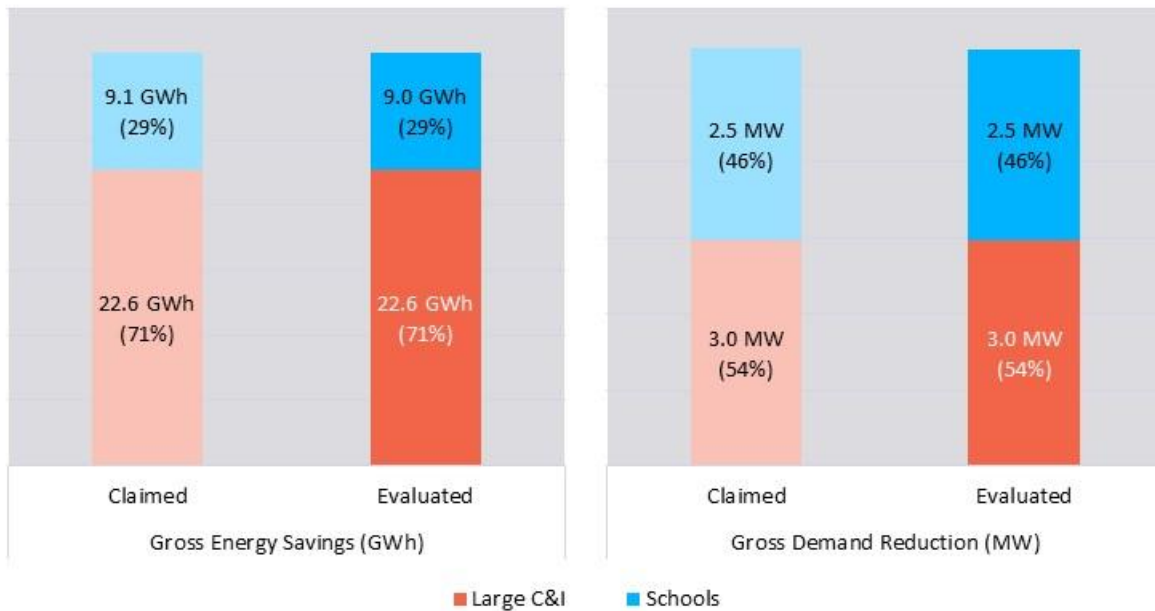
⁵¹ AEG qualitatively sampled school baseline models. We reviewed the three largest schools from each school district and then a sample of five more models from each school district. Since we found no issues with any models, we assumed that all baseline models were correct.

Sector-Level Findings. Table 5-32 and Figure 5-22 show the CEI savings distribution by sector. Large C&I comprised 71% of total energy savings and 54% of total demand reduction.

Table 5-32 CEI Evaluated Savings by Sector

Sector	No. of Projects ⁵²	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
Large C&I	31	22,617,697	22,617,703	100%	2,954	2,954	100%
Schools	11	9,054,295	9,046,724	100%	2,523	2,522	100%
Total	42	31,671,992	31,664,428	100%	5,477	5,475	100%

Figure 5-22 CEI Claimed and Evaluated Savings by Sector



Net Lifetime Savings. CEI measures are assumed to have a one-year measure life. Table 5-31 above shows the net lifetime savings.

CEI – Process Evaluation Methods

Evaluation Approach. Table 5-5 above summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and CLEAResult manager to gather their impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- We reviewed the participant evaluations from CEI workshops. Five workshops were conducted in 2022, including a kick-off and four workshops covering specific topics such as employee engagement, sustainable culture, technology, and schools.

⁵² These are the total number of projects in the channel. Of these 42 projects, 33 claimed savings.

- AEG conducts participant surveys for each channel once during the 3-year program cycle. The participant survey for CEI is scheduled for 2024.

Program Performance. Table 5-33 shows how CEI performance has changed since 2021. Relative to the previous program year, energy savings increased by 12%, and demand reduction decreased by 7%.

Table 5-33 CEI – Claimed Savings 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of CEEP	Claimed	Share of CEEP	
Energy (kWh)	28,201,243	26%	31,671,992	24%	12%
Demand (kW)	5,868	31%	5,477	25%	-7%

Channel Operations. CEI is a behavior-based program that engages customers to participate in a cohort through a series of workshops and training. The interactive cohort style allows participants to learn from one another and the information provided in the workshops. Each customer receives an audit at the beginning of participation to better understand the building operations. Energy savings are modeled, and customers receive two inducements: at the 6-month mark and at the end of the year. Twice-a-year payouts have helped influence customers to implement projects.

CEI Customer Participation Process

- Customer joins cohort.
- Customer receives audit.
- Customer attends workshops and trainings.
- Customer implements projects.
- CLEAResult models energy savings.
- Inducements paid to customers at six months and at one year.

Participants are recruited through one-on-one in-person marketing. CLEAResult works with OG&E account executives to introduce them to potential participants. Some customers who have done custom projects through CEEP are also referred to the channel.

CLEAResult has transitioned much of the workshops and training to a remote model and feels they are now more efficient. All workshops and training were previously conducted in person. They now have digitized workshops, developed tools to do some energy scans remotely using digital technology, and updated their digital libraries.

“We have learned that we can be just as effective or more effective remotely. We can connect with more people quicker.” – Implementer

The program had 26 participants in 2022, 10 of which were schools.

Barriers to Participation. The most significant barrier to participation is staffing resources at the customer site. Participating in CEI takes time and effort, and customers don’t always have enough resources. The CEI team has seen a lot of employee turnover at customer sites, and participants struggle to keep up with everyday tasks. But the implementer feels that participation will likely increase as more corporations become more focused on greenhouse gas (GHG) reduction.

Channel Effectiveness. The implementer reports that CEI is one of the channels that has been successful year after year. It has achieved significant and consistent results. Customers respond favorably to the channel because it’s no risk to them, i.e., “all carrots, no sticks.” Feedback from customers has also been very positive. Some customers drop out, but that is typically a result of energy champions leaving the company.

AEG reviewed the participant workshop evaluations as part of the process evaluation. Data was provided for five workshops in 2022. Participants rated the workshops on the following:

- If the workshop encouraged participation,
- The quality of the presentations,
- The quality of facilitation,

- Usefulness of the information,
- Amount of material covered, and
- Pace of the workshop.

Overall, participants rated the workshops very highly, with average scores for participation, quality, and usefulness ranging from 4.6 to 4.75 on a 5-point scale. Only one participant felt the amount of material covered was too much, and only one participant felt that the pace was too quick.

HVAC Replacement and Tune-Up (C&I HVAC)

The C&I HVAC channel focuses on energy savings by optimizing existing HVAC units and replacing older inefficient systems. Customer-requested HVAC tune-ups or unit replacements will be completed through a network of participating contractors (Trade Allies). When customers contact the CEEP program, the project team will refer them to available contractors or schedule an appointment for them. Trade Allies will complete the tune-up or HVAC unit replacement, the data collection on system performance, and the paperwork required to submit the applicable channel rebate forms. Savings are estimated using CLEAResult’s CoolSaver tool, which performs pre- and post-measurements on the HVAC equipment receiving tune-ups and model measure savings. Once the application has passed the channel requirements review, it will be processed, and the rebate will be paid directly from OG&E to the Trade Allies.

C&I HVAC – Key Findings

The **impact evaluation** established C&I HVAC evaluated energy savings of 6,045,765 kWh, which amounts to a 100% realization rate, and evaluated demand savings of 3,325 kW, which amounts to a 100% realization rate. Table 5-34 provides a summary of the C&I HVAC impact evaluation findings. We discuss the impact evaluation key findings below.

Table 5-34 C&I HVAC Impact Evaluation Summary

Savings	Gross Savings			Net Savings		
	Claimed	Evaluated	RR	Evaluated	NTG Ratio	Lifetime
Energy (kWh)	6,075,441	6,045,765	100%	5,985,307	99%	29,926,536
Demand (kW)	3,329	3,325	100%	3,292	99%	n/a

- **Quality and consistency.** The savings replication, engineering review, and site visits found that the channel operates well. The CLEAResult CoolSaver tool is robust and leads to accurate savings.
- **ISRs are 100%.** Our surveys and site visits found that all claimed tune-ups were completed, and the equipment was still operating.
- **Some building types in the channel do not have direct AR TRM building types.** Mapping building types not specified in the AR TRM to the appropriate building type is difficult. AEG conducted a similarity analysis of the AR TRM building types that map to the IL TRM building types, producing a simple but imperfect mapping.

The **process evaluation** resulted in the following key findings:

- **C&I HVAC savings grew in the last year,** increasing by 16% (energy) and 11% (demand) relative to 2021.
- **All savings come from HVAC tune-ups.** Inducements are too small to influence high-efficiency HVAC replacement.
- **Trade Allies have a good relationship with CLEAResult** and say the channel is easy to participate in. However, Trade Allies are extremely busy in the summer and have a hard time keeping up with demand.

C&I HVAC – Recommendations

The **impact evaluation recommendations** are as follows:

- [Use the AEG building type mapping for buildings that do not have heating and cooling hours in the AR TRM.](#) Building type mapping to buildings not specified in the AR TRM comes down to judgment. AEG used the IL TRM extensive building type list as a proxy, but it is not a perfect solution. AEG will work with CLEAResult to derive custom hours of use, but in the meantime, CLEAResult should use the AEG building type mapping for buildings that are not in the AR TRM:
 - Convenience store maps to the AR TRM building type full menu restaurant
 - Manufacturing-large, manufacturing-small, and warehouse all map to the AR TRM building type small office.

The **process evaluation recommendations** are as follows:

- [Recruit more Trade Allies to the program](#), particularly Trade Allies that serve rural areas. Provide participating Trade Allies with a dedicated contact at OG&E.
- [Consider offering an early replacement program for HVAC equipment.](#) Older still-working equipment could be identified during tune-ups. Customers could be provided with additional information and a larger inducement for replacing their equipment before burnout.

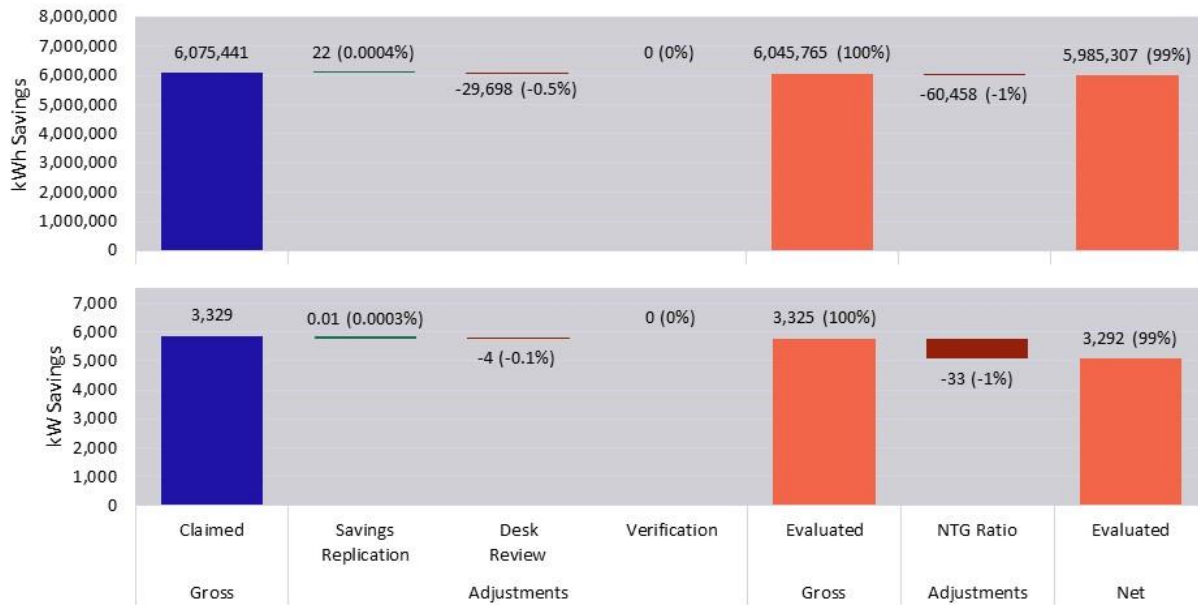
C&I HVAC – Impact Evaluation

Evaluation Approach. Table 5-4 above summarizes the impact evaluation activities conducted on C&I HVAC to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). Note the following:

- We did not conduct desk reviews for a sample of projects because there was no additional documentation besides the data in the database.
- Verification included site visits for the largest projects (top 5% using a historical threshold) and online participant surveys for other projects.
- AEG used the 2021 NTG adjustments in the C&I HVAC channel. AEG conducted an NTG update analysis (also in the participant survey) and NTG benchmarking with similar programs.

Evaluation Adjustments. Figure 5-23 presents a summary of impact evaluation adjustments from each activity. We discuss the driver of each adjustment below.

Figure 5-23 C&I HVAC Summary of Adjustments by Activity



- **Savings Replication.** AEG conducted a savings replication using all reported inputs for all C&I HVAC measures. The adjustments are from slight rounding differences.
- **Desk Review.** AEG did not conduct desk reviews in the same manner as other channels. Instead, we recreated the inputs using other reported data and conducted a building type mapping for buildings not specified in the AR TRM.
 - We mapped building types not specified in the AR TRM differently. We based our building type mapping on a similarity analysis of the IL TRM building types and compared that to the AR TRM. This slightly decreased the savings.
 - We calculated different baseline efficiencies for a handful of measures. This slightly decreased the savings.
- **Verification.** AEG conducted site visits and online surveys to verify that projects received tune-ups and that the equipment was still operating. We found that all measures received tune-ups and were still working.
- **Net-to-Gross.** AEG applied to the NTG adjustments from the 2021 evaluation. We conducted NTG research incorporated in the participant survey but need further research to establish updated NTG adjustments for 2023.

Table 5-35 shows the reported building types without a specified AR TRM match and AEG’s recommended mapping. As an example, we show zone 8 hours of use because it was the most common weather zone. Also, note that AEG only used one building type to simplify the analysis.⁵³ The driving factor in the desk review adjustment was that AEG mapped heating and cooling hours to different building types for a handful of reported building types that do not have heating and cooling hours specified in the AR TRM. Overall, this slightly decreased the savings.

⁵³ That is, we did not use separate building types for heating and cooling hours.

Table 5-35 C&I HVAC Building Type Mapping and Zone 8 Hours of Use

Reported Building Type	CLEAResult AR TRM Mapping			AEG AR TRM Mapping		
	AR Building Type	Heating Hours	Cooling Hours	AR Building Type	Heating Hours	Cooling Hours
Convenience	School	1,094	1,183	Full Menu Restaurant	362	1,640
Manufacturing-large	Assembly	915	1,632	Small Office (<=30k SqFt)	564	1,448
Manufacturing-small	Assembly	915	1,632	Small Office (<=30k SqFt)	564	1,448
Warehouse	School	1,094	1,183	Small Office (<=30k SqFt)	564	1,448

AEG used the IL TRM with a more extensive building type list to establish our recommended building type mapping. For example, *Convenience Store* is a building type in the IL TRM but not in the AR TRM. We reviewed IL TRM *Convenience Store* hours of use to determine a recommended AR TRM building type mapping instead of the AR TRM building type *School*, as in the claimed savings.

We found that, of the building types that are in both the AR TRM and the IL TRM, Full Menu Restaurant has hours of use in the IL TRM that matches closest to the IL TRM’s hours of use for Convenience Store. Therefore, we used the AR TRM’s Full Menu Restaurant as the proxy for Convenience Store hours of use. Note that this process requires judgment and is not exact, and AEG will work with CLEAResult to derive custom hours of use for these building types.

Stratum-Level Findings. Table 5-36 shows C&I HVAC energy savings and demand reduction by stratum. We used a census sampling approach for all activities, thus having no precision estimates around the savings. Figure 5-24 shows C&I HVAC savings distribution by stratum. The Top 5% stratum comprised 21% of total energy savings, indicating that the historical threshold is much lower relative to the 2022 5% threshold.

Table 5-36 C&I HVAC Evaluated Savings by Strataum

Sector	No. of Projects	Gross Energy Savings (kWh)			Gross Demand Reduction (kW)		
		Claimed	Evaluated	RR	Claimed	Evaluated	RR
Top 5%	7	1,287,225	1,268,001	99%	699	697	100%
All Others	160	4,788,216	4,777,764	100%	2,630	2,628	100%
Total	167	6,075,441	6,045,765	100%	3,329	3,325	100%

Figure 5-24 C&I HVAC Claimed and Evaluated Savings by Stratum



Table 5-37 shows the net lifetime energy savings. Tune-ups were the only measure this year, and they had an EUL of 5 years.

Table 5-37 C&I HVAC Net Lifetime Savings

Measure	Estimated Useful Life (EUL)	Net Lifetime Energy Savings (kWh)
Tune-ups	5	29,926,536
Overall	5	29,926,536

Net-to-Gross Analysis. As part of the participant survey, AEG assessed NTG scores for C&I HVAC in 2022. AEG also performed a benchmarking analysis to compare NTG scores of similar programs in other jurisdictions.

Table 5-38 shows the findings from the overall NTG analysis by measure⁵⁴. The resulting NTG scores assessed from the participant survey is 86%, approximately 13% lower relative to 2021 scores. However, the benchmarking analysis showed that HVAC tune-up measures have around 90-100% NTG adjustment ratios in other jurisdictions, comparable to 2021.

Table 5-38 C&I HVAC NTG Results

Measure	2022 NTG Survey Update	2022 Benchmarking Analysis	2021 NTG Score (kW)
HVAC Tune-Up	86%	90-100%	99%

⁵⁴ Only Tune-up measures in 2022 C&I HVAC.

Table 5-39 shows the nine responses recorded for the NTG battery of questions. We discuss below each criterion used to determine the likelihood that a customer was a free rider.

Table 5-39 C&I HVAC NTG Results

Program/Channel	Able to Make Financial Investment	Would have tune-up <1 year	Very Likely to have tune up w/o program	Previous tune-up >3 years	Free Ridership Score
Respondent 1	No	NA	NA	NA	0%
Respondent 2	No	NA	NA	NA	0%
Respondent 3	No	NA	NA	NA	0%
Respondent 4	Yes	No	Yes	NA	100%
Respondent 5	Yes	No	No	Yes	33%
Respondent 6	No	NA	NA	NA	0%
Respondent 7	No	NA	NA	NA	0%
Respondent 8	Yes	Yes	NA	NA	0%
Respondent 9	No	NA	NA	NA	0%
Average Free Rider Score					14%

The **first criterion** was based on the response to the following question in the participant survey:

“Would you have been able to make the financial investment to tune up your HVAC equipment if the HVAC Program was not available?”

- Customers who answered “no” were not deemed free riders.

The **second criterion** was the impact of the channel on the timing of the decision to implement the energy efficiency measure. The AR TRM stipulates a decision-maker who would have installed a measure within one year for full free ridership. AEG determined customers were not free riders if they stated that they would have installed a measure in more than one year.

Specifically, respondents were asked the following questions:

“Did you tune up your HVAC equipment sooner than it would have if the program had not been available?”

“When might you have tuned up or serviced your HVAC equipment if you had not participated in the program?”

- Respondents who answered “yes” to the first question and indicated that they would have installed the measure one or more years later in the second question were deemed not to be free riders.

The **third criterion** applied only to respondents who said they would have made the financial investment to tune up their HVAC equipment and would have done so within one year of when they undertook it. Two factors were analyzed to determine the likelihood of free ridership.

- The first factor required determining if a participant stated they intended to tune up their HVAC equipment even without the Program.
 - The respondent answered, “yes” to the following question:

“Before learning about the program, did you have plans to tune up or service your HVAC equipment?”

- The respondent answered, “very likely” to the following question:
“Using a scale where 1 means not at all likely and 5 means very likely, how likely is it that you would have tuned up or serviced the HVAC equipment if the program was not available?”
- If both these criteria were met the respondent was considered a free rider.
- The second factor required determining if a participant indicated they had previously had their HVAC equipment tuned up without an inducement in the last three years. Specifically, respondents were asked the following questions:
“Have you had your HVAC equipment tuned up or serviced previously?”
“When was your HVAC equipment last tuned up or serviced? If you are not sure, please provide your best estimate.”
- If the respondent answered “yes” to the first question and less than three years to the second question, they were considered a partial free rider (33%).

The program also likely influences customer behavior in the future. Eight of the nine respondents who answered a question about future behavior said they would be very likely (3) or somewhat likely (5) to purchase high-efficiency equipment in the future.

C&I HVAC – Process Evaluation

Evaluation Approach. Table 5-5 summarizes the process evaluation activities conducted to determine evaluated savings. We include detailed descriptions of each activity in [Appendix A](#). We performed the following activities:

- AEG conducted separate, comprehensive interviews with the OG&E program manager and the CLEAResult manager and with two of the six participating Trade Allies that participated in the channel in the first half of 2022.
 - The interviews gathered impressions of the channel’s implementation activities, performance, delivery issues, and opportunities for improvements.
- AEG administered an online survey to all customers who participated in the channel in 2022 but experienced very low response rates. The survey covered topics such as awareness, motivation, and satisfaction, and AEG used results to estimate the HVAC channel’s NTG ratio.
 - Only four customers with a valid email address completed the online survey even after AEG offered to donate \$20 to an Oklahoma area food bank of the respondent’s choice.
 - AEG conducted follow-up phone calls in March 2023 in an effort to improve the response rate. This effort increased the total number of responses to 10, two of which were partial completes (19% response rate).

Program Performance. Table 5-40 shows how C&I HVAC performance has changed since 2021. Energy savings and demand reduction increased by 16% and 11%, respectively, compared to the previous program year.

Table 5-40 C&I HVAC Claimed Savings – 2021 v. 2022

Gross Savings	2021		2022		% Diff. 2021 v. 2022
	Claimed	Share of CEEP	Claimed	Share of CEEP	
Energy (kWh)	5,247,410	5%	6,075,441	5%	16%
Demand (kW)	3,001	16%	3,329	15%	11%

Channel Operations. The channel provides no-cost HVAC tune-ups to C&I customers who have not tuned up their HVAC systems within the last five years. [The channel is marketed by the Trade Ally network, focusing on](#)

small business customers and school districts. Although rebates for high-efficiency HVAC units are also offered, no HVAC units were rebated through the channel in 2022.

The Trade Allies have a strong relationship with CLEAResult and said that they liked using the CoolSaver tool.

Participants said they heard about the C&I HVAC channel from their Trade Ally (3), through word of mouth (2), from an OG&E representative (1), or through an online search (1). One survey respondent had participated previously.

Barriers to Participation. Trade Allies are extremely busy in the summer and have a hard time keeping up with demand. Since COVID-19, most schools require that tune-ups are conducted in the summer when kids are not in school.

*“Pre-COVID, only one district said only when kids are not in school. But now most of them require this.”
– Program implementer*

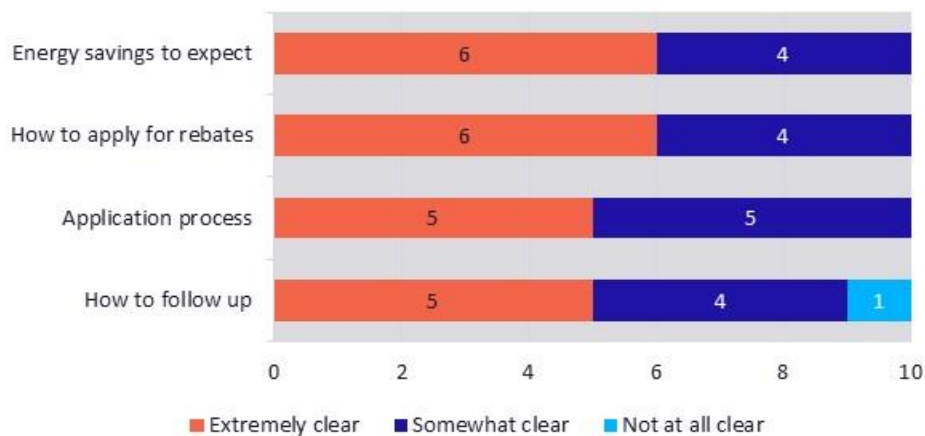
“Summers are super busy. We don’t have the bandwidth to do more. We bought three new trucks this summer and still didn’t have enough time to do additional OG&E tune-ups.” – Participating Trade Ally

Trade Allies observed that rebates for HVAC upgrades are too small to encourage customers to participate. The rebate amount is not worth the hassle of participation.

“It’s not worth it to go through the process for such low rebates.” – Participating Trade Ally

Channel Satisfaction and Experience. Participants were asked about their satisfaction with and experience participating in the channel. As shown in Figure 5-25, all ten respondents said the information provided to them about the C&I HVAC channel was either “extremely clear” or “somewhat clear” for most information elements. Only one said it was “not at all clear” how to follow up with questions or concerns.

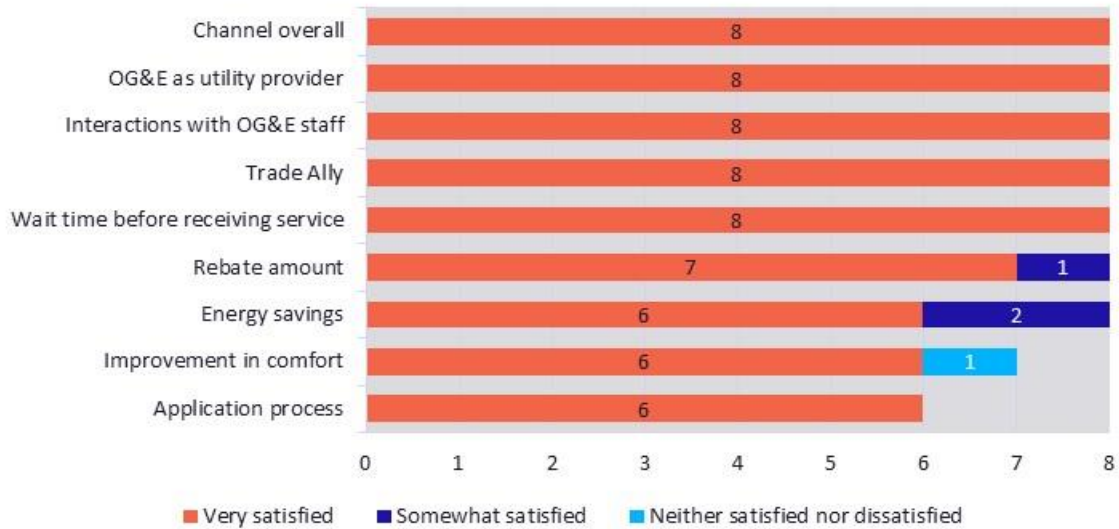
Figure 5-25 C&I HVAC Clarity of Information



Regarding the information provided, participants were asked to rate how helpful the information was in educating them about what to expect from a tune-up. All ten respondents said the information was “very helpful” (7) or “somewhat helpful” (3). Five respondents said their understanding of maintaining their HVAC equipment was “significantly improved,” while five said, “somewhat improved.”

AEG asked survey respondents to rate their satisfaction with various elements of the C&I HVAC channel and the channel overall. Figure 5-26 shows that respondents were almost universally “very satisfied” with every element. Two respondents were “somewhat satisfied” with the energy savings they saw, one was “somewhat satisfied” with the rebate amount, and one was “neither satisfied nor dissatisfied” with their facility’s improvement in comfort.

Figure 5-26 C&I HVAC Channel Satisfaction



On average, respondents rated their likelihood of recommending the C&I HVAC channel to others a 9.6 out of 10, with five 10s and three 9s.

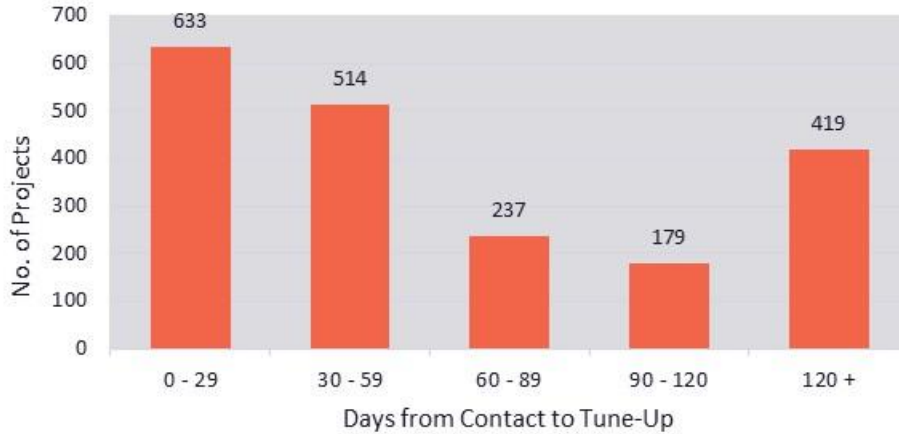
Trade Allies also said that customers are very happy with the channel. The channel is also very beneficial for Trade Allies’ businesses.

*“We can do schools so much faster than their maintenance crew could. The schools are very grateful.”
– Participating Trade Ally*

*“It [the channel] gets us new contacts, new leads. People we wouldn’t have met otherwise.” –
Participating Trade Ally*

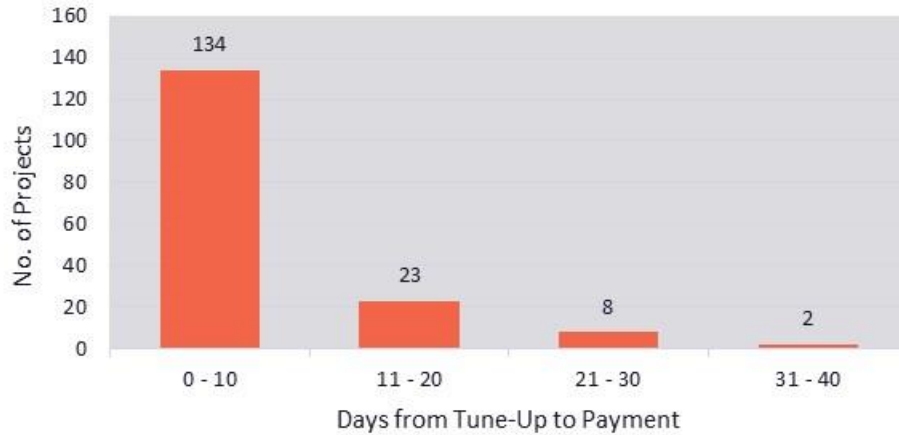
Cycle Time Analysis. Cycle time analysis was conducted for the channel to explore the time it takes from initial customer contact to tune-up to inducement distribution. The figure below shows the number of days from contact to tune-up for the channel. The C&I HVAC projects averaged 108 days from contact to tune-up. Most tune-ups were completed within 60 days (Figure 5-27). Note that eight projects were removed from the analysis because the tune-up date preceded the contact date.

Figure 5-27 C&I HVAC Number of Days from Contact to Tune-Up



As shown in Figure 5-28, most payments were completed within ten days of the tune-up, with an average of eight days.

Figure 5-28 C&I HVAC Number of Days from Tune-Up to Payment



Recommendations for Improvement. One Trade Ally said they would like to resume annual kick-off meetings with CLEAResult and OG&E. He stated that having a contact at OG&E can make a big difference when trying to convince customers to participate.

“We don’t have as much direct contact with OG&E as we used to before CLEAResult ran the program. Being able to pick up the phone and call OG&E when with customers can be really important to closing the sale.” – Participating Trade Ally

A

DETAILED METHODOLOGIES

This section provides detailed methodologies of the data collection and analyses used for the impact and process evaluations across all programs.

Impact Evaluation

The impact evaluation has three objectives: (1) estimate evaluated gross savings, (2) estimate evaluated net savings, and (3) test program cost-effectiveness. We used a combination of evaluation activities to produce a customized approach appropriate to each program and channel. Figure A-1 shows the evaluation activities performed in the 2022 evaluation and maps each activity to the corresponding objective. Table A-1 summarizes the impact evaluation activities performed for each program and channel. We describe each activity in detail below.

Figure A-1 Impact Evaluation Activities



Table A-1 Impact Evaluation Activities by Program and Channel

Program/Channel	Savings Replication	Eng. Desk Review	Verification	NTG Ratio Update	NTG Ratio Benchmarking	Benefit-Cost Analysis
HEEP						
RSOL	√	√	√		√	√
LivingWise		√	√		√	√
Res HVAC	√	√	√	√	+	√
CPS	√	√	√		√	√
PE-NHC		√		√	+	√
WRAP						
WRAP	√	√	√			√

Program/Channel	Savings Replication	Eng. Desk Review	Verification	NTG Ratio Update	NTG Ratio Bench-marking	Benefit-Cost Analysis
CEEP						
C&I Solutions		√	√		√	√
SAGE		√	√		√	√
SBDI		√	√		√	√
Midstream	√	√	√		√	√
CEI		√			√	√
C&I HVAC	√	√	√	√	+	√

As applicable, we developed a sampling plan to efficiently execute each analysis while maintaining a +/- 10% error margin at a 90% confidence level. For activities that require customer interaction, such as surveys, interviews, and onsite, we reviewed the selected sample with OG&E staff to ensure that participants are not currently included in other OG&E surveys (i.e., avoid survey fatigue). We include detailed descriptions of the sample design in [Appendix B](#).

Evaluated Gross Savings

For all programs and channels, AEG conducted some combination of the following impact activities to produce evaluated gross savings and the corresponding gross realization rate.

Savings replication, performed at the census level, duplicated the savings from the tracking database and ensured that claimed savings estimates, associated inputs, and assumptions were correct and reasonable. Savings replication included the following two steps:

- We reviewed OG&E’s program tracking database to verify the accuracy of input assumptions and savings calculations and confirm that the database covers an appropriately comprehensive suite of project information, focusing on required data fields for the verification. We ensured that the necessary data was available to facilitate the most accurate estimates of program savings.
- We replicated the savings using the current AR TRM or other approved documentation (e.g., a different state’s TRM, ENERGY STAR, etc.) to calculate savings for the population of deemed and semi-prescriptive measures and services in the program tracking database.

Engineering desk reviews, performed on a sample of participants, checked the accuracy of input variables, model numbers, and other project-specific information in the backup documentation for a sample of applications or projects. Desk reviews can be “simple” or “complex,” which are described as follows:

- **Engineering Algorithm Review (Simple)**. For prescriptive or semi-prescriptive measures, we requested all backup documentation for a representative sample of participants. Based on the documentation provided, we completed a more thorough review of the impacts, including verification of model numbers, measure counts, and other algorithm inputs.
- **Engineering Algorithm Review (Complex)**. For custom measures or complex semi-prescriptive measures, we conducted a detailed review of the savings approaches and calculations to confirm or adjust savings. This activity may include some or all of the following:
 - Review of project-level M&V plans, as available, to ensure that the savings calculations are consistent with any plans,
 - Review of detailed project documentation, which may include pre-implementation and post-implementation data collected during project-level M&V,
 - Primary or secondary research to inform the savings analysis, and

- Incorporation of data collected from onsite verification activities.

Verification activities, performed on a sample of participants, use virtual or onsite methods to verify measures/equipment rebates, installation, and operation. Our approach to verification for impact evaluations is as follows:

- **Contact a Sample Participants.** We followed the customer outreach protocol outlined in the EM&V plan, which included OG&E and Implementer coordination. The protocol focused on managing customer survey fatigue, communicating AEG’s affiliation with OG&E, and improving participant response rates.
- **Develop Site-Specific EM&V Plans.** We developed site-specific or measure-specific data collection plans to account for the need for various measures and corresponding verification methods for different sample points. As part of the development process, AEG verified the project scope and supporting documentation’s completeness to determine the necessary supplementary information. The review included measure types/classification, measure baselines, savings estimation methodology and assumptions, and M&V plans. The plans included the following elements:
 - [Virtual verification \(phone/email\)](#) for simple verification of prescriptive measure sites, and
 - [Onsite verification \(in-person\)](#) for the complex sites with custom measures.
- **Virtual Verification Process.** For residential and prescriptive/semi-prescriptive measures, we performed virtual (phone/email) verification activities. Participants were asked to verify the installation and critical aspects of incentivized equipment and measures. The types of data collected will depend on the installed measures but are likely to include:
 - Counts of lamps, fixtures, or other efficient equipment installed by type,
 - Photographs of installed energy efficiency equipment,
 - Photographs of equipment nameplates,
 - Supplemental trend data from BAS or SCADA systems, and
 - Manufacturer’s specification sheets for installed equipment.
- **Onsite Verification Process.** For custom and whole building projects, we performed in-person or onsite verification activities, which included some or all of the following:
 - Verified that equipment is operating correctly and recorded model numbers and efficiencies (in addition to all the same information as discussed for Virtual Verification),
 - Confirmed the fuel used and other pertinent information, including (1) verifying utility meters that serve the building and recording meter numbers, (2) verifying any calculation inputs that are required to evaluate the energy savings, (3) verifying baseline and efficient case parameters used in the building simulation models, and (4) verifying building construction permit and completion dates,
 - For measures with very high savings, measures with considerable uncertainty in their assumptions, custom engineering analyses, and complex projects that need more detailed data collection and analysis:
 - Obtained screenshots of the building’s energy management system or control system,
 - Obtained trend data from the building’s energy management system and any submeter data available from the site, and
 - Verified parameters used in the building simulation model, including building occupancy and equipment operation schedules, equipment sizes and efficiencies, details of equipment control systems, and building geometry and construction characteristics.

For Onsite Verification, the EM&V plans also included the following guidelines:

- General safety procedures and guidelines, including tools and PPE guidelines,
- COVID-19 adaptations to minimize risk to program participants and AEG staff and account for disrupted building operations and potentially unusable data, and
- Onsite verification training.

Evaluated Net Savings

AEG recommended a once-per-cycle *prospective* update of the NTG ratio used to derive the evaluated net savings from the evaluated gross savings. In other words, the 2022 evaluation used the current (2021) NTG ratios. During EM&V planning, AEG pre-determined programs and channels for an NTG ratio update analysis in 2022.

- **Benchmarking Analysis.** For all programs and channels, AEG performed a benchmarking analysis, comparing the current NTG ratios used in similar programs around the region or country. AEG used the findings from this analysis to formulate recommendations for current and future NTG analyses.
- **NTG Ratio Update.** We used a survey-based approach for programs/channels updated in 2022. This self-report approach (surveys and interviews) started with gross estimates of savings adjusted for NTG factors, such as savings (1) from free riders, participants not influenced by the program, and (2) from spillover, nonparticipants influenced by the program, but savings were not reported. We discuss program/channel-specific surveys in respective program/channel sections.

Cost-Effectiveness

We calculated the cost-effectiveness of OG&E's programs based on OG&E's reported total spending, evaluated energy and demand savings, measure inputs, and OG&E-specific economic inputs. Measure inputs include equipment measure life and participant incremental cost. OG&E-specific economic inputs include avoided costs, discount rates, line losses, etc. Additional inputs included Non-Energy Benefit (NEB) savings associated with water savings, when applicable, and the Oklahoma Utility Earned Incentive.⁵⁵

We used AEG's proprietary BenCost model to evaluate cost-effectiveness. The BenCost model is a transparent and comprehensive program planning and cost-effectiveness tool built in Microsoft Excel that conforms to the fundamental principles of cost-effectiveness economics and is consistent with industry best practices. The specific tests used to evaluate cost-effectiveness are Total Resource Cost Test, Utility Cost Test, Ratepayer Impact Measure Test, Participant Cost Test, and Societal Cost Test. The cost-effectiveness approach and assumptions are detailed in [Appendix C](#).

Process Evaluation Approach

AEG's approach to process evaluations is to provide quantifiable, actionable results that can be replicated over time to measure progress toward the program's goals. Similar to the impact evaluation, we used a combination of activities to produce a customized approach appropriate to each program and channel. Figure A-2 lists the typical evaluation activities performed in a process evaluation. Table A-2 summarizes the process evaluation activities performed for each program and channel. We describe each activity in detail below.

⁵⁵ The Oklahoma Corporation Commission rules permit OG&E to receive an incentive if the portfolio goals are met.

Figure A-2 Process Evaluation Activities



Table A-2 Process Evaluation Activities by Program and Channel

Program/Channel	Program Manager Interview	Implementer Interview	Trade Ally Survey/ Interview	Participant Survey/ Interview	Non participant Survey/ Interview	Cycle Time Analysis
HEEP						
RSOL	√	√				√
LivingWise	√	√				
Res HVAC	√	√	√	√		
CPS	√	√				
PE-NHC	√	√		√		
WRAP						
WRAP	√	√	√	√		
CEEP						
C&I Solutions	√	√	√			√
SAGE	√	√	√			√
SBDI	√	√	√			√
Midstream	√	√				
CEI	√	√				
C&I HVAC	√	√	√	√		√

AEG’s analysis collectively contributes to developing actionable recommendations to capitalize on program strengths, overcome program weaknesses, streamline program data collection and tracking, and increase program key performance indicators (KPIs).

As applicable, we developed a sampling plan to efficiently execute each analysis while maintaining a +/- 10% error margin at a 90% confidence level. For activities that require customer interaction, such as surveys and interviews, we reviewed the selected sample with OG&E staff to ensure that participants are not currently included in other OG&E surveys (i.e., avoid survey fatigue). We include detailed descriptions of the sample design in [Appendix B](#).

Program Manager and Implementer Interviews

AEG conducted in-depth interviews with OG&E implementation staff and third-party implementers enlisted by OG&E that are involved in the day-to-day running of the program. These foundational discussions provide our team with critical context and the program-specific language we need to effectively converse with participants

and accurately interpret their feedback. These interviews are also instrumental in determining the KPIs to track for each channel and creating the program scorecards for the evaluation plan.

An experienced AEG analyst or project manager conducted in-depth interviews and identified staff impressions of program implementation activities, program performance, marketing and customer awareness of the program, program data and tracking mechanisms, barriers to increased participation, overall program effectiveness, and opportunities for program improvements. Our experienced interviewers used a flexible approach to the discussion, allowing the respondent to talk about their experiences or perspective while still shaping the discussion to collect critical and relevant information.

Contractor and Trade Ally Interviews

As applicable to each program and channel, we interviewed participating contractors and trade allies who provide various installation and audit services. In these interviews, we captured information about the areas where our prior research has indicated barriers/challenges to the programs. The possible topics the interviews could address are program awareness, the effectiveness of program marketing, the need and availability of training, drivers of participation, barriers to participation, program satisfaction, and benefits. Additionally, these interviews could elicit interest in new program activities or determine items such as the marketing support desired by trade allies.

Participant/Nonparticipant Surveys and In-depth Interviews

AEG recommended a once-per-cycle cadence for conducting participant interviews. Under a separate engagement in 2022, AEG conducted a market evaluation that included surveys with nonparticipants. For that reason, we did not conduct additional nonparticipant surveys. AEG will work with OG&E to identify if nonparticipant surveys are necessary for the 2023 or 2024 evaluations.

Participant data collection is conducted primarily to understand the participant experience with OG&E's programs. AEG determined the appropriate medium (surveys and/or in-depth interviews) depending on the number and type of participants. We focused the surveys and interviews on:

- How participants became aware of programs,
- How they learned about the program,
- Why they signed up for the program,
- Experience signing up, including the wait time,
- The assessment experience or interactions with contractors for some programs,
- Satisfaction with the program, inducements, and measures installed,
- Attitudes toward energy efficiency,
- Information sources used when making purchasing decisions,
- Verification of direct install measures, including persistence,
- Net-to-gross battery,
- Likelihood of installing additional measures and technologies,
- Barriers to installing additional measures and technologies,
- Recommendations for program improvement,
- Challenges due to COVID-19,
- Relevant demographics, including the age of home, and
- Opportunities to improve program delivery/their experience.

AEG worked collaboratively with OG&E for both mediums to design surveys and interview prompts. AEG also worked collaboratively with OG&E staff and third-party implementers to identify the best approach to fielding surveys and scheduling interviews:

- Survey invitations were sent to valid email addresses, prompting participants to complete an online survey.
- In-depth interviews were conducted over the phone.

Cycle Time Analysis

Using tracking data and the participant survey/interview results, we calculated the typical time required for a participant to move through the key stages of participation. We then used the participant surveys or interviews to identify key points of attrition or stages where participants “fall out” of the process. We provide a graphical representation of the typical customer participation process and annotate the timeline with information from other process tasks, which will help OG&E understand when and why participants drop out and the points at which delays occur.

B

SAMPLE DESIGN AND EXTRAPOLATION

We developed a sampling plan to efficiently and cost-effectively execute each analysis while maintaining a +/- 10% error margin at a 90% confidence level (90/10) at the program level. For the 2022 evaluation, we analyzed the participant population necessary for each program/channel and determined if a sampling approach was necessary for these activities: Desk Reviews, Verification, and Participant Surveys.

Table B-1 identifies with a check mark (√) the activities that required a sampling approach by program and channel. Activities with “c” indicate a census sampling approach.

Table B-1 Evaluation Activity Sampling by Program and Channel

Program/Channel	Desk Review	Verification	Participant Survey
HEEP			
RSOL	√	√	n/a
LivingWise ⁵⁶	*	*	n/a
Res HVAC	c	√	√
CPS	c	n/a	n/a
PE-NHC	√	n/a	√
WRAP			
WRAP	√	√	√
CEEP			
C&I Solutions	√	√	n/a
SAGE	√	√	n/a
SBDI	√	√	n/a
Midstream	√	√	n/a
CEI	c	c	n/a
C&I HVAC	√	√	√

We used the following approach to sample design:

- **Reviewed the program data**, focusing on the population distribution⁵⁷ in each tracking database across measures, reported savings, and other metrics (e.g., home type, heating fuel type, etc.) as relevant to ensure that we build an efficient sampling plan specific to projects and customers in the current evaluation year.
- **Determined whether sampling** is required to complete the impact evaluation activities. Some activities, such as savings replication, did not require a sampling plan.
- **Stratified the project population** based on the program data review and evaluation goals. We determined a stratification approach based on each program/channel’s participant population, delivery stream, measure category, or claimed savings bins as needed.

⁵⁶ The LivingWise sample consisted of students that completed the HEW. AEG did not design a separate sample for this channel.

⁵⁷ Based on data from the first half of 2022 to accommodate the June 15, 2023 report filing.

- Selected an appropriate and efficient sampling approach within each stratum depending on the distribution of participation and claimed savings: census v. sample.
- Determined the recommended sample size for each stratum. We used an 85/15 assumption within each stratum to achieve 90/10 at the program level. We also assumed a coefficient of variation (CV) of 0.50⁵⁸ since we did not have access to error ratios from the previous evaluation. These assumptions mitigate the risk that we under-sample or over-sample strata and fail to meet or far exceed confidence and precision targets.

We worked closely with OG&E project staff to develop reasonable and efficient sample plans that meet their needs for the evaluation. For activities requiring customer interaction, such as onsite, surveys, and interviews, we reviewed the selected sample with OG&E staff to ensure that participants are not included in other OG&E surveys (i.e., avoid survey fatigue).

Sample Design Summary

The following tables present the sample design executed in 2022 and the achieved CVs around evaluated savings. We will use our findings to provide insights about any substantial deviations from confidence and precision targets that can be incorporated into future sample plans.

We show the [achieved relative precision and CV for evaluated gross energy savings \(kWh\)](#) for conservative reporting purposes. The precision and CV associated with demand (kW) are slightly lower.

Table B-2 shows the sample design summary for HEEP. Please note the following:

- Population counts are in number of homes except for CPS, which shows the number of rebated measures.
- RSOL – Multifamily, Res HVAC – Tune Up, and Res HVAC – ROB have 100% ISRs, and thus have no measured precision and CV.
- For HEEP, the sample design achieved an overall +/- 0.68% error margin at a 90% confidence level (90/10).

Table B-2 HEEP Sample Design Summary

Channel/Stratum	Population Count	Desk Review			Verification/Participant Sample			Rel. Prec. (90%)
		Sample Count	Rel. Prec. (90%)	Achieved CV	Sample Count	Rel. Prec. (90%)	Achieved CV	
RSOL – Multifamily	2,217	22	0.72%	0.004	5	-	-	0.90%
RSOL – Single Family	2,158	26	6.00%	0.035	193	3.71%	0.022	7.12%
LivingWise – Kit 1 – 2021	1,110	n/a	n/a	n/a	2,725	10.85%	0.065	10.85%
LivingWise – Kit 1 – 2022	5,385	n/a	n/a	n/a	1,437	9.49%	0.057	9.49%
LivingWise – Kit 2 – 2022	7,985	n/a	n/a	n/a	415	19.68%	0.112	19.68%
Res HVAC – Tune Up	1,976	n/a	n/a	n/a	153	-	-	-
Res HVAC – ROB	248	n/a	n/a	n/a	24	-	-	-
CPS	4,679 ⁵⁹	n/a	n/a	n/a	n/a	n/a	n/a	-
PE-NHC	1,460	24	0.96%	0.006	10 ⁶⁰	n/a	n/a	0.56%
Overall HEEP								0.68%

⁵⁸ Exceptions to this assumption are discussed below.

⁵⁹ Number of rebated measures

⁶⁰ Number of interviewed builders

Table B-3 shows the sample design summary for WRAP. Please note the following:

- Population counts are in number of homes.
- *Multifamily – Electric* and *Multifamily – Gas* has 100% RR (Desk Review), , and thus has no measured precision and CV.
- *Multifamily – Gas* has 100% ISR (Verification), and thus has no measured precision and CV.
- For WRAP, the sample design achieved an overall +/- 0.71% error margin at a 90% confidence level (90/10).

Table B-3 WRAP Sample Design Summary

Stratum	Population Count	Desk Review			Verification/Participant Sample			Rel. Prec. (90%)
		Sample Count	Rel. Prec. (90%)	Achieved CV	Sample Count	Rel. Prec. (90%)	Achieved CV	
Multifamily - Electric	484	27	-	-	3	0.00%	0.001	0.41%
Multifamily - Gas	206	23	-	-	3	-	-	-
Single Family - Electric	545	26	0.96%	0.006	23	0.00%	0.002	1.04%
Single Family - Gas	2,148	32	0.53%	0.003	10	0.00%	0.010	1.88%
Overall WRAP	3,383							0.71%

Table B-4 shows the sample design summary for CEEP. Please note the following:

- Population counts are in number of projects except for Midstream, which shows the number of invoices.
- All strata that had a census sampling approach (Population Count = Sample Count) has no measured precision and CV.
- Strata that had onsite verification (all *CIS – Custom* and all *Top 5%*) include verification adjustments under desk review. The rest of the strata had 100% ISR (Verification), and thus has no measured precision and CV.
- For CEEP, the sample design achieved an overall +/- 0.52% error margin at a 90% confidence level (90/10).

Table B-4 CEEP Sample Design Summary

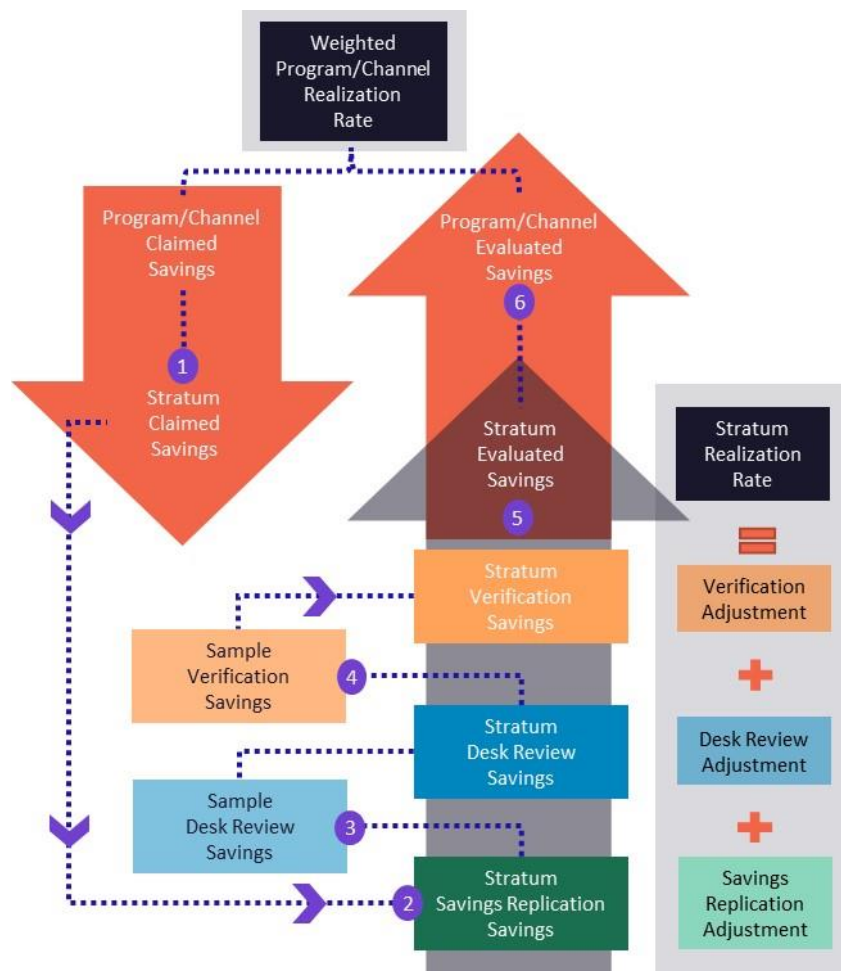
Channel/Stratum	Population Count	Desk Review			Verification/Participant Sample			Rel. Prec. (90%)
		Sample Count	Rel. Prec. (90%)	Achieved CV	Sample Count	Rel. Prec. (90%)	Achieved CV	
CIS – Custom – Top 5%	5	5	-	-	n/a	n/a	n/a	-
CIS – Custom – Hort. Ltg	43	16	2.80%	0.016	n/a	n/a	n/a	2.80%
CIS – Custom – All Others	14	10	2.53%	0.014	n/a	n/a	n/a	2.53%
CIS – Presc – Ltg Top 5%	4	4	-	-	n/a	n/a	n/a	-
CIS – Presc – Ltg All Others	99	20	0.33%	0.002	20	-	-	0.33%
CIS – Presc – Non Lighting	44	16	1.29%	0.007	16	-	-	1.29%
SAGE – Lighting Top 5%	5	5	-	-	n/a	n/a	n/a	-
SAGE – Lighting All Others	43	12	0.18%	0.001	12	-	-	0.18%
SAGE – Non Lighting	4	4	-	-	4	-	-	-
SBDI – Lighting	128	22	15.84%	0.092	22	-	-	15.84%
SBDI – Non Ltg Top 5%	7	7	-	-	n/a	n/a	n/a	-
SBDI – Non Ltg All Others	72	20	3.80%	0.022	20	-	-	3.80%

Channel/Stratum	Population Count	Desk Review			Verification/Participant Sample			Rel. Prec. (90%)
		Sample Count	Rel. Prec. (90%)	Achieved CV	Sample Count	Rel. Prec. (90%)	Achieved CV	
Midstream – Top 5%	68	22	0.02%	0.000	22	-	-	0.02%
Midstream – All Others	1887	32	0.29%	0.002	32	-	-	0.29%
CEI	42	n/a	n/a	n/a	n/a	n/a	n/a	-
C&I HVAC – Top 5%	7	7	-	-	n/a	n/a	n/a	-
C&I HVAC – All Others	160	160	-	-	8	-	-	-
Overall CEEP								0.52%

Sample Extrapolation

AEG used the following steps, including Savings Replication, Desk Review, and Verification activities, to inform *Channel* and *Program Evaluated Savings*. As noted in [Appendix A](#), we performed each impact evaluation activity as appropriate to each program and channel. Each activity’s realization rate (adjustment) is incremental from each preceding step. Figure B-1 below shows the sequence followed by sample extrapolation. Below we discuss steps 1 to 6 in more detail and define each adjustment and realization rate.

Figure B-1 Sample Stratification



1. [Stratify Program Savings](#). As discussed above, AEG reviewed the program data and stratified the population of savings by program, channel, and additional criteria as appropriate to each program/channel.
2. [Savings Replication](#). AEG completed its audit of the tracking system and re-calculated the claimed savings. We performed this audit at the census level for programs and channels with the appropriate data available. Throughout this report, we refer to the difference between *Stratum Claimed Savings* and *Stratum Savings Replication Savings* as *Savings Replication Adjustment*.

$$\text{Savings Replication Adjustment} = \frac{\text{Stratum Savings Replication Savings}}{\text{Stratum Claimed Savings}}$$

3. [Desk Reviews](#). AEG gathered backup documentation for each sampled project within each program, channel, and stratum and conducted Desk Reviews to determine the sample-verified savings.
 - a. Within each stratum, AEG used a [Ratio Expansion](#) approach to determine the *Stratum Desk Review Savings*, using the evaluated savings from the previous step (*Stratum Savings Replication Savings*) as the reference point.
 - This approach ensures adjustments are incremental to changes made to the population of claimed savings during Savings Replication (i.e., the Desk Review does not double-count any Savings Replication adjustments).
 - b. Throughout this report, we refer to the difference between *Stratum Claimed Savings* and *Stratum Desk Review Savings* as *Desk Review Adjustment*

$$\text{Desk Review Adjustment} = \frac{\text{Stratum Desk Review Savings} - \text{Stratum Savings Replication Savings}}{\text{Stratum Claimed Savings}}$$

4. [Verification](#). AEG conducted various verification activities (onsite inspections, web-based surveys, and phone surveys) on a sample of participants. AEG collected measure-level in-service rates (ISRs) to determine the sample-verified savings.
 - a. Again, within each stratum, AEG used a [Ratio Expansion](#) approach to determine the *Stratum Verification Savings*, using the evaluated savings from the previous step (*Stratum Desk Review Savings*) as the reference point.
 - This approach ensures adjustments are incremental to changes made to the population of claimed savings during Desk Reviews (i.e., the Verification does not double-count any Desk Review or Savings Replication adjustments).
 - b. Throughout this report, we refer to the difference between *Stratum Claimed Savings* and *Stratum Verification Savings* as *Verification Adjustment*

$$\text{Verification Adjustment} = \frac{\text{Stratum Verification Savings} - \text{Stratum Desk Review Savings}}{\text{Stratum Claimed Savings}}$$

5. [Stratum Evaluated Savings](#). Collectively, the three impact evaluation activities produce the *Stratum Evaluated Savings*. Similarly, the sum of the three adjustments makes the *Stratum Realization Rate*.

$$\begin{aligned} \text{Stratum Realization Rate} &= \text{Savings Replication Adjustment} + \text{Desk Review Adjustment} + \text{Verification Adjustment} \\ &= \frac{\text{Stratum Evaluated Savings}}{\text{Stratum Claimed Savings}} \end{aligned}$$

6. [Aggregate to Channel, Program, and Portfolio Levels](#). We calculated *Channel* and *Program Evaluated Savings* as the sum of *Stratum Evaluated Savings*. Similarly, we calculated *Portfolio Evaluated Savings* as the sum of *Program Evaluated Savings*.

- a. To estimate the *Weighted Realization Rate* for each channel, program, and overall portfolio, AEG divided evaluated savings by claimed savings. Program and portfolio realization rates incorporate all adjustments from Savings Replication, Desk Reviews, and Verification activities.

$$\textit{Weighted Program Realization Rate} = \frac{\textit{Program Evaluated Savings}}{\textit{Program Claimed Savings}}$$

C

COST-EFFECTIVENESS ANALYSIS

AEG evaluated the cost-effectiveness of the portfolio and programs based on 2022 costs provided by OG&E and their third-party implementers and the evaluated savings resulted from this evaluation. We provide a brief overview of the approach and the assumptions used in the analysis.

We used AEG's [proprietary BenCost model](#) as the primary tool to execute the cost-effectiveness analysis. The BenCost model is a transparent and comprehensive program planning and cost-effectiveness tool built in Microsoft Excel® that conforms to the fundamental principles of cost-effectiveness economics and is consistent with industry best practices. BenCost also has the flexibility to allow for modifications based on OG&E-specific needs.

We used five cost-effectiveness analysis methods among the standard methods used in this industry. All tests weigh monetized benefits against costs. These monetized amounts are presented as Net Present Value (NPV) evaluated over the measures' lifespan. The benefits and costs differ for each test based on the perspective of the test.

- **Total Resource Cost (TRC) Test** evaluates benefits and costs from the perspective of all utility customers (participants and non-participants). The TRC test measures the net costs and benefits of an energy efficiency program as a resource option based on the total costs of the program, including both the participant and the utility costs.
- **Program Administrator Cost Test/Utility Cost Test (PACT/UCT)** evaluates benefits and costs from the perspective of the utility, government agency, or third party implementing the program. The PACT/UCT measures the net costs of a program as a resource option based on the costs incurred by the program administrator (utility), excluding any net costs incurred by the participant. The benefits are avoided supply costs of energy and demand as well as the Oklahoma Utility Earned Incentive.⁶¹ The costs are the program costs incurred by the utility and participant inducements.
- **Participant Cost Test (PCT)** evaluates benefits and costs from the perspective of the customer installing the measure. The PCT measures the quantifiable benefits and costs to the customer due to participation in a program. The benefits include a reduction in the participants' bill and inducements received. The costs are out-of-pocket expenses incurred as a result of participation.
- **Ratepayer Impact Measure (RIM) Test** evaluates the impact of efficiency measures on non-participating ratepayers. The RIM test measures the change in customer bills or rates due to changes in utility revenues and operating costs. Benefits are the savings from avoided supply costs of energy and demand. Costs are the program costs incurred by the utility, participant inducements, and decreased utility revenues.
- **Societal Cost Test (SCT)** evaluates benefits and costs to society as a whole. The SCT measures the net costs and benefits of a program as a resource option based on the total costs of the program, including both the participant cost and utility cost and the benefit to society represented by an environmental externality factor.

Analysis Inputs. We calculated the cost-effectiveness of OG&E's programs based on OG&E reported total spending, evaluated energy and demand savings, measure inputs, and OG&E-specific economic inputs.

- Measure inputs include equipment measure life and participant incremental cost.
- OG&E-specific economic inputs include avoided costs, discount rates,⁶² line losses, etc.

⁶¹ The Oklahoma Corporation Commission rules permit OG&E to receive an incentive if the portfolio goals are met.

⁶² The discount rates vary by cost-effectiveness test.

- Additional inputs included Non-Energy Benefit (NEB) savings associated with water savings, when applicable, as well as the Oklahoma Utility Earned Incentive.⁶³ Several of the residential programs’ measures result in reduced water usage and energy efficiency savings. For these measures, we calculated annual water reductions and used the average costs of water (\$/gallon) in the OG&E service territory to determine NEB impacts.

Table C-1 summarizes the benefit and cost components included in each test.

Table C-1 Benefits and Costs Included in each Cost-Effectiveness Test

Test	Benefits	Costs
TRC	<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 (i.e., natural gas) • Non-energy benefits (i.e., water) 	<ul style="list-style-type: none"> • Program overhead costs • Incremental measure costs
PACT/UCT	<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 incentive costs
PCT	<ul style="list-style-type: none"> • Incentive payments • Bill Savings 	<ul style="list-style-type: none"> • Incremental equipment costs • Incremental installation costs
RIM	<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 (i.e., natural gas) • Non-energy benefits (i.e., water) 	<ul style="list-style-type: none"> • Program overhead costs • Utility incentive costs • Lost revenue due to reduced energy bills • Incremental measure costs
SCT	<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 (i.e., natural gas) • Non-energy benefits (i.e., water) 	<ul style="list-style-type: none"> • Program overhead costs • Program installation costs • Incremental measure costs

The following tables detail the results of each cost-effectiveness test for the programs and portfolio.

Table C-2 Cost-Effectiveness Benefits by Program

Program	TRC Benefits	UCT Benefits	RIM Benefits	PCT Benefits	SCT Benefits
HEEP	\$39,801,957	\$38,063,280	\$39,801,957	\$78,110,221	\$52,811,601
WRAP	\$14,822,861	\$12,944,980	\$14,822,861	\$26,813,418	\$19,933,129
CEEP	\$69,386,177	\$77,171,985	\$69,386,177	\$145,347,854	\$89,263,064
Energy Education	\$0	\$0	\$0	\$0	\$0
R&D	\$0	\$0	\$0	\$0	\$0
Planning	\$0	\$0	\$0	\$0	\$0
Total	\$124,010,996	\$128,180,245	\$124,010,996	\$250,271,492	\$162,007,794

⁶³ The Oklahoma Corporation Commission rules permit OG&E to receive an incentive if the portfolio goals are met.

Table C-3 Cost-Effectiveness Costs by Program

Program	TRC Costs	UCT Costs	RIM Costs	PCT Costs	SCT Costs
HEEP	\$13,384,293	\$11,277,372	\$80,291,413	\$8,250,758	\$8,250,758
WRAP	\$6,119,760	\$6,119,760	\$29,509,812	\$5,437,846	\$5,437,846
CEEP	\$28,239,466	\$18,062,009	\$153,791,576	\$20,083,791	\$20,083,791
Energy Education	\$788,314	\$788,314	\$788,314	\$0	\$788,314
R&D	\$160,007	\$160,007	\$160,007	\$0	\$160,007
Planning	\$0	\$0	\$0	\$0	\$0
Total	\$48,691,841	\$36,407,462	\$264,541,122	\$33,772,395	\$34,720,716

Table C-4 Cost-Effectiveness Net Benefits by Program

Program	TRC Net Benefits	PACT/UCT Net Benefits	RIM Net Benefits	PCT Net Benefits	SCT Net Benefits
HEEP	\$26,417,664	\$26,785,908	-\$40,489,455	\$69,859,462	\$44,560,843
WRAP	\$8,703,101	\$6,825,219	-\$14,686,950	\$21,375,571	\$14,495,283
CEEP	\$41,146,711	\$59,109,977	-\$84,405,399	\$125,264,063	\$69,179,273
Energy Education	-\$788,314	-\$788,314	-\$788,314	\$0	-\$788,314
R&D	-\$160,007	-\$160,007	-\$160,007	\$0	-\$160,007
Planning	\$0	\$0	\$0	\$0	\$0
Total	\$75,319,155	\$91,772,784	-\$140,530,126	\$216,499,097	\$127,287,078

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7.2 Marketing Materials



Saving energy and money has never been easier

OG&E brings you a collection of energy- and money-saving programs, at your home or at your business, all at no additional cost to you. Take advantage of the following:

- Residential Solutions Program
- Customer Rebates
- A/C Replacement & Tune-up
- Consumer Products
- Weatherization
- Positive Energy Home
- Multi-Family Efficiency Program
- Student Energy Education LivingWise
- Food Bank Program
- A/C Commercial Tune-up
- Large Commercial & Industrial Solutions
- Small Business Solutions
- Schools & Governments
- Midstream
- Continuous Energy Improvement (CEI)

To learn more about these programs, visit [OGE.com](https://www.oge.com) or call customer service at **844-882-5746**.

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OKLAHOMA ENERGY EFFICIENCY PROGRAMS

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Commercial and Industrial Energy Efficiency Programs (CEEP)

Energy costs can have a major impact on a business's operating expenses. That's why OG&E's CEEP offers financial incentives when energy efficiency measures are implemented at commercial facilities. OG&E provides easy energy assessments at no additional cost to customers to help identify and financially qualify potential energy-saving projects that could include low-or no-cost solutions.

Energy-saving solutions include:

HVAC Commercial Tune-up

The HVAC Commercial Tune-up Program offers an enhanced tune-up to commercial customers. This tune-up provides businesses with a more efficient A/C system while saving money.

Large Commercial & Industrial (C&I) Solutions

The Large C&I Solutions Program equips businesses with energy advisors who can help identify energy-saving opportunities that will lower energy costs. A business can also receive incentives based on the energy saved by upgrades to lighting, lighting controls, building automation, HVAC equipment, chillers, ground source heat pumps, motors, air compressors, retro-commissioning lite (RCx Lite), and other new construction and retrofit projects.

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 low-or no-cost energy-saving changes.



Midstream Program

The Midstream Program provides commercial customers with instant rebates off the sale price of various LED light bulbs or fixtures. Simply visit a participating lighting distributor to take advantage of the generous savings.



Small Business Solutions (SBDI)

SBDI offers facility walk-throughs and enhanced financial incentives to qualified small businesses that implement energy efficiency lighting measures. In some cases, the incentives in this program will provide 90 percent of the upgrade cost—all at no additional cost to the small business customer.



Schools and Governments Efficiency Program (SAGE)

The SAGE Program can provide incentives for LED lighting, HVAC upgrades and a select number of custom measure improvements. The program also performs facility walk-through audits to suggest energy-efficient updates.

Home Energy Efficiency Programs (HEEP)

Saving energy is easier than ever. OG&E's vast lineup of easy energy-saving opportunities will help homeowners lower their energy bills while increasing comfort, safety and efficiency. Providing so many ways to save with rebates and no out-of-pocket cost programs, you don't want to miss out.

Energy-saving solutions include:

Residential Solutions Program

OG&E's Residential Solutions Program provides quick and easy ways to save energy and money. The first step is OG&E's online HEETracker tool, which provides personalized, step-by-step solutions to lower your energy costs and make your home more comfortable. Take your review today and schedule an assessment. Next is a walk-through Home Energy Assessment from an energy advisor, who will provide energy-saving value to your home worth up to \$250. Take yours today and schedule an assessment or visit oge.com/heap to learn more.

Multi-Family Efficiency Program

The Multi-Family Efficiency Program provides various energy-saving upgrades for residential apartments and other multi-family dwellings. Upgrades are installed by OG&E's trade allies.



Customer Rebates

For homeowners looking to maximize their energy use and reduce electrical costs, OG&E offers money-saving rebates on select **ENERGY STAR® certified** door replacement, **ENERGY STAR certified** window replacement, and attic insulation.

HVAC Replacement & Tune-up

OG&E's A/C Replacement & Tune-up Program offers enhanced A/C tune-ups performed by trained HVAC trade allies using proven energy-saving techniques. A tune-up can boost your A/C unit's efficiency by up to 30 percent, plus help you enjoy longer-lasting, better-working equipment, greater energy efficiency, and improved comfort and humidity control. This program also allows customers to receive instant rebates for upgrading older units with new high-efficiency units from participating trade allies.

Consumer Products

This component allows residential customers in OG&E's territory to receive instant in-store discounts from major retailers on energy-efficient products. Look for special pricing from OG&E at your local retailers.

Weatherization Program

So that everyone can enjoy energy efficiency, OG&E's Weatherization Program provides home energy efficiency upgrades for eligible customers who own or rent (landlord approval required) a single-family home, duplex or mobile home and have an annual income of \$60,000 or less. This program is designed to reduce energy use, lower energy costs, increase comfort and safeguard occupants' health. Call **800-272-9741** to learn more.

Positive Energy® Home

You only get one chance to build a home right the first time. That's why OG&E's Positive Energy Home Program offers a high standard of energy efficiency and comfort through strict construction requirements. This program is the best option for a new home.

Student Energy Education LivingWise

The LivingWise Program provides residential energy and water efficiency education. These educational kits will be provided to fifth-grade students in OG&E's service territory. The program's proven school-based format includes take-home LivingWise Kits of energy measures, coupled with creative classroom and in-home education techniques to create awareness for families to adopt new resource habits.

Food Bank Program

Understanding that every little bit of savings helps those who need it most, OG&E has partnered with Oklahoma food banks to distribute energy-efficient LEDs and educational materials to qualifying OG&E customers.



SAVE MONEY & ENERGY AT HOME

OG&E is proud to introduce our Silver Energy™ program to serve our most experienced customers like you with residential choices designed to increase your comfort, safety and savings. We make homes more energy efficient and safe with home-improving services that seal up drafts, add security with LED lighting and reduce your heating and cooling bills, while saving you money each month. These energy-saving options help keep OG&E rates among the lowest in the nation and the silver lining is all of the services are provided at no additional cost to you!



OG&E WEATHERIZATION PROGRAM

It's easy to increase your comfort and reduce your heating & cooling bills at no additional cost with OG&E's Oklahoma Weatherization Program. Call 800-272-9741 to enroll.*

Oklahoma Weatherization Program may include:

- Adding insulation to the attic
- Duct sealing
- Caulking windows to eliminate air leakage and drafts
- Weatherstripping around doors
- Installing energy-saving LED light bulbs
- Sealing air leaks throughout the home
- Other thermal improvements

*Incentive funds are limited.

OG&E®

We Energize Life



HOME ENERGY EFFICIENCY PROGRAM

SCORE ENERGY AND MONEY SAVINGS WITH TRACKER

OG&E's Tracker provides you with a simple way to make your home as energy efficient as possible, including:

- Personalized recommendations specific to your home
- Ability to track progress as you take energy-efficiency actions
- Professional support, rebates and energy-efficient products
- An in-home assessment valued at \$250
- Up to 15 LED bulbs
- Advanced power strips
- Custom Home Energy Report
- All at no out of pocket costs

BILLING OPTIONS PERFECT FOR YOU

OG&E OFFERS OPTIONS THAT CAN FIT YOUR LIFESTYLE.

- Average Monthly Billing (AMB) is designed to level out those unusually high bills that occur during months of high electricity use. Your total annual cost for electricity remains the same, but you have the convenience of a more consistent bill each month.
- Customers age 65 and older can qualify for a \$5.00 monthly credit, June through September, when you switch to the SmartHours price plan. This billing option rewards decreased usage during peak summer demand hours. That's a guaranteed initial summer savings of \$20.00!

An **OG&E A/C Tune-up** can help you lower energy costs even more. A/C Tune-up benefits include:

- A/C Tune-up costs covered up to \$200 (additional charges may apply)
- Up to \$500 toward a qualifying replacement (based on efficiency and size)
- Longer-lasting, better-working equipment
- Greater energy efficiency
- Improved comfort and humidity control

SMARTHOURS™

Oklahoma seniors age 65+ who enroll in SmartHours qualify for a \$5 monthly credit, June through September. That's \$20 in savings on top of nearly half-price electricity for 19 hours each weekday and all day on weekends, Independence Day and Labor Day.

GFB

Manage your bill with our easy-to-use Guaranteed Flat Bill (GFB) pricing option. You pay the same amount for your electric bill every month for one full year – no matter how much electricity you use in the summer heat or winter cold. GFB is open to Oklahoma customers only.



INSTANT SAVINGS ON LED LIGHTING

Look for special pricing from OG&E at local retailers for instant savings on high efficient, long-lasting LED light bulbs.

THIRD PARTY NOTIFICATION

Add a family member or friend to receive a notification if there is a status change to your electric account.



OG&E
SILVER ENERGY™
PROGRAM

Visit [OG.E.com/silverenergy](https://www.ogenergy.com/silverenergy) to learn more.
Or call OG&E Customer Service from 8 a.m. to 5 p.m.
Monday through Friday at 1-800-272-9741.



Se Acerca el Invierno Comience a Preparar Su Hogar

Servicios de Climatización de OG&E

Hasta \$2,500 dólares en mejoras para proteger su hogar ante la llegada del invierno, sin costo adicional para usted*



Enmasillado



Iluminación LED



Cintas protectoras

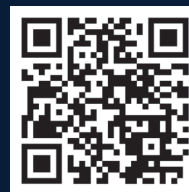


y mucho más



Aislamiento al ático

Ahorre hasta
30%
tan sólo en
calefacción



Inscríbese hoy mismo en
oge.com/weatherization

O escanee aquí

OG&E[®]

Energía para dar Vida

© 2022 OGE Energy Corp.



Winter is coming

Prepare your home

OG&E weatherproofing services

Up to \$2,500 to weatherize your home for winter at no added cost to you*



Caulking



LED lighting



Weatherstripping



and more



Attic insulations

Save up to
30%
on heating
alone



See if you are eligible for savings at [OG.E.com/weatherization](https://oge.com/weatherization)

Or scan here



We Energize Life

*For households making less than \$60,000 a year whether you rent or own a single-family home



YOUR HOME IS YOUR FAMILY'S FOUNDATION WE'RE HERE TO WEATHER-PROOF IT

Save up to 30% on air and heating, with up to \$2,500* in weather-proofing services at no additional cost to you:



CAULKING



WEATHER
STRIPPING



ATTIC
INSULATIONS



LED
LIGHTING



AND MORE

Get them all or get exactly what you need for **lower energy costs** and **increased comfort**.

*for households making less than \$60,000 a year whether you rent or own a single-family home

See if you are eligible
for savings at
oge.com/weatherization



Or scan
here

OG+E[®]

We Energize Life

HIGHER EFFICIENCY, LOWER COSTS



At OG&E, our goal is to help customers save energy and live more comfortably.

That's why our Home Energy Efficiency Program provides energy-saving tools, programs and incentives to all our neighbors across Oklahoma. From attic to basement, we'll help you discover which upgrades work best for your home and budget—and be there to help you every step of the way.

Bring home **easy savings**

Lowering your energy consumption is now easier than ever—and it all starts with our simple-to-use online Home Energy Efficiency Tracker tool. With just a few questions, our Tracker identifies trouble spots in your home and provides customized tips on how to improve your comfort and lower your energy costs.

Get started on the path toward a more comfortable, energy-efficient home at oge.com/heep.



Your energy efficiency **toolbox**

Complete your online Tracker profile to see if your home could benefit from our In-Home 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
- Up to 15 LED bulbs
- Advanced power strips (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**

A cooler, more efficient summer starts with an OG&E A/C Tune-up.

Schedule yours today to boost your A/C unit's efficiency by up to 30 percent. Valued at \$200, the tune-up requires no out-of-pocket costs from qualifying customers.*

Benefits:

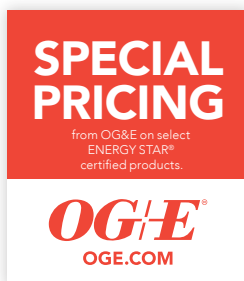
- Longer-lasting, better-working equipment
- Great energy efficiency
- Improved comfort and humidity control
- Access to incentives for a high-efficiency replacement, if needed

*Additional charges may apply.

Instant **Incentives**

Look for "Special Pricing from OG&E" signs at your local retailer for special deals on energy-efficient products.

**Incentive funds are limited. Please call 844-882-5746 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.**

Attic Insulation

Depending on your current insulation level, you could qualify for up to \$500 toward attic insulation improvements.

Windows

We offer a \$50 rebate for each professionally installed ENERGY STAR® certified window (limit seven).

Doors

Get \$100 back for each sliding or French door you replace with an ENERGY STAR certified model (limit two).

For more ways OG&E can help you manage your energy costs, visit oge.com/heep or contact us at 844-882-5746.



MAYOR EFICIENCIA, MENORES COSTOS



En OG&E, nuestro objetivo es ayudar a nuestros clientes a ahorrar energía y vivir con mayor comodidad.

Es por eso que nuestro Programa de Eficiencia Energética para el Hogar ofrece herramientas, programas e incentivos de ahorro de energía para todos nuestros vecinos en Oklahoma. Desde el ático hasta el sótano, le ayudaremos a descubrir qué mejoras son las que se adaptan más a su hogar y a su presupuesto, y estaremos allí para ayudarle en todo momento.

Implemente ahorros fáciles en su hogar

Reducir su consumo de energía es ahora más fácil que nunca, y todo comienza con nuestra sencilla herramienta HEETracker (Localizador de Eficiencia Energética para el Hogar). Con sólo algunas preguntas, nuestro HEETracker identifica las áreas problemáticas en su hogar y ofrece consejos personalizados sobre cómo aumentar su comodidad y reducir sus costos de energía.

Dé el primer paso para lograr un hogar más cómodo y energéticamente eficiente en oge.com/heep.

OG&E

Energía para dar Vida

oge.com



Su caja de herramientas energéticamente eficiente

Complete su perfil de HEETracker en línea para ver si su hogar podría beneficiarse de nuestra Evaluación en el Hogar. Con un valor de \$250 dólares, la evaluación incluye todo lo siguiente, **sin requerir costos adicionales:**

- Un análisis de la eficiencia energética de su hogar realizado por un experto
- Hasta 15 focos LED
- Regletas avanzadas de multi-contacto (hasta dos según sea necesario)
- Un Reporte Personalizado de Energía en el Hogar con las mejoras recomendadas
- Acceso a servicios, incentivos y ofertas adicionales para ayudarle a manejar los costos de energía



Ajuste sus **costos de energía**

Un verano más fresco y eficiente comienza con un Ajuste de Aire Acondicionado de OG&E.

Programe el suyo hoy mismo para aumentar la eficiencia de su unidad de aire acondicionado hasta un 30 por ciento. Con un valor de \$200, este ajuste no requiere de ningún gasto adicional por parte de los clientes que califiquen.*

Beneficios:

- Equipo más duradero y con mejor funcionamiento
- Mayor eficiencia energética
- Mayor comodidad y control de humedad
- Acceso a incentivos para obtener un reemplazo de alta eficiencia, en caso de ser necesario

*Se podrán aplicar cargos adicionales.

Incentivos al Instante

Busque los letreros que digan "Precios Especiales de OG&E" en su tienda local para recibir ofertas especiales en productos de eficiencia energética.



Más maneras de ahorrar

¿Quiere ser un consumidor más consciente del consumo de energía? Los reembolsos e incentivos de OG&E le permiten pagar menos por tecnología que le ahorra más.**

Aislamiento del ático

Dependiendo de su nivel actual de aislamiento, usted podría calificar para hasta \$500 en mejoras para colocar más aislamiento en su ático.

Ventanas

Ofrecemos un reembolso de \$50 por cada ventana con certificación ENERGY STAR® instalada por un profesional (límite de siete).

Puertas

Obtenga un reembolso de \$100 por cada puerta corrediza o francesa que reemplace por un modelo con certificación ENERGY STAR (límite de dos).

**Los fondos para incentivos son limitados. Llame al 844-822-5746 para confirmar la disponibilidad de fondos y para programar el trabajo.

Para conocer más maneras en las que OG&E puede ayudarle a manejar sus costos de energía, visite oge.com/heep o llámenos al 844-882-5746.



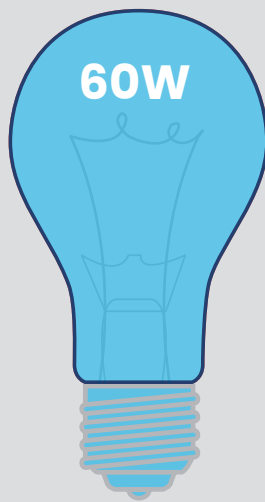
oge.com

SHINE ON THE SAVINGS.

You can have a lower energy bill and a more energy-efficient home. **It all starts with ENERGY STAR® certified LEDs.**

Your energy bill is about to get a makeover. By replacing your traditional incandescent light bulbs with LED bulbs, you'll lower energy use and maintenance costs.

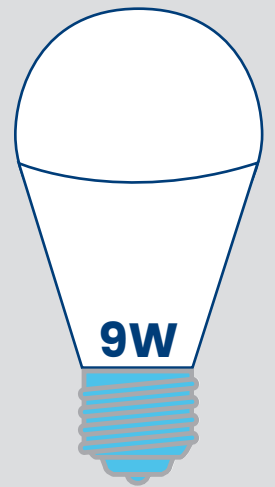
Here's an overview on how LEDs can make a difference in your home.



Incandescent



CFL



LED

Watts = Energy used | Lumens = Brightness

The bright side

ENERGY STAR certified LEDs provide the same brightness (lumens) using less energy (watts). Select the light output that matches your old incandescent bulbs and enjoy the long-term savings.

How many lumens do you need?

LUMENS	450+	800+	1100+	1600+
LED	5W	9W	13W	17W
CFL	11W	13W	20W	23W
STANDARD	40W	60W	75W	100W

OG+E®

We Energize Life

OGE.com

WARM OR SOFT WHITE
2,700–3,000 Kelvin

NEUTRAL OR COOL WHITE
3,500–4,100 Kelvin

SUNLIGHT OR DAYLIGHT
5,000–6,500 Kelvin



CHOOSING THE RIGHT COLOR

Light color is measured on the Kelvin (K) temperature scale, with a lower K number giving off a warmer, yellowish glow and a higher K providing cooler, bluer light.

Warm white, soft white

Good for:
Living rooms
Family rooms
Bedrooms



WALL SCONCES AND LAMPS

Cool white, natural white

Good for: Garages
Kitchens Bathrooms
Hobby rooms Basements



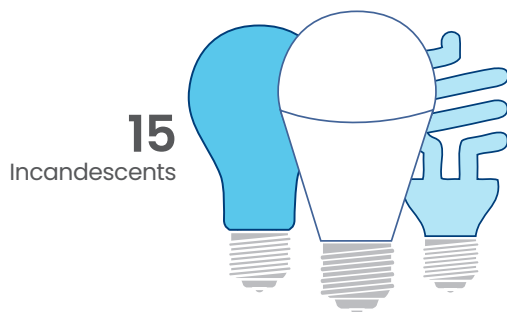
BATHROOM VANITIES AND PENDANT FIXTURES

Natural or daylight

Good for:
Reading areas
Detail-oriented activities



TRACK LIGHTING, RECESSED CANS AND
OUTDOOR EXPOSED



A light that lasts

A single LED can last more than 25,000 hours, which is up to 15 times longer than an incandescent and 1.5 times longer than a CFL.

Visit oge.com/keep to learn more about ways to lower your energy bill.

OG+E

We Energize Life

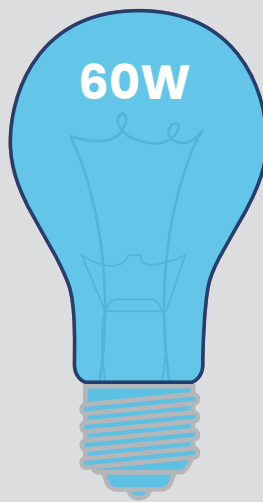
OG.E.com

DISFRUTE LOS AHORROS.

Usted puede tener una factura de electricidad más baja y un hogar energéticamente eficiente.
Todo comienza con los focos LED con certificación ENERGY STAR®.

Su factura de electricidad está por recibir una transformación. Si reemplaza los focos incandescentes de iluminación tradicional por focos LED, reducirá su consumo de energía y costos de mantenimiento.

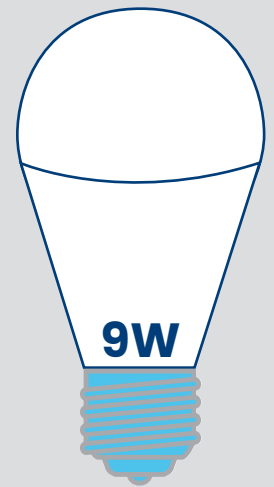
A continuación le mostramos cómo los focos LED pueden marcar una gran diferencia en su hogar.



Incandescente



CFL



LED

Vatios = Energía utilizada | Lúmenes = Brillo

El lado brillante

Los focos LED con certificación ENERGY STAR ofrecen el mismo brillo (lúmenes) utilizando menos energía (vatios). Seleccione la intensidad luminosa que corresponda a sus antiguos focos incandescentes y disfrute de los ahorros a largo plazo.

¿Cuántos lúmenes necesita?

LÚMENES	450+	800+	1100+	1600+
LED	5W	9W	13W	17W
CFL	11W	13W	20W	23W
ESTÁNDAR	40W	60W	75W	100W

OG/E®

Energía para la Vida



OGE.com

CÁLIDA O BLANCA CÁLIDA

2,700–3,000 Kelvin

NEUTRA O BLANCA FRÍA

3,500–4,100 Kelvin

NATURAL O DE DÍA

5,000–6,500 Kelvin



CÓMO ELEGIR EL COLOR ADECUADO

El color de la luz se mide en la escala de temperatura Kelvin (K); si el número Kelvin es más bajo, producirá un brillo más cálido y con tono amarillento; y si el número Kelvin es más alto, producirá una luz más fría y con tono azulado.

Cálida, blanca cálida

Ideal para:
Salas
Áreas de estar
Habitaciones



LÁMPARAS DE PARED Y DE MESA

Neutra, blanca fría

Ideal para: Garajes
Cocinas Baños
Salas de Sótanos
entretenimiento



LÁMPARAS COLGANTES Y DE BAÑO

Natural o de día

Ideal para:
Áreas de lectura
Áreas para actividades específicas



LÁMPARAS DIRECCIONALES, LUCES EMPOTRADAS Y LUCES PARA EXTERIORES



Iluminación que dura más

Un solo foco LED puede durar más de 25,000 horas, es decir, hasta 15 veces más que un foco incandescente y 1.5 veces más que un foco CFL.

Visite oge.com/heep para conocer más sobre las diferentes formas de reducir su factura de electricidad.

OG/E®

Energía para la Vida

OGE.com

Multi-Family Efficiency Program

EFFICIENCY IS OUR TREAT.



OG&E is helping property owners and tenants alike save more energy. As part of our Multi-family Efficiency Program, we provide properties with energy-efficient LEDs, power strips, shower heads, faucet aerators and high-performance A/C tune-ups all for no upfront costs.

Start saving in three easy steps:

1. Contact OG&E to schedule an appointment.
2. Notify tenants and maintenance of installation dates.
3. OG&E contractors install free measures as needed.

Eligibility

Individually metered multifamily properties receiving electric service from OG&E are eligible to participate.

Availability

Funding is limited and participation is on a first-come, first-served basis. Offerings are subject to change without notice.

Real savings.

No additional cost
to participate.



TO LEARN MORE
ABOUT OUR
MULTI-FAMILY
EFFICIENCY PROGRAM

call 844.882.5746

OG&E[®]

We Energize Life

OG&E.com

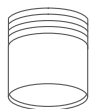
MULTI-FAMILY EFFICIENCY PROGRAM

EFFICIENCY IS OUR TREAT.



Thanks so much for allowing us in your home today.

As part of OGE's Multi-Family Efficiency Program, we've teamed up with your property management to make several energy-efficient upgrades in your home, including:



Kitchen and bathroom faucet aerators

- Use 31 percent less water than standard faucets and require less energy to heat your water
- Flow compensator gives consistent flow regardless of water pressure



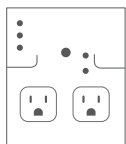
Energy-efficient showerheads

- Use 40 percent less water than traditional showerheads, requiring less energy for water heating
- Pressure-compensating technology guarantees consistent flow



ENERGY STAR® certified LED bulbs

- Use up to 90 percent less energy than traditional incandescent bulbs
- Last up to 22 times longer than incandescent bulbs



Advanced power strip

- Reduces "vampire power"—the energy electronics continue to run when plugged in, but not in use

Multi-Family Efficiency

**WE ENERGIZE
BUSINESS
SUCCESS**

OG&E ENERGY EFFICIENCY

To learn more about our
Multi-Family Efficiency
Program call
844-882-5746

OG&E

We Energize Life

OGE.com

PROGRAMA DE EFICIENCIA MULTIFAMILIAR

LA EFICIENCIA ES LO QUE NOS CARACTERIZA.



Muchas gracias por permitirnos entrar a su hogar el día de hoy.

Como parte del Programa de Eficiencia Multifamiliar de OG&E, estamos colaborando junto con la administración de su vivienda para realizar diversas mejoras de eficiencia energética en su hogar, incluyendo:



Aireadores para grifos de cocina y baño

- Utilizan 31 por ciento menos agua que los grifos estándar y requieren menos energía para calentar el agua
- El compensador de flujo proporciona flujo constante sin importar la presión del agua



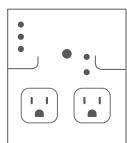
Cabezales de regadera energéticamente-eficientes

- Utilizan 40 por ciento menos agua que los cabezales de regadera tradicionales, y requieren menos energía para calentar el agua
- La tecnología de compensación a presión garantiza un flujo constante



Focos LED certificados por ENERGY STAR®

- Utilizan hasta 90 por ciento menos energía que los focos incandescentes tradicionales
- Duran hasta 22 veces más que los focos incandescentes



Extensión avanzada de multi-contacto

- Reducen la "corriente vampiro", lo que sucede cuando la energía eléctrica continúa circulando mientras está enchufada, pero no se está utilizando

Eficiencia Multifamiliar

WE ENERGIZE
BUSINESS
SUCCESS
OG&E ENERGY EFFICIENCY

Para más información
sobre nuestro Programa
de Eficiencia Multifamiliar
llame al **844-882-5746**

OG&E

Energía para dar Vida



OG&E.com

MULTI-FAMILY DUCT SEALING PROGRAM

NO LEAKS, NO COST



Leaky ducts leak money. Sign up for OG&E's no up-front cost Multi-family Duct Sealing Program and we'll identify, seal and repair every leaky duct in your building—all at no out-of-pocket cost to you or your tenants.

In a typical multi-family building, heating and cooling ducts lose over 40 percent of their air passing through them. Proper duct sealing can not only dramatically cut your tenants' heating and cooling costs, but also boost your building's overall comfort, reduce wear and tear on your HVAC system and lower your long-term maintenance costs.

How it works

1. Our team tests the ducts in each apartment to identify and seal any air leaks.
2. The ducts are re-tested to verify all leaks are properly sealed.
3. At around 45 minutes per apartment, we typically complete 10–15 apartments per day.

With almost 1,500 apartments and counting, OG&E's team of duct-sealing experts have already helped thousands of tenants save energy and live more comfortably. Contact us today and get the savings flowing.

NO UP-FRONT COST
Multi-Family
Duct Sealing Program

WE ENERGIZE
**BUSINESS
SUCCESS**

OG&E ENERGY EFFICIENCY

SEAL THE DEAL.

To get started,
contact us at
[ogeresidential@
clearresult.com](mailto:ogeresidential@clearresult.com) or
844-882-5746.

OG&E[®]

We Energize Life



OG&E.com

PROGRAMA MULTIFAMILIAR DE SELLADO DE DUCTOS

SIN FUGAS, SIN COSTO



Las fugas de aire en los ductos crearán fugas con su dinero. Inscríbase sin costo inicial en el Programa Multifamiliar de Sellado de Ductos de OG&E y le ayudaremos a identificar, sellar y reparar las fugas en cada ducto de su edificio. Todo esto sin ningún costo para usted o sus inquilinos.

En un típico edificio multifamiliar, los ductos de calefacción y enfriamiento pierden más del 40% del aire que pasa a través de ellos. Un sellado adecuado de los ductos no sólo puede reducir drásticamente los costos de calefacción y enfriamiento de sus inquilinos, sino que también puede aumentar la comodidad general dentro de su edificio, reducir el desgaste de su sistema de calefacción y aire acondicionado (HVAC) y disminuir sus costos de mantenimiento a largo plazo.

Cómo funciona

1. Nuestro equipo realizará pruebas a los ductos en cada apartamento para identificar y sellar cualquier fuga de aire.
2. Los ductos se volverán a probar para verificar que todas las fugas estén selladas correctamente.
3. Con un tiempo estimado de 45 minutos por apartamento, completamos normalmente de 10 a 15 apartamentos por día.

Con casi 1,500 apartamentos y aún más, el equipo de expertos en sellado de ductos de OG&E ha ayudado ya a miles de inquilinos a ahorrar energía y a vivir con mayor comodidad. Comuníquese con nosotros hoy mismo y comience a ahorrar.

**Programa
Multifamiliar**
de Sellado de Ductos
sin costo inicial



SELLE EL ACUERDO.

Para comenzar,
comuníquese
con nosotros en
[ogeresidential@
clearresult.com](mailto:ogeresidential@clearresult.com) o
844-882-5746.

OG+E®

Energía para dar Vida



OGE.com

\$50 REBATE ON ENERGY STAR® SMART THERMOSTATS

OKLAHOMA

FUND AVAILABILITY IS LIMITED. SUBMISSION OF APPLICATION DOES NOT GUARANTEE REBATE PAYMENT. By signing below, the purchaser authorizes OG&E to perform on-site inspections as needed to confirm installation. Purchaser confirms they are an OG&E customer and all information on this application is accurate. A separate rebate application must be filled out for each unit purchased. Rebate checks will be paid to the purchaser listed on this form.

Purchaser's Signature: _____ Date: _____



Please return completed rebate form and dated sales receipt by email or mail to:
rebates@oge.com | OG&E OK Residential Rebates, PO Box 2900, Oklahoma City, OK 73101

Questions: **844-882-5746**, 8am-5pm CST, Option 4

UPGRADE YOUR COMFORT

\$50 REBATE ON ENERGY STAR® SMART THERMOSTATS

OKLAHOMA

Customer Information (please print)

OG&E Account #: _____

Installation Address: _____

City: _____ State: _____ ZIP: _____

Customer Name (as shown exactly on your OG&E electric bill):

Customer Address: _____

City: _____ State: _____ ZIP: _____

Daytime Phone: _____

Email: _____

Building Information

Existing Thermostat (circle one):

Programmable (properly programmed) / Non-Programmable

Home Type (circle one): **Single / Duplex / Triplex / Fourplex**

Occupancy Type: **Own / Rent**

HVAC Type (circle one): **Heat Pump / Gas / Electric Resistance**

Size of area to be cooled: _____ sq. ft.

Smart Thermostat Information

Manufacturer/Brand: _____

Model #: _____

Installation Date: _____

Installation Cost: _____



Purchase an ENERGY STAR certified smart thermostat to qualify for this rebate. Available to OG&E residential customers only, limit three per account number. Rebate form must be submitted within 45 days of purchase. This program has limited funding. Rebates are paid on a first-come, first-served basis.



OG&E'S EV CHARGER REBATE PROGRAM

LIVE LIFE IN THE SMART LANE.



Receive
\$250
 per EV
 charging port.

CONTACT US FOR MORE
 INFORMATION:

844-882-5746, Option 4
rebates@oge.com

Our new Smart EV Charging Program offers residential customers rebates for purchasing and installing qualified electric vehicle charging stations in their homes.

All residential customers with single-family homes are eligible for these rebates, which can greatly offset your purchase and installation costs.

Rebates*

Charger Type	Standard	Qualifying Product
Level 2	\$250 per port	ENERGY STAR® certified

**Customers are eligible for rebates for up to two qualifying chargers per program year.*

ENERGY STAR certified level 2 charging stations:

- Use 40 percent less energy in standby mode than non-certified models
- Charge around four times faster than level 1 systems
- Provide 10–20 miles of range per hour of charging
- Can help improve your property value

Resource: energystar.gov

OG&E®

We Energize Life

OG&E.com



Build a more positive future.

Your perfect home shouldn't involve compromises. Choosing a Positive Energy Home gives you the power to achieve the comfortable, energy-efficient lifestyle you've always wanted—from the moment you move in.

Contact us today to learn more about the energy-saving possibilities of the Positive Energy Home. Multi-family incentives are also now available.

With rates among the lowest in the nation, we'll never stop finding ways to help Oklahomans save energy. See them all at oge.com/pehome.

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THE POSITIVE ENERGY[®] HOME



OG+E[®]

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.....

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What makes each OG&E Positive Energy® Home so efficient?

While all new homes must comply with state and local building codes, Positive Energy Homes are held to far more rigorous energy efficiency standards. We focus on four key areas to help you achieve the greatest savings and comfort:

Improved insulation

Better insulation results in consistently comfortable temperatures and lower energy costs year round.

High-performance windows

Low E windows block unwanted heat, by reflecting up to 74 percent of the sun's ultraviolet light. This provides some protection against fading furniture and carpet.



Airtight ducts and construction

Tighter leak-tested construction helps keep out dust, moisture, pests and allergens while lowering maintenance costs.

High-efficiency heating and cooling equipment

High-efficiency, properly installed heating and cooling systems can drastically lower your energy costs.

oge.com/pehome | 405-437-4295

ogepositiveenergyhomes@clearesult.com

Choose the high-efficiency system that makes sense for your home.

Positive Energy Homes offer four unique equipment options to help optimize your energy savings:

- 1. Dual fuel system** – Combines electric and natural gas power to deliver an energy-efficient air conditioner and a superb heating seasonal performance factor (HSPF) of 8.5.
- 2. Total electric system** – Powered entirely by electricity for a clean, quiet and fume-free home with a highly efficient 8.5 HSPF and an energy-efficient air conditioner.
- 3. Geothermal system** – Reduce your carbon footprint by powering your home with an energy-efficient air conditioner and ultra-efficient, fossil fuel-free geothermal heat pumps.
- 4. Efficient system** – Pairs a high-efficiency A/C unit with a 90 percent annual fuel utilization efficiency (AFUE) furnace for optimal energy savings.

From blueprints to moving day, we're here for you every step of the way.

Blueprint for success. Our energy experts will help you get started by reviewing your house plans and identifying energy-saving solutions that can save you money for years.

Expert consultation. We'll provide the information you need to choose energy-efficient improvements that are right for you.

Inspection. Our experts will thoroughly inspect your home during and after construction to ensure it meets or exceeds our strict building standards.

Positive Energy certification. Your home is certified only after passing rigorous leak detection and air infiltration tests.

ADVANCED A/C TUNE-UP PROGRAM

TUNE UP YOUR SUMMER

OG&E's Advanced A/C Tune-up is the coolest way to save on energy costs and improve your home's comfort. In one safe and easy appointment, an OG&E participating contractor can boost your A/C unit's energy efficiency by up to 30 percent.

Even cooler, save more than money!

Benefits:

- Reduced cooling costs
- Improved comfort and humidity control
- Longer-lasting, better-working equipment
- Clean and replace filter

During your tune-up, a participating contractor will:

- Clean outdoor condenser coils
- Inspect indoor coil and blower and clean as needed
- Test your A/C to measure its cooling output
- Measure indoor airflow and recommend adjustments if needed

Eligibility

Our Advanced A/C Tune-up is available to Oklahoma OG&E residential customers who own or rent a single-family, permanent-foundation home.**

Schedule now.

Contact us today at **844-882-5746** or **ogehvac@clearesult.com**.

*Repairs and additional charges may apply.

**Your home A/C unit must be in working order to qualify. The OG&E Advanced A/C Tune-up is a maintenance program, not a repair program. Tune ups are performed when the temperature is 70° F or higher with dry conditions. Funds are limited, and on a first-come, first-served basis

Save up to
\$200*
 on an OG&E
 Advanced
 A/C Tune-up.

Enroll now at
oge.com/heap or
 contact us to get started.

844-882-5746
ogehvac@clearesult.com

We Energize Life

OG&E.com

PROGRAMA DE AJUSTE AVANZADO DE AIRE ACONDICIONADO

MEJORE SU VERANO

El ajuste avanzado de Aire Acondicionado de OG&E es la mejor manera de ahorrar en sus costos de energía y mejorar la comodidad de su hogar. Con una consulta personalizada sencilla y segura, un contratista participante de OG&E podrá ayudarle a mejorar la eficiencia energética de su unidad de aire acondicionado hasta un 30 por ciento.

¡Y lo mejor es que usted ahorrará dinero y mucho más!

Beneficios:

- Reducción en los costos del aire acondicionado
- Mayor comodidad y control de humedad
- Mejor y más duradero equipo de aire acondicionado
- Limpieza y reemplazo del filtro

Durante su AJUSTE AVANZADO de aire acondicionado, un contratista participante se encargará de:

- Limpiar las bobinas del condensador exterior
- Inspeccionar la bobina y el ventilador interior; limpiarlos en caso de ser necesario
- Realizar pruebas a la unidad de aire acondicionado para medir su potencia de enfriamiento
- Medir el flujo de aire al interior y recomendar ajustes de ser necesario

Elegibilidad

Nuestro ajuste avanzado de Aire Acondicionado está disponible para los clientes residenciales de OG&E en Oklahoma, que sean dueños o renten una vivienda unifamiliar con cimientos permanentes.**

Programa su ajuste avanzado hoy mismo.

Contáctenos llamando al **844-882-5746** o en **ogehvac@cleareresult.com**.

*Reparaciones y cargos adicionales pueden aplicar.

**La unidad de aire acondicionado de su hogar deberá estar en funcionamiento para poder calificar para este programa. El ajuste avanzado de Aire Acondicionado de OG&E es un programa de mantenimiento, no un programa de reparación. Los ajustes se realizarán cuando la temperatura sea de 70° F o superior con clima seco. Los fondos para el programa son limitados y serán ofrecidos por orden de solicitud.

Ahorre hasta
\$200*

en un ajuste
avanzado de
Aire Acondicionado
de OG&E.

Inscríbese hoy mismo en
oge.com/heap o
contáctenos ya
para comenzar.

844-882-5746
ogehvac@cleareresult.com

OG&E®

Energía para la Vida
.....

OG&E.com

Hurry and enroll today - spots are filling up fast!

We know you are busy, so we've made enrolling a snap. Choose the ONE option that works best for you!

- Fax this completed form to 1-800-544-8051
- Call toll free at 1-888-GET-WISE
- Email the information requested below to info@getwise.org
- Enroll online at www.getwise.org/enroll



LIVINGWISE[®]
PROGRAM

A SPECIAL \$50.00
MINI GRANT FOR YOUR
CLASSROOM

\$50.00

when 80% of the completed
Surveys are submitted
by February 1, 2023



YES! Please enroll me in the FREE LivingWise[®] Program!
I have verified that the contact information below is correct.

Contact Name: _____

School Name: _____

City: _____ State: _____ ZIP Code: _____

School Phone: _____ Fax: _____

Email: _____

Phone (alternative): _____ Grade Level: **5th**

Which month would you like to receive the materials? (circle one)

Aug. Sept. Oct. Nov. Dec. # of Students: _____

I would like to be contacted via: (circle all that apply)

School phone Alternate phone Fax Email

Please enroll the following additional teachers to participate in the FREE program. These teachers will also receive a \$50.00 Mini Grant once they have submitted at least 80% of the completed student surveys by February 1, 2023.

Name: _____ # of Students: _____

Name: _____ # of Students: _____

Name: _____ # of Students: _____











Three reasons to enroll your classroom in LivingWise today!

1. Each student receives a FREE LivingWise Kit containing educational materials and energy-efficient products that can be installed in the student's home! For your convenience, we have enclosed a flyer describing the products.
2. Each participating teacher will receive a \$50.00 Mini Grant when returning 80% of the completed Student Surveys by February 1, 2023.
3. Each teacher receives a FREE LivingWise® Kit to take home and use!

**SUPPORTS
STATE ACADEMIC
STANDARDS**

How do Teachers Benefit?

-  NOTHING TO ADD - the program is meant as an enhancement to your current curriculum.
-  The rigorous curriculum provided by this program adheres to the academic standards set for: ELA, Math, Next Generation Science, Technology, and College and Career Readiness.
-  Program comes complete with a teacher manual and FREE LivingWise kits for each student.
-  Implementation time is minimal and the time frame is flexible - you set the pace!
-  PARENTS/GUARDIANS are encouraged to be directly involved in their child's education.
-  Students learn how to help their FAMILIES save electricity, natural gas, and water.
-  The FREE kits and exciting projects engage students to make learning fun!
-  Partnerships in the community are fostered to create support for schools.

P: 1-888-438-9473
F: 1-800-544-8051
www.getwise.org/enroll



LIVINGWISE®
PROGRAM

OG+E®

We Energize Life



LivingWise® Program Contents

Each program includes the following materials:

Student Materials

- *Student Guide*
- *Take-Home Workbook*
- *LivingWise Kit (shown below)*
- *Parent Letter/Pledge Form*
- *Student Survey Form*
- *Certificate of Achievement*
- *Unlimited Website Access*
- *Toll-Free HELP Line*
- *“OG&E” Wristband*

Teacher Materials

- *Teacher Book*
- *Step-by-Step Program Checklist*
- *Program At A Glance*
- *State Academic Standards Sheets*
- *Electricity, Water, and Natural Gas Posters*
- *Teacher Survey Form*
- *Unlimited Website Access*
- *Toll-Free HELP line*
- *Self-Addressed Postage-Paid Envelope*

LivingWise Kit*

- *High-Efficiency Showerhead*
- *Two LED Light Bulbs*
- *Kitchen Faucet Aerator*
- *Bathroom Faucet Aerator*
- *Digital Thermometer*
- *LED Night Light*
- *Advanced Power Strip*
- *Flow Rate Test Bag*
- *Parent/Guardian Program Evaluation*
- *Quick Start Guide*
- *Installation Instruction Booklet*
- *Spanish-Translated Materials*



*Actual kit items may vary.



WELCOME

Thank you for choosing to participate! The LivingWise Program will help your students and their families learn the importance of natural resources and immediately lower their utility bills. **Oklahoma Gas & Electric** has fully paid for and provided this program for your class.

Program materials are continually updated using feedback from teachers just like you. This year, the following enhancements have been made:

- **TEACHER MATERIALS.** The *Teacher Book* includes a Program At A Glance, chapters, lessons, hands-on classroom activities, and teaching ideas.
- **STUDENT MATERIALS.** The *Student Guide* includes easy-to-use chapters and lessons, visual aids, charts and graphs, vocabulary exercises, engagement exercises, and “think and apply” discussion topics.
- **PARENT MATERIALS.** The introduction letters to parents and the kit contain information specifically designed to engage parents. Materials reinforce the concepts taught and will effectively help parents become an active participant in their child’s education.
- **SUPPORT OF MORE STATE STANDARDS.** The materials meet or exceed state academic standards in science, math, and language arts.

To ensure program success and your eligibility for a Mini Grant, please do the following:

- **HAVE YOUR STUDENTS INSTALL ALL OF THE PRODUCTS IN THE KIT.** Installation of all of the products is essential for learning how to conserve at home. The more products that are installed, the higher probability that the program will be available in future years.
- **IMPLEMENT THE PROGRAM.** Most teachers find that they can implement the program in two weeks or less. Find a time to fully implement the program so that students and their families have the best opportunity to save natural resources and money on the utility bill.
- **RETURN PROGRAM RESULTS.** Make sure that each student completes a Student Survey form and thank-you note. Return the Student Survey forms, thank-you notes, the Teacher Survey form (located on the reverse side of this letter) and a letter from you in the postage-paid envelope provided.

Questions? Call 1-888-GET-WISE or visit www.getwise.org.

TEACHER SURVEY

Your feedback is greatly appreciated.

Program brought to you by:

OG&E[®]

We Energize Life
.....

Date: _____

School: _____

Teacher Name: _____

Email: _____

Number of Student Survey Forms Returned: _____

Teacher Signature: _____

Please assess the LivingWise[®] Program Program by filling out this Teacher Survey form. Upon completion, return this Teacher Survey form, your Student Survey forms, student thank-you notes, and a letter from you to **Oklahoma Gas & Electric** in the postage-paid return envelope provided.

PLEASE FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR OPINION:

1. The materials were clearly written and well organized.

- Strongly Agree Agree Disagree Strongly Disagree

2. The products in the kit were easy for students to use.

- Strongly Agree Agree Disagree Strongly Disagree

3. Students indicated that their parents supported the program.

- Yes No

4. Would you conduct this program again?

- Yes No

5. Would you recommend this program to other colleagues?

- Yes No

6. Would you be willing to participate on a local Teacher Focus Group?

- Yes No

7. If my school is eligible for participation next year, I would like to enroll.

- Yes No

8. What did students like best about the program? Explain.

9. What did you like best about the program? Explain.

10. What would you change about the program? Explain.

GET YOUR \$50.00 MINI GRANT!

**Return the following by
February 1, 2023:**

- 80% of Student Survey forms
- This Survey form
- Student thank-you notes
- A letter from you



DON'T LET TIME RUN OUT



Simply return 80% of your completed surveys by February 1, 2023, and you'll receive a **\$50.00** Mini Grant for your classroom!

And don't forget to give a wristband reward to your students when they return their completed surveys to you!



Offer open only to teachers participating in the program. Certain restrictions may apply. Good while supplies last. Offer ends February 1, 2023. 80% return rate of completed participant survey forms required for eligibility. For more information call 1-888-GET-WISE or contact us online at www.getwise.org.

OKLAHOMA ACADEMIC STANDARDS*

GRADE 5

LANGUAGE ARTS

1: LISTENING AND SPEAKING-Students will listen and speak effectively in a variety of situations.

Listening-Students will develop and apply effective communication skills through speaking and active listening.

5.1.L.1 Students will actively listen using agreed-upon discussion rules with awareness of verbal and nonverbal cues.

5.1.L.2 Students will actively listen and interpret a speaker’s verbal messages and ask questions to clarify the speaker’s purpose.

2: READING AND WRITING FOUNDATIONS-Students will develop foundational skills for reading and writing proficiency by working with sounds, letters, and text.

Fluency-Students will read grade-level text smoothly and accurately, with appropriate expression.

5.2.F.1 Students will expand their sight word vocabulary by reading regularly- and irregularly-spelled words in isolation and context with increasing automaticity.

5.2.F.2 Students will orally and accurately read grade-level text at a smooth rate with expression that connotes comprehension.

2: READING AND WRITING PROCESS-Students will use a variety of recursive reading and writing processes.

Reading-Students will read and comprehend inclusive, diverse, and increasingly complex literary and informational texts.

5.2.R.1 Students will explain how key supporting details support the main idea of a text.

5.2.R.2 Students will identify details in fiction, poetry, and nonfiction texts to distinguish various genres.

5.2.R.4 Students will summarize facts and details from an informational text.

3: CRITICAL READING AND WRITING-Students will apply critical thinking skills to reading and writing.

Reading-Students will analyze, interpret, and evaluate increasingly complex literary and informational texts that include a wide range of historical, cultural, ethnic, and global perspectives from a variety of genres.

5.3.R.1 Students will determine the author’s purpose and draw conclusions to determine if the author’s purpose was achieved.

5.3.R.6 Students will distinguish fact from opinion in an informational text and explain how reasons and facts support specific points.

5.3.R.7 Students will distinguish the structures of informational texts: compare/contrast, cause/effect, problem/solution, description, sequential.

Writing-Students will thoughtfully and intentionally write, addressing a range of modes, purposes, and audiences.

5.3.W.3 Students will write opinion essays that: introduce a topic and state a clear opinion, and incorporate relevant, text-based evidence to support the opinion.

*State Academic Standards derived from multiple, independent sources exhibit the most current information available to date.

OKLAHOMA ACADEMIC STANDARDS*

GRADE 5

LANGUAGE ARTS

4: VOCABULARY-Students will expand and apply their spoken and reading vocabularies to speak, read, and write effectively.

Reading-Students will expand academic, grade-level vocabularies through reading, word study, and discussion.

5.4.R.2 Students will use context clues to clarify the meaning of words.

5.4.R.3 Students will use word parts (e.g., affixes, Latin roots, stems) to define and determine the meaning of new words.

5.4.R.4 Students will consult reference materials (e.g., dictionaries, glossaries, thesauruses) to comprehend the words in a text.

5.4.R.5 Students will acquire new grade-level vocabulary, relate new words to prior knowledge, and apply vocabulary in various contexts.

Writing-Students will apply knowledge of vocabulary to speak and write effectively.

5.4.W.1 Students will use domain-appropriate vocabulary to communicate ideas in writing.

5.4.W.2 Students will use precise and vivid vocabulary in writing for the intended mode and effect on the audience.

6: RESEARCH-Students will engage in inquiry to acquire, refine, and communicate accurate information.

Reading-Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.

5.6.R.1 Students will conduct research to answer questions, including self-generated questions, and to build knowledge, using multiple sources.

5.6.R.2 Students will identify and use text features to analyze the structure of informational texts.

5.6.R.3 Students will determine the relevance and reliability of the information gathered.

Writing-Students will synthesize information ethically through speaking and writing.

5.6.W.3 Students will write informative texts independently for short timeframes that organize related information logically and convey key details, quotations, or other relevant information from multiple sources.

*State Academic Standards derived from multiple, independent sources exhibit the most current information available to date.

OKLAHOMA ACADEMIC STANDARDS*

GRADE 5

MATHEMATICS

NUMBER & OPERATIONS

5.N.1	Divide multi-digit numbers and solve real-world and mathematical problems using arithmetic.
5.N.1.1	Estimate solutions to division problems to assess the reasonableness of results.
5.N.1.2	Divide multi-digit numbers, by one- and two-digit divisors, using efficient procedures, based on knowledge of place value, including standard algorithms.
5.N.1.3	Recognize that quotients can be represented in a variety of ways, including a whole number with a remainder, a fraction or mixed number, or a decimal and consider the context in which a problem is situated to select and interpret the most useful form of the quotient for the solution.
5.N.1.4	Solve real-world and mathematical problems requiring addition, subtraction, multiplication, and division of multi-digit whole numbers. Use various strategies, including the inverse relationships between operations, the use of technology, and the context of the problem to assess the reasonableness of results.
5.N.2	Read, write, represent, and compare fractions and decimals; recognize and write equivalent fractions; convert between fractions and decimals; use fractions and decimals in real-world and mathematical situations.
5.N.2.2	Read and write decimals using place value to describe decimal numbers including fractional numbers as small as thousandths and whole numbers as large as millions.
5.N.2.3	Compare and order fractions and decimals, including mixed numbers and fractions less than one, and locate on a number line.

ALGEBRAIC REASONING & ALGEBRA

5.A.1	Describe and graph patterns of change created through numerical patterns.
5.A.1.2	Use a rule or table to represent ordered pairs of whole numbers and graph these on a coordinate plane, identifying the origin and axes in relation to the coordinates.

GEOMETRY & MEASUREMENT

5.GM.2	Understand how the volume of rectangular prisms and surface area of shapes with polygonal faces are determined by the dimensions of the object and that shapes with varying dimensions can have equivalent values of surface area or volume.
5.GM.2.1	Recognize that the volume of rectangular prisms can be determined by the number of cubes (n) and by the product of the dimensions of the prism ($a \times b \times c = n$). Know that rectangular prisms of different dimensions (p , q , and r) can have the same volume if $a \times b \times c = p \times q \times r = n$.

DATA & PROBABILITY

5.D.1	Display and analyze data to find the range and measures of central tendency (mean, median, and mode).
5.D.1.2	Create and analyze line and double-bar graphs with whole numbers, fractions, and decimals increments.

*State Academic Standards derived from multiple, independent sources exhibit the most current information available to date.

OKLAHOMA ACADEMIC STANDARDS*

GRADE 5

SCIENCE

PHYSICAL SCIENCE

Matter and Its Interactions

5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.
5-PS1-2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Motion and Stability: Forces and Interactions

5-PS2-1	Support an argument that the gravitational force exerted by the Earth is directed down.
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LIFE SCIENCE

From Molecules to Organisms: Structure and Processes

5-LS1-1	Support an argument that plants get the materials they need for growth chiefly from air and water.
5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Ecosystems: Interactions, Energy, and Dynamics

5-LS2-2	Use models to explain factors that upset the stability of local ecosystems.
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EARTH AND SPACE SCIENCE

Earth's Systems

5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
5-ESS2-2	Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

Earth and Human Activity

5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the earth's resources and environment.
-----------------	--

*State Academic Standards derived from multiple, independent sources exhibit the most current information available to date.



OG+E[®]

We Energize Life



CERTIFICATE OF ACHIEVEMENT

Awarded to



**for making a difference in your community
by successfully completing the LivingWise[®] Program.**

Diane Sumner

Diane Sumner, Ed.D., Director of Education



LIVINGWISE[®]
PROGRAM

!FELICITACIONES!

La clase de su hijo ha sido seleccionada para participar en el fascinante Programa LivingWise. El programa está diseñado para enseñarle a su hijo el valor del agua y de la energía y para ayudarle a usted a ahorrar dinero en sus facturas de servicios públicos. Este programa lo provee Oklahoma Gas & Electric SIN COSTO para usted, la escuela de su hijo ni el distrito escolar.

La vivienda promedio estadounidense paga por la mínima \$2,200 por año en facturas de servicios públicos y puede reducir estos costos simplemente con algunos cambios sencillos. A su hijo se le dará un kit LivingWise que incluye productos GRATUITOS de alta calidad para el ahorro de agua y energía que utilizan la tecnología de ahorro más moderna. Este kit tiene un valor de más de \$50 y le dará a usted la habilidad de implementar estos cambios.

Para participar, por favor haga lo siguiente:

- Haga que su hijo hable con usted sobre las formas en las que le gustaría ahorrar agua y energía y complete el Formulario de Compromiso ubicado en la próxima página.
- Instale todos los artículos del kit. Usted y su hijo pueden hacer la mayoría de las actividades en menos de 15 minutos. Si necesita ayuda adicional con la instalación de los artículos del kit, visite www.getwise.org para ver videos de instalación o llame al 1-888-GET-WISE.
- Trabaje con su hijo para responder todas las preguntas de la encuesta en el Libro de Trabajo para llevar a casa.

El Programa LivingWise será una experiencia sencilla y divertida para toda su familia. No sólo le permitirá a su hijo la posibilidad de ser un líder en su hogar y en su comunidad, sino que también su familia se beneficiará inmediatamente por las facturas más bajas de los servicios públicos. Gracias por su participación.

!COMENCEMOS!



?PREGUNTAS? • 1-888-GET-WISE • www.getwise.org

CONGRATULATIONS!

Your child's class has been selected to participate in the exciting LivingWise Program. The program is designed to teach your child the value of water and energy and help you save money on your utility bills. This program is being provided by Oklahoma Gas & Electric at NO COST to you, your child's school, or the school district.

The average U.S. household pays at least \$2,200 per year in utility bills and can reduce these costs with just a few simple changes. Your child will be given a kit which includes FREE high quality energy and water saving products that utilize the latest efficiency technology. This kit is valued at over \$50 and will provide you with the ability to make these changes.

To participate, please do the following:

- Have your child talk to you about the ways they would like to save energy and water and complete the Pledge Form located on the next page.
- Install all of the kit items. You and your child can do most of the activities in less than 15 minutes. If you need additional help installing the kit items, visit www.getwise.org to view installation videos or call 1-888-GET-WISE.
- Work with your child to answer all of the survey questions in the Take-Home Workbook.

The LivingWise Program will be an easy and fun experience for your entire family. Not only will it allow your child the chance to be a leader in your home and community, but also your family will immediately benefit from lower utility bills. Thank you for your participation.

LET'S GET STARTED!



QUESTIONS? • 1-888-GET-WISE • www.getwise.org

STUDENTS

PLEDGE FORM

Name:	Date:
School:	Teacher:

Pledging to save energy and water is an important step in conserving our natural resources and will save your family money on utility bills. As you go through the Program, you will learn why it is important to conserve energy and water. The Program will teach you simple ways to save energy, water, and money. Taking the Pledge shows that you want to be more energy and water efficient to reduce your family's utility bills.

TAKE THE PLEDGE

We have helped you out by writing your first pledge. All you have to do to complete the first pledge is install the items from your kit. Now, write two more pledges describing how you will be more energy and water efficient at home. Remember, a pledge is a *promise*.

- 1. I pledge** to do my part by installing all of the items in my kit to save energy and water as well as reduce my family's utility bills.
- _____
- _____

SIGN THE PLEDGE

I have written and reviewed my pledges above and by signing this form, I promise to use energy and water more efficiently at home.

Student Signature

Parent Signature

These kits are made possible by:



Firma del Padre

Firma del Estudiante

He escrito y revisado mis anteriores compromisos y al firmar este formulario, prometo usar la energía y el agua de manera más eficiente en casa.

FIRMAR EL COMPROMISO

- 1. Me comprometo** a hacer mi parte instalando todos los artículos de mi kit para ahorrar energía y agua así como para reducir las facturas de servicios públicos de mi familia.
- _____
- _____

Le hemos ayudado a escribir su primer compromiso. Todo lo que tiene que hacer para completar el primer compromiso es instalar los artículos de su kit. Ahora, escriba dos compromisos más que describan cómo ahorrará energía y agua en el hogar. Recuerde, un compromiso es una promesa.

ASUMIR EL COMPROMISO

Comprometarse a ahorrar energía y agua es un paso importante para conservar nuestros recursos naturales y le ahorrará dinero a su familia en las facturas de servicios públicos. A medida que avanza por el Programa, aprenderá por qué es importante ahorrar energía y agua. El Programa le enseñará formas sencillas de ahorrar energía, agua y dinero. Asumir el Compromiso muestra que usted quiere ahorrar más energía y agua para reducir las facturas de los servicios públicos de su familia.

Nombre:	Fecha:
Escuela:	Docente:

FORMULARIO DE COMPROMISO

ESTUDIANTES

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 7 W-29 W	\$20
LED Wall Pack/Flood 30 W-80 W	\$50
LED Wall Pack/Flood +80 W	\$80

LINEAR

LED 8' tube	\$12
LED T8 Replacement	\$3
LED T5 Replacement (LED replacement lamps for 46" T5 HO fluorescent lamps)	\$5

*Funds are limited and available on a first-come, first-served basis. Products must be purchased from approved OG&E distributor.

**Specific lamps, fixtures or sensors must be validated by the PPC. (All products aside from sensors must also be either DLC* or ENERGY STAR* approved.)

LED LOWBAY/HIGHBAY

LED Lowbay/Highbay 30 W-60 W	\$65
LED Lowbay/Highbay 61 W-100 W	\$75
LED Lowbay/Highbay +100 W	\$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:

ogemidstreamok@clearesult.com or
oge.com/ceep, or call 405-437-4304

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HELP YOURSELF TO FOODSERVICE REBATES.



Does your commercial kitchen have a big appetite for energy? You're in luck: We now offer incentives to help you replace your old inefficient appliances with ENERGY STAR® certified electric equipment.

Benefits of upgrading:

- The typical restaurant uses **5–7 times more energy** per square foot than other commercial buildings.
- ENERGY STAR certified combination ovens are up to **30% more energy efficient** than standard models and feature better gaskets for faster and more uniform cooking.
- ENERGY STAR certified griddles are up to **11% more energy efficient** than standard models thanks to improved thermostatic controls and higher production capacity.
- ENERGY STAR certified steam cookers use up to **70% less energy** and up to 90% less water than standard models.

Source: energystar.gov

Available incentives:

Equipment	Rebate
Combination ovens	
5–10 pans	\$1,000
14–19 pans	\$1,200
20+ pans	\$1,400
Steam cookers	
3 pans	\$500
4 pans	\$750
5 pans	\$1,000
6 pans	\$1,200
Griddles	\$100/sq. ft.

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INCENTIVE APPLICATION

Customer Information

Company:		Mailing Address:	
City:	State:	ZIP:	
Contact Person:			
Phone:		Email:	
Installation Address:			
City:	State:	ZIP:	
Primary Contact: <input type="checkbox"/> Customer <input type="checkbox"/> Dealer			

Foodservice Dealer Information

Company:		Mailing Address:	
City:	State:	ZIP:	
Contact Person:			
Phone:	Fax:	Email:	
OG&E customer account # where equipment is being installed:			
Primary Contact: <input type="checkbox"/> Customer <input type="checkbox"/> Dealer			

New Equipment Information

Install date	Equip. type	Qty.	Size	Manufacturer	Model #	Serial #

Participant signature:

Foodservice dealer/installer signature:

Please submit your completed application, equipment receipt(s) and installation invoice(s) within 30 days to:

Mail: OG&E Rebates
P.O. Box 2900
Oklahoma City, OK 73101

Email: keely.mallory@clearesult.com
Phone: 405-437-4304



OGE.com

SAPULPA RESTAURANT UNVEILS THEIR LIGHT MENU



In the restaurant business, sometimes a tip is just a tip. For popular Sapulpa restaurant La Margarita, one customer's tip turned out to be worth several thousand dollars a year.

A recipe for efficiency

Maintaining La Margarita's festive atmosphere takes a lot of light—and the restaurant's outdated bulbs weren't cutting it. Acting on a customer's tip, the restaurant's management turned to a participating OG&E contractor to replace the entire building's lighting system with high-quality, energy-saving LEDs.

"People were great who did the work, they were very professional," said Ramona Olmos, La Margarita's manager. **"They were quick and were able to install the new lights and didn't disturb our business."**

Cooking up the savings

Thanks to the lighting upgrades, La Margarita is now saving nearly \$4,000 a year in energy costs. What's more, rebates from OG&E's Small Business Direct Install program covered more than 77% of the project costs—allowing the project to pay for itself in just over 5 months.

All told, the restaurant saw an incredible 110% return on investment. **"We saw a savings from our first bill,"** Olmos said. **"It was nice to realize the monthly savings from the new lighting."**

SAVINGS AT A GLANCE

\$3,973

ANNUAL COST SAVINGS

\$331

MONTHLY COST SAVINGS

\$6,590

INCENTIVES PROVIDED BY OG&E

5.7 months

PAYBACK PERIOD

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**CONTACT US FOR
MORE INFORMATION**

405-437-4350
oge.ok.sbdi@clearresult.com

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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:

- \$0.20/peak kWh reduced on all eligible measures

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.



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Take control of your energy use—and your bottom line.



To get started, contact a program representative by email at

sbdiok@oge.com

OR CALL

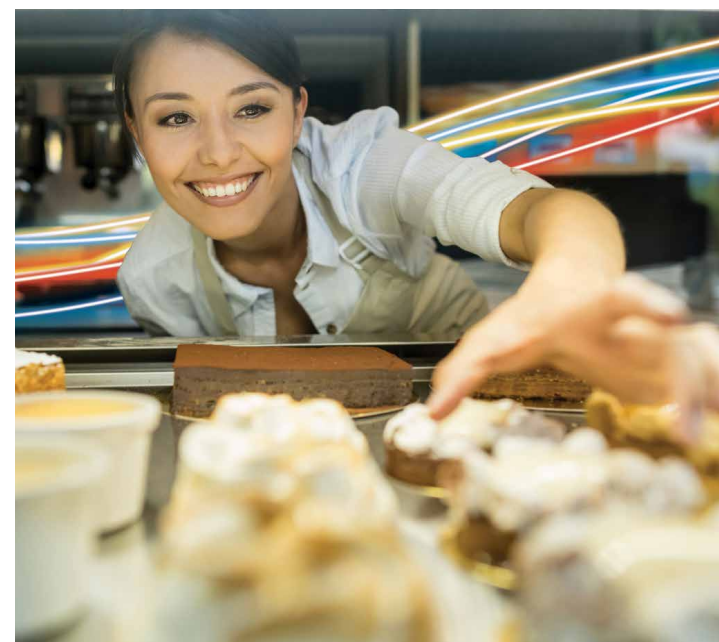
844-882-5747

OKLAHOMA

BIG SAVINGS FOR YOUR SMALL BUSINESS

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.



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Program Benefits

We'll provide everything you need to help your business achieve long-term energy savings, including:

- No out-of-pocket costs and 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 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 200 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

20,671 kWh

total energy savings

2.96 kW

total peak demand savings

\$4,134

estimated incentives

\$578

net cost to customer

\$4,712

estimated project cost

3.36 months

project payback

\$2,067

estimated annual savings

SMALL BUSINESS SAVINGS, DELIVERED

TRYING TO LOWER YOUR OPERATING COSTS?



LET US GIVE YOU A HAND.

OG&E provides a variety of simple, high-efficiency upgrades designed to save businesses like yours energy and money. Get in touch today and OG&E's partner, CLEAResult, will install your recommended upgrades at little to no cost to you.

Available upgrades include:

- Faucet aerators
- High-efficiency showerheads
- Pre-rinse spray valves
- Screw-in LED bulbs
- Weatherstripping
- Overhead door weatherstripping
- Packaged terminal air conditioner (PTAC) seals

Get started.

Contact Katie Campbell today at **918-877-1281** or katie.campbell@clearesult.com.



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OG&E SCHOOLS & GOVERNMENT EFFICIENCY PROGRAM

FACT SHEET



Design

OG&E provides incentive funding for energy-efficient upgrades and retrofits to all educational and publicly funded facilities within our service territory. Based on the energy-efficient measures you choose, we'll help you secure the largest incentives available. Free educational activities are also available, which are designed to help administrative personnel at facilities to identify and quantify energy efficiency opportunities.

Goals

The program aims to help cover a portion of the total cost of each project. Over the long term, we're here to help participants save money on utility bills, improve comfort and protect the environment through education, increased efficiency and responsible energy consumption.

Implementation

Program representatives will help facilities with participation in all our available services, and help determine what energy efficiency measures will work best for them.

Eligibility

All educational and publicly funded facilities are eligible to participate if they're located within the OG&E service territory.

Timeframe

Participation is based on a first-come, first-served basis throughout the program year, or while funds last.

**More ways
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MORE INFORMATION:

844-882-5747
sage@oge.com

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OG&E SCHOOLS & GOVERNMENT EFFICIENCY PROGRAM

MEASURES SHEET



OG&E's Schools and Government Efficiency Program provides a variety of energy efficiency measures for educational and publicly funded facilities. We'll provide an energy assessment at **no out-of-pocket cost** to you to help you identify and install the measures that could bring you the biggest savings.

Lighting retrofits

Modern, efficient fixtures use less energy while providing high-quality light that is designed to improve the learning environment.

Exit light replacements

Replace aging and inefficient incandescent exit lights with energy-saving LED units.

Gym and multipurpose room lighting replacements

Older gym and multipurpose room lighting can be inefficient as well as unappealing. This retrofit will solve both issues.

Sports lighting

Retrofitting existing sports lighting with efficient LEDs can greatly reduce energy and maintenance costs.

HVAC replacement

Older HVAC systems can be a major cause of wasted energy. Upgrading is one of the easiest ways to save.

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sage@clearesult.com

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OG&E SCHOOLS AND GOVERNMENT EFFICIENCY PROGRAM



FORT GIBSON SCHOOLS SWITCH ON THE SAVINGS

With help from OG&E's Schools and Government Efficiency Program, a district-wide lighting upgrade is saving Fort Gibson Public Schools thousands each year.

Getting Schooled in Efficiency

The Fort Gibson Public School District reached out to OG&E with concerns about its outdated lighting system and rising energy costs. Through the School and Government Efficiency Program, OG&E provides publicly funded facilities like Fort Gibson schools with guidance and incentives for energy efficiency projects.

OG&E's participating contractors performed a full lighting retrofit of the school district's kindergarten, middle school, high school, administrative offices and gymnasiums. That meant replacing each of the district's 1,621 T8 and T12 bulbs with longer-lasting, energy-saving LED bulbs. To offset the costs of the upgrades, OG&E provided the district with more than \$50,000 worth of incentives.

Thanks to these incentives and energy cost savings of more than \$27,000, the district is expected to recoup its investment within five years.

Lighting the Way to Savings

The success of the lighting retrofit inspired the district to also participate in OG&E's benchmarking services. By comparing Fort Gibson schools' energy performance metrics to similar buildings, OG&E's energy experts will be able to calculate the most cost-effective, energy-saving opportunities for the school district.

SAVINGS AT A GLANCE

364,029 kWh

SAVED

\$27,666

ESTIMATED ANNUAL SAVINGS

\$54,604

INCENTIVES PROVIDED BY OG&E

4.8 years

ESTIMATED PAYBACK PERIOD

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sage@clearresult.com

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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.

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"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

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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

Trey Parsons

Associate SEM Program Manager
405.507.3013
trey.parsons@clearesult.com

Patrick Curry

Sr. SEM Program Coach
405.437.4331 ext. 1256
patrick.curry@clearesult.com



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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.

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- 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



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?

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Associate SEM Program Manager
405.507.3013
trey.parsons@clearesult.com

Patrick Curry

Sr. SEM Program Coach
405.437.4331 ext. 1256
patrick.curry@clearesult.com



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OG&E'S NEED PROJECT CONFERENCE

A BRIGHT ENERGY-EFFICIENT FUTURE STARTS IN THE CLASSROOM.



As part of OG&E's continued partnership with area schools, we've partnered with the National Energy Education Development (NEED) Project to offer a free conference for educators interested in expanding their energy curriculum to empower their students. This is a wonderful opportunity being hosted by Oklahoma City Public Schools open to teachers across OG&E territory!

Please register by October 3, 2022.

Reasons to attend:

- Free to teachers, who will receive a classroom Science of Energy Kit valued at **\$400**
- Offers a proven, ready-made energy efficiency curriculum valued at **\$1,200**. *NEED curriculum meets Oklahoma Common Core as well as STEM/STEAM standards.*
- Prize drawings
- Hands-on energy experiments

[Register Here](#)

Conference Details

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October 17, 2022

8:00 a.m. – 3:30 p.m.

Roosevelt Middle School
3233 SW 44th St,
Oklahoma City, OK 73119

Donetta Herndon

405-826-3646

donetta.herndon@clearesult.com

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OG&E'S NEED CONFERENCE AGENDA

OCTOBER 17, 2022

- 8:00 a.m. Registration**
Sign in, enjoy light refreshments, take a pre-workshop poll.
- 8:30 a.m. Welcome**
Welcome! Discuss the expectations for the day.
- 8:45 a.m. Energy Efficiency Bingo**
Get up and meet fellow participants during Energy Efficiency Bingo!
- 9:15 a.m. Science of Energy**
- 10:15 a.m. Explore Energy Efficiency & Conservation Classroom Activities**
Using the hands-on materials in your Efficiency and Conservation kit, explore lessons to use with your students.
- 11:15 a.m. Lunch**
- 12:15 p.m. Teaching Energy Conservation in Your Language Arts Classroom**
Energy conservation isn't just for the science classroom. Try some activities that will help energize your language arts classrooms.
- 1:15 p.m. Energy House**
Work in teams to construct the most energy-efficient home.
- 2:30 p.m. Energy Web Game**
Get up and meet fellow participants while creating an Energy Web.
- 3:00 p.m. Planning an Integrated Approach to Energy Conservation at Your School**
Working in school teams, brainstorm ways to integrate students into your energy conservation and efficiency programs. Share ideas among districts.
- 3:15 p.m. Paperwork – Materials, Incentives, Evaluation**
- 3:30 p.m. Adjourn**

[Register Here](#)



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OG&E COMMERCIAL ENERGY EFFICIENCY PROGRAM

MEASURES SHEET



OG&E's Commercial Energy Efficiency Program offers financial incentives when energy efficiency measures are implemented at large commercial facilities like yours. We'll provide a free and easy energy assessment to help you identify and financially qualify for potential energy savings projects that could even include little or no-cost solutions.

To make reducing your energy costs even easier, we also offer significant incentives for each energy-efficient upgrade installed. Incentives are available for the following measures, including but not limited to:

- HVAC – DX Retrofit
- HVAC – DX New Construction
- Chiller Retrofit
- Chiller New Construction
- PC Power Management
- LED Lighting Retrofit
- Lighting New Construction
- Linear Fluorescent Retrofit with Delamp
- 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

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405-507-3013
cepleads@oge.com

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OG&E'S ADVANCED A/C TUNE-UP PROGRAM

SAVING ENERGY HAS NEVER BEEN COOLER



Want to know something cool? A state-of-the-art OG&E Advanced A/C Tune-up can improve the energy efficiency of your A/C unit by **up to 30 percent**, resulting in longer-lasting, better-working equipment with improved comfort and humidity control. We'll even cover the cost, based on the tonnage of the unit (additional charges may apply).

During your tune-up, a participating contractor will:

- Measure indoor airflow and recommend adjustments if needed
- Clean outdoor condenser coils
- Inspect indoor coil and blower and clean as needed
- Test your A/C to measure its cooling output

Don't wait to start saving.

Contact us at ogehvac@clearesult.com to enroll for your OG&E Advanced A/C Tune-up today. To learn more, visit OGE.com/business.

Save up to
\$400

on an OG&E
Advanced
A/C Tune-up.

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CONTACT US FOR MORE
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844-882-5746
ogehvac@clearesult.com

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OG&E COMMERCIAL ENERGY EFFICIENCY PROGRAM

ENERGY SAVINGS ARE IN THE AIR.



Capable of powering everything from HVAC controls to air-powered hand tools, compressed air can be a vital energy source for your facility. Although often considered a free resource, compressed air systems account for nearly 10 percent of total industrial electricity use.

To OG&E, that represents a great opportunity to save. Our team of energy experts offers a variety of custom solutions designed to save energy, time and money by optimizing your facility's compressed air system.

Demand-side energy efficiency measures include:

- Leak repair or leak-free aluminum piping
- Open blow modifications (high-efficiency nozzles)
- Re-piping
- Loop reconfiguration
- Air equipment repairs
- No-loss or reduced-loss drains

Supply-side energy efficiency measures include:

- New air compressors and air dryers
- Installation of increased storage capacity
- Replacement of existing compressors
- Compressor controls

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OG&E COMMERCIAL ENERGY EFFICIENCY PROGRAM

LIGHTEN UP YOUR **ENERGY COSTS**



According to ENERGY STAR®, lighting consumes up to 35 percent of an average building's electricity. Combined with excess amounts of waste heat, older and inefficient lighting is an unnecessary drain on any business's operating costs.

Upgrading to cooler, ultra-efficient lighting can drastically reduce your energy bill and improve your workplace comfort. With expert, no upfront-cost assessments and generous incentives available from OG&E, making the switch couldn't be any easier.

Benefits of upgrading

- A smarter lighting system design can cut your facility's energy use significantly.
- Most projects pay for themselves in energy savings alone. OG&E incentives can help you offset the cost even further.
- In addition to reducing your electric use, lighting retrofits can help you lower cooling costs, improve comfort and create a more productive work environment.

**Make the
switch today**

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Visit [OGE.com/business](https://www.oge.com/business)
for a list of participating
contractors, or contact
us at **844-882-5747**
or via email at
[cepleads@OGE.com](mailto:cepleads@oge.com)
for more information.

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OG&E'S EV CHARGER REBATE PROGRAM

SUPPORT ELECTRIC VEHICLES AND YOUR BUSINESS



OG&E's new EV Charger Rebate Program offers commercial customers incentives for purchasing qualified electric vehicle charging stations on their premises.

All businesses, nonprofit groups and schools qualify for these incentives. Our incentives greatly offset your purchase, making it easier to become a leader in developing sustainable EV infrastructure for our community.

Incentives*

Charger Type	Standard	Qualifying Product
Level 2	\$250 per port	ENERGY STAR® certified

*Customers are eligible for rebates for up to 10 qualifying chargers per program year.

How businesses benefit:

- Promotes your organization as eco-friendly and forward-thinking
- Helps you achieve your sustainability goals
- Assists with employee recruitment and retention
- Builds goodwill by providing a community amenity
- Increases your property value

Save
\$250
 per EV
 charging port.

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CONTACT US FOR
 MORE INFORMATION:

844-882-5746
cepleads@clearresult.com

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ENERGY EFFICIENCY IS BLOOMING IN OKLAHOMA.



Indoor agriculture keeps on growing in Oklahoma. While the budding industry has sparked a statewide green rush, the energy-intensive operations required for a successful grow room has led to new challenges for many indoor farmers.

Luckily, OG&E is here to help. Get in touch today to see what we can do to help your business bloom.

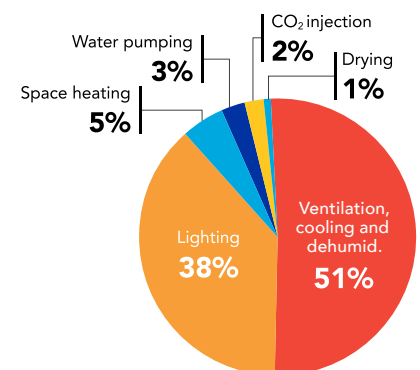
Our energy-saving solutions include:

- **HVAC.** Heating, cooling and ventilation make up over half of the average grow room's energy use. We'll help you find the most efficient and cost-effective options for your facility.
- **Lighting.** Unlike other lighting options, LEDs allow you to modify the wavelength to match plants' needs at different growing stages. This helps boost photosynthesis and crop yield.
- **Incentives.** The more energy you save, the more you can earn. For instance, installing a high-efficiency LED fixture that saves 124 kWh can earn you a \$14 incentive, while a larger project that saves nearly 6,000 kWh can earn you \$660.

Contact us today:

Coleman Nash at 405-550-6200 or coleman.nash@clearesult.com

Energy use in a typical grow room:



Source: Southwest Energy Efficiency Project

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OKLAHOMA



OGHE[®]

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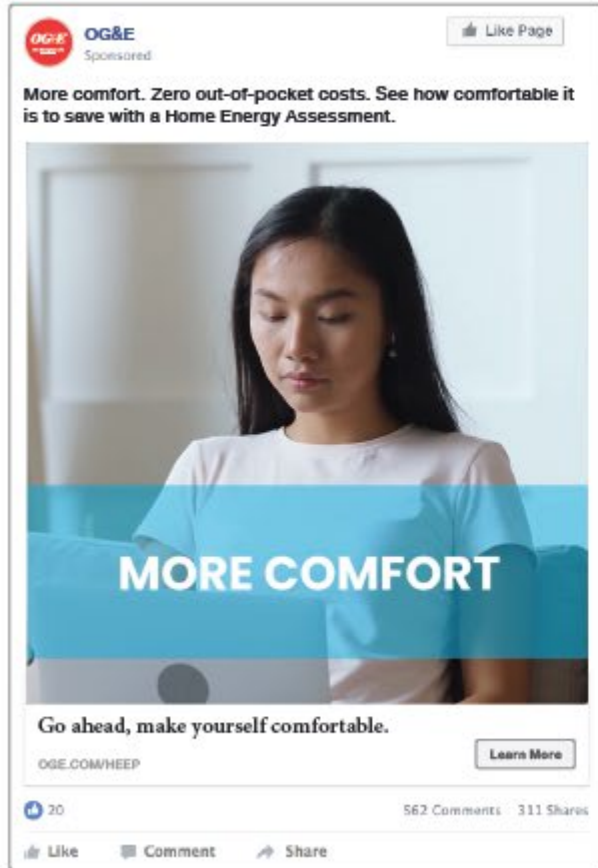
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2022 Oklahoma Digital Media

CR FACEBOOK – In-Home Assessments

✓ Video

AD 1 - VIDEO - 15 SECONDS



OG&E Sponsored Like Page

More comfort. Zero out-of-pocket costs. See how comfortable it is to save with a Home Energy Assessment.

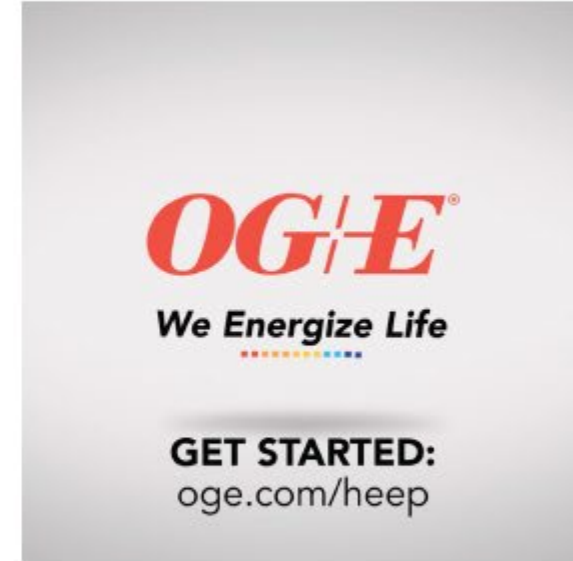
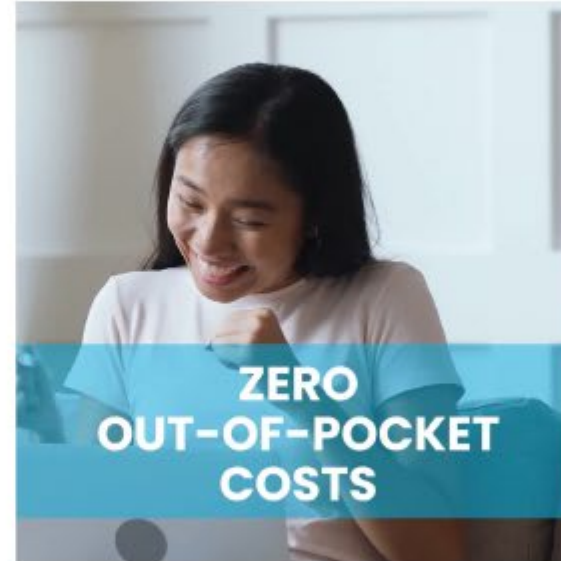
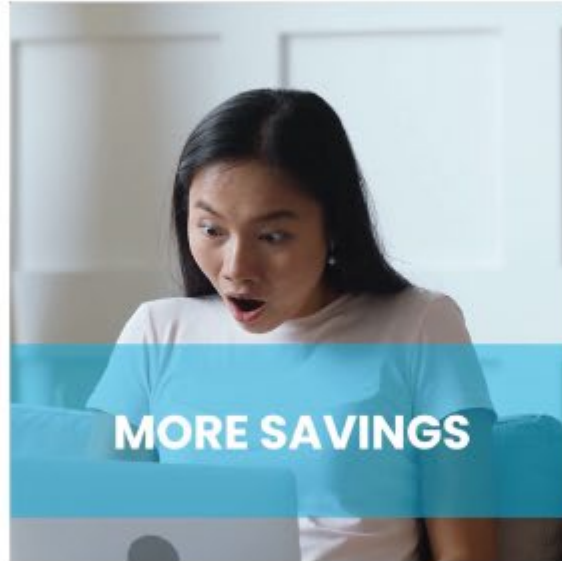
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The best savings are yet to come. Let us treat you to a Home Energy Assessment and up to \$250 worth of energy-saving upgrades.



Energy savings are our treat.


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It's easy to save energy. Just ask any of the thousands of Oklahomans who got started with a Home Energy Assessment.



Saving energy has never been easier.

OG&E.COM/HHEEP Learn More

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An OG&E Home Energy Assessment includes up to \$250 worth of upgrades at no out-of-pocket cost to you, including:

- 🏠 An expert walk-through analysis of your home
- 💡 Up to 15 LED bulbs
- ⚡ Advanced power strips
- ✅ Custom recommendations
- ➡ And more



Schedule a Home Energy Assessment today.

OG&E.COM/HHEEP Learn More

20 562 Comments 311 Shares

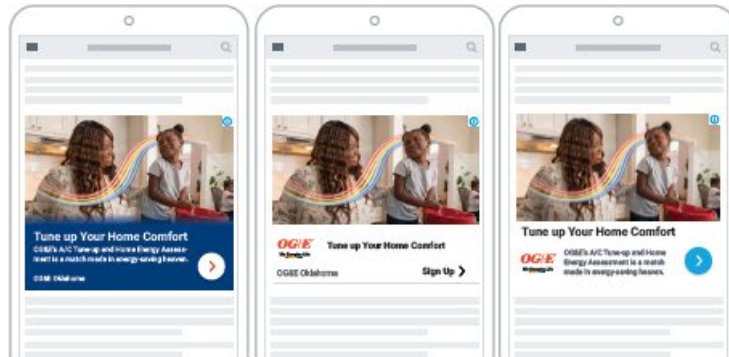
Like Comment Share

CR GOOGLE DISPLAY

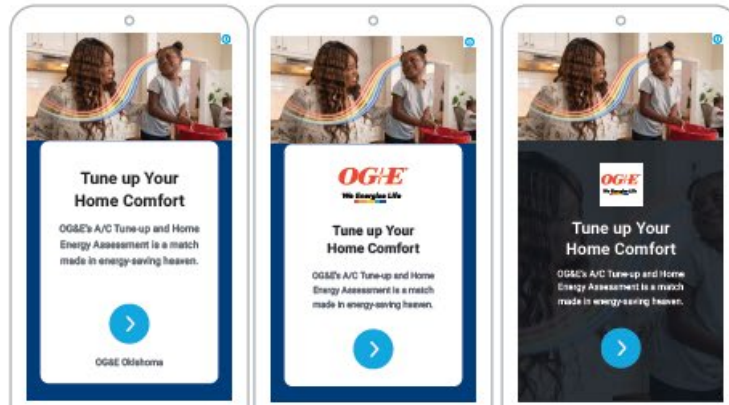
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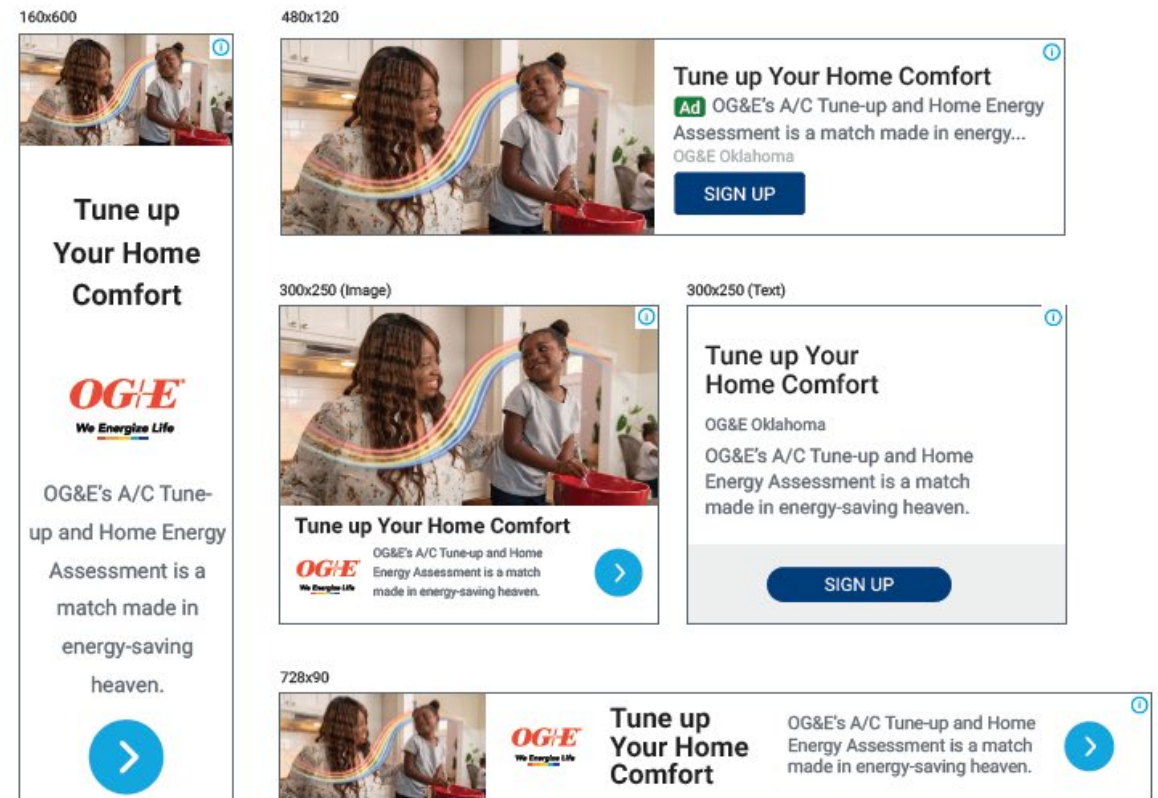
EXAMPLE OF MOBILE AD AT 300X250



EXAMPLE OF MOBILE AD AT 320X568



EXAMPLE OF DESKTOP ADS



7.3 AM Conservation™ LivingWise™ Report

OG&E Oklahoma LivingWise[®]

PROGRAM SUMMARY REPORT

2022 Calendar Year

SUBMITTED BY:



AM

CONSERVATION[™]

OG&E Oklahoma LivingWise[®]

PROGRAM SUMMARY REPORT

2022 Calendar Year

MADE POSSIBLE BY:



We Energize Life
.....

SUBMITTED BY:



June 2023

Executive Summary

“I like the idea of having the students really stop and consider how their actions can actually make a difference.”

Pam Norris, Teacher
Beggs MiddleSchool

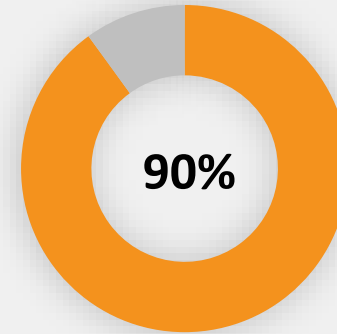
Executive Summary

AM Conservation is pleased to present this Program Summary Report to OG&E, which summarizes the 2022 Calendar Year OG&E LivingWise® Program. The program was implemented in the OG&E service area in the state of Oklahoma by 14,480 teachers, students, and their families.

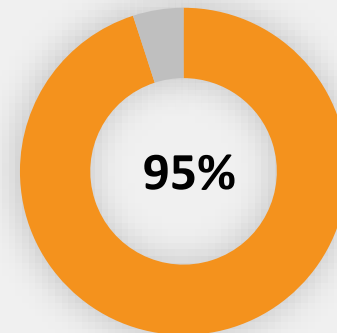
The following pages provide an overview of the program and materials, outline of program implementation, introduction to the program team, description of program enhancements, impact of the program, and summary of results from the home activities. In addition to this information, evaluations, letters, and comments are provided for a glimpse into actual participant feedback. Lastly, projected savings from the individual measures found within the LivingWise Kit are also included.

Participant Satisfaction

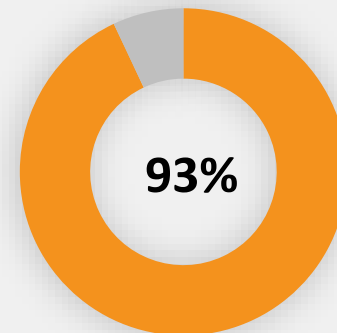
A successful program excites and engages participants. Students, parents, and teachers are asked to evaluate the program and provide personal comments. A sample of the feedback is given in the margin. ➤



■ Teachers who indicated parents supported the program.

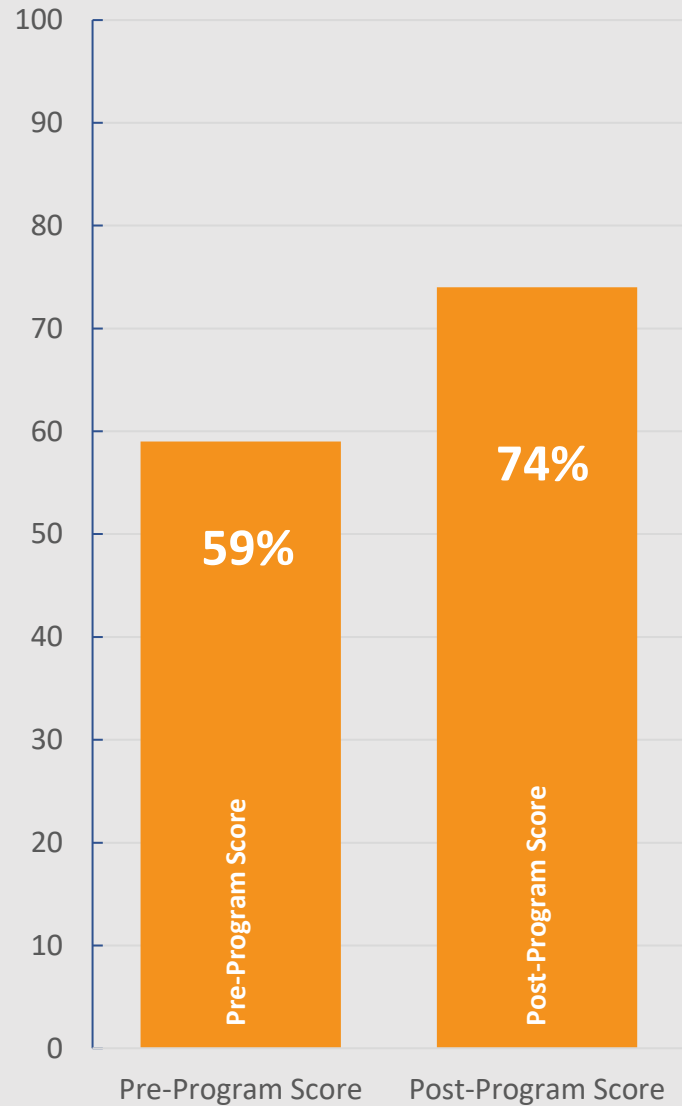


■ Teachers who indicated they would recommend this program to other colleagues.



■ Teachers who indicated they would conduct this program again.

Executive Summary

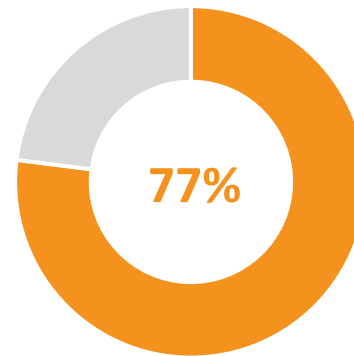


Knowledge Gained

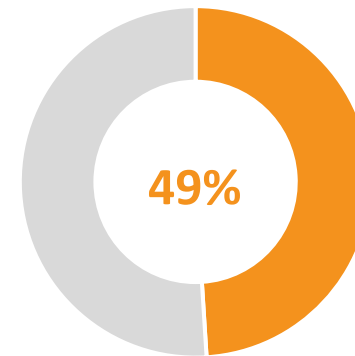
Identical tests were administered to the students prior to the program and again upon program completion to measure knowledge gained. Scores and subject knowledge improved from 59% to 74%.

Data Obtained

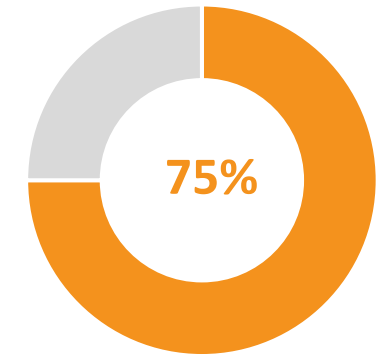
Home surveys were taken by students and their families, which collected household demographic and consumption data along with program participation information (KIT 1).



■ Student who reported that their family homes were owned.



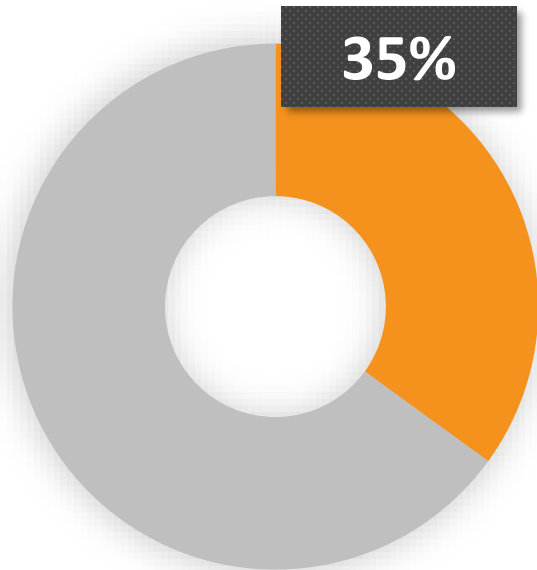
■ Student who reported that their water was heated by electricity.



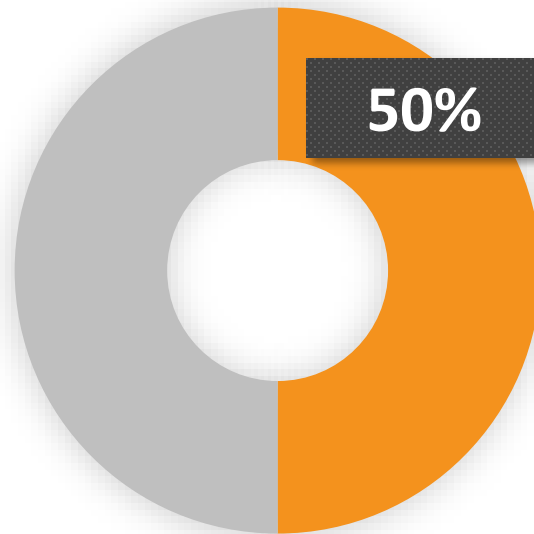
■ Student who reported that their home has a dishwasher.

Measures Installed

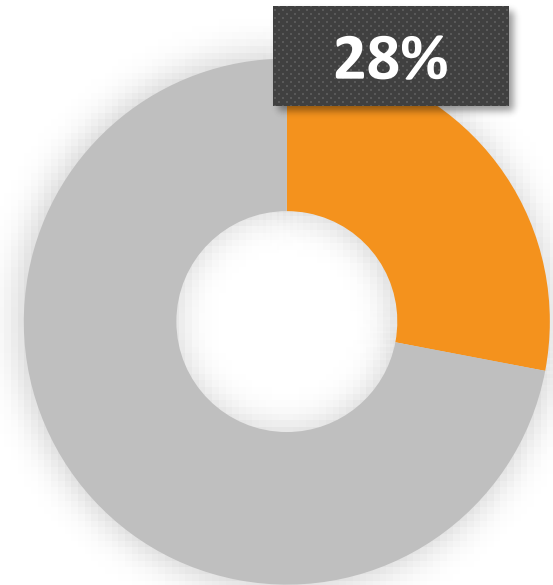
Students completed take-home activities as part of the program and reported on the kit measures they installed in their homes (KIT 1).



Students who reported installing the Showerhead.



Students who reported installing the First LED Light Bulb



Students who reported installing the Kitchen Faucet Aerator.

Energy and Water Savings Results

In addition to educating students and their parents, a primary program goal is to generate cost-effective energy and water savings. Student home surveys not only provided the data used in the savings projections, but also reinforced the learning benefits.

Projected Resource Savings

PROJECTED ANNUAL SAVINGS	
49,405,754	gallons of water saved
3,650,501	kWh of electricity saved
394	kW peak demand reduction

PROJECTED ANNUAL SAVINGS PER HOME	
3,412	gallons of water saved
252	kWh of electricity saved
0.0272	kW peak demand reduction

PROJECTED LIFETIME SAVINGS	
494,057,544	gallons of water saved
37,457,357	kWh of electricity saved

PROJECTED LIFETIME SAVINGS PER HOME	
34,120	gallons of water saved
2,587	kWh of electricity saved

Program Overview

The OG&E Oklahoma LivingWise® Program, a school-based energy efficiency education program, is designed to generate immediate and long-term resource savings by bringing interactive, real-world education home to students and their families. The 2022 Calendar Year program was taught in 5th grade throughout the OG&E Oklahoma service area.

The OG&E Oklahoma LivingWise® Program team identifies and enrolls students and teachers within the designated service area. The program physically begins with classroom discussions using a Student Guide that provides the foundations of using energy and water efficiently. It is followed by hands-on, creative, problem-solving activities led by the classroom teacher.

All program materials support state and national academic standards to allow the program to fit easily into a teacher's existing curriculum and requirements. The participating classroom teachers follow the Teacher Book and lesson plan. Information is given to guide lessons throughout the program in order to satisfy each student's individual needs, whether they are visual, auditory, or kinesthetic learners.

The LivingWise Kit and Student Take-Home Workbook comprise the take-home portion of the program. Students receive a kit containing high-efficiency measures they use to install within their homes. With the help of their parents/guardians, students install the kit measures and complete a home survey. The act of installing and monitoring new energy efficiency devices in their homes allows students to put their learning into practice. Here, participants and their parents/guardians realize actual water and energy savings within their home, benefitting two generations.

A critical element of AM Conservation program design is the use of new knowledge through reporting. At the end of the program, the OG&E program team tabulates all participant responses—including home survey information, teacher responses, student letters, and parent feedback—and generates this Program Summary Report.

“For more than 28 years, AM Conservation has designed and implemented Measure-Based Education® programs. The programs inspire change in household energy and water use habits while delivering significant and measurable resource savings.”

Each participant in the OG&E Oklahoma LivingWise® Program receives classroom materials and energy efficiency kits containing high-efficiency measures to perform the program's take-home activities. Program materials for students, parents/guardians, and teachers are outlined below.

Each Student & Teacher Receives

Student Guide

Student Take-Home Workbook

Parent Letter/Pledge Form*

Student Survey Form

Certificate of Achievement

LivingWise Kit Containing:

- (1) High-Efficiency Showerhead
- (2) LED Light Bulbs
- (1) Bathroom Faucet Aerator
- (1) Kitchen Faucet Aerator
- (1) LED Night Light
- (1) Advanced Power Strip
- Digital Thermometer
- Flow Rate Test Bag
- Parent/Guardian Program Evaluation
- Quick Start Guide
- Installation Booklet

OG&E Wristband

Program Website Access at Getwise.org

Toll-Free HELP Line

Each Teacher/Classroom Receives

Teacher Book

Step-by-Step Program Checklist

Lesson Plans

State Academic Standards Chart

Teacher Survey Form

Pre/Post Student Survey Answer Keys

Water, Electricity and Natural Gas Posters

Self-Addressed Postage-Paid Envelope

Program Overview

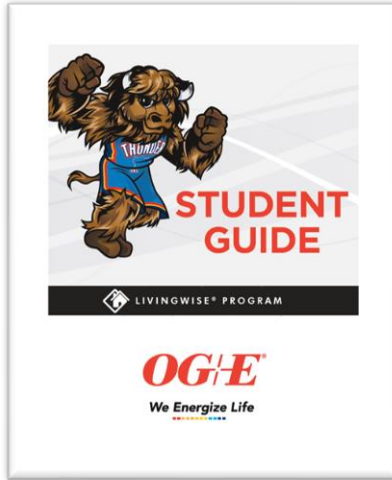


Custom Branding

In addition to increasing resource awareness and efficiency, the program has been designed to strengthen bonds between OG&E and the community. One of the steps taken to ensure the greatest possible exposure is to feature the OG&E logo throughout each LivingWise Kit. In addition to the kit, the Teacher Survey Form and Parent Letter/Pledge Form also feature OG&E branding.



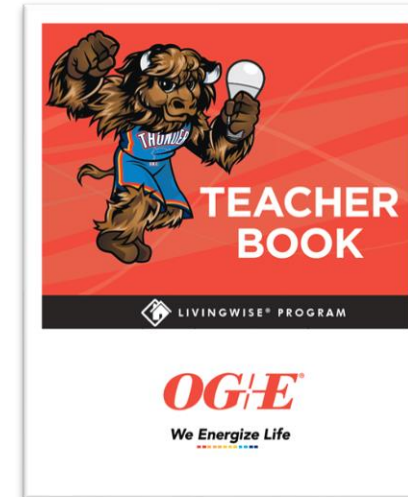
Program Materials



Student Guide



Student Take-Home Workbook



Teacher Book

TEACHER SURVEY
Your feedback is greatly appreciated.

Program brought to you by: **OG+E**
We Energize Life

Date: _____
School: _____
Teacher name: _____
Email: _____
Number of Student Survey forms returned: _____
Teacher Signature: _____

Please assess the LivingWise® Program by filling out this Teacher Survey form. Upon completion, return this Teacher Survey form, your Student Survey forms, student thank-you notes, and a letter from you to Oklahoma Gas & Electric in the postage-paid return envelope provided.


PLEASE FILL IN THE CIRCLE THAT BEST DESCRIBES YOUR OPINION:

- The materials were clearly written and well organized.
 Strongly Agree Agree Disagree Strongly Disagree
- The products in the kit were easy for students to use.
 Strongly Agree Agree Disagree Strongly Disagree
- Students indicated that their parents supported the program.
 Yes No
- Would you conduct this program again?
 Yes No
- Would you recommend this program to other colleagues?
 Yes No
- Would you be willing to participate on a local Teacher Focus Group?
 Yes No
- If my school is eligible for participation next year, I would like to enroll.
 Yes No
- What did students like best about the program? Explain.

- What did you like best about the program? Explain.

- What would you change about the program? Explain.

GET YOUR \$50.00 MINI GRANT!
Return the following by February 1, 2022:
• 50% of Student Survey forms
• This Survey form
• Student thank-you notes
• A letter from you



Teacher Survey Form

PARENTS **OG+E**
We Energize Life

CONGRATULATIONS!

Your child's class has been selected to participate in the exciting LivingWise Program. The program is designed to teach your child the value of water and energy and help you save money on your utility bills. This program is being provided by Oklahoma Gas & Electric at NO COST to you, your child's school, or the school district.

The average U.S. household pays at least \$2,200 per year in utility bills and can reduce these costs with just a few simple changes. Your child will be given a kit which includes FREE high quality energy and water saving products that utilize the latest efficiency technology. This kit is valued at over \$50 and will provide you with the ability to make these changes.

To participate, please do the following:

- Have your child talk to you about the ways they would like to save energy and water and complete the Pledge Form located on the next page.
- Install all of the kit items. You and your child can do most of the activities in less than 15 minutes. If you need additional help installing the kit items, visit www.getwise.org to view installation videos or call 1-888-GET-WISE.
- Work with your child to answer all of the survey questions in the Take-Home Workbook.

The LivingWise Program will be an easy and fun experience for your entire family. Not only will it allow your child the chance to be a leader in your home and community, but also your family will immediately benefit from lower utility bills. Thank you for your participation.

LET'S GET STARTED!

SIGN + **INSTALL** = **SAVE \$\$\$**

QUESTIONS? • 1-888-GET-WISE • www.getwise.org

Parent Letter/Pledge Form



Certificate of Achievement

The 2022 Calendar Year OG&E Oklahoma LivingWise® Program followed this comprehensive implementation schedule:

1. Identification of Oklahoma state academic standards & benchmarks
2. Curriculum development and refinement (completed annually)
3. Curriculum correlation to state academic standards & benchmarks
4. Materials modification to incorporate OG&E branding
5. Incentive program development
6. Teacher/school identification—with OG&E approval
7. Teacher outreach and program introduction
8. Teachers enrolled in the program individually
9. Implementation dates scheduled with teachers
10. Program material delivered to coincide with desired implementation date
11. Delivery confirmation
12. Periodic contact to ensure implementation and teacher satisfaction
13. Program completion incentive offered
14. Results collection
15. Program completion incentive delivered to qualifying teachers
16. Data analysis
17. Program Summary Report generated and distributed

Participating teachers are free to implement the program to coincide with their lesson plans and class schedules. The participant list within this document provides a comprehensive list of classrooms in the fifth grade that participated during the 2022 Calendar Year school year.

Parent Feedback

“My students enjoyed the change from our normal routine. They also enjoyed the experiments.”

Rebecca Johnson, Teacher
Lakeview Elementary School

Program Team

AM Conservation has been in the business of designing and implementing energy and water efficiency programs for nearly three decades. Throughout this time, we've built an expert team of industry professionals that deliver a seamless program to achieve your goals.


We designed the OG&E Oklahoma LivingWise® Program in our program center from the ground up. Working in conjunction with OG&E, we identified goals, desired outcomes of the program, and specific materials' customization. The result is a stimulating program that delivers significant and measurable resource savings. The OG&E Oklahoma LivingWise® Program features a proven blend of innovative education, comprehensive implementation services, and hands-on activities to put efficiency knowledge to work in homes throughout the OG&E service territory.

The OG&E Oklahoma LivingWise® Program is a reflection of true teamwork. On behalf of the entire implementation team at AM Conservation, I would like to thank you for the opportunity to design and implement the OG&E Oklahoma LivingWise® Program. It has been a pleasure working with you. I look forward to many more years of program success.

Sincerely,



Josh Levig
Program Manager



Rodney Shelton
Senior Director of Business Development



Lee Moran
Senior Program Manager, PMP®, CEM®

Program Team

The success of the OG&E Oklahoma LivingWise® Program is owed to a cross-functional implementation team chosen specifically to meet the goals of the program. We incorporated both a PMP® certified Program Manager and a CEM® designated energy analyst to ensure the program hits key milestones and delivers results. These thought leaders are supported by an integral mix of specialists working in unity to accomplish your program objectives. The OG&E Oklahoma LivingWise® Program implementation team consisted of the following:

Outreach

Our outreach team is the face of the OG&E Oklahoma LivingWise® Program, introducing teachers to the program, and providing support throughout implementation to guarantee the program's success in the classroom. This group builds relationships and keeps teachers engaged in program execution year after year.

Graphic Design and Marketing

Expertly-designed kits and program materials are a result of our Graphic Design and Marketing teams. This group provides brand alignment and marketing strategies to ensure program branding is within guidelines. Additionally, this team facilitates copy and art direction and works with education to develop end-user activities.

Education

Led by a Ph.D. educator having both classroom and administration leadership experience, this team is responsible for the development of educational content as well as classroom energy literacy and engagement. The group also ensures the program's content is aligned with state expectations in science, math, and language as well as the rigorous expectations of STEM (Science, Technology, Engineering, and Math).

Information Technology

We leave IT strategy and cyber security in the hands of our experts. This team built and manages the integrated systems responsible for seamlessly blending operations, driving automation, and maximizing participation in the OG&E Oklahoma LivingWise® Program. This group provides the managed data services and software in support of outreach, enrollment, order processing, fulfillment, data collection and reporting.

Warehouse and Logistics

Last but not least, our warehouse and logistics teams guarantee OG&E Oklahoma LivingWise® program materials reach the classroom on-time and without errors. This group provides printing, purchasing, production, quality assurance & control, warehousing and shipping for all program materials. Additionally, this team ensures that all materials are consistent with orders and confirms delivery.

Program Impact

“AM Conservation utilizes an extensive network of educators for program feedback. This feedback ensures that educational components meet the changing needs of educators, keep information relevant to students, and provide increased energy literacy for program participants.”

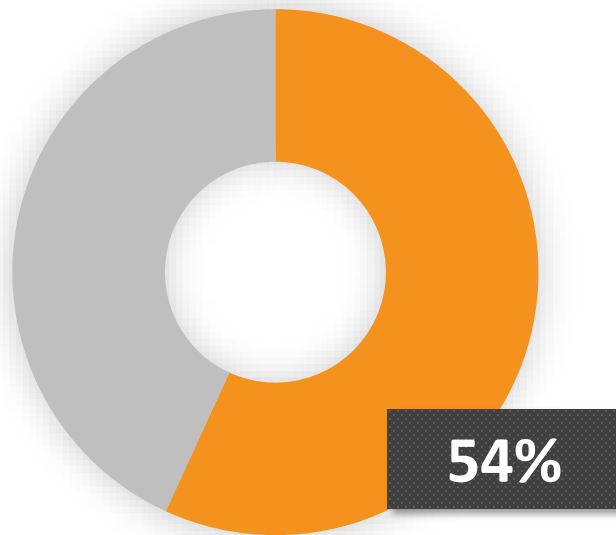
The OG&E Oklahoma LivingWise® Program has had a significant impact within the community. As illustrated on the next pages, the program successfully educated participants about energy and water efficiency while generating resource savings through the installation of efficiency measures in homes. Home survey information was collected to track projected savings and provide household consumption and demographic data. Program evaluations and comments were collected from teachers, students, and parents.

Home Survey

Upon completion of the program, participating families are asked to complete a home survey to assess their resource use, verify product installation, provide demographic information, and measure participation rates. A few samples of questions asked are below while a complete summary of all responses is included in the appendices (KIT 1).

Did you work with your family on this program?

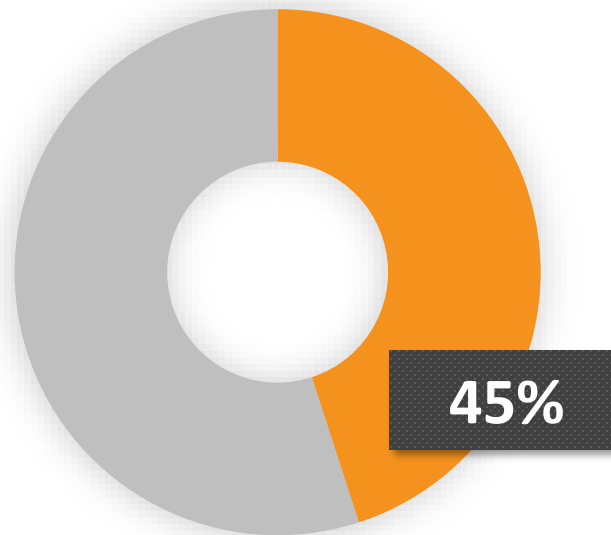
Yes 54%, No 46%



Students who indicated they worked with their family on the program.

Did your family change the way they use energy?

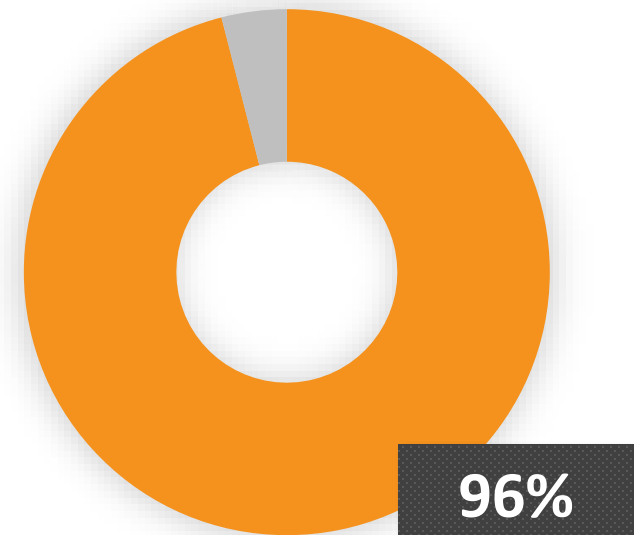
Yes 45%, No 55%



Students who indicated their family changed the way they use energy.

Students who rated the program Okay, pretty good and great.

Okay to Great 96%, Not good 4%



Students who rated the program Okay, pretty good and great.

Teacher Feedback

“What I liked best as a teacher was the excitement the kids had telling me about how they worked with their parents.”

Kenny Tudor, Teacher
Lincoln Elementary School

Home Activities

As part of the program, parents and students installed resource efficiency measures in their homes. They also measured the pre-existing devices to calculate savings that they generated. Using the family habits collected from the home survey as the basis for this calculation, 14,480 households are expected to save the following resource totals. Savings from these actions and new behaviors will continue for many years to come.

Projected Resource Savings

Number of Participants:	14,480		
	Annual	Lifetime	
Projected reduction from Showerhead retrofit:	1,343,105	13,431,042	kWh
Product Life: 10 years	32,100,423	321,004,226	gallons
Projected reduction from Bathroom Aerator retrofit:	253,661	2,536,580	kWh
Product Life: 10 years	6,052,905	60,529,050	gallons
Projected reduction from Kitchen Aerator retrofit:	460,017	4,600,122	kWh
Product Life: 10 years	11,252,427	112,524,269	gallons
Projected reduction from two LED Lightbulbs retrofit:	584,637	7,308,006	kWh
Product Life: 12.5 years			
Projected reduction from LED Night Light:	124,700	997,605	kWh
Product Life: 8 years			
Projected reduction from Water Heater Setback:	32,480	64,963	kWh
Product Life: 2 years			
Projected reduction from Advanced Power Strip:	851,904	8,519,039	kWh
Product Life: 10 years			
TOTAL PROGRAM SAVINGS:	3,650,501	37,457,357	kWh
	49,405,754	494,057,544	gallons
TOTAL PROGRAM SAVINGS PER HOUSEHOLD:	252	2,587	kWh
	3,412	34,120	gallons
TOTAL PROGRAM KW DEMAND REDUCTION:			
Showerhead:	140.13		
Bathroom Faucet Aerator:	27.43		
Kitchen Faucet Aerator:	48.00		
Two LED Light Bulbs:	78.69		
Water Heater Setback:	2.86		
Advanced Power Strip:	98.25		
Total:	394		
TOTAL PROGRAM DEMAND REDUCTION PER HOUSEHOLD:	0.027210		

Teacher Program Evaluation

Program improvements are based on participant feedback received. One of the types of feedback obtained is from participating teachers via a Teacher Program Evaluation Form. They are asked to evaluate relevant aspects of the program and each response is reviewed for pertinent information. The following is feedback from the Teacher Program Evaluation for the OG&E Oklahoma LivingWise® Program.

Teacher Response

93% of responding teachers indicated they would conduct the program again given the opportunity.

95% of responding teachers indicated they would recommend the program to their colleagues.

What did you like best about the program?

“I think they enjoyed the class discussions. They really were into renewable energy idea and had some good points during our discussions.” **Pam Norris, Beggs Middle School**

“My students enjoyed the change from our normal routine. They also enjoyed the experiments.” **Rebecca Johnson, Lakeview Elementary School**

“The student books, the teachers book. I used the web workouts this year and I liked that too.” **Stacy Williams, Perkins-Tryon Intermediate School**

“I like the excitement it builds in students and the opportunity families have to work together on activities and experiments.” **Luann Gilbert, Earlywine Elementary School**

What would you change about the program?

“I would make sure to do it earlier in the school year.” **Andrea Nevling, Pleasant Hill Elementary School**

“Nothing. It is great and my students love it.” **Natilee Clayton, Overholser Elementary School**

“Adjust to accommodate teachers who teach an entire grade level.” **Justina Bates, Little Axe Elementary School**

“Nothing, everything is great! They LOVED the draw-string bags :)” **Melissa Smith, Union Elementary School**

“I would not change anything.” **Angela Tyler, Meeker Elementary School**

Parent/Guardian Program Evaluation

Parent involvement with program activities and their children is of paramount interest to both utilities and teachers in the program. When parents take an active role in their child's education it helps the schools and strengthens the educational process considerably. When students successfully engage their families in retrofit, installation, and home energy efficiency projects, efficiency messages are powerfully delivered to two generations in the same household. The program is a catalyst for this family interaction, which is demonstrated by feedback from Parent/Guardian Program Evaluations in each program. The following is feedback from the Parent/Guardian Program Evaluations for the OG&E Oklahoma LivingWise® Program.

Parent Response

100% of participating parents indicated that the program was easy to use.

100% of participating parents indicated they would continue to use the kit items after the completion of the program.

100% of participating parents indicated they would like to see this program continued in local schools.

Which aspect of the program did you like best?

“Very informative, useful, easy instructions for both parent and child.”

Victor Ginela, Del City Elementary School

“The fact that my son wanted to see how much we could save.” **Tiffany Waltman, Mannford Upper Elementary School**

Are there any comments you would like to express to your child's program sponsor?

“Loved this idea and every school should have a chance to do it.” **Tiffany Waltman, Mannford Upper Elementary School**

“Liked the program very much!” **Pam Harluss, Lincoln Elementary School**

Projected Savings

Projected Savings from Showerhead Retrofit

Showerhead retrofit inputs and assumptions:		
Number of Participants:	14,480	¹
Deemed kWh Savings per Participant Kit 1 2021	115.656 kWh ²	
Deemed kWh Savings per Participant Kit 1 2022	100.973 kWh ²	
Deemed kWh Savings per Participant Kit 2 2022	84.031 kWh ²	
Deemed kW Savings per Participant Kit 1 2021	0.012042 kW ²	
Deemed kW Savings per Participant Kit 1 2022	0.010489 kW ²	
Deemed kW Savings per Participant Kit 2 2022	0.008801 kW ²	
Deemed Water Gallon Savings per Participant Kit 1 2021	2,607 gallons ²	
Deemed Water Gallon Savings per Participant Kit 1 2022	2,028 gallons ²	
Deemed Water Gallon Savings per Participant Kit 2 2022	2,290 gallons ²	
Estimated Useful Life	10.00	years ²
Projected Energy Savings:		
Showerhead retrofit projects an annual reduction of:	1,343,105 kWh ³	
Showerhead retrofit projects a lifetime reduction of:	13,431,042 kWh ⁴	
Projected Demand Reduction Savings:		
Showerhead retrofit projects an annual reduction of:	140.126 kW ⁵	
Projected Water Savings:		
Showerhead retrofit projects an annual reduction of:	32,100,423 gallons ⁶	
Showerhead retrofit projects a lifetime reduction of:	321,004,226 gallons ⁷	
¹ Reported by Participants		
² 2022 EMV Report		
³ Deemed kWh X Participants		
⁴ Deemed kWh X Participants X EUL		
⁵ Deemed kW X Participants		
⁶ Deemed gallons X Participants		
⁷ Deemed gallons X Participants X EUL		

Projected Savings from Bathroom Faucet Aerator Retrofit

Bathroom Faucet Aerator retrofit inputs and assumptions:		
Number of Participants:	14,480	¹
Deemed kWh Savings per Participant Kit 1 2021	20.658 kWh ²	
Deemed kWh Savings per Participant Kit 1 2022	18.539 kWh ²	
Deemed kWh Savings per Participant Kit 2 2022	16.393 kWh ²	
Deemed kW Savings per Participant Kit 1 2021	0.002151 kW ²	
Deemed kW Savings per Participant Kit 1 2022	0.001926 kW ²	
Deemed kW Savings per Participant Kit 2 2022	0.001717 kW ²	
Deemed Water Gallon Savings per Participant Kit 1 2021	489 gallons ²	
Deemed Water Gallon Savings per Participant Kit 1 2022	396 gallons ²	
Deemed Water Gallon Savings per Participant Kit 2 2022	423 gallons ²	
Estimated Useful Life	10.00	years ²
Projected Energy Savings:		
Bathroom Faucet Aerator retrofit projects an annual reduction of:	253,661 kWh ³	
Bathroom Faucet Aerator retrofit projects a lifetime reduction of:	2,536,580 kWh ⁴	
Projected Demand Reduction Savings:		
Bathroom Faucet Aerator retrofit projects an annual reduction of:	27.431 kW ⁵	
Projected Water Savings:		
Bathroom Faucet Aerator retrofit projects an annual reduction of:	6,052,905 gallons ⁶	
Bathroom Faucet Aerator retrofit projects a lifetime reduction of:	60,529,050 gallons ⁷	
¹ Reported by Participants		
² 2022 EMV Report		
³ Deemed kWh X Participants		
⁴ Deemed kWh X Participants X EUL		
⁵ Deemed kW X Participants		
⁶ Deemed gallons X Participants		
⁷ Deemed gallons X Participants X EUL		

Projected Savings

Projected Savings from the Kitchen Faucet Aerator Retrofits

Kitchen Faucet Aerator retrofit inputs and assumptions:		
Number of Participants:	14,480	¹
Deemed kWh Savings per Participant Kit 1 2021	37.667 kWh ²	
Deemed kWh Savings per Participant Kit 1 2022	33.107 kWh ²	
Deemed kWh Savings per Participant Kit 2 2022	30.047 kWh ²	
Deemed kW Savings per Participant Kit 1 2021	0.003922 kW ²	
Deemed kW Savings per Participant Kit 1 2022	0.003439 kW ²	
Deemed kW Savings per Participant Kit 2 2022	0.003147 kW ²	
Deemed Water Gallon Savings per Participant Kit 1 2021	919.80 gallons ²	
Deemed Water Gallon Savings per Participant Kit 1 2022	739 gallons ²	
Deemed Water Gallon Savings per Participant Kit 2 2022	783 gallons ²	
Estimated Useful Life	10.00 years ²	
Projected Energy Savings:		
Kitchen Faucet Aerator retrofit projects an annual reduction of:	460,017 kWh ³	
Kitchen Faucet Aerator retrofit projects a lifetime reduction of:	4,600,122 kWh ⁴	
Projected Demand Reduction Savings:		
Kitchen Faucet Aerator retrofit projects an annual reduction of:	48.001 kW ⁵	
Projected Water Savings:		
Kitchen Faucet Aerator retrofit projects an annual reduction of:	11,252,427 gallons ⁶	
Kitchen Faucet Aerator retrofit projects a lifetime reduction of:	112,524,269 gallons ⁷	
¹ Reported by Participants		
² 2022 EMV Report		
³ Deemed kWh X Participants		
⁴ Deemed kWh X Participants X EUL		
⁵ Deemed kW X Participants		
⁶ Deemed gallons X Participants		
⁷ Deemed gallons X Participants X EUL		

Projected Savings from Two LED Light Bulbs Retrofit

Two LED Light Bulbs retrofit inputs and assumptions:		
Number of Participants:	14,480	¹
Deemed kWh Savings per Participant Kit 1 2021	51.561 kWh ²	
Deemed kWh Savings per Participant Kit 1 2022	41.693 kWh ²	
Deemed kWh Savings per Participant Kit 2 2022	37.932 kWh ²	
Deemed kW Savings per Participant Kit 1 2021	0.006925 kW ²	
Deemed kW Savings per Participant Kit 1 2022	0.005587 kW ²	
Deemed kW Savings per Participant Kit 2 2022	0.005124 kW ²	
Estimated Useful Life	12.50 years ²	
Projected Energy Savings:		
LED Light Bulb retrofit projects an annual reduction of:	584,637 kWh ³	
LED Light Bulb retrofit projects a lifetime reduction of:	7,308,006 kWh ⁴	
Projected Demand Reduction Savings:		
LED Light Bulb retrofit projects an annual reduction of:	78.688 kW ⁵	
¹ Reported by Participants		
² 2022 EMV Report		
³ Deemed kWh X Participants		
⁴ Deemed kWh X Participants X EUL		
⁵ Deemed kW X Participants		

Projected Savings from Advanced Power Strip

Advanced Power Strip		
Number of Participants:	7,985	¹
Deemed kWh Savings per Participant Kit 2 2022:	106.688 kWh ²	
Deemed kW Savings per Participant Kit 2 2022:	0.012304 kW ²	
Estimated Useful Life	10.00	years ²
Projected Energy Savings:		
Advanced Power Strip has an annual reduction of:	851,904 kWh ³	
Advanced Power Strip has a lifetime reduction of:	8,519,039 kWh ⁴	
Projected Demand Reduction Savings:		
Advanced Power Strip has an annual reduction of:	98.247 kW ⁵	
¹ Reported by Participants		
² 2022 EMV Report		
³ Deemed kWh X Participants		
⁴ Deemed kWh X Participants X EUL		
⁵ Deemed kW X Participants		

Home Check-Up (KIT 1)

1 How many people live in your home (including you)?

1	1%
2	3%
3	14%
4	29%
5	26%
6	15%
7+	12%

2 How is your water heated?

Natural Gas	33%
Electricity	49%
Propane	18%

3 Does your home have a dishwasher?

Yes	75%
No	25%

4 How many half bathrooms are in your home?

0	68%
1	24%
2	6%
3	1%
4+	0%

5 How many full bathrooms are in your home?

1	29%
2	58%
3	10%
4	2%
5+	1%

6 Which fuel is used as the main source of energy to heat your home?

Natural Gas	24%
Electricity	59%
Heating Oil	2%
Wood	2%
Propane	11%
Other	2%

7 What type of air conditioning unit do you have?

Central Air Conditioner	77%
Evaporative Cooler	4%
Room Unit	16%
Don't Have One	4%

8 What type of home do you live in?

Single Family home	89%
Multi-Family Home/Apartment Building	11%

9 Was your home built before 1992?

Yes	49%
No	51%

10 Is your home owned or rented?

Owned	77%
Rented	23%

Home Check-Up (KIT 2)

1 How many people live in your home (including you)?

1	0%
2	2%
3	13%
4	28%
5	28%
6	17%
7+	12%

2 How is your water heated?

Natural Gas	51%
Electricity	37%
Propane	13%

3 Does your home have a dishwasher?

Yes	72%
No	28%

4 How many half bathrooms are in your home?

0	68%
1	26%
2	4%
3	1%
4+	0%

5 How many full bathrooms are in your home?

1	38%
2	48%
3	9%
4	4%
5+	0%

6 Which fuel is used as the main source of energy to heat your home?

Natural Gas	37%
Electricity	53%
Heating Oil	1%
Wood	1%
Propane	7%
Other	2%

7 What type of air conditioning unit do you have?

Central Air Conditioner	74%
Evaporative Cooler	2%
Room Unit	21%
Don't Have One	3%

8 What type of home do you live in?

Single Family home	89%
Multi-Family Home/Apartment Building	11%

9 Was your home built before 1992?

Yes	47%
No	53%

10 Is your home owned or rented?

Owned	71%
Rented	29%

Home Activities (KIT 1)

1 Did your family install the new High-Efficiency Showerhead?

Yes	35%
No	65%

2 Did your family install the new Bathroom Faucet Aerator?

Yes	27%
No	73%

3 Did your family install the new Kitchen Faucet Aerator?

Yes	28%
No	72%

4 Did your family install the first 9-watt LED Light Bulb?

Yes	50%
No	50%

5 Did your family install the second 9-watt LED Light Bulb?

Yes	44%
No	56%

6 Did your family install the LED Night Light?

Yes	64%
No	36%

7 Did your family raise the temperature on your refrigerator?

Yes	22%
No	77%

8 How much did your family turn down the thermostat in winter for heating?

1 - 2 Degrees	12%
3 - 4 Degrees	20%
5+ Degrees	14%
Didn't Adjust Thermostat	54%

9 How much did your family turn up the thermostat in summer for cooling?

1 - 2 Degrees	13%
3 - 4 Degrees	21%
5+ Degrees	14%
Didn't Adjust Thermostat	52%

10 Did your family lower your water heater settings?

Yes	19%
No	81%

11 Did you work with your family on this program?

Yes	54%
No	46%

12 Did your family change the way they use energy?

Yes	45%
No	55%

13 How would you rate the LivingWise Program?

Great	32%
Pretty Good	35%
Okay	29%
Not so Good	4%

Home Activities (KIT 2)

1 Did your family install the new High-Efficiency Showerhead?		
Yes	42%	
No	58%	
2 Did your family install the new Bathroom Faucet Aerator?		
Yes	32%	
No	68%	
3 Did your family install the new Kitchen Faucet Aerator?		
Yes	36%	
No	64%	
4 Did your family install the first 9-watt LED Light Bulb?		
Yes	61%	
No	39%	
5 Did your family install the second 9-watt LED Light Bulb?		
Yes	52%	
No	48%	
6 Did your family install the Advanced Power Strip in your home?		
Yes	71%	
No	29%	
7 If you answered "yes" to question 6, where did you install your Advanced Power Strip?		
TV System	25%	
Computer System	12%	
Other	62%	
8 If you answered "yes" to question 6, did you received help from your parents?		
Yes	58%	
No	42%	
9 Did your family raise the temperature on your refrigerator?		
Yes	25%	
No	75%	
10 How much did your family turn down the thermostat in winter for heating?		
1 - 2 Degrees	18%	
3 - 4 Degrees	17%	
5+ Degrees	15%	
Didn't Adjust Thermostat	50%	
11 How much did your family turn up the thermostat in summer for cooling?		
1 - 2 Degrees		15%
3 - 4 Degrees		16%
5+ Degrees		15%
Didn't Adjust Thermostat		55%
12 Did your family lower your water heater settings?		
Yes		26%
No		74%
13 Did you work with your family on this program?		
Yes		56%
No		44%
14 Did your family change the way they use energy?		
Yes		59%
No		41%
15 How would you rate the LivingWise Program?		
Great		40%
Pretty Good		37%
Okay		19%
Not so Good		3%

Teacher Program Evaluation Data

1 The materials were clearly written and well organized.

Strongly Agree	83%
Agree	17%
Disagree	0%
Strongly Disagree	0%

2 The products in the kit were easy for students to use.

Strongly Agree	76%
Agree	24%
Disagree	0%
Strongly Disagree	0%

3 Student indicated that their parents supported the program.

Yes	90%
No	10%

4 Would you conduct this program again?

Yes	93%
No	7%

5 Would you recommend this program to other colleagues?

Yes	95%
No	2%

6 If my school is eligible for participation next year, I would like to enroll.

Yes	95%
No	5%

1 Was the Program easy for you and your child to use?

Yes

100%

No

0%

2 Will you continue to use the Kit items after the completion of the Program?

Yes

100%

No

0%

3 Would you like to see this Program continued in local schools?

Yes

100%

No

0%

Participant List

School Name	Teacher	Students
Achille Elementary School	Toby Isenberg	18
Adams Elementary School	Misty Owings	21
Adams Elementary School	Cathy Allen	8
Adams Elementary School	Tammy Millis	19
Adams Elementary School	Brandi Peterman	25
All Saints Catholic School	Jorge Morales	44
Antioch Christian Academy	Christopher Roberts	24
Apollo Elementary School	Caitlyn Havlik	85
Barnes Elementary School	J Vermillion	20
Barnes Elementary School	S Morrison	20
Barnes Elementary School	Mandi Cornell	20
Beggs Middle School	Pam Norris	60
Belfonte Elementary School	Jon Jones	20
Belfonte Elementary School	Erin Rhodes	20
Belle Isle Middle School	Elizabeth Maples	125
Bishop John Carroll School	Jennifer Herndon	30
Bokoshe Elementary School	Sara Lovell	12
Boulevard Christian School	Bernadette Beatty	11
Bradley Elementary School	Chase Huston	24
Braggs Elementary School	Cyndi Bailey	4
Braggs Elementary School	Melinda Lindsey	15
Bristow Adventist School	Abbigail Banks	6
Byng Elementary School	Becky Henderson	62
Caddo Elementary School	Kara Doyle	42
Calera Elementary School	Lisa Bishop	65
Calumet Elementary School	Amanda Estep	42
Cameron Elementary School	Russ McDonald	20
Canton Elementary School	Kim Nault	23
Capitol Hill Middle School	Willie Payne	55
Capitol Hill Middle School	Jasmine Franklin	53
Central Elementary School	Amber O'Bryant	67
Central Elementary School	Jennie Hancock	60
Central Oak Elementary School	Kristen Dean-Tapassi	22
Central Oak Elementary School	Juanita Cunningham	22

School Name	Teacher	Students
Central Oak Elementary School	Jodi Travis	22
Central Oak Elementary School	Lesli Arnold	21
Checotah Intermediate School	Tina Womack	115
Cherokee Elementary School	Melody Cranford	64
Cherokee Elementary School	Melody Cranford	60
Chisholm Elementary School	Lisa Earl	85
Cleveland Bailey Elementary School	Rene O'Hagan	22
Cleveland Bailey Elementary School	Breanna Fortenberry	22
Cleveland Bailey Elementary School	Rene O'Hagan	50
Collins Elementary School	Ashley McGovran	48
Collins Elementary School	Heather Adams	67
Coolidge Elementary School	Dana Everett	25
Coronado Heights Elementary School	Raylyna Soto	25
Coronado Heights Elementary School	Sheila Alderson	25
Coronado Heights Elementary School	Tracy Hopson	25
Coronado Heights Elementary School	Rachel Jonesheins	5
Coyle Elementary School	Lindsay Gibbs	22
Creek Elementary School	Margaret Ragsdale	78
Crescent Elementary School	Joseph Knapp	85
Cross Timbers Elementary School	Lisa Jones	40
Cross Timbers Elementary School	Kurt Smith	40
Cross Timbers Elementary School	Charlene McCanathy	60
Crutcho Elementary School	Gale Chapple	40
Dale Middle School	Brittany Collier	71
Darlington Elementary School	Pam Garner	24
Davis Middle School	Daleen Jones	13
Davis Middle School	Dustin Hammons	15
Davis Middle School	Jeff Mapes	14
Davis Middle School	Sarah Waters	14
DeI City Elementary School	Gary Siebert	25
DeI City Elementary School	Jenni Olivencia	25
DeI City Elementary School	Janice Howard	25
Dickson Upper Elementary School	Emile Winchester	90
Dove Science Academy South Elementary	Yasmin Hinojosa	60

Participant List

School Name	Teacher	Students
Dove Science Academy South Elementary	Kaoutar Tahiri	30
Drummond Elementary School	Kim Arnold	15
Drummond Elementary School	Ashley Alegria	15
Durant Intermediate School	Alecia Jarvis	55
Durant Intermediate School	Susan Hall	55
Durant Intermediate School	Vicki Sutton	55
Durant Intermediate School	Arlene McKim	55
Durant Intermediate School	Tracy Risner	55
Durant Intermediate School	Myra Skelton	55
Earl Harris Elementary School	Youmi Carroll	25
Earl Harris Elementary School	Nancy Summers	25
Earl Harris Elementary School	Karla White	25
Earl Harris Elementary School	Heather Rabichel	25
Earl Harris Elementary School	Elizabeth Bryan	25
Earlsboro Elementary School	Kim Williams	20
Earlywine Elementary School	Luann Gilbert	67
Eisenhower Elementary School	Cristil Carillo	20
Emmanuel Christian School	Melodee Schneider	23
Epic Charter Schools	Dawnya Martin	1
Epperly Heights Elementary School	Valerie Minor	25
Epperly Heights Elementary School	Judy Musselman	25
Epperly Heights Elementary School	Jackson Hodges	25
Epperly Heights Elementary School	Keirra Cooper	25
Eufaula Elementary School	Tami Snow-Cantrell	75
Family of Faith Christian School	Sharon Phillips	12
Fisher Elementary School	Tami King	25
Fisher Elementary School	Heather Kovach	25
Fort Gibson Intermediate Elementary School	Jimmie Hammtree	42
Fort Gibson Intermediate Elementary School	Karlee Ritchie	44
Fort Gibson Intermediate Elementary School	Amy Hasler	44
Glenwood Elementary School	Jamie Sutherland	25
Glenwood Elementary School	Marisa Burrell	25
Glenwood Elementary School	Tabbitha Huggins	25
Greenville Elementary School	Tambre Sanders	7
Guthrie Upper Elementary School	Stacey Johnston	479
Healdton Elementary School	Natasha Moore	18
Heritage Hall School	Kimberly Crawford	19
Heritage Hall School	Amanda Walker	19
Heritage Hall School	Rebecca Whittan	20

School Name	Teacher	Students
Heritage Trails Elementary School	Sally Russell	28
Heritage Trails Elementary School	Morgan Weidenmaier	29
Heritage Trails Elementary School	Alexa Hamilton	29
Hilldale Elementary School	Charles Lance	22
Hilldale Elementary School	Hadiqa Aslam	22
Hilldale Elementary School	Ashley Guzman	22
Hilldale Elementary School	Darbi Wallis	22
Hilldale Elementary School	Melanie Rose	22
Hilldale Upper Elementary School	Karah Lehman	23
Holmes Park Elementary School	Tara Fancher	25
Holmes Park Elementary School	Kaylee Romeo	25
Holmes Park Elementary School	Lesli Whillock	25
Holmes Park Elementary School	Megan Plummer	25
Hoover Elementary School	Jamilyn Lewis	24
Hoover Elementary School	Ashley Currier	24
Hoover Elementary School	Ashley Currier	24
Horace Mann Elementary School	Alyssa McGrew	22
Horace Mann Elementary School	ReAnna McCree	22
Horace Mann Elementary School	Rebecca Miller	20
Houchin Elementary School	Stephani Clayton	52
Houchin Elementary School	Stephani Clayton	80
Howe Elementary School	Jamie Nobles	27
Howe Elementary School	Coty Atkins	27
Independence Middle School	Amy Rice	30
Independence Middle School	Erin Harris	60
Independence Middle School	Laura Reilly	32
Independence Middle School	Tina Treat	26
Independence Middle School	Sandy Winn	26

Participant List

School Name	Teacher	Students
Jefferson Elementary School	Michelle Alvarez	41
Jefferson Middle School	Ashley Taffe	50
JF Kennedy Elementary School	Harley Purvis	20
John Marshall Middle School	Adelina Clonts	90
John Marshall Middle School	Ravonne French	90
John Rex Charter School	Kristin Lawson	70
Jones Elementary School	Tara Freeman	20
Jones Elementary School	AJ Calvert	20
Jones Elementary School	Cortney Cunningham	20
Jones Elementary School	Heather Carr	20
Justice Elementary School	Mary Davis	20
Justice Elementary School	Kelly Martin	20
Kennedy Elementary School	Stephanie Cobb	25
Kennedy Elementary School	Natosha Cagle	25
Kennedy Elementary School	Kristina Rodgers	25
Kiefer Upper Elementary	Taylor Johnson	70
Kingston Elementary School	Lucinda Shipley	97
Kingston Elementary School	Lindsey Dowdy	25
Kingston Elementary School	Charlie Anderson	25
Kingston Elementary School	Alison Clowers	25
Kingston Elementary School	Cherish Sheffield	25
Kipp Reach College Preparatory	Kesha Foster	80
Kremlin-Hillsdale Elementary School	Heather Carson	17
Lakeview Elementary School	Rebecca Johnson	28
Lakeview Intermediate	Amy Loeffelholz	70
Latta Middle School	Jill Bates	70
Latta Middle School	Shawna Senkel	65
Liberty Mounds Elementary School	Burton McLain	40
Lincoln Elementary School	Kenny Tudor	56
Lincoln Elementary School	Emily Stein	20
Lincoln Elementary School	Tonya Ford	20
Lincoln Elementary School	Zac Robertson	30

School Name	Teacher	Students
Lincoln Elementary School	Tina Mantz	26
Little Axe Elementary School	Robin Jones	89
Lomega Elementary School	Makaly Cranford	12
Lone Grove Intermediate School	Sarah Voreis	84
Lone Grove Intermediate School	Christi Garner	100
Madison Elementary School	Lindsey Grotheer	18
Madison Elementary School	Taylor Kirtley	18
Madison Elementary School	Mara Kennedy	17
Madison Elementary School	Brittany Arnold	15
Madison Elementary School	Lindsey Grotheer	25
Madison Elementary School	Taylor Kirtley	25
Mannford Upper Elementary School	Amanda Kyser	110
Mannsville Elementary School	Summer Pense	15
Maple Elementary School	Shana Thiel	19
Mary Golda Ross Middle School	Tahwantonweh Superna	100
Mary Golda Ross Middle School	Simone Clemmons	100
Mary White Elementary School	Shannon Loman	60
Maysville Elementary School	Tiffani Ray	28
McKinley Elementary School	Shannon Lowe	23
McKinley Elementary School	Roscoe Reed	23
McCloud Intermediate School	Shannon Brackeen	125
Medford Elementary School	Janelle Smith	19
Messiah Lutheran Institute	Connie Copenhaver	20
Midwest City Elementary School	Chelsea Cash	27
Midwest City Elementary School	T. Isbill	27
Midwest City Elementary School	E. Savage	26
Midwest City Elementary School	A. Irick	26
Millwood Elementary School	Anna Dickenson	78
Monroe Elementary School	Amy Skaggs	19
Monroe Elementary School	Stacia Paul	19
Monroe Elementary School	Denise Peterson	18
Morrison Elementary School	Tiffany Schlehuber	90

Participant List

School Name	Teacher	Students
Morrison Elementary School	Tiffany Schlehuber	45
Moss Elementary School	Ashley Cates	21
Mounds Middle School	Sheri Hughes	42
Muldraw Middle School	Jamie Sharp	95
Mulhall - Orlando Elementary School	Theresa Weir	19
Mustang Horizon Intermediate	Alisha Dupuis	17
Mustang Horizon Intermediate	Bethany Fair	350
New Lima Elementary School	Jessica Carr	17
New Lima Elementary School	Jessica Carr	19
North Rock Creek Schools	Luci Copelin	67
Northridge Elementary School	Amber Hinkle	23
Northridge Elementary School	Laura Hardee	23
Northridge Elementary School	Andrew Wiggins	23
Northridge Elementary School	Stephanie Westmorelan	24
Northridge Elementary School	Joel Dyer	24
Northwood Elementary School	Kathleen White	100
Oak Hall Episcopal School	Amy Flanagan	15
Oakridge Elementary School	Dawn Hubbard	107
Okay Elementary School	Andrea Collins	30
Oklahoma School for the Blind	Elisha Moore	7
Oklahoma School for the Blind	Elisha Moore	5
Oklahoma School for the Deaf	Kelsey Jones	14
Oklahoma School for the Deaf	Sally Henry	14
Oktaha Elementary School	Susan Ledford	25
Oktaha Elementary School	Tonya Bush	25
Olive Elementary School	Regina Hawks-Kheddar	31
Overholser Elementary School	Cortlyn Emerich	25
Overholser Elementary School	Natilee Clayton	25
Overholser Elementary School	Maria Castro	25
Panama Upper Elementary School	Sherri Walker	18
Panama Upper Elementary School	Suzie Carpenter	18
Panama Upper Elementary School	Stacey Bradshaw	18

School Name	Teacher	Students
Paoli Elementary School	Donna Mckinney	10
Parkview Adventist Academy	Daniel Spooner	5
Parkview Elementary School	Rashonda Stockard	150
Perkins-Tryon Intermediate School	Jake Niles	17
Perkins-Tryon Intermediate School	Myla Stevens	20
Perkins-Tryon Intermediate School	Aaron Stanberry	17
Perkins-Tryon Intermediate School	Stacey Williams	20
Perkins-Tryon Intermediate School	Kasey Stancell	20
Perkins-Tryon Intermediate School	Anita Morris	19
Pershing Elementary School	Annetta Custer	75
Pioneer - Pleasant Vale Elementary School	Debbie Whatley	38
Pleasant Grove Elementary School	Kathy Ferguson	23
Pleasant Hill Elementary School	Andrea Nevling	25
Pleasant Hill Elementary School	Rickel Boyd	28
Pleasant Hill Elementary School	Karen McCabe	17
Pleasant Hill Elementary School	Hannah Parker	20
Positive Tomorrows School	Bailey Henwood	13
Positive Tomorrows School	Amanda Martinez	15
Prairie View Elementary School	Tina Green	48
Purcell Intermediate School	Kerri Raper	107
Putnam Heights Academy	Christin Crawford	1
Ralph Downs Elementary School	Mary Thele	65
Ravia Elementary School	Diana Walters	17
Red Oak Elementary School	Lorie Prater	70
Redstone Intermediate School	Justin Winfrey	58
Redstone Intermediate School	Misti Zerger	60
Ringwood Elementary School	Denise Bowers	26
Ripley Elementary School	Ashley Shenold	30
Ripley Elementary School	Ashley Shenold	41
Riverside Elementary School	Niki Spohn	13
Rock Creek Elementary School	Misty Hobbs	42
Rogers Elementary School	Shawntae Ballard	300

Participant List

School Name	Teacher	Students
Roland Upper Elementary School	Melinda McKinney	51
Ronald Reagan Elementary School	Janet Pyle	30
Ronald Reagan Elementary School	Lindsay Sharp	30
Roosevelt Middle School	Yulissa Gutierrez	70
Roosevelt Middle School	Leland Johnson	69
Roosevelt Middle School	Winston Prescott	69
Rosary School	Jennifer Carson	25
Russell Babb Elementary School	Valerie Campbell	46
Russell Babb Elementary School	Kimberly Anderson	44
Russell Babb Elementary School	Lauren Sadberry	67
Sacred Heart Catholic School	Abby Boyd	16
Sacred Heart Catholic School	Joy Baker	21
Sacred Heart Catholic School	Sydney Boyd	12
Saint Joseph Catholic School	David Adams	5
Sasakwa Elementary School	Donna Radford	16
Schwartz Elementary School	Christy Combs	48
Seiling School	Anna Nelson	35
Shady Point School	Clyde Oldaker	10
Sharon-Mutual Elementary School	Erica Nail	33
Silo Elementary School	Brooke Noel	100
Sky Ranch Elementary School	Andrea Nevling	73
Soldier Creek Elementary School	Shelby Pearson	30
Soldier Creek Elementary School	Hartzell Clane	30
Soldier Creek Elementary School	Tori Kitchel	30
Sooner Elementary School	Susan Christian	26
Sooner Elementary School	Autumn Rogers	51
Sooner Elementary School	Julie Martin	18
Sooner Elementary School	Kristin Self	18
Sooner Elementary School	Jennifer Day	18
South Lake Elementary School	Sarah French	130
Southeast Middle School	Passion Bradley	150
Southeast Middle School	Passion Bradley	150

School Name	Teacher	Students
Springer Elementary School	Lora Lents	24
St. John Nepomuk Catholic School	Beth Sprague	11
St. Paul's Lutheran School	Wendi Collums	6
St. Philip Neri Catholic School	(Pam) Pamela Miller	17
St. Philip Neri Catholic School	Ann Thompson	18
Stanley Hupfeld Academy at Western Village	Heather Meldrum	24
Stanley Hupfeld Academy at Western Village	Ego Ochuru	20
Stanley Hupfeld Academy at Western Village	Deborah Scobey	24
Stanley Hupfeld Academy at Western Village	Amy Lawes	24
Steed Elementary School	Ciane Hartzell	30
Steed Elementary School	Alexandria Mcghee	30
Strother Elementary School	Angela Tyler	40
Sulphur Intermediate Elementary School	Lacey Doty	95
Taft 5th Grade Center	Shaun Floyd	90
Taft 5th Grade Center	Shaun Floyd	90
Taft 5th Grade Center	Robert Turner	90
Taft 5th Grade Center	Yvonne Little	90
Taft Elementary School	Kendra Humphries	22
Taft Elementary School	Jennifer White	19
Thomas Middle School	Cara Sherry	20
Thomas Middle School	Nancy Giles	20
Thomas Middle School	Sherry McDaniel	20
Thomas Middle School	M Story	20
Tinker Elementary School	Kayla Wilbanks	24
Tinker Elementary School	Chelsea Bauer	23
Tony Goetz Elementary School	Keri Green	84
Tony Goetz Elementary School	Amy Tull	77
Townsend Elementary School	Karen Bermudez	26
Townsend Elementary School	Shannon Sullivan	25
Townsend Elementary School	Katy Allen	25
Townsend Elementary School	Karen Bermudez	26
Townsend Elementary School	Shannon Sullivan	26

Participant List

School Name	Teacher	Students
Trinity School	Norma Morton	14
Tulakes Elementary School	Melissa Meek	24
Tulakes Elementary School	Samantha Farmer	24
Tulakes Elementary School	Courtney Garrett	25
Tulakes Elementary School	Gracie Kitzel	25
Union Elementary School	Lexis Estrada	22
Union Elementary School	Alesya Franz	19
Union Elementary School	Melissa Smith	25
Union Elementary School	Alesya Franz	25
Varnum Elementary School	Randy McCown	24
Vici Elementary School	Donna Peoples	23
Vici Elementary School	tim moss	20
Victory Life Academy	Cindy Northcutt	28
Wanette Elementary School	Courtney Ellis	4
Wanette Elementary School	Caitlyn Havlik	11
Ward Elementary School East	Kerrey Matlock	51
Ward Elementary School East	Elise Horn	1
Ward Elementary School East	Amber Boney	1
Ward Elementary School East	Elise Horn	20
Ward Elementary School East	Kerrey Matlock	20
Ward Elementary School East	Amber Boney	20
Washington Elementary School	Lindy Brewer	22
Washington Elementary School	Kristen Byrd	22
Washington Elementary School	Tasha Wilk	22
Washington Elementary School	Janet McPherson	22
Washington Irving Elementary School	Shawna Shorb	60
Wayland Bonds Elementary School	Stephanie Schoenecke	30
Wayland Bonds Elementary School	Janice Walker	30
Wayland Bonds Elementary School	Melissa Cospers	30
Wayne Elementary School	Beth Boles	30
Webbers Falls Elementary School	Ali Sanders	21
Webster Middle School	Michael Frazier	220

School Name	Teacher	Students
Wellston Elementary School	Jackie Wall	20
Wellston Elementary School	Wanda Hall	18
Wellston Elementary School	Wanda Hall	43
Western Oaks Elementary School	Jerilyn Cushing	20
Western Oaks Elementary School	Kendra Moy	20
Western Oaks Elementary School	Melissa Pagonis	20
Western Oaks Elementary School	Rebecca Hinton	20
Western Oaks Elementary School	Kersten Kalka	20
Westfall Elementary School	Chrystal Reis	22
Westfall Elementary School	Miranda Pherigo	23
Westfall Elementary School	Heather Sander	24
Will Rogers Elementary School	Tiffany Hughes	21
Will Rogers Elementary School	Connie Gallupe	21
Wilson Elementary School	John Walker	32
Wilson Elementary School	Amanda Stearns	20
Woodward Christian Academy	Robert Dwinelle	5
Woodward Christian Academy	Robert Dwinelle	3

Total	14480
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Thank You from Teachers and Students

Dear OGT + E Living Wise Program,

I am Mrs. Hunter. I personally want to thank you for providing these beneficial resources. I enjoyed teaching with them because my husband works for OGT + E and I can bring in something personal to help engage the students further. We completed the student guide this week and the kids really enjoyed it. Thank you.

Sincerely,
Mrs. Hunter

Dear OGT + E,

Thank you for the Living Wiser box. Thank you for teaching us how to conserve energy. I also learned there are different types of fuels. My favorite part was the vocab scramble.

Sincerely,
Koby

Dear O G + E

Thank you for the boxes. Thank you for teaching us how to conserve energy. I also learned there are different types of energy sources. My favorite part was the box.

sinc
Ethan

Dear O G + E,

Thank you for the living wizinboxes. Thank you for teaching us to conserve energy. We learned different lots of fuel. My favorite part was the vocab Scramble.

Sinc
Trinit

Dear OGE,

Thank you for the living wise Boxes.

Thank you for teaching us how to conserve, I also learned there are different types of fuels. Non-renewable and renewable. My favorite part was learning more stuff about energy.

Sincerely,
Kaeden

Dear OGE

Thank You for the living wise Boxes.
Thank You for teaching us how to conserve energy. I also learned that there are different renewable and nonrenewable. My favorite part was the word Scramble.

Sincerely,
Emma

7.4 Water and Emissions Methodology

Methodology to estimate a consistent, output-based emissions and fresh water savings rate from OG&E's operations

Background:

In an annual report, OG&E represents Demand Program emissions and water savings for The Oklahoma Corporation Commission. The following estimation methodology is used to maintain a consistent and reliable representation of this basis. Importantly, this methodology allows water and emissions to be compared on an equal footing due to the inclusion of only parameters under OG&E's direct operational control. For the Demand Program, an estimate is needed for: fresh water use, and emissions of nitrogen oxides (NO_x), sulfur dioxide (SO₂) & carbon dioxide-equivalents (CO₂e).

Assumptions:

1. Fresh water use and emission rates are derived from all power plants owned and operated by OG&E, including wind, solar, and fossil-fueled (natural gas and coal).
2. OG&E has direct control (i.e., is the operator) over these facilities and direct access to their water use, emissions, and power generation information.
3. Purchased power (from any source or state) is not part of this methodology as the associated water use and emissions are not accounted for by OG&E in regulatory programs or permits.
4. Renewable Emissions Credits (RECs) are not part of this calculation as they only pertain to CO₂e emissions and wind and solar generation, not part of any regulatory program, not certified and would be inconsistent with other environmental benefit estimations i.e., water conservation.

Calculation:

Fresh water use is based on the amount of water lost due to evaporation in the power generation process. Usage data is obtained from quality assured measurement systems which provide information for reporting to the Oklahoma Water Resources Board (OWRB) regarding water use governed by facility water rights permits. Water usage data for Frontier Power Plant is not reported to OWRB because this facility purchases water from the City of Oklahoma City. Frontier water use data is metered as it comes into the facility and when it leaves the facility. Emissions data is obtained from the Continuous Emissions Monitors (CEMs) Data Acquisition Handling System (DAHS) that is quality assured and consistent with information available from the Clean Air Markets Division (CAMD) of the Environmental Protection Agency (EPA). Generation data (gross megawatt hours (MWhs)), are derived from the sum of the gross output from OG&E-operated fossil-fueled generating units and the gross output of OG&E-owned renewable generation. The gross generation for fossil-fueled units is obtained from the same CEMS system as the emission data. Total gross generation from the McClain Power Plant is not required by the EPA CEMS reporting program referenced above, therefore, it is obtained from OG&E's Generating Availability Data System (GADS) database, a North American Electric Reliability Corporation (NERC)-developed database. GADS is a mandatory industry program for conventional generating units that are 20 MW and larger and windfarms with a total installed capacity of 75MW or greater. Currently, solar generation is not part of the NERC mandatory reporting requirements, therefore, solar MWh data is obtained from reliable, accurate OG&E sources other than GADS.

The output-based water use and emission rates are derived by dividing measured fresh water use, and emissions of NO_x, SO₂, and CO₂e from OG&E-operated fossil-fueled facilities by *gross* power generation (MWhs) from OG&E-operated fossil-fueled and OG&E owned renewable generation facilities.

Each of these factors is multiplied by the energy savings in MWh during the Demand Program period resulting in gallons of fresh water and mass (pounds or short tons) of emissions avoided by the OG&E-owned generating fleet over the duration.