Oklahoma Gas and Electric Company

Oklahoma Comprehensive Demand Program Portfolio

2021 Annual Report

In Accordance with Annual Reporting Requirements

Oklahoma Corporation Commission Utility Rules

165:35-41-7

July 1, 2022



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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 2021. This report is required to be submitted with the Oklahoma Corporation Commission ("OCC" or "Commission"") by July 1, 2022, pursuant to the Annual Reporting Requirements in OAC 165:35-451-7.

On July 2, 2018, OG&E filed a comprehensive portfolio of energy efficiency programs with the Oklahoma Corporation Commission for Program Years 2019-2021. This portfolio was approved by OCC Order No. 688933 in Cause No. PUD 201800074 on December 27, 2018. The focus of this report will be on the third Program Year ("PY2021"), spanning from January 1, 2021 to December 31, 2021, of the implementation cycle.

Below is a summary of the 2021 Demand Program Portfolio results.

2021 Summary of Results	Projected (Filed)	Actual	% Achieved
Expenses (with Labor)	$38,078,905	$35,474,777	93%
Net Energy Savings (kWh)	158,160,901	170,956,762	108%
Net Demand Savings (kW)	27,429	30,789	112%

Cost Effectiveness - TRC	1.31	2.02
Cost Effectiveness - PACT (UCT)	1.73	3.50
Cost Effectiveness - RIM	0.46	0.71
Cost Effectiveness - PCT	3.73	3.44
Cost Effectiveness - SCT	1.89	3.29

Levelized Cost per kWh	$0.032	$0.026

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	158,329	$11,958,035	51,066,688	8,700
WRAP	January 2008	3,614	$6,077,350	12,619,303	3,371
CEEP	January 2013	863	$16,359,105	107,270,771	18,718
Total		162,806	$34,394,490	170,956,762	30,789

**The HEEP Number of projects includes lighting packages, (i.e., 65,000 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	688,207	Residential Customers	158,329
WRAP	January 2008	211,235	Low Income Residential Customers	3,614
CEEP	January 2013	117,373	Commercial/Industrial Customers	863
Education	January 2010	805,580	All Customers	46

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	$150,000	$7,399,966	$75,000	$3,800,000	$571,250	$371,817	**$12,368,033**
WRAP	$150,000	$4,650,000	$210,000	$170,000	$259,000	$180,983	**$5,619,983**
CEEP	$150,000	$10,399,939	$75,000	$6,050,000	$833,750	$285,172	**$17,793,862**
Education	$0	$0	$0	$800,000	$0	$77,027	**$877,027**
Regulatory	$20,000	$0	$0	$0	$0	$0	**$20,000**
Planning	$50,000	$0	$0	$0	$0	$0	**$50,000**
Research & Development	$1,350,000	$0	$0	$0	$0	$0	**$1,350,000**
Total	**$1,870,000**	**$22,449,905**	**$360,000**	**$10,820,000**	**$1,664,000**	**$915,000**	**$38,078,905**

Actual

Program	Actual Program Costs						
	Administrative	Inducements	Education & Marketing	Program Delivery	EM&V	Allocated Labor	Total
HEEP	$223,865	$6,747,614	$10,024	$4,427,691	$495,352	$53,489	**$11,958,035**
WRAP	$38,229	$5,350,041	$304,492	$128,924	$130,092	$125,572	**$6,077,350**
CEEP	$104,666	$8,338,000	$7,674	$7,184,141	$551,790	$172,834	**$16,359,105**
Education	$0	$0	$0	$826,266	$0	$124,636	**$950,902**
Regulatory	$0	$0	$0	$0	$0	$0	**$0**
Planning	$21,637	$0	$0	$0	$0	$0	**$21,637**
Research & Development	$107,748	$0	$0	$0	$0	$0	**$107,748**
Total	**$496,146**	**$20,435,655**	**$322,190**	**$12,567,023**	**$1,177,233**	**$476,531**	**$35,474,777**

2.3 Summary of Energy and Demand Savings

Projected

Program	Projected (Filed)	
	Energy Savings (kWh)	Demand Savings (kW)
HEEP	49,398,524	9,011
WRAP	12,265,528	3,122
CEEP	96,496,849	15,295
Total	158,160,901	27,429

Actuals

Program	Actuals			
	Gross Energy Savings (kWh)	Gross Demand Savings (kW)	Verified Net Energy Savings (kWh)	Verified Net Demand Savings (kW)
HEEP	65,721,774	10,469	51,066,688	8,700
WRAP	12,544,560	3,237	12,619,303	3,371
CEEP	109,550,746	19,060	107,270,771	18,718
Total	187,817,079	32,766	170,956,762	30,789

2.4 Summary of Cost Effectiveness and Incentives

Projected

Cost Effectiveness Tests - Projected (Filed)					
Program	**TRC**	**UCT/PACT**	**RIM**	**PCT**	**SCT**
HEEP	1.85	2.04	0.48	5.48	2.81
WRAP	1.14	1.41	0.49	2.56	1.77
CEEP	1.20	1.83	0.45	3.31	1.63
Total	**1.31**	**1.73**	**0.46**	**3.73**	**1.89**

Projected Incentive	$5,498,836

Actuals

Cost Effectiveness Tests - Actuals					
Program	**TRC**	**UCT/PACT**	**RIM**	**PCT**	**SCT**
HEEP	3.04	3.93	0.74	5.55	5.27
WRAP	2.33	2.39	0.78	3.33	4.05
CEEP	1.61	3.82	0.68	2.71	2.42
Total	**2.02**	**3.50**	**0.71**	**3.44**	**3.29**

Actual Incentive	$5,301,809

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

3.2 Summary of the Portfolio Levelized Costs

Program	Levelized cost/kWh
Demand Portfolio	0.026
HEEP	0.025
WRAP	0.052
CEEP	0.023
Residential Sector	0.030
Commercial Sector	0.023
*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
$35,474,777	2,077,193,978	1.7%

Demand Portfolio Energy Savings (DPES) MWh	Total Annual Energy Sales (TAES) MWh	% DPES/TAES
170,957	25,095,563	0.681%

3.4 Summary of the Portfolio Lost Revenues

The PY2021 projected Lost Net Revenues (Filed) was $6,875,166. Actual Lost Net Revenues amounted to $12,608,596.

3.5 Utilities Annual Growth

Year	Annual Metered Growth Rate		Average Growth Rate		
	Energy	Demand	Residential	Commercial	Industrial
2019	25,797,421	6873	8,983,599	6,419,556	7,500,803
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
Average Growth Rate (2019-2021)	-0.4%	-0.7%	-0.5%	-5.3%	6.7%

3.6 Reduced Emissions and Water Consumption at Generation

2021	SO_2		NO_X		CO_2e		Fresh Water	
Portfolio	72.4	Tons	107	Tons	129,395	Tons	53.6	million gallons
Factors	0.8	lb/MWh	1.2	lb/MWh	1,396	lb/MWh	289.1	gallons/MWh

Customer Avoided Water purchase

In PY2021 residential water savings measures reduced residential customers' water consumption by 31,710,655 gallons. The water bill savings associated with the reduction in water consumption are applied as Non-Energy Benefits ("NEBs") in the ADM 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 (oge.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.

OG&E partnered with Central Oklahoma Habitat for Humanity and Rebuilding Together OKC, 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 2021, OG&E weatherized 3,614 homes at an average cost of $1,345 per home. OG&E and ONG jointly weatherized 500 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 health and safety reasons, 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.

4.2 Home Energy Efficiency Program

The Home Energy Efficiency Program consists of four 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 point-of-purchase 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. In PY2021, 3,103 Multi-Family units received direct install materials consisting of LEDs, Power Taps, and water measures. There were 1,959 in home assessments completed, with 287 of those being performed virtually, 316 attic insulation submissions, 363 window submissions, 1,624 HVAC tune-ups completed, with 22 trade allies participating. Two trade allies performed 1,818 duct sealing projects in multi-family units, and 436 rebates for new A/C units. In Consumer Products there were 6 measures available; 1,254,667 total LED bulbs (260,000 bulbs distributed to Food Banks, 9,465 power strips, 689 bathroom ventilation fans, 6,061 A/C window units, 602 room air purifiers, and 460 water dispensers discounted through 8 different retailer companies with 270 locations represented. The LivingWise™ Schools Outreach channel distributed 12,071 kits. 1,004 Positive Energy Homes were constructed with 31 builders participating. A challenge the Positive Energy New Home Construction channel faced in PY2021 was a delay in construction due to rising prices and a shortage in building materials. Although OG&E faced difficulties due to COVID-19 in PY2020, OG&E was able to surmount these challenges and have a very successful PY2021.

Positive Energy New Home Construction

Program	Homes	Program Savings	
	Number of Homes	Energy Savings (kWh)	Demand Savings (kW)
Positive Energy New Home Construction	1,005	1,754,076	571

Program	Actual Program Costs						
	Administrative	Inducements	Education & Marketing	Program Delivery	EM&V	Allocated Labor	Total
Positive Energy New Home Construction	$30,886	$901,545	$1,383	$610,878	$68,343	$7,380	**$1,620,415**

Program	Cost Effectiveness Tests - Actuals				
	TRC	PACT	RIM	PCT	SCT
Positive Energy New Home Construction	0.67	2.21	0.88	0.80	1.42

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 Commercial HVAC 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 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. In PY2021, 88 different customers participated with 1,606 HVAC units tuned up; 6 trade allies completed the work. OG&E provided incentives to 18 school districts, and 8 city, state, and municipal customers, using 12 trade allies. There were 2,491 projects using 19 distributors in the Midstream channel, plus 308 projects for Small Business with 21 trade allies. Large C&I had 130 customers participate with 42 trade allies completing 185 projects. Opportunities include more complex projects, more comprehensive measures, and new custom measures. Finally, CEI partnered with 15 school districts and 27 industrial customers which accounted for over 160 buildings.

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. Despite the Pandemic, a total of 46 community events were held in 2021 at various locations or virtually across the service territory. The live events consisted of festivals, chamber activities, and more.

The Education Program with the assistance of CLEAResult, was able to host a virtual, but hands-on National Energy Education Development (NEED) workshop for 36 teachers. 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." In September 2021, an education section was added to the OGE website titled e-SMARTkids. It has tools and activities to teach electrical safety, energy science, and energy efficiency. Due to COVID-19 restrictions, OG&E was not able to visit schools in person but other opportunities to assist teachers and

families in the service territory continue to be explored.

#	Name of Group	Group Size	#	Name of Group	Group Size
1	Pott Nation Liheap classes (10 classes, 6 days)	167	17	6 Pop Up Store events (Ardmore, Enid,Okc,Shawnee,Poteau,Muskogee)	2000+
2	Ardmore Kwainis	35	18	Magnolia Festival 3 days Durant	1000
3	Big Lots Distribution Center Durant	350	19	Love County Senior Day - Marietta	55
4	Chandler Ok Crawfish Boil	115	20	RSVP Senior Center Presentation - ENID	60
5	Covered in color MWC	300+	21	NEED Teacher Conference - Virtual	36
6	Durant 3 day event /Magnolia fest	1000+	22	Asian Night Market Festival	600
7	Central Palstics Shawnee	260	23	Pott County Baloon Fest	500
8	Enid ok fan distribution/weatherization	66 apartments	24	Perry Publishing Turkey Giveaway - NE OKC	300
9	Senior Health fair Tulsa (Silver Energy)	900+	25	Tyler Media Toy Drive 2021 - Remington	360
10	Country Estates Carnival MWC		26	Viva Oklahoma Hispanic Chamber Expo - SE OKC	2000
11	Speech trarapist of OKC/Camp Communicate NW OK	36	27	NE Renaissance Neighborhood Weatherization and EE	250
12	Home Show OKC	1500	28	Light Up Lions Park	500
13	Poteau Balloon Fest	300+	29	Picnic with Protectors MWC kids EE	300
14	Festival of the Arts OKC	500+	30	Light the night Scissortail park (EE/WRAP)	270
15	Oklahoma Senior Games - 10 event locations throughout OK (Silver energy)	3000	31	Garden Council Neighborhood Weatherization Event	150
16	Oklahoma State Fair - OKC	1000+	32	NEED Teacher Conference - NM	19

4.5 Research and Development

The R&D program approved by the Oklahoma Corporation Commission in Case No. PUD 201800074 as part of the current 2019-2021 demand portfolio includes two projects:

1. Utility-scale battery pilot ("Battery Pilot")
2. Geotargeted neighborhood behavior/EE program advancement pilot ("Geotargeting Pilot")

The Battery Pilot project remained underway in 2021 despite the significant impact of the COVID-19 pandemic, with the following summary status:

Research and Development Program	Status
Battery Pilot	• Phase 1 laboratory emulation completed • Phase 2A laboratory demonstration preparation ongoing • Phase 2B distribution system demonstration preparation initiated
Geo-Targeting of Energy Efficiency	Suspended in June 2021 due to COVID-19

Due to the impact of the COVID-19 pandemic, the Geotargeting Pilot project was suspended in

June 2021.

Project #1 – 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. There are three pilot hypotheses:

1. Battery systems can be a cost-effective EEDR measure as determined by the Oklahoma Total Resource Cost Test ("TRC").
2. Battery systems can be safely and effectively deployed and operated on the OG&E distribution system.
3. Battery systems can improve load factor on those parts of the OG&E grid to which they are connected (e.g., substations, circuits) by offsetting demand (i.e., kW) required to be served by the grid.

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.

2021 activities included:

- Completed maintenance, repairs, upgrades, and reconfiguration of existing equipment
  - Procured and installed two BTC Power Level 3 charging units
  - Upgraded Spiers battery stack system inverters to provide capacity required by BTC units for charging vehicles to be tested
  - Resolved requirements for electronic communication through the system chain of battery stack ⇔ BTC units ⇔EV and Enerchron control and analysis hardware
- Began initial experimentation of charging fleet and employee EV with the BTC units
- Initiated development of processes and procedures to extend Phase 2 execution from battery dispatch in isolation from the laboratory to battery dispatch as a part of the OG&E distribution system

2021 results include:

- Hypothesis #1: Continued to observe battery cost trends in light of 2020 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.
- Hypothesis #2: Completed upgrades and maintenance to ensure ability to safely and effectively demonstrate real-world charging of a 2019 Chevrolet Bolt and a 2015 Nissan Leaf at the laboratory with the BTC chargers.
- Hypothesis #2: Continued development of procedures, processes, and analyses to enable safe and effective dispatch of the battery system to the chargers as a part of the OG&E distribution system.
- Hypotheses #3: Phase 1 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 – Geotargeting Pilot

The Geotargeting Pilot sought to explore leveraging existing EE programs without substantial alteration to target a defined area of the distribution system in order to assess the ability of such targeting to increase participation in EE programs, particularly by hard to reach ("HTR") populations, and for that to reduce distribution system loading as measured by peak capacity (i.e., kW) and secondarily seasonal and annual energy (i.e., kWh). The pilot asked the question, "Can DPR programs 'move the needle' with respect to distribution system loading?" by considering four pilot hypotheses:

1. Geotargeting of DPR programs in an area with high concentrations of HTR customers will generate a deeper understanding of the barriers to EE program participation among HTR customers and how to overcome such barriers.
2. The Pilot will result in a demonstrable increase in EE program participation within the test neighborhood year-over-year and relative to the control neighborhood.
3. The adoption of EE program measures in the test area will reduce distribution transformer (over)loading at peak year-over-year within the test neighborhood and relative to the control neighborhood.
4. The adoption of EE program measures in the test area will reduce summer seasonal energy delivered through distribution transformers year-over-year within the test neighborhood and relative to the control neighborhood.

OG&E continued work on the Pilot through May, at which time deliberations began on whether

the low levels of customer participation in the test neighborhood relative to the control neighborhood made continuation of the effort a prudent use of resources. The Pilot was suspended in June.

2021 activities included:

- Continued development of approaches to grouping customers of like types and transformers of like load shapes
- Continued development of meta modeling techniques by which to assess impacts at the grouped transformer level
- Ongoing data collection, cleaning, management, and analysis of EE participation levels
- Design of data visualization and dashboarding structures
- Planning and influence on targeting of marketing efforts
- Design of a WRAP participation-enabling minor HVAC repair micro-pilot and an extended duct sealing micro-pilot

Final Results include:

- Hypothesis #1: CONFIRMED. Completed market characterization and barriers research into the South Oklahoma City test neighborhood in order to tailor marketing and outreach to the specific needs and barriers present.
- Hypothesis #2: INDERTERMINATE. COVID-19 caused lower than expected participation in EE in both the test and control areas. However, the pilot enabled enhancement of EE production reporting to quantify disqualifications of Weatherization Residential Assistance Program (“WRAP”) enrollees and participation.
- Hypotheses #3-4: INDETERMINATE. COVID-19 caused low participation, preventing execution and analysis by application of customer and transformer grouping methodologies of updated meta modeling approach and model specifications. However, the pilot did enable development of visualization and dashboarding plan including screen mock-ups, IT security clearances, and selection of IT platform for eventual hosting.

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
CLEAResult	Jeremy Sims	117 NW 8th St., Oklahoma City, OK 73102	jeremy.sims@clearesult.com	(405) 507-3017
AM Conservation	Josh Levig	6650 Echo Ave Suite A Reno, NV 89506	jlevig@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)	25,053	9,644	38%	7,115	28%
Number of Customers		10,665		2,846	

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

Metric	2021		
	Opt-Out Eligible	Chose to Opt-Out of EE Programs	% Opt-Out
2021 Electric Sales (GWh)	2,721	358	13%
Number of Accounts	15,713	782	5%

7.0 Attachments

7.1 ADM Evaluation Measurement and Verification with Cost-Effectiveness Report

ADM
ENERGY RESEARCH AND EVALUATION

Oklahoma Gas & Electric (OG&E) Oklahoma Demand Program Evaluation for PY2021

Final Report

Prepared for:

Oklahoma Gas & Electric (OG&E) in Oklahoma

In accordance with annual reporting requirements:

Title 165: Oklahoma Corporation Commission
Chapter 35. Electric Utility Rules
Subchapter 41. Demand Programs
165:35-41-7. Reporting

May 5, 2022

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1 Executive Summary

This report presents an evaluation of the performance of the Demand Portfolio of energy efficiency programs offered by Oklahoma Gas and Electric (OG&E) in 2021. 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 165:35-41-6.

On July 02, 2018, OG&E submitted a comprehensive portfolio of demand Programs to the Oklahoma Corporation Commission (OCC) for Program Years 2019-2021. This portfolio was approved by the OCC in Cause No. PUD 201800074 by Order No. 688933 on December 27, 2018. The focus of this report is participation in the demand programs during program year 2021 (PY2021) of the implementation cycle, spanning from January 1, 2021 to December 31, 2021.

1.1 Demand Program Offerings

OG&E offered three programs, two residential programs and one commercial and industrial (C&I) program. ADM evaluated the results for the entire portfolio of demand programs. These programs and program channels are listed below. Detailed descriptions for the residential and commercial programs can be found in Section 2.1.

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

Program impacts, including reported and verified annual energy savings and peak demand reduction during PY2021, are summarized in the following sections. These will be expressed as *ex ante*, *ex post,* and net savings.

All impacts presented in this report represent energy (kWh) savings or peak demand (kW) reduction at-the-meter.

1.2 Evaluation Objectives

The goals of the PY2021 Evaluation Measurement & Verification (EM&V) effort are as follows:

- For prescriptive measures, verify that savings are being calculated according to appropriate Technical Reference Manual guidelines. For most measures, this constitutes applying Arkansas TRM version 8.2[1] (AR TRM) methodologies.
- For custom measures, this effort comprises the calculation of savings according to accepted protocols (e.g., International Performance Measurement and Verification Protocol (IPMVP). This is to ensure that custom measures are cost-effective and providing reliable savings.
- Perform process evaluation for all programs and the portfolio overall. This provides a comprehensive review of program operations, marketing and outreach, quality control procedures, and program successes relative to goals. From this, we provide program and portfolio-level recommendations for OG&E. Process evaluation activities include interviews of key program actors, surveys of participants and non-participants, literature reviews and best-practices assessments, and documentation of program activities, successes, and shortcomings.
- Conduct net-to-gross assessments. We developed net-to-gross ratios specific to each program.

1.3 Evaluation Findings

Table 1-1 shows the savings goals, reported gross impacts, evaluated *ex post* gross kWh savings and *ex post* gross kW reductions, gross realization rates, net impacts, net-to-gross (NTG) ratios, and lifetime impacts.[2]

[1] Please note that, throughout this document, the abbreviation “AR TRM” refers to V 8.2. Other references to any other versions will be specifically noted.

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

Table 1-1: OG&E Portfolio Evaluation Impacts

Impact	Metric	HEEP	WRAP	CEEP	Total
Energy Savings (kWh)	Goals (Net)	49,398,524	12,265,528	96,496,849	158,160,901
	Reported (Gross)	65,721,774	12,544,560	109,550,746	187,817,079
	Evaluated (Gross)	71,105,795	12,619,303	110,744,854	194,469,952
	Realization Rate	108%	101%	101%	104%
	Evaluated (Net)	51,066,688	12,619,303	107,270,771	170,956,762
	NTG Ratio	72%	100%	97%	88%
	% of Goal (Net)	103%	103%	111%	108%
	Lifetime (Net)	883,457,666	212,986,008	1,069,169,344	2,165,613,018
Annual Demand Reduction (kW)	Goals (Net)	9,011	3,122	15,295	27,429
	Reported (Gross)	10,469	3,237	19,060	32,766
	Evaluated (Gross)	12,167	3,371	19,317	34,856
	Realization Rate	116%	104%	101%	106%
	Evaluated (Net)	8,700	3,371	18,718	30,789
	NTG Ratio	72%	100%	97%	88%
	% of Goal (Net)	97%	108%	122%	112%

The contribution to portfolio savings by program is summarized in Figure 1-1.

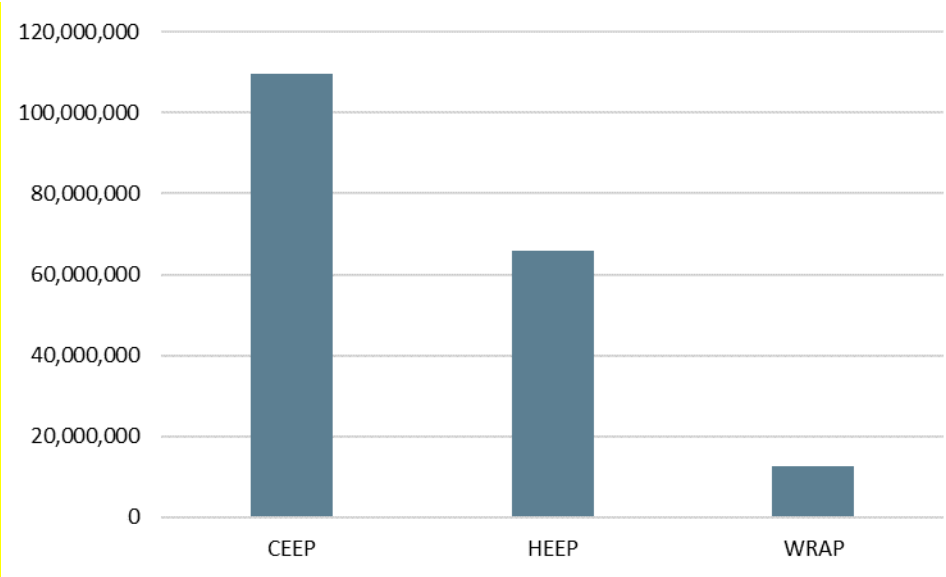


Figure 1-1: Contribution to Portfolio kWh Savings by Program

The *ex ante* energy savings grouped by measure categories for the residential programs can be seen in Figure 1-2.

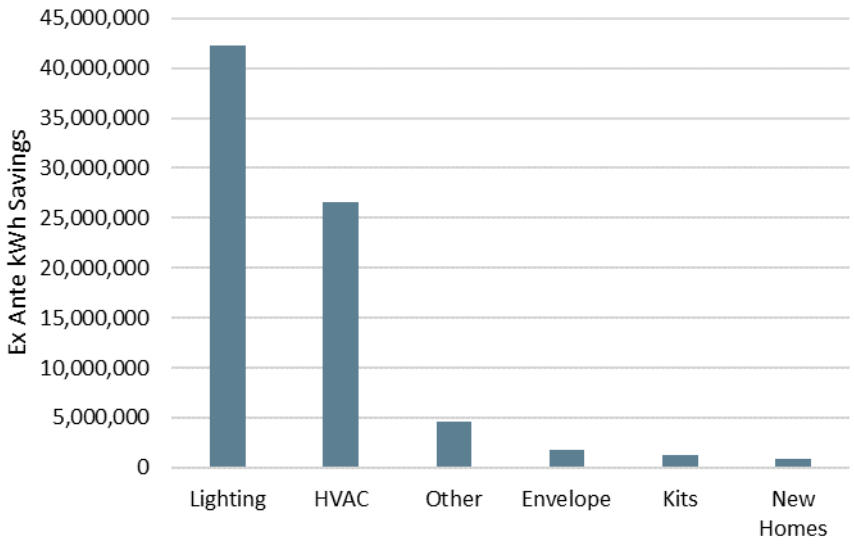


Figure 1-2: Contribution to Residential Savings by End-Use

The savings share by end-use was different in the C&I program, shown in Figure 1-3. The majority of *ex ante* savings is attributed to Lighting (e.g., new construction, retrofit, and lighting controls). The Continuous Energy Improvement (CEI) Channel was the second largest contributor to savings.

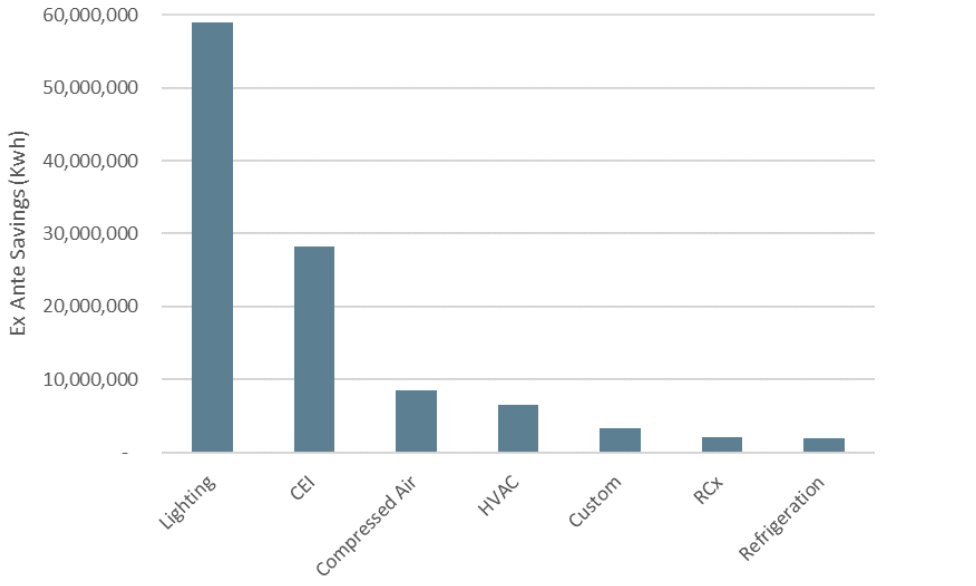


Figure 1-3: Ex Ante Energy Savings by Measure CEEP

Further, ADM positioned the net savings into the context of OG&E's PY2021 filed targets. Table 1-2 summarizes the performance against those targets of programs evaluated in this report.

Table 1-2: Program Performance against Energy Savings Targets (kWh)

Program	Verified Net Savings	2021 Net Savings Goal	% of Goal Attained
HEEP	51,066,688	49,398,524	103%
WRAP	12,619,303	12,265,528	103%
CEEP	107,270,771	96,496,849	111%
Total	**170,956,762**	**158,160,901**	**108%**

The program year budgets and actual spending, including OG&E labor expenses, are summarized in Table 1-3.

Table 1-3: Summary of Budgets and Actual Spend

Program	Budgeted Spend	Actual Spend	% Attained
HEEP	$12,368,034	$11,958,035	97%
WRAP	$5,619,983	$6,077,350	108%
CEEP	$17,793,861	$16,359,105	92%
Energy Education Res	$394,662	$427,906	108%
Energy Education C&I	$482,365	$522,996	108%
Planning	$50,000	$21,637	43%
Regulatory	$20,000	-	0%
R&D	$1,350,000	$107,748	8%
Total	**$38,078,905**	**$35,474,777**	**93%**

1.4 Summary of Portfolio Benefit-Cost Ratios

We calculated the cost-effectiveness of OG&E's programs based on reported total spending, verified net energy savings, and verified net demand reduction for each of the Demand Programs. Additional inputs to the cost-effectiveness testing include estimates of line-loss adjustments, equipment measure life, discount rates, participant costs, and avoided costs. OG&E provided all program spending and economic inputs. The California Standard Practice Manual informs the methods used to calculate cost-effectiveness.[3]

The cost-effectiveness testing also includes Non-Energy Benefit (NEB) savings associated with water savings, when applicable. 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 average costs of water ($/gallon) in the OG&E service territory to determine NEB impacts. The cost-effectiveness scores shown in Table 1-4 include these NEBs.

[3] California Standard Practice Manual: Economic Analysis of Demand Side Management Programs, October 2001. Available at: https://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=7741

The specific tests used to evaluate cost-effectiveness are The Utility Cost Test (UCT), Total Resource Cost (TRC) Test, Ratepayer Impact Measure (RIM), Societal Cost Test (SCT), and Participant Cost Test (PCT). OG&E's 2021 portfolio of programs passes all these tests except the ratepayer impact measure. Few programs pass the ratepayer impact measure, so the latter finding is not unusual. The benefit-cost ratios developed through the cost-effectiveness analysis are presented in Table 1-4.

Table 1-4: Cost-Effectiveness Estimates and Net Benefits Summary

Program	TRC	UCT	RIM	PCT	SCT	TRC Net Benefits
HEEP	3.04	3.93	0.74	5.55	5.27	$31,794,881
WRAP	2.33	2.39	0.78	3.33	4.05	$8,085,025
CEEP	1.61	3.82	0.68	2.71	2.42	$22,324,260
Energy Education Res	0.00	0.00	0.00	0.00	0.00	($427,906)
Energy Education C&I	0.00	0.00	0.00	0.00	0.00	($522,996)
Planning & Regulatory	0.00	0.00	0.00	0.00	0.00	($21,637)
Regulatory	0.00	0.00	0.00	0.00	0.00	$0
R&D	0.00	0.00	0.00	0.00	0.00	($107,748)
Total	**2.02**	**3.50**	**0.71**	**3.44**	**3.29**	**$61,123,878**

2 Introduction

This report presents an evaluation of the performance of Oklahoma Gas and Electric's energy efficiency programs in 2021. 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.

2.1 Program Descriptions

Descriptions of each program and program Channel are below. Please note that these descriptions come from the 2019 – 2021 demand program plan.

2.1.1 Residential Portfolio Programs

- **Home Energy Efficiency Program:** This multipronged program helps OG&E's 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 program Channels:
  - **Residential Solutions:** This market-driven HEEP Channel promotes EE by providing homeowners with low-cost home assessments, direct-install measures, community and educational outreach, and inducements for home retrofits. The inducements encourage participation by decreasing the upfront costs of energy efficient upgrades.
  - **Residential HVAC Replacement and Tune-up**: This HEEP Channel improves HVAC system efficiency within residences by providing inducements to improve operating efficiency of the existing unit or replace it with a higher efficiency unit.
  - **Consumer Products:** This HEEP Channel offers rebates for the purchase of efficient products, including lighting, power strips, and home appliances. To help customers offset a portion of the incremental cost associated with higher efficiency appliances and products, the program uses upstream, midstream, and downstream inducements.
  - **Positive Energy – New Home Construction:** The HEEP 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 service area.

- **LivingWise® Schools Outreach:** This HEEP Channel consists of direct outreach through partnerships with local schools. Energy saving kits and educational materials are provided to 5th-grade students explaining how they can improve energy efficiency at their 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.

- **Weatherization Residential Assistance Program:** The WRAP program has been designed to achieve energy savings by helping to improve the comfort and reduce energy costs for OG&E's residential customers. Residential customers are eligible to apply for WRAP if they own, rent, or lease their single family home, duplex, or mobile home and have incomes at or below $60,000. Property owners of multifamily units, whose rental units are 66 percent occupied by hard-to-reach customers pursuant to OAC 165:35-41-3 definition of "hard-to-reach customers," are also eligible to apply.

2.1.2 Commercial & Industrial Programs

- **Commercial Energy Efficiency Program:** The CEEP is designed to address the needs of OG&E's commercial and industrial customer base. Specifically, the program provides an umbrella of participation channels for all Commercial and Industrial customers to participate through a number of targeted paths that address a variety of unique participation barriers.
  - **Commercial and Industrial Solutions:** This CEEP channel offers inducements on both a performance and custom path for customers to perform energy upgrades. Technical support is also provided to assist in project identification and development.
    - Performance: The Performance Path provides inducements based on the estimated energy savings achieved with the measures installed.
    - Custom: The Custom Path gives participants an opportunity to achieve their energy efficiency goals by proposing measures that may be outside of the deemed measure list. Proposed measures are evaluated for savings and costs, and an appropriate inducement amount is approved if the project is deemed cost-effective.
  - **Networked Lighting Controls**– A new offering for this planning cycle. The CEEP NLC channel will take a graduated rollout approach given anticipated changes in product and system lines as well as the

development of deemed values for advanced lighting control systems. Furthermore, the program will take a graduated approach to trade ally outreach and education to align delivery with market maturity.

- **Continuous Energy Improvement (CEI)**: The CEEP CEI channel engages large C&I customers and institutional customers, like school districts, with a goal of leveraging cost savings from no and low-cost measures to drive more capital-intensive projects through the prescriptive and custom tracks.
- **Schools and Government Efficiency (SAGE):** The CEEP SAGE channel offers assistance to the institutional and public sectors to overcome barriers to energy improvement that are unique to their market segment, such as conflicting organizational goals, outdated specifications, limited technical knowledge, and rigid energy budgeting. The channel also encourages the prioritization of energy planning in the general management of facilities.
- **Small Business Midstream:** The CEEP channel offers point of sale inducements for qualified products to OG&E commercial customers through participating local and national distributors. This program channel offers an opportunity to participate in EE programs for those contractors and end-users who otherwise would have a hard time participating and/or applying through another CEEP channel.
- **Small Business Direct Install (SBDI):** The CEEP SBDI channel is targeted to OG&E small business customers that have an annual peak demand of 150 kW or less, or that have multiple locations with a combined peak demand of 250 kW or less. The channel drives participation through an extensive contractor network. Contractors provide direct installation of low-cost energy efficiency measures, facility walk-throughs, and inducements for a suite of prescriptive energy efficiency measures. SBDI participants are also eligible to participate in the Commercial and Industrial Solutions program if the customer's needs are beyond the scope of services outlined within this channel.
- **Retro-commissioning**: The CEEP RCx channel is a new offering with three major components for this planning cycle. RCx is available to facilities with an annual peak demand over 150 kW. This channel provides comprehensive system energy optimization studies allowing participants to identify low and no-cost, long-term improvement strategies. Inducements are also offered on a $/kWh basis to address recommendations. Additionally, RCx participants will receive

recommendations for higher cost system improvements and can address those through the CIS channel. Another component of the RCx channel is the Express Building Tune-Ups ("EBTU") offering for this planning cycle. The EBTU offers an option to smaller commercial customers, or to those who lack the necessary capital outlays to participate in RCx. The third component is C&I Assessments ("CIA") which offers a streamlined energy survey with simplified "find and fix" opportunities for participants.

2.2 Program Implementation & Strategic Alliances

OG&E has full-time employees dedicated to the implementation of demand programs. Additionally, OG&E entered contracts with several energy services companies and contractors to aid in program implementation.

CLEAResult (CR) was contracted to implement most Channels of HEEP and the entirety of the CEEP. OG&E contracted with AM Conservation to provide energy efficiency kits distributed to students through the LivingWise® Schools Outreach Channel in HEEP. The WRAP is managed in-house by OG&E, with Skyline Energy Solutions conducting audits and measure installation. Frontier Associates is responsible for hosting the program database and calculating *ex ante* savings for program measures.

2.3 Evaluation Measurement and Verification

OG&E engaged ADM Associates, Inc. to conduct evaluation, measurement, and verification (EM&V) of its Demand Program portfolio. The ADM staff evaluated each program within the OG&E portfolio for PY2021.

2.4 High Impact Measures (HIM)

This section outlines the High Impact Measures for each program and sector in the OG&E portfolio of Demand Programs. A HIM is a measure responsible for more than 5% of the sector's total savings.

2.4.1 Residential Programs

Two measures, LED lighting and duct sealing, represent HIMs. Those measures, along with the percentage of savings and total energy savings, are shown in the figure below.

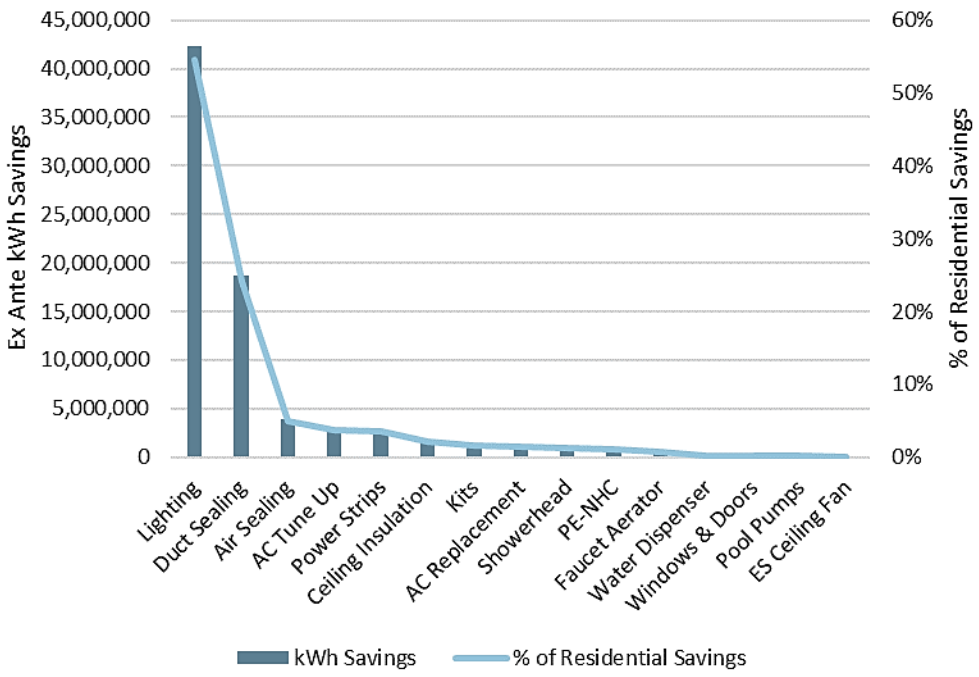


Figure 2-1: Residential High Impact Measures

2.4.2 C&I Programs

Figure 2-2 shows the energy savings of measures installed through OG&E's C&I program. Lighting measures contribute the most savings *ex ante* savings. Within the high efficiency lighting measures, projects were categorized within three measure categories, depending on the project type: new construction, retrofit, and Small Business Midstream lighting. The contributions to the *ex ante* savings of each of these are shown in Figure 2-2 below.

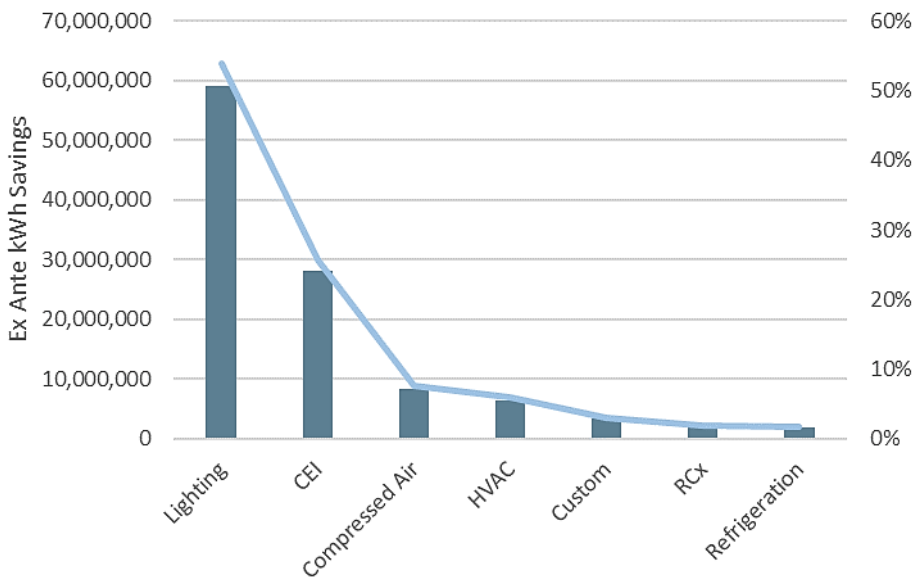


Figure 2-2: C&I Measures by End-Use

3 Methodology

3.1 Introduction

This section details general impact evaluation methodologies by program-type as well as data collection methods applied. This section will present full descriptions of:

- Gross Savings Estimation
- Sampling Methodologies
- Free Ridership Determination
- Process Evaluation Methodologies
- Data Collection Procedures

3.2 Glossary of Terminology

As a first step to detailing the evaluation methodologies, we provide a glossary of terms used throughout this report:

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

Ex ante Savings Estimate – (i.e., *Ex ante* Savings, Reported Savings, *Ex ante* Gross Savings, Reported Gross Savings) Forecasted savings used for program and portfolio planning purposes (from the Latin for “beforehand”).

Ex post Evaluation Estimated Savings – (i.e., *Ex post* Savings, *Ex post* Gross Savings, Evaluated Gross Savings) Savings estimates reported by an evaluator after the energy impact evaluation has been completed (from the Latin for “from something done afterward”).

Ex post Net Savings – (i.e., Net Savings, Evaluated Net Savings, Verified Net Savings) When *Ex Post Evaluation Estimated Savings* are multiplied by the *Net-to-Gross Ratio*.

Free rider – A program participant who would have implemented the program measure or practice in the absence of the program.

Gross Realization Rate – The ratio of *Ex Post* Gross Savings and *Ex Ante* Savings.

Participant – A consumer who received a service offered through the subject efficiency program in a given program year.

Net-to-Gross (NTG) – A factor representing Net program savings divided by the *Ex post* Gross program savings that is applied to *Ex ante* gross program impacts,

converting them into net program load impacts after adjustments for free ridership and spillover. (1 – Free ridership % + Spillover %).

Spillover – Reductions in energy consumption and/or demand caused by the program that exceed those directly related to program participation. This occurs when customers adopt energy efficiency measures or take other types of efficiency actions independently (i.e., without an inducement being offered).

Stipulated Values – See "deemed savings."

This glossary is drawn from several evaluation-related reference documents, such as the 2016 IPMVP, US DOE NREL Uniform Methods Project, 2004 California Evaluation Framework, 2006 DOE EERE Guide for Managing General Program Evaluation Studies, and the AR TRM.

3.3 Overview of Methodology

The proposed methodology for the evaluation of the OG&E portfolio is intended to provide:

- Net impact results per program at ±10 percent precision at the 90 percent confidence interval; and
- Program feedback and recommendations via process evaluation.

This evaluation provides the verified net savings results, provides the recommendations for program improvement, and ensures cost-effective use of ratepayer funds. The evaluation is also streamlined to focus on areas in need of research and improvement.

3.3.1 Sampling

Sampling is necessary to evaluate savings for the OG&E portfolio insomuch as verification of a census of program participants is typically cost-prohibitive. As per evaluation best practices, samples are drawn to ensure ±10 percent precision at the 90 percent confidence interval. Programs are evaluated on one of three bases:

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

3.3.2 Census

A census of participant data was used for select Programs or Program Channels where such review is feasible. In these cases, all Program measures were evaluated.

3.3.3 Simple Random Sampling

For programs with relatively homogenous measures, we conducted a simple random sample of participants. The sample size for verification surveys is calculated ±10 percent precision at the 90 percent confidence interval. The sample size to meet ±10 percent precision at the 90 percent confidence interval is calculated based on the coefficient of variation of program participants' savings. The coefficient of Variation (CV) is defined as:

$$CV = \frac{Standard\ Deviation_x}{Mean_x}$$

Where x is the average kWh savings per participant, without data to use as a basis for x, it is typical to apply a CV of 0.5.

The resulting sample size is estimated with the following:

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

Where:

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

CV = Coefficient of Variation

RP = Required Precision, 10% in this evaluation

3.3.4 Stratified Random Sampling

For some channels, Simple Random Sampling is not an effective sampling methodology. The CV values observed in these channels are typically very high because the distributions of savings are generally positively skewed. Often, a relatively small number of projects account for a high percentage of the program's estimated savings.

To address this situation, ADM used a sample design that considers such skewness. With this approach, ADM selects several sites with large savings for the sample with certainty and take a random sample of the remaining sites. Non-certainty sites are selected for the sample through systematic random sampling to improve the precision. Non-certainty sites are a random sample of sites remaining after the certainty sites have been selected by ordering them per the magnitude of their savings and using systematic random sampling. Sampling systematically from a list that is ordered according to the magnitude of savings ensures that any sample selected will have some units with high savings, some with moderate savings, and some with low savings. Systematically chosen sampled sites should not result in a concentration of sites with atypically high savings or low savings.

3.3.5 Free Ridership

In determining *ex post* net savings for the OG&E portfolio, we provide estimates of free ridership for individual programs. Free riders are program participants that would have implemented the same energy efficiency measures at nearly the same time absent the program.

3.3.6 Impact Evaluation Activities by Program

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

We adjusted program-reported gross savings using our research results to evaluate program impacts, relying primarily on engineering desk reviews, AR TRM deemed savings calculations, and on-site or virtual verification and metering for applicable programs. To calculate deemed savings, we verified the appropriateness of savings algorithms and values in program tracking data compared to the AR TRM guidelines. Where sampling was used (for surveys and site visits), we designed a sampling plan to achieve a minimum precision of ±10% of the gross realized savings estimate with 90% confidence.

We estimated energy savings and demand reduction for each program and measure category by applying a verified gross savings adjustment to program-reported savings.

3.3.7 Net-to-Gross Approach by Programh

We estimated NTG for each program in the portfolio. Table 3-1 shows the NTG approach followed for each program based on our assessment of specific program needs and the availability of accurate, existing information. These data collection and analysis activities comply with one of the five accepted approaches listed in the AR TRM.

Table 3-1: NTG Approach by Program

Program and Channel Component	Approach
HEEP Residential Solutions: Home Assessment	Self-report survey
HEEP LivingWise® Schools Outreach	Deemed net-to-gross ratio
HEEP Residential HVAC Replacement & Tune-up	Self-report survey
HEEP Consumer Products	Email Survey of random OG&E customers / In-store survey of participating customers / Deemed for food bank distribution participants and non-lighting measures
HEEP PE-NHC (New Home Construction)	Self-report survey
WRAP	Deemed net-to-gross ratio

Program and Channel Component	Approach
CEEP CIS	Self-report survey
CEEP SAGE	Self-report survey
CEEP SBDI	Self-report survey
CEEP Small Business Midstream	Self-report survey
CEEP CEI	Deemed net-to-gross ratio

3.4 Overview of Process Evaluation

The general approach to process evaluation begins reviewing the tests for timing and appropriateness of process evaluation as defined in Protocol C of the AR TRM. In this review, we determine what aspects of the program warrant a process evaluation (due to issues identified in past evaluations).

The data collection procedures for the residential and commercial process evaluations included:

- *Participant Surveying*. We surveyed statistically significant samples of participants in each program to provide feedback for the program and assess participant satisfaction.
- *In-Depth Facilitated Discussions*. We conducted in-depth facilitated discussions with high-level program actors, including OG&E program staff and third-party implementation staff. These discussions were semi-structured and focused on gathering information regarding Program strengths, weaknesses, opportunities, and threats.
- *Review of Tracking Data.* We reviewed program tracking data for each program to prepare for survey and interview outreach efforts, compare program activity in 2021 to past years, identify trends, validate the data's consistency, and investigate the geographic distribution of projects throughout OG&E's utility service territory.

4 Home Energy Efficiency Program (HEEP)

4.1 Evaluation Findings

Table 4-1 and Table 4-2 present the *ex ante* energy and demand savings, *ex post* energy and demand reductions, energy and demand realization rates, energy and demand net savings, and net-to-gross (NTG) for the HEEP.

Table 4-1: Energy Savings Summary for HEEP in PY2021

Channel	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	Net-to-Gross	Net Energy Savings (kWh)	Net Lifetime Energy Savings (kWh)
RSOL	4,729,162	4,660,084	99%	85%	3,977,665	54,1881,980
LivingWise® Schools Outreach	1,287,855	1,239,782	96%	100%	1,239,782	15,948,674
Residential HVAC Replacement and Tune-up	16,096,584	16,138,453	100%	96%	15,466,038	246,784,407
Consumer Products	41,896,993	47,313,401	113%	61%	28,840,646	527,971,641
PE-NHC	1,711,179	1,754,076	103%	88%	1,542,559	38,563,964
HEEP Total	**65,721,774**	**71,105,795**	**108%**	**72%**	**51,066,688**	**883,457,666**

Table 4-2: Demand Reduction Summary for HEEP in PY2021

Channel	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate	Net-to-Gross	Net Demand Reductions (kW)
RSOL	976	986	101%	76%	749
LivingWise® Schools Outreach	148	142	96%	100%	142
Residential HVAC Replacement and Tune-up	2,783	2,804	101%	89%	2,507
Consumer Products	5,992	7,665	128%	63%	4,800
PE-NHC	570	571	100%	88%	502
HEEP Total	**10,469**	**12,167**	**116%**	**72%**	**8,700**

4.2 Program Overview

The design of the HEEP offering in PY2021 was a multipronged approach to encourage residential customers to reduce the energy consumption of their homes. It provides the customer multiple avenues for participation, including home assessments, the HVAC replacements and tune-ups, energy efficient new homes, energy saving kits, and consumer product offerings. OG&E contracted with implementation contractors AM Conservation for the LivingWise® Schools Outreach Channel and CLEAResult (CR) for all other HEEP Channels. Program participation and reported savings is shown below in Table 4-3.

Table 4-3: PY2021 HEEP Participation Summary by Channel

Channel	Total Quantity of Measures	Ex Ante Energy Savings (kWh)	Ex Ante Demand Reductions (kW)
RSOL	71,858	4,729,162	*976*
LivingWise® Schools Outreach	84,497	1,287,855	148
Residential HVAC Replacement and Tune-up	5,681	16,096,584	2,783
Consumer Products	1,271,944	41,896,993	5,992
PE-NHC	1,005	1,711,179	570
HEEP Total	**1,434,985**	**65,721,774**	**10,469**

4.2.1 Residential Solutions Channel

The Residential Solutions (RSOL) Channel of HEEP offers home energy assessments and discounted measure installations. Additionally, direct install energy saving measures are offered to single family and multifamily residential customers in OG&E's Oklahoma service territory.

4.2.2 LivingWise® Schools Outreach Channel

The OG&E LivingWise® Schools Outreach Channel provides teachers, parents, and students with educational materials on energy efficiency and energy efficient products to use in their home. Teachers within OG&E's service territory usually volunteer to participate and enroll their class in the Channel. Teachers enrolled in the Channel educate their fifth-grade students about electricity and the benefits of saving energy in their homes.

The Third-Party Implementer (TPI), AM Conservation, developed the curriculum for the Channel. This curriculum allows teachers to easily integrate the Channel into their existing curriculum at no cost to the school district, teacher, or students and it reduces the burden of developing additional lesson plans. The material can be presented in a span of five days and helps teachers meet the Oklahoma Academic State Standards in language arts, mathematics, and science. Channel participants also gain access to the LivingWise® Schools Outreach website, which helps teachers, for example, answer most common questions (FAQ webpage), access additional resources, and offers other sources that enrich the students' experience.

The LivingWise® Schools Outreach[4] webpage also includes resources that offers a range of information from energy efficiency information to installation instructions for the measures provided in the kits. Teachers send the kits home with the students

[4] https://www.getwise.org/

instructing them to work with their guardians on installing the included measures. The kit materials help students learn about energy-saving habits and ways to be more energy-efficient at home. Students eager to learn more can find "Cool Links" on the LivingWise® Schools Outreach website that includes resources and games marketed towards children (e.g., Department of Energy Kids and Energy Information Administration (EIA) Kids).

A quiz assesses the students' knowledge about electricity before and after participating in the Channel. Surveys accompany the quizzes. The Home Check-Up Survey collects information about the home; impact calculations utilize this information, including the type of heating fuel and air conditioning used at home. The Home Activities Survey collects information about measure installation; impact calculations utilize this information known as in-service rates (ISR). Teachers are eligible for a $50 gift card when 80% of their student surveys are completed and returned.

4.2.3 Residential HVAC Replacement and Tune-up Channel

The HEEP Residential HVAC Replacement and Tune-up Channel was designed to offer inducements for HVAC replacements, HVAC tune-ups, duct sealing, and air sealing. The objectives of the HVAC replacement and tune-up measures generate energy savings and demand reductions from residential HVAC systems. Newly installed HVAC units replace old inefficient equipment. HVAC tune-ups optimize an HVAC unit's operation and efficiency. Duct sealing and air sealing measures improve a home's infiltration by reducing air leakage.

Requests for participation are completed through a network of participating independent HVAC trade allies. When customers contact the Channel, the project team refers the customer to available trade allies or schedules an appointment. Trade allies install the measure, collect data on system performance, and then submit the required paperwork. Once the application has passed the Channel's review, the application is processed, and the rebate is paid.

This Channel targets all residential customers living within the OG&E Oklahoma service territory. Inducements offered by the Channel include $100-$200 for HVAC Tune-ups, $1,000-$6,000 for HVAC Replacement, $11-$400 for duct-sealing, and up to $200 for air-sealing.

4.2.4 Consumer Products Channel

The Consumer Products Channel provides instant inducements on select energy-saving products in two paths: Upstream and Food Bank Lighting Giveaway. The goal of the Channel is to encourage the purchase of energy-saving products by OG&E customers. Table 4-4 below outlines the Channel's measures, rebates, and retailers.

Table 4-4: Upstream Component Measures, Locations, and Inducements

Measure	Participating Retailers/Organizations	Instant Inducement
LED Omni-directional Lamps	10+[5]	$1.00 - $2.25
LED Specialty Lamps	10+[2]	$1.00 - $4.25
Advanced Power Strips	Dollar Tree	$10
Window Air Conditioner	Home Depot, Lowe's	$25
Room Air Purifier	Home Depot, Lowe's	$25
Bathroom Exhaust Fan	Home Depot, Lowe's	$25 - $35
Water Cooler	Home Depot, Lowe's	$25

Lighting measures account for the majority of savings and induced measures in the Consumer Products Channel. The number of participants in this Channel is unknown due to the nature of the upstream design. However, $2,262,411 in inducements were the paid for the 1,254,667 lighting measures and 17,277 non-lighting in the Channel.

4.2.4.1 Upstream

OG&E works with retailers and manufacturers through the TPI to offer instant, in-store inducements on qualifying energy efficient products to OG&E customers. In PY2021, the Upstream path offered seven measures to its customers: ENERGY STAR Omni-directional and ENERGY STAR Specialty LEDs (hereafter referred to as LEDs when described jointly), advanced power strips, window air conditioners, room air purifiers, bathroom exhaust fans, and water coolers. OG&E provided instant rebates that generally ranged between $1.00 and $4.25 on a variety of LEDs. OG&E worked with many of the big box retailers they had partnered with in previous years, such as Home Depot and Wal-Mart. The participating retailers advertise that OG&E is responsible for the discounted pricing of the energy-saving products using signage or stickers on the product package. The retailers track the sale of the energy-saving products and report the sales to the TPI, who reimburses the retailer or manufacturer for the difference between the discounted and regular retail price.

4.2.4.2 Food Bank Lighting Giveaways

Food Bank Lighting Giveaways has operated as a path in the Consumer Products Channel since 2015. OG&E distributed an OG&E branded box that contained ENERGY STAR Omni-Directional LEDs and a flyer educating the customer about the importance of energy efficient lighting through food banks in the OG&E territory. Since its inception, the path has donated millions of ENERGY STAR Omni-Directional LEDs to families who

[5] Franchised locations operated under "Doing Business As" names, which resulted in 50 unique retailer names in the data set. When consolidated under the franchise name there were 10 participating retailers in the Consumer Products Channel.

do not have the privilege of food security. The ENERGY STAR Omni-Directional LEDs help reduce the cost of electricity for families.

Two organizations participated in PY2021: Regional Food Bank of Oklahoma and Community Food Bank of Eastern Oklahoma. The food banks operate within three major cities in Oklahoma: Oklahoma City, Tulsa, and McAlester. The Food Bank Lighting Giveaways path represents 25% of the Consumer Products Channel reported savings and 28% of the induced measures.

4.2.5 Positive Energy – New Home Construction (PE-NHC)

The PE-NHC Channel's main objective is to induce homebuilders to include energy efficient measures in the construction of new homes built within OG&E's Oklahoma service territory. The Channel also educates participants about the benefits of energy efficient homes.

The Channel uses home builders as the lead source of marketing and outreach. OG&E provides home builders with a significant amount of support in the marketing and outreach process. The Channel works with the builders throughout the design and construction process to ensure that participating homes meet or exceed the PE-NHC Channel's minimum requirements.

The implementer has third party Home Energy Rating System (HERS) raters create energy models for participating homes. These energy models determine a home's *ex ante* saving savings by using certified energy modeling software.

4.3 Impact Evaluation Approach

The impact evaluation effort of the HEEP included the following:

- **Desk Review of Residential Calculations**. We used the AR TRM 8.2 in assessing savings from residential energy efficiency measures.
- **Participant Survey Photo Submissions**. Respondents to ADM's RSOL and Residential HVAC Replacement and Tune-up Single Family surveys were allowed to upload photos to verify program participation. Seventy Residential HVAC Replacement & Tune-up and 55 RSOL Channel survey respondents uploaded verification photos (see Section 4.3.6 for more detail).
- **Free Ridership Estimation**. We determine free ridership through primary research, including stakeholder interviews and customer surveys.

4.3.1 Residential Solutions

The following sections outline the impact evaluation approach for the RSOL Channel.

For equipment and retrofits rebated through the PY2021 HEEP, calculation methodologies were performed as described in the AR TRM. Table 4-5 identifies the sections in the AR TRM that were used for verification of measure-level savings.

Table 4-5: AR TRM Sections by Measure Type

Measure	Section in AR TRM
ENERGY STAR Omni-Directional	2.5.1.4
Ceiling Insulation	2.2.2
ENERGY STAR Windows	2.2.7
Faucet Aerators	2.3.4
ENERGY STAR Doors	2.2.7
Low Flow Showerhead	2.3.5
ENERGY STAR Pool Pumps	2.4.5
Advanced Power Strips	2.4.4

4.3.1.1 ENERGY STAR Omni-Directional LEDs

Energy savings for Omni-directional LEDs was calculated using the following savings algorithms from the AR TRM:

Equation 4-1: ENERGY STAR Omni-Directional LED Energy Savings

$$kWh_{savings} = \left(\left(W_{base} - W_{post}\right)/1000\right) \times Hours \times ISR \times IEF_E$$

Where:

W_{base} = Based on the wattage equivalent of the lumen output of the purchased LED Omni-directional lamp and the Program year purchased/installed.

W_{post} = Wattage of Omni-directional LED purchased/installed

ISR = In-Service Rate or percentage of rebate units that get installed to account for units purchased but not immediately installed. The ISR was obtained from the 2021 customer survey data.

Hours = Average hours of use per year = 365 days in a year * Daily usage (hours/day) for residential lamps. ADM has reviewed appropriate metering studies and calculated an unweighted average Hours of Use (HOU) per lamp across all studies to reduce the possibility of bias. ADM applied a value of 2.63 hours * 365.25 days/year = 960.61 hours.

IEF_E = Interactive Effects Factor to account for cooling energy savings and heating energy penalties; this factor also applies to outdoor and unconditioned spaces as specified in Arkansas TRM. The IEF_E values by heating/Cooling type are shown in the table below:

Table 4-6: Interactive Effects Factor for Cooling Energy Savings and Heating Energy Penalties

Heating Type	Interactive Effects Factor (IEF_E)
Gas Heat with AC	1.10
Gas Heat with no AC	1.00
Electric Resistance Heat with AC	0.83
Electric Resistance Heat with no AC	0.73
Heat Pump	0.96
Heating/Cooling Unknown	0.97

Peak demand reductions were calculated via the following formula, adjusting peak demand impacts for the percentage of indoor and outdoor bulbs based on the survey results:

Equation 4-2: ENERGY STAR Omni-Directional LED Demand Reduction

$$kW_{savings} = \left(\left(W_{base} - W_{post}\right)/1000\right) \times CF \times ISR \times IEF_D$$

Where:

W_{base} = Based on the wattage equivalent of the lumen output of the purchased Omni-directional LED and the Program year purchased/installed

W_{post} = Wattage of Omni-directional LED purchased/installed

CF = Summer Peak Coincidence Factor for measure (Indoor = 10%, Outdoor = 0%)

ISR = In-Service Rate or percentage of rebated units installed to account for units purchased but not immediately installed. The ISR was obtained from the 2021 customer survey data.

IEF_D = Interactive Effects Factor to account for cooling demand savings; this factor also applies to outdoor and unconditioned spaces, as specified in section 2.5.1.3 in Arkansas TRM. The IEF_D values by heating/Cooling type are shown in the table below:

Table 4-7: Interactive Effects Factor for Cooling Demand Savings

Heating Type	Interactive Effects Factor (IEF_D)
Gas Heat with AC	1.29
Gas Heat with no AC	1.00
Electric Resistance Heat with AC	1.29
Electric Resistance Heat with no AC	1.00
Heat Pump	1.29
Heating/Cooling Unknown	1.25

4.3.1.2 Ceiling Insulation

This measure requires adding ceiling insulation above a conditioned area in a residential dwelling of existing construction to a minimum ceiling insulation value of R-38. It pertains to ceiling insulation only (attic floor).

Deemed savings values will be used to calculate the energy and demand savings. They are dependent on the climate zone. Section 2.2.2 of the Arkansas TRM will be used to look up these values. The deemed savings are based on the R-value of the ceiling insulation pre-retrofit and combined post-retrofit R-value of at least R-38. They are the savings per square foot that are a factor to be multiplied by the ceiling area's square footage over a conditioned space that is being insulated. Table 4-8 shows the values from Zone 8 Northeast/North Central Region in Arkansas.

Table 4-8: Ceiling Insulation (R-38) – Deemed Savings Values per square foot - Zone 8

Ceiling Insulation Base R-value	AC/Gas Heat Energy Savings (kWh/ft^2)	Gas Heat (no AC) Energy Savings (kWh/ft^2)	AC/Electric Resistance Energy Savings (kWh/ft^2)	Heat Pump Energy Savings (kWh/ft^2)	Demand Reductions (kW/ft^2)
0 to 1	1.8642	0.2203	8.734	4.572	0.00107
2 to 4	1.0497	0.1215	4.846	2.495	0.00061
5 to 8	0.6330	0.0728	2.909	1.495	0.00038
9 to 14	0.3909	0.0446	1.784	0.917	0.00025
15 to 22	0.1847	0.0216	0.858	0.439	0.00011

4.3.1.3 ENERGY STAR Windows

This measure involves replacing windows with ENERGY STAR window(s) in an existing home. Deemed savings per square foot of the window, inclusive of frame and sash, are used to calculate the energy and demand savings for ENERGY STAR windows replacing single-paned or double-paned, clear glass. They are dependent on the climate zone. Table 4-9 and Table 4-10 show the Zone 8 Northeast/North Central Region's values in Arkansas.

Table 4-9: ENERGY STAR Replacement for Single-Pane Window - Zone 8

Equipment Type	Energy Savings (kWh/ft^2)	Demand Reductions (kW/ft^2)
Electric AC with Gas Heat	5.800	0.0036
Gas Heat Only (no AC)	0.187	n/a
Elec. AC with Resistance Heat	11.485	0.0036
Heat Pump	7.768	0.0036

Table 4-10: ENERGY STAR Replacement for Double-Pane Window - Zone 8

Equipment Type	Energy Savings (kWh/ft^2)	Demand Reductions (kW/ft^2)
Electric AC with Gas Heat	3.730	0.0037
Gas Heat Only (no AC)	0.156	n/a
Elec. AC with Resistance Heat	8.476	0.0037
Heat Pump	5.484	0.0031

4.3.1.4 ENERGY STAR Doors

This measure involves replacing doors with ENERGY STAR door(s) in an existing home. Deemed savings per square foot of window, inclusive of frame and sash from section 4.3.1.3, are used to calculate the energy and demand savings for ENERGY STAR doors replacing single-paned or double-paned, clear glass doors.

4.3.1.5 ENERGY STAR Variable-Speed Pool Pumps

This measure involves replacing a single-speed pool pump with an ENERGY STAR certified variable-speed or multi-speed pool pump. This measure applies to all residential applications; however, pools that serve multiple tenants in a common area are not eligible for this measure. Deemed savings are per installed unit based on the pump horsepower for self-priming (inground) and non-self-priming. The tables below show the deemed savings of both variable speed and multi-speed pool pumps by horsepower.

Table 4-11: ENERGY STAR Self-Priming Pool Pumps – Deemed Savings Values (AR TRM)

Pump HP	Energy Savings (kWh)	Demand Reductions (kW)
<1	1,501	0.28
≥1 to <1.5	2,733	0.49
≥1.5 to <2	2,655	0.56
≥2 to <2.5	3,213	0.65
≥2.5 to <3	3,242	0.70
≥3	4,109	0.86

Table 4-12: ENERGY STAR Non-Self-Priming Pool Pumps – Deemed Savings Values (AR TRM)

Pump HP	Energy Savings (kWh)	Demand Reductions (kW)
≤1.5	771	0.18
>1.5	979	0.33

4.3.1.6 Faucet Aerators

This measure involves retrofitting aerators on kitchen and bathroom water faucets. The methodology in Equation 4-3 represents savings per faucet aerator installed. The following formulas are used to calculate the energy and demand savings.

Equation 4-3: Faucet Aerators Energy Savings

$$kWh_{savings} = \frac{\rho \times C_p \times V \times \left(T_{Mixed} - T_{Supply}\right) \times \left(\frac{1}{RE}\right)}{Conversion\ Factor}$$

Where:

ρ = Water density = 8.33 lb/gal

C_p = Specific heat of water = 1 BTU/lb·°F

V = gallons of water saved per year per faucet

- Water gallons save/year/faucet (1.5 gpm) is 359
- Water gallons save/year/faucet (1.0 gpm) is 599

T_{Mixed} = Mixed water temperature, 105.3°F

T_{Supply} = Average supply water temperature (climate zone dependent Water Main Temperature).

RE = Recovery Efficiency (or in the case of HPWH, EF); if unknown, use 0.98 as a default for electric resistance water heaters, 2.2 for heat pump water heaters, or 0.79 for natural gas water heaters

Conversion Factor = 3,412 Btu/kWh for electric water heating or 100,000 Btu/Therm for gas water heating

Equation 4-4: Faucet Aerators Demand Reduction

$$kW_{savings} = kWh_{savings} \times Ratio_{Annual\ kWh}^{Peak\ kW}$$

Where:

$Ratio_{\text{Peak kW Annual kWh}}$ = 0.000104

4.3.1.7 Low Flow Showerhead

This measure consists of removing existing showerheads and installing low-flow showerheads in residences. The formulas below are used to calculate the energy and demand savings.

Equation 4-5: Low Flow Showerhead Annual Energy Savings

$$kWh_{savings} = \frac{\rho \times C_P \times V \times \left(T_{Mixed} - T_{Supply}\right) \times \left(\frac{1}{RE}\right)}{Conversion\ Factor}$$

Where:

ρ =Water density = 8.33 lb/gallon
C_p = Specific heat of water = 1 BTU/lb·°F
V = 2.0, 1.75, or 1.5 gallons per minute (GPM) showerhead water gallons saved per year
T_{Mixed} = Mixed water temperature, 107.1°F, from Table 156 (average for Arkansas)
T_{Supply} = Average supply water temperature (Water main temperature)
RE = Recovery Efficiency (or in the case of HPWH, EF); if unknown, use 0.98 as a default for electric resistance water heaters, 2.2 for heat pump water heaters, or 0.79 for natural gas water heaters
Conversion Factor = 3,412 Btu/kWh for electric water heating or 100,000 Btu/Therm for gas water heating

Equation 4-6: Low Flow Showerhead Demand Reduction

$$kW_{savings} = kWh_{savings} \times Ratio_{Annual\ kWh}^{Peak\ kW}$$

Where:

$Ratio_{Peak\ kW\ Annual\ kWh}$ = 0.000104

4.3.1.8 Advanced Power Strips

In the AR TRM, energy savings for advanced power strips are determined based on the strips' end-use – either in a home office setting, a home entertainment setting, or some other use. The determining factor of the end-use in residence is what kind of appliance is plugged into the 'master' outlet of the advanced power strip; the AR TRM provides deemed savings values for televisions, personal computers, or 'other' appliances plugged into the 'master' outlet.

Savings were calculated based on the percentage of survey respondents that indicated their advanced power strip's master outlet was occupied by either a television, PC, or 'other' category of appliance. These percentages were applied as an in-service rate to the population of advanced power strips installed through the Program to calculate *ex post* savings for this measure. Savings were scaled according to the number of controlled outlets on the advanced power strips. The table below outlines AR TRM deemed savings assumptions for power strips.

Table 4-13: Deemed Savings for Tier 1 Residential Advanced Power Strip

System Type	Peripheral Device	Energy Savings (kWh)	Demand Reductions (kW)
Home Entertainment	Audio Equipment: AV Receiver	20	0.002
Home Entertainment	Audio Equipment: Speakers	0	0.000
Home Entertainment	Audio Equipment: Subwoofer	4	0.000
Home Entertainment	Media Player: Blu-Ray	7	0.001
Home Entertainment	Media Player: DVD	20	0.002
Home Entertainment	Media Player: DVD-R	29	0.003
Home Entertainment	Media Player: DVD/VCR	37	0.004
Home Entertainment	Media Player: VCR	28	0.003
Home Entertainment	Set-Top Box: Cable	96	0.013
Home Entertainment	Set-Top Box: Cable with DVR	259	0.034
Home Entertainment	Set-Top Box: Satellite	83	0.012
Home Entertainment	Set-Top Box: Satellite with DVR	154	0.022
Home Entertainment	Set-Top Box: Stand Alone DVR	180	0.022
Home Entertainment	Television: CRT	11	0.001
Home Entertainment	Television: LCD	3	0.000
Home Entertainment	Television: Plasma	4	0.000
Home Entertainment	Television: Projection	48	0.006
Home Entertainment	Video Game Console: Nintendo Wii	21	0.002
Home Entertainment	Video Game Console: PlayStation 2	11	0.001
Home Entertainment	Video Game Console: PlayStation 3	92	0.009
Home Entertainment	Video Game Console: XBOX	53	0.005
Home Entertainment	Video Game Console: XBOX 360	89	0.008
Home Office	Computer: Desktop	38	0.004
Home Office	Computer: Laptop	38	0.004
Home Office	Computer Monitor: CRT	16	0.002
Home Office	Computer Monitor: LCD	8	0.001
Home Office	Computer Speakers	16	0.002
Home Office	Copier	13	0.001
Home Office	Fax Machine: Inkjet	46	0.004
Home Office	Fax Machine: Laser	20	0.002
Home Office	Printer: Inkjet	13	0.001
Home Office	Printer: Laser	38	0.003
Home Office	Scanner	18	0.002
Home Entertainment	Whole System Average	252	0.030
Home Office	Whole System Average	83	0.008
Average APS	Whole System Average	167	0.019

4.3.2 LivingWise Schools Outreach

At the outset of each Program year, the TPI calculates average per-kit savings based on the savings algorithms and assumptions about installation found in the last Program year. The TPI sends electronic reports to OG&E throughout the year with the number of kits delivered to classrooms and their associated impacts. The TPI provides OG&E with a final report after the Program year is complete that specifies the number of kits delivered, and their final estimates of annual kWh and kW impacts for the Program year.

OG&E maintains a tracking system that shows the number of participants in the Program each year and recorded impacts. OG&E uses the participation information and impact estimates provided by the TPI as the reported amounts for the Program year.

ADM performed the calculation methodologies described in the AR TRM for the measures rebated through the PY2021 LivingWise® Schools Outreach Channel. Table 4-14 identifies the locations of savings calculations used for verification of measure-level savings in the AR TRM.

Table 4-14: AR TRM Sections by Measure Type

Measure	Section in TRM
ENERGY STAR Omni-Directional LEDs	2.5.1.4
Faucet Aerators	2.3.4
Low-Flow Showerhead	2.3.5

The LivingWise® Schools Outreach Channel's impact evaluation effort included a desk review of residential calculations and values from the AR TRM for residential measures found within each kit. ADM applied an NTG ratio of 100% for this Channel.

In addition to the AR TRM, we also examined the *ex ante* calculator. The TPI's workbook reported the net number of kits. ADM modified the AR TRM algorithms to use the calculated ISR using student surveys provided by the TPI. ADM determined the mix of water heater fuel types (standard electric, heat pump, or gas) from the student survey for domestic hot water measures. For omnidirectional lamps, ADM calculated a weighted average heating type for the inputs: IEF_E, IEF_D, and IEF_G. ADM verified that the savings values were appropriate for each kit. ADM applied those savings values to the number of kits distributed in PY2021.

4.3.2.1 ENERGY STAR Omni-Directional LEDs

See Section 4.3.1.1 for details on how the AR TRM outlines the savings algorithms.

4.3.2.2 Faucet Aerators

See Section 4.3.1.4 for details on how the AR TRM outlines the savings algorithms.

4.3.2.3 Low Flow Showerheads

See Section 4.3.1.7 for details on how the AR TRM outlines the savings algorithms.

4.3.3 Residential HVAC Replacement and Tune-up Channel

The impact evaluation effort of the HEEP Residential HVAC Replacement and Tune-up Channel included the following:

- **Desk Review of Residential Calculations**. We used CLEAResult's CoolSaver™ M&V plan and database and the AR TRM to review all projects.
- **Confirmation of HVAC unit model numbers**: We verified HVAC model numbers using an AHRI model number or participant survey HVAC unit nameplate photo submission.
- **Net-to-Gross Estimation**. We estimated the NTG based on survey responses.

4.3.3.1 Central Air Conditioner Replacement

This measure installs a new AC system in residential applications. All installations were installed in replace-on-burnout (ROB) scenarios per the tracking data provided by CLEAResult. This assumption of ROB scenarios was confirmed to be correct with customer survey responses.

The savings for central air conditioning units were calculated by using the following equations.

Equation 4-7: Central AC Replacement Energy Savings

$$kWh_{savings} = CAP \times (\frac{1kW}{1000W}) \times EFLH \times (\frac{1}{SEER_{base}} - \frac{1}{SEER_{post}})$$

Equation 4-8: Central AC Replacement Demand Reduction

$$kW_{savings} = CAP \times (\frac{1kW}{1000W}) \times (\frac{1}{EER_{base}} - \frac{1}{EER_{post}}) \times CF$$

Where:

CAP	= *Rated equipment cooling capacity of the new unit (Btu/hr)*
EFLH	= Equivalent full-load cooling hours
$SEER_{base}$	= Seasonal energy efficiency rating of the baseline equipment for cooling = 14 SEER
$SEER_{post}$	= Seasonal energy efficiency rating of the installed equipment for cooling

EER_{base} = Full-load energy efficiency rating of the baseline equipment for cooling
= 11.8 EER

EER_{post} = Full-load energy efficiency rating of the installed equipment for cooling

CF = Coincidence factor = 0.87 (default)

4.3.3.2 Central Heat Pump Replacement

This measure installs a new residential heat pump. All projects were replace-on-burnout (ROB) per the tracking data provided by CLEAResult.

The savings for central heat pump replacements were calculated by using the following equations.

Equation 4-9: Central Heat Pump Replacement Total Energy Savings

$$kWh_{savings} = kWh_{savings_C} + kWh_{savings_H}$$

Equation 4-10: Central Heat Pump Replacement Cooling Energy Savings

$$kWh_{savings_C} = CAP_C \times (\frac{1kW}{1000W}) \times EFLH_C \times (\frac{1}{SEER_{base}} - \frac{1}{SEER_{post}})$$

Equation 4-11: Central Heat Pump Replacement Heating Energy Savings

$$kWh_{savings_H} = CAP_H \times (\frac{1kW}{1000W}) \times EFLH_H \times (\frac{1}{HSPF_{base}} - \frac{1}{HSPF_{post}})$$

Equation 4-12: Central Heat Pump Replacement Demand Reduction

$$kW_{savings} = CAP_C \times \left(\frac{1kW}{1000W}\right) \times \left(\frac{1}{EER_{base}} - \frac{1}{EER_{post}}\right) \times CF$$

Where:

CAP_C = Rated equipment cooling capacity of the new unit (Btu/hr)

CAP_H = Rated equipment heating capacity of the new unit (Btu/hr)

EFLH_C = Equivalent full-load cooling hours

EFLH_H = Equivalent full-load heating hours

$SEER_{base}$ = Seasonal energy efficiency rating of the baseline equipment for cooling
= 14 SEER

$SEER_{post}$ = Seasonal energy efficiency rating of the installed equipment for cooling

$HSPF_{base}$ = Heating seasonal performance rating of the baseline equipment for heating
= 8.2 HSPF (split) or 8.0 HSPF (packaged)

$HSPF_{post}$ = Heating seasonal performance rating of the installed equipment for heating

EER_{base} = Full-load energy efficiency rating of the baseline equipment for cooling
= *11.8 EER*

EER_{post} = Full-load energy efficiency rating of the installed equipment for cooling

CF = Coincidence factor = 0.87 (default)

4.3.3.3 Geothermal Replacement

This measure consists of installations of a residential geothermal heat pump. All installations were designated as replace-on-burnout (ROB) installation scenarios. This assumption of ROB scenarios was confirmed to be correct with customer survey responses.

The savings for central heat pump replacements were calculated by using the following equations.

Equation 4-13: Central Heat Pump Replacement Total Energy Savings

$$kWh_{savings} = kWh_{savings_C} + kWh_{savings_H}$$

Equation 4-14: Central Heat Pump Replacement Cooling Energy Savings

$$kWh_{savings_C} = CAP_C \times (\frac{1kW}{1000W}) \times EFLH_C \times (\frac{1}{SEER_{base}} - \frac{1}{SEER_{post}})$$

Equation 4-15: Central Heat Pump Replacement Heating Energy Savings

$$kWh_{savings_H} = CAP_H \times (\frac{1kW}{1000W}) \times EFLH_H \times (\frac{1}{HSPF_{base}} - \frac{1}{HSPF_{post}})$$

Equation 4-16: Central Heat Pump Replacement Demand Reduction

$$kW_{savings} = CAP_C \times \left(\frac{1kW}{1000W}\right) \times \left(\frac{1}{EER_{base}} - \frac{1}{EER_{post}}\right) \times CF$$

Where:

CAP_C = Rated equipment cooling capacity of the new unit (Btu/hr)

CAP_H = Rated equipment heating capacity of the new unit (Btu/hr)

EFLH_C = Equivalent full-load cooling hours

EFLH_H = Equivalent full-load heating hours

HSPF = COP x 3.412 Btu/Watt-hr

COP_{base} = Coefficient of performance, heating
= 3.7, ASHRAE 90.1-2013, Table 6.8.1-2 Heat Pump Minimum Efficiencies – Water to air, water loop (heating mode)

COP_{post} = Heating seasonal performance rating of the installed equipment for heating
EER_{base} = Full-load energy efficiency rating of the baseline equipment for cooling
= 14.1 EER, ASHRAE 90.1-2013, Table 6.8.1-2 Heat Pump Minimum Efficiencies – Water to air, water loop (cooling mode)
EER_{post} = Full-load energy efficiency rating of the installed equipment for cooling
SEER = *EER x 13/11*.3, using SEER to EER conversion
CF = Coincidence factor = 0.87 (default)

4.3.3.4 HVAC Tune-Up

The HVAC Tune-Up measure provides financial inducements to encourage residential customers to improve their HVAC systems' efficiency.

A qualified technician provides tune-ups that involve testing the unit's performance before and after measures are implemented. Typical tune-up measures can include airflow corrections, cleaning of the blowers, fans, evaporator coils, condenser coils, and a refrigerant charge correction.

Evaluation of the Channel is based on the CoolSaver™ 2021 M&V Plan provided by CLEAResult. We examined the data set containing a census of participants to assess savings by measure. The workbook provided contains data exported from the CoolSaver™ tracking tool. We examined the data and recreated the overall savings calculations. Savings from tune-ups were based on the AR TRM stipulated equivalent full-load hours along with unit-specific capacity and deemed efficiency loss recovered due to work performed.

4.3.3.5 Duct Sealing

Duct sealing savings were calculated using the following savings algorithms from the AR TRM.

Equation 4-17: Duct Sealing Electric Cooling Energy Savings

$$kWh_{savings_C} = ((DL_{pre} - DL_{post}) \times EFLH_C \times (h_{out} \times \rho_{out} - h_{in} \times \rho_{in}) \times 60)/(1000 \times SEER)$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft^3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft^3/min)
EFLH_C= Equivalent Full Load Hours
h_{out} = Outdoor design specific enthalpy (Btu/lb), 39 BTU/lb

h_{in} = Indoor design specific enthalpy (Btu/lb), 29 BTU/lb
ρ_{out} = Density of outdoor air at 95°F = 0.0740 (lb/ft^3)
ρ_{in} = Density of conditioned air at 75°F = 0.0756 (lb/ft^3)
60 = Constant to convert from minutes to hours
CAP = Cooling capacity (Btu/hr)
1000 = Constant to convert from W to kW
SEER = Seasonal Energy Efficiency Ratio of the existing system (Btu/W·hr). Default value for SEER = 11.5

Equation 4-18: Duct Sealing Heat Pump Heating Energy Savings

$$kWh_{savings_H} = ((DL_{pre} - DL_{post}) \times 60 \times HDD \times 24 \times 0.018)/(1000 \times HSPF)$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft^3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft^3/min)
60 = Constant to convert from minutes to hours
HDD = Heating degree days
24 = Constant to convert from days to hours
0.018 = Volumetric heat capacity of air (Btu/ft^3°F)
CAP = Heating capacity (Btu/hr)
1000 = Constant to convert from W to kW
HSPF = Heating Seasonal Performance Factor of the existing system (Btu/W·hr). Default value for HSPF = 7.30

Equation 4-19: Duct Sealing Electric Resistance Heating Energy Savings

$$kWh_{savings_H} = ((DL_{pre} - DL_{post}) \times 60 \times HDD \times 24 \times 0.018)/3412$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft^3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft^3/min)
60 = Constant to convert from minutes to hours
HDD = Heating degree days
24 = Constant to convert from days to hours
0.018 = Volumetric heat capacity of air (Btu/ft^3°F*)*
$EFLH_H$= Equivalent full load heating hours
CAP = Heating capacity (Btu/hr)
3,412 = Constant to convert from Btu to kWh

Equation 4-20: Duct Sealing Cooling Demand Reduction

$$kW_{savings_C} = kWh_{savings_C}/EFLH_C \times CF$$

Where:

$kWh_{savings_C}$= Calculated cooling energy savings (kWh)
$EFLH_C$= Equivalent full load cooling hours
CF = Coincidence factor = 0.87

4.3.3.6 Air Infiltration

This measure reduces air infiltration into the residence, using pre and post-treatment blower door air-pressure readings to quantify the air leakage reduction. There is no post-treatment minimum infiltration requirement; however, installations must comply with the prevailing Oklahoma mechanical or ventilation code. This measure applies to all residential applications.

Deemed savings are based on savings per reduced CFM_{50} ($CFM_{50,pre}$ – $CFM_{50,post}$) estimates provided in the AR TRM. Savings estimates are also based on the HVAC types. CFM_{50} post values are measured with a blower door test after the air sealing measures were installed.

4.3.4 Consumer Products

The impact evaluation effort of the Consumer Products Channel included the following:

- **Desk Review of Residential Calculations**: We used AR TRM values in assessing savings from some measures offered in this Channel. For those measures not included in the AR TRM, we used other reputable sources such as the Illinois TRM version 7.0 and the 2016 Pennsylvania TRM.
- **Net-to-Gross Estimation**: We determined the NTG through a survey with a random sample of 10,000 OG&E customers.
- **Leakage Estimation**: ADM estimated Leakage for each of the retailers and food banks in this Channel.

4.3.4.1 ENERGY STAR Omni-Directional LEDs

See Section 4.3.1.1 for details on how the AR TRM outlines the savings algorithms for ENERGY STAR Omni-directional LEDs. ADM modified the ISR for the food bank distribution from the AR TRM value. ADM determined that the ISR of 90% from the Vermont TRM[6] is more appropriate for this distribution method through a discussion with the implementation and utility staff.

[6]See page 155 https://puc.vermont.gov/sites/psbnew/files/doc_library/Vermont%20TRM%20Savings%20Verification%202018%20Version_FINAL.pdf

4.3.4.2 ENERGY STAR Specialty LEDs

The savings algorithms and inputs for specialty LEDs are equal to Omni-directional LEDs in all respects but two. The measure life for all LEDs is a 19-year measure life. Furthermore, the default baseline wattage for reflectors and specialty EISA exempt lamps is dependent upon lamp type and lumen range, as illustrated in Table 4-15 and Table 4-16 below.

Table 4-15: ENERGY STAR Default Baseline Wattage for Reflector Lamps

Lamp Type (a)	Incandescent Equivalent (Pre-EISA) (b)	Wattsbase (EISA (c)
PAR20	50	35
PAR30	50	35
R20	50	45
PAR38	60	55
BR30	65	EXEMPT
BR40	65	EXEMPT
ER40	65	EXEMPT
BR40	75	65
BR30	75	65
PAR30	75	55
PAR38	75	55
R30	75	65
R40	75	65
PAR38	90	70
PAR38	120	70
R20	≤45	EXEMPT
BR30	≤50	EXEMPT
BR40	≤50	EXEMPT
ER30	≤50	EXEMPT
ER40	≤50	EXEMPT

Table 4-16: ENERGY STAR Directional LEDs - Default Baseline Wattage for Specialty EISA Exempt Lamps

Minimum Lumens	Maximum Lumens	Incandescent Equivalent (Wbase)
310	749	40
750	1,049	60
1,050	1,489	75
1,490	2,600	100

4.3.4.3 Advanced Power Strip

See Section 4.3.1.8 for details on how the AR TRM outlines the savings algorithms for advanced power strips.

4.3.4.4 Window Air Conditioners

ADM used the AR TRM to evaluate window air conditioner savings. The evaluation team verified Window Air Conditioner (WAC) model numbers listed in the Channel tracking data system against the ENERGY STAR database[7] to ensure that each WAC distributed in 2021 was ENERGY STAR qualified.

WAC kWh and kW savings were calculated via the following formulas:

Equation 4-21: Window AC Energy Savings

$$kWh\ savings = CAP * \frac{kW}{1000W} * RAF * EFLH_C * \left(\frac{1}{\eta_{base}} - \frac{1}{\eta_{post}}\right)$$

Equation 4-22: Window AC Demand Reduction

$$kW\ savings = CAP * \frac{kW}{1000W} * \left(\frac{1}{\eta_{base}} - \frac{1}{\eta_{post}}\right) * CF$$

Where:

CAP = Rated equipment cooling capacity of the new unit (Btu/h).
η_{base} = Energy efficiency rating (EER) of the baseline cooling equipment (Table 4-17).
η_{post} = Energy efficiency rating (EER) of the installed cooling equipment (at least equal to Table 4-17).
CF = Coincidence factor = 0.87 (default).
RAF = Room AC adjustment factor = 0.49 (default).
$EFLH_C$= Equivalent full-load cooling hours Table 4-18

[7] www.energystar.gov

Table 4-17: Window AC Replacement - Baseline Efficiency Standards

Reverse Cycle (Yes/No)	Louvered Sides (Yes/No)	Capacity (Btu/hr)	Baseline Efficiency (CEER)[8]	Efficiency Standard (EER)
No	Yes	<8,000	11.0	12.1
		≥8,000 and <14,000	10.9	12.0
		≥14,000 and <20,000	10.7	11.8
		≥20,000	9.4	10.3
No	No	<8,000	10.0	11.0
		≥8,000	9.6	10.6
Yes	Yes	<20,000	9.8	10.8
		≥20,000	9.3	10.2
Yes	No	<14,000	9.3	10.2
		≥14,000	8.7	9.6

Table 4-18: Window AC Replacement – Equivalent Full-Load Cooling Hours

Weather Zone	Location	EFLHC
9	Rogers	1,305
8	Ft. Smith	1,432
7	Little Rock	1,583
6	El Dorado	1,738

Table 4-19: RAF Derivation

Weather Zone	Location	ES[9] EFLHC	RLW Adj Hours[10]	AHAM Hours[11]	Avg. Hours	RAF
9	Rogers	1,305	431	833	632	0.48
8	Ft. Smith	1,432	473	978	725	0.51
7	Little Rock	1,583	522	1,009	766	0.48
6	El Dorado	1,738	573	1,061	817	0.47
Average:						**0.49**

4.3.4.5 Room Air Purifiers

The evaluation team verified room air purifier (RAP) model numbers listed in the program tracking system in the ENERGY STAR databases (www.energystar.gov) to ensure that each RAP distributed in 2021 is ENERGY STAR qualified.

RAP kWh and kW savings were calculated via the following formulas from the AR TRM:

[8] Combined Energy Efficiency Ratio (CEER)
[9] ENERGY STAR® Equivalent Full Load Cooling Hours (ENERGY STAR® $EFLH_C$)
[10] RLW Analytics Adjusted Full Load Cooling Hours (RLW Adj Hours). See footnote 85 in AR TRM.
[11] Association of Home Manufacturers (AHAM). See footnote 86 in AR TRM.

Equation 4-23: ENERGY STAR RAP Annual Energy Savings

$$Annual\ Energy\ Savings = kWh_{base} - kWh_{ee}$$

Equation 4-24: RAP kWh Algorithm

$$kWh = \left[\frac{CADR}{CADR\ per\ watt} * \frac{AOH}{1000}\right] + \left[Standby\ Hours * \frac{Standby\ Power}{1000}\right]$$

Where:

CADR = Clean Air Delivery Rate = Actual, if unknown, assume CADR in each range as provided in Table 4-20 below.
Standby Power, conventional unit = 1.0 Watt
CADR/watt, conventional unit = 1.0 CADR/Watt
CADR/watt, efficient unit = Actual, if unknown use 3.0 CADR/Watt
Standby Power, efficient unit = Actual, if unknown use 1.0
AOH = Annual Operating Hours = run hours per year, 16 hours/day, 365 days a year = 5,840 hours
Standby Hours = 8760 – 5840 = 2920 hours

Equation 4-25: ENERGY STAR RAP Demand Savings

$$kW_{savings} = \left(\frac{kWh_{savings}}{AOH}\right) * CF$$

Where:

Hours = Annual operating hours = 5,840 hours
CF = Coincidence Factor for the measure, assumes equal use throughout the year, 5,840 hours divided by 8,760 = 0.67

Annual energy consumption and savings for each capacity class are shown in Table 4-20.

Table 4-20: Annual Energy Savings by Capacity Range

Clean Air Delivery Rate (CADR) Range	CADR	Baseline Unit Energy (kWh)	ENERGY STAR Unit Energy (kWh)	Energy Savings (kWh)	Demand Reductions (kW)
51-100	75	441	149	292	0.0335
101-150	125	733	246	487	0.0558
151-200	175	1,025	344	681	0.0782
201-250	225	1,317	441	876	0.1005
Over 250	300	1,755	587	1,168	0.134

4.3.4.6 Bathroom Exhaust Fan

The evaluation team used the Illinois TRM version 7.0 to inform the energy savings and demand reduction algorithms for ENERGY STAR bathroom exhaust fans. The

evaluation team checked the model numbers of bathroom exhaust fans listed in the program tracking system against ENERGY STAR databases (www.energystar.gov) to verify that each bathroom exhaust fan distributed in 2021 is ENERGY STAR qualified.

Bathroom exhaust fan kWh and kW savings were calculated via the following formulas:

Equation 4-26: ENERGY STAR Bathroom Exhaust Fan Annual Energy Savings

$$\Delta kWh = \left(CFM * \frac{\left(\frac{1}{\eta_{baseline}} - \frac{1}{\eta_{efficient}}\right)}{1000} \right) * Hours$$

Where:

CFM = Nominal Capacity of the exhaust fan
= Actual or use defaults provided below
= Assume 50CFM for continuous ventilation
$\eta_{baseline}$ = Average efficacy for baseline fan (CFM/watts)
= See table below
$\eta_{efficient}$ = Average efficacy for efficient fan (CFM/watts)
= Actual or use defaults provided below
Hours = assumed annual run hours,
= 1,089 for standard usage
= 8,760 for continuous ventilation.

Table 4-21: ENERGY STAR Bathroom Exhaust Fan Default Inputs

Application	Min CFMM	Max CFM	Average CFM	Baseline	ENERGY STAR		ENERGY STAR Most Efficient	
				Base CFM /Watts	CFM /Watts	Energy Savings (kWh)	CFM /Watts	Energy Savings (kWh)
Standard Usage	10	89	70.6	1.7	4.9	28.9	12.0	38.2
	90	200	116.1	2.6	5.6	25.3	13.9	38.7
	Unknown		92.4	2.2	5.3	27.4	12.9	38.6
Continuous Usage	N/A		50	1.7	5.1	170.7	11.2	216.9

Equation 4-27: ENERGY STAR Bathroom Exhaust Fan Demand Savings

$$\Delta kW = \left(CFM * \frac{\left(\frac{1}{\eta_{baseline}} - \frac{1}{\eta_{baseline}}\right)}{1000} \right) * CF$$

Where:

CF = Summer Peak Coincidence Factor
= 0.135 for standard usage

= 1.0 for continuous operation
Other variables as defined above

Table 4-22: ENERGY STAR Bathroom Exhaust Fan Default kW Savings

Application	Min CFM	Max CFM	Average CFM	ENERGY STAR ΔkW Savings	ENERGY STAR Most Efficient ΔkW Savings
Standard Usage	10	89	70.6	0.0036	0.0047
	90	200	116.1	0.0031	0.0048
	Unknown		92.4	0.0034	0.0048
Continuous Usage	N/A		50	0.0195	0.0247

4.3.4.7 Water Cooler

The evaluation team used the 2016 Pennsylvania TRM to calculate the energy savings and demand reduction for ENERGY STAR Water Coolers. The evaluation team checked the water cooler model numbers listed in the program tracking data against the ENERGY STAR database (www.energystar.gov) to verify that each water cooler distributed in 2021 was ENERGY STAR qualified.

Water cooler kWh and kW savings were calculated via the following formulas:

Equation 4-28: ENERGY STAR Water Cooler Annual Energy Savings

$$\Delta kWh = (kWh_{base} - kWh_{ee}) * 365_{year}^{Days}$$

Equation 4-29: ENERGY STAR Water Cooler Demand Savings

$$\Delta kW_{peak} = \Delta kWh * ETDF$$

Table 4-23: ENERGY STAR Water Cooler - References

Component	Unit	Value
kWh_{base} , Energy use of baseline water cooler	kWh/day	Cold Only: 0.29 Hot & Cold: 2.19
kWh_{ee}, Energy use of ENERGY STAR water cooler	kWh/day	Cold Only: 0.16 Hot & Cold Storage: 0.87 Hot & Cold On-Demand: 0.18 Or EDC Data Gathering
HOU, Annual hours of use	Hours/year	8,760
ETDF, Energy to Demand Factor	kW/kWh/yr	0.0001119

Table 4-24: Default Savings for ENERGY STAR Water Coolers

Cooler Type	Energy Savings (kWh)	Demand Reductions (kW)
Cold Only	47.5	0.0053
Hold & Cold Storage	481.8	0.0539
Hot & Cold On-Demand	733.7	0.0821

4.3.4.8 Leakage

The AR TRM defines leakage: “when program-incented efficient products are installed outside of the funding utility’s service territory.” When Channel discounted bulbs are installed outside of OG&E’s service territory, the discounted bulbs’ energy and demand impacts are not being realized within the territory that paid for and claimed the savings. ADM calculated leakage for the Consumer Products Channel in PY2019. Given that there were no significant changes to program offerings in PY2021, the leakage calculated in the PY2019 evaluation was applied to PY2021. ADM estimated leakage using an approach that combined survey responses with Geo-mapping. The leakage analysis used the following approach:

- First, we developed a map of concentric circles surrounding the participating retailers. The initial modeling assumed the “reach” of a retailer is a 60-minute drive, which is then modified by the presence of an alternative sponsoring retailer (i.e., if a customer is within a 60-minute drive of two sponsoring retailers, it is assumed they purchased from the closest one). Then an initial leakage score is applied to each participating retail location based upon the percent of customers within the concentric circle served by the sponsoring utility.
- Second, ADM used the survey to assess customers’ shopping habits within the radius of participating retailers. ADM assessed the survey responses to discover the total and maximum drive times that Oklahoma consumers find acceptable when shopping for products induced by the Channel. ADM modified the initial 60-minute drive assumption established in Step 1, with the assessed total and maximum drive times.
- Lastly, ADM calculated the percentage of LEDs leaked out of the OG&E territory (but still within Oklahoma) and the percent leaked out-of-state.

ADM applied out-of-state leakage to the lighting measures only. Table 4-25 shows the estimated leakage for each participation path in the Consumer Products Channel for PY2021. Retailers/Organizations were classified into one of four categories, as illustrated in Table 4-26.

Table 4-25: PY2021 Leakage Estimates

Participation Path	Estimated Leakage for Energy Savings (kWh)	Estimated Leakage for Demand Reductions (kW)
Upstream	617,259	96
Food Bank	132,132	20
Total	**749,391**	**116**

Table 4-26: Retailer/Organization Leakage Categorization[12]

Participating Retailer/Organization	Leakage Category
Ace Hardware	Do-It-Yourself
Batteries Plus	Do-It-Yourself
Community Food Bank of Eastern Oklahoma	Food Bank
Crest Fresh Market	Mass Merchant
Dollar General	Discount
Dollar Tree	Discount
Regional Food Bank of Oklahoma	Food Bank
Target	Mass Merchant
The Home Depot	Do-It-Yourself
Walmart	Mass Merchant

4.3.4.9 Cross-Sector Sales Adjustments

The AR TRM stipulates:

"For retail (time of sale) programs, increased savings may be claimed based on sales to nonresidential customers. […] 6.7 percent of installed lamps may be allocated to the commercial program. […] Since no building type will have been identified, apply the weighted average annual operating hours and coincidence factor based on a review of the building types that participate in commercial lighting programs during the current program year."

Therefore, ADM evaluated the weighted average annual operating hours (AOH) and CF based on building types in the CEEP Small Business Midstream Channel. The AOH was determined to be 3,505, and the CF equal to 0.64. We applied the commercial AOH and CF to the 6.7% of LEDs that the AR TRM stipulates were installed in nonresidential settings, which increased annual energy savings and peak demand reduction for those LEDs.

The period in which the savings occur affects the applicable baseline wattage and discount factor for cost-effectiveness savings.

[12] The retailers listed in Table 4-26 were used in the PY2019 leakage analysis. Crest Fresh Market and Ace Hardware didn't participate in PY2021. Lowe's and Sam's Club are new participants in PY2021.

4.3.4.10 Net-to-Gross Estimation Methodology

For the Consumer Products Channel, ADM separated LEDs into two NTG categories:

- The assumed net-to-gross ratio for bulbs distributed through the Food Bank Lighting Giveaway path was 100%. The 100% net-to-gross ratio was assumed because customers do not shop for the LEDs but rather have them simply offered them without prompting. Individuals who received LEDs through the food banks are also more likely to represent low-income customers, potentially limiting their ability or willingness to purchase high-efficiency lighting products.
- ADM estimated a free ridership score for bulbs discounted at participating retail stores. To determine the net effects of the in-store retail discounts required estimating the percentage of energy savings from efficient lighting purchases that would have occurred without Program intervention. Ideally, participating retailers could provide LED sales data for non-program periods or from similar non-program retail locations. These data would provide adequate information to calculate the lift in LED sales attributable to the Channel price markdowns. However, retailers are reluctant to release sales data for this purpose, and non-program sales data were not made available to us.

Therefore, ADM conducted surveys with randomly selected OG&E customers and with volunteers. Additional details are provided in Section 4.5.4 below.

4.3.5 Positive Energy – New Home Construction (PE-NHC)

The impact evaluation effort of the PE-NHC Channel includes the following:

- **Checking of Program databases**. We received and checked Channel databases from OG&E.
- **Performing engineering reviews.** We reviewed supporting documentation and performed virtual and on-site visits to verify energy models.
- **Free ridership estimation.** We used interviews with builders and Program managers to calculate free ridership rates.

4.3.5.1 Energy Savings Calculations

The *ex ante* energy savings are found by subtracting the as-built home energy consumption from its baseline home's energy consumption. The baseline home represents a home built to meet Oklahoma Uniform Building Code minimum energy efficiency requirements. The as-built and baseline homes share the same skeletal properties; the only difference is their energy efficiency values in various parts of the home.

A similar process is used to find the peak demand reduction.

4.3.5.2 Baseline Home

The baseline represents a home built to meet Oklahoma Uniform Building Code minimum energy efficiency requirements. The Oklahoma Uniform Building Code uses the 2015 international residential code (IRC) with amendments. Key assumptions used in the baseline home are shown in Table 4-27.

Table 4-27: Baseline Home Key Assumptions

Input	Assumption	Source
Attic Insulation	R-28.6	2015 IRC with amendments
Wall Insulation	R-12.20	2015 IRC with amendments
Window U	0.5	2015 IRC with amendments
Window SHGC	0.35	2015 IRC with amendments
Infiltration	7 ACH at 50 Pa	2015 IRC with amendments
Cooling Efficiency (SEER)	14	NAECA minimum values.
Heat pump efficiency heating (HSPF)	8.2	NAECA minimum values for both GSPH and ASHP

4.3.6 Photo and On-Site Verification Procedures and Findings

ADM asked HEEP RSOL and Residential HVAC Replacement and Tune-up single family survey respondents to upload photos to verify their participation in OG&E's HEEP. We received participant survey photo submissions for the Residential HVAC Replacement and Tune-up and RSOL Channels. For the PE-NHC Channel, ADM performed site visits at a sample of homes.

4.3.6.1 Residential HVAC Replacement and Tune-up

Residential HVAC Replacement and Tune-up survey participants were instructed to provide pictures of their HVAC unit's model numbers. Seventy survey respondents attempted to upload photos of their HVAC unit's nameplate. ADM was able to verify 58 of these participants' unit model numbers. The submitted photos were compared against model documents in the tracking data. The tracking data model number matched the model number found in the photos for 55 respondents.

4.3.6.2 Residential Solutions

ADM received photo uploads from 55 respondents to the RSOL single family survey. Respondents verified direct install as well as "major measure" installations through the photo upload section. After being downloaded, ADM staff randomly sampled and verified the quality of uploaded photos; the majority of them were clear and sufficient to support the verification.

- **ENERGY STAR Windows:** 36 customers replied to the survey question regarding ENERGY STAR window(s) and confirmed installations, resulting in a 100% verification rate. Seventeen respondents also uploaded photos of their ENERGY STAR Windows.
- **ENERGY STAR Doors:** Four customers replied to the survey and confirmed the installation of the ENERGY STAR door(s), resulting in a 100% verification rate. Two respondents uploaded photos of their doors.
- **LEDs:** 135 customers replied to the survey question regarding LED installation, 132 confirmed the installation of LED light bulbs, resulting in a 98% verification rate. Thirty-two respondents uploaded photos to verify the installation of their LEDs further.
- **Advanced Power Strips:** 97 customers replied to the survey question regarding advanced power strip installation, and 95 confirmed installations of one or more advanced power strip through the Channel, resulting in a 98% verification rate. Sixty-two percent of power strips were installed with entertainment devices plugged into them. Other respondents indicated they were using the power strips for home office purposes (27%), had not installed them (4%), or could not recall how they were using them (6%). 27 respondents uploaded photos to verify the installation and end-use of their advanced power strips further.
- **Ceiling Insulation:** 40 customers replied to the survey question regarding ceiling insulation and confirmed the installation, resulting in a 100% verification rate. ADM did not request photo uploads to verify the installation of this measure.
- **ENERGY STAR Variable-Speed Pool Pumps:** Due to the low quantity of installations in PY2021, ADM did not survey any participants that received inducements for pool pumps. A 100% verification rate was assigned for this measure.
- **Faucet Aerator:** Six customers replied to the survey and confirmed the installation of the faucet aerator(s), resulting in a 100% verification rate. Two respondents uploaded photos to verify the installation of their aerators further.
- **Low Flow Showerhead:** Seven customers replied to the survey and confirmed the installation of the low flow showerhead(s), resulting in a 100% verification rate. Three respondents uploaded photos to verify the installation of their showerheads further.

4.3.6.3 Positive Energy – New Home Construction

We conducted 20 on-site verification visits for the PE-NHC Channel. OG&E provided significant support, notifying site verification participants, and identifying the most

appropriate contact at sites where it was needed. During these visits we verified the implementation status of the measures, verified that the measures were installed, that they were installed correctly, and were functioning correctly. Photographs were taken of most of the installed measures. Data collected at each site focused on obtaining more specific information regarding the characteristics of the home where the measures were implemented.

4.4 Gross Savings Summary and Findings

4.4.1 Residential Solutions

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

- Single family Measures:
  - ENERGY STAR Windows
  - Faucet Aerators
  - Low Flow Showerheads
  - LEDs
  - Advanced Power Strips
  - Ceiling Insulation
  - ENERGY STAR Doors
  - ENERGY STAR Variable-Speed Pool Pumps
- Multifamily Measures:
  - Low Flow Showerheads
  - Aerators
  - LEDs
  - Advanced Power Strips

ADM verified measure-level savings per the AR TRM guidelines and obtained results that differed from CLEAResult's calculations. Table 4-28, Table 4-29, and

Table 4-30 present the verified *ex post* savings results of the PY2021 Residential Solutions Channel by measure and market segment.

The Channel level *ex ante* savings differ from *ex post* verified savings primarily because of the advanced power strips measure. The main cause of the realization rate is from the "Percent Entertainment" value ADM verified through its customer *ex ante* used 81% for "Percent Entertainment", while *ex post* used 62%.

Table 4-28: SF and MF Combined Savings Summary

Measure	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
Advanced Power Strips	1,153,854	1,087,570	94%	125	128	102%
Aerator	342,331	330,967	97%	36	34	97%
Attic Insulation	535,420	537,025	100%	334	339	101%
ENERGY STAR Doors	4,828	4,827	100%	4	4	100%
ENERGY STAR Pool Pumps	99,292	108,865	110%	20	23	114%
ENERGY STAR Window	192,366	192,425	100%	149	149	100%
LEDs	1,457,461	1,445,196	99%	210	209	99%
Showerhead	943,610	953,209	101%	98	99	100%
Total	**4,729,162**	**4,660,084**	**99%**	**976**	**986**	**101%**

Table 4-29: Single Family Savings Summary by Measure for PY2021

Measure	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
Advanced Power Strips	399,101	337,023	84%	47	39	83%
Aerator	33,096	17,644	53%	3	2	53%
Attic Insulation	535,420	537,025	100%	334	339	101%
ENERGY STAR Doors	4,828	4,827	100%	4	4	100%
ENERGY STAR Pool Pumps	99,292	108,865	110%	20	23	116%
ENERGY STAR Window	192,366	192,425	100%	149	149	100%
LED	667,625	654,817	98%	84	82	98%
Showerhead	65,469	65,456	100%	7	7	100%
Total	**1,997,197**	**1,918,082**	**96%**	**648**	**645**	**100%**

Table 4-30: Multifamily Savings Summary by Measure for PY2021

Measure	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
Advanced Power Strips	754,753	750,547	99%	78	89	114%
Aerator	309,235	313,323	101%	32	323	101%
LEDs	789,835	790,378	100%	126	126	100%
Showerhead	878,142	887,753	101%	91	92	101%
Total	**2,731,965**	**2,742,001**	**100%**	**328**	**340**	**104%**

Table 4-31, Table 4-32, and Table 4-33 outline the verified *ex post* lifetime savings by measure for the Residential Solutions Channel by market segment.

Table 4-31: SF and MF Combined Lifetime Savings Summary for PY2021

Measure	Estimated Useful Life (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Advanced Power Strips	10	10,875,699
Aerators	10	3,309,674
Attic Insulation	20	10,740,496
ENERGY STAR Doors	20	96,542
ENERGY STAR Pool Pumps	10	1,088,650
ENERGY STAR Window	20	3,848,500
LEDs	19	27,458,716
Showerheads	10	9,532,089
Total		**66,950,366**

Table 4-32: Single family Lifetime Savings Summary by Measure for PY2021

Measure	Estimated Useful Life (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Advanced Power Strips	10	3,370,227
Aerator	10	176,444
Attic Insulation	20	10,740,496
ENERGY STAR Doors	20	96,542
ENERGY STAR Pool Pumps	10	1,088,650
ENERGY STAR Window	20	3,848,500
LEDs	19	654,562
Showerhead	10	12,441,527
Total		**32,416,948**

Table 4-33: Multifamily Gross Lifetime Savings Summary by Measure

Measure	Estimated Useful Life (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Aerator	10	3,133,230
Advanced Power Strips	10	7,505,472
LEDs	19	15,017,189
Showerheads	10	8,877,527
Total		**34,533,418**

4.4.2 LivingWise® Schools Outreach

ADM reviewed the tracking data for a census of kits and verified there were no duplicate project data errors. ADM verified inputs for savings calculations and provided verified *ex post* savings per AR TRM. The savings from the measures below were verified and matched to the calculations provided by the TPI.

- Faucet Aerators
- Low-flow showerheads
- Omni-directional LEDs

Table 4-34 presents the verified *ex post* energy-savings results of the PY2021 LivingWise® Schools Outreach Channel. The individual measure sections below list factors that impacted savings. Table 4-35 below outlines the estimate useful life and the verified *ex post* lifetime energy-savings by measure for the LivingWise® Schools Outreach Channel. Table 4-36 shows the per-measure *ex post* savings and in-service rates (ISR) for the LivingWise® Schools Outreach kit components.

Table 4-34: LivingWise® Schools Outreach Savings Summary

Ex Ante Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
1,287,855	1,239,782	96%	148	142	96%

Table 4-35: Lifetime Savings Summary by Measure for PY2021

Measure	Estimated Useful Life (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Omni-directional LEDs	19	7,496,255
Faucet Aerator	10	1,619,625
Low-Flow Showerhead	10	6,832,794
Total		**15,948,674**

Table 4-36: Ex Post Savings Summary Per Unit Measure

Measure	ISR	*Ex Post* Energy Savings (kWh)	*Ex Post* Demand Reductions (kW)
Omni-directional LED 1	54%	16	0.0022
Omni-directional LED 2	54%	16	0.0022
Faucet Aerator (kitchen)	33%	5	0.0005
Faucet Aerator (bathroom)	32%	8	0.0009
Low-Flow Showerhead	41%	57	0.0059

4.4.2.1 Omni-directional LEDs

The difference in savings between *ex ante* and *ex post* is explained by the change in ISR calculation from 2020 to 2021. *Ex ante* calculations use 59% ISR from 2020, whereas *ex post* use the verified ISR of 54% from the 2021 student survey.

4.4.2.2 Faucet Aerators

ADM was able to determine one difference between *ex ante* and *ex post* savings. *Ex ante* used 214 gallons saved per year for bathroom aerators and 135 gallons saved per kitchen aerator. AR TRM v8.2 stipulates 599 gallons per year for a faucet aerator with 1.0 gpm flow and 359 gallons per year for a faucet aerator with 1.5 gpm flow.

4.4.2.3 Low-Flow Showerheads

ADM was able to determine one difference between *ex ante* and *ex post* savings. *Ex ante* used 1,393 gallons saved per year. AR TRM v8.2 stipulates 3,053 gallons per year for a 1.5 gpm low-flow showerhead.

4.4.3 Residential HVAC Replacement and Tune-up Channel

Table 4-37 outlines the verified *ex post* energy savings and demand reductions per measure for the Residential HVAC Replacement and Tune-up Channel.

Table 4-38 outlines the *ex post* lifetime savings for the Residential HVAC Replacement and Tune-up Channel.

Table 4-37: Savings Summary for Residential HVAC Replacement and Tune-up Channel

Measure	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
Air Infiltration	614,830	622,572	101%	42	43	102%
Duct Sealing	11,867,638	11,787,061	99%	1,074	1,067	99%
HVAC Tune-up	2,902,834	2,892,127	100%	1,521	1,523	100%
Replace On Burnout	711,282	836,693	118%	146	171	117%
Total	**16,096,584**	**16,138,453**	**100%**	**2,783**	**2804**	**101%**

Table 4-38: Residential HVAC Replacement and Tune-up Channel Lifetime Savings Summary

Measure	Estimated Useful Life (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Air Infiltration	11	6,848,293
Duct Sealing	18	212,167,089
HVAC Tune-up	6	18,453,144
Replace On Burnout	20	17,131,539
Total		**254,600,065**

There are two unique estimated useful lives for Tune-up measures. Tune-up measures that include a refrigerant adjustment receives an estimated useful life of 10 years and a tune-up that does not include refrigerant adjustments receives an estimated useful life of 3 years. For HVAC replacement measures there are three unique estimated useful lives: Air Conditioners 19 years, GSHPs 25 years, and ASHPs 16 years.

4.4.4 Consumer Products

ADM performed an invoice review to verify all claimed measures in the Consumer Products Channel had matching invoices. ADM found nearly 100% of the claimed measure had matching invoices.

Table 4-39 outlines the verified *ex post* energy savings and demand reductions for the Consumer Products Channel. The overall realization rate for energy savings and demand reduction was 113% and 128%, respectively. However, ADM found high variability between measures in realization rates. Detailed descriptions of differences in the savings calculations are in the measure level findings below. Table 4-40 outlines the *ex post* lifetime savings for the Consumer Products Channel.

Table 4-39: Gross Savings Summary for Consumer Products

Participation Path	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
Food Bank - Omni-directional LEDs	8,219,274	8,856,430	108%	1,103	1,374	124%
Retail - Directional Lamps	2,838,518	3,349,472	118%	381	520	136%
Retail - Omni-directional and Decorative LEDs	28,362,554	32,871,618	116%	3,807	5,098	134%
Advanced Power Strips	1,584,441	1,410,152	89%	180	160	89%
Window Air Conditioners	396,415	389,226	98%	464	464	100%
Room Air Purifiers	254,971	218,567	86%	29	25	86%
Bathroom Exhaust Fan	19,192	16,251	85%	2	2	83%
Water Cooler	221,628	201,684	91%	25	23	91%
Total	**41,896,993**	**47,313,401**	**113%**	**5,992**	**7,665**	**128%**

Table 4-40: Gross Lifetime Savings Summary for Consumer Products

Bulb Type	Estimated Useful Life (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Food Bank - Omni-directional LEDs	19	168,272,179
Retail - Directional Lamps	19	63,639,959
Retail - Omni-directional and Decorative LEDs	19	624,560,746
Advanced Power Strips	10	14,101,525
Window Air Conditioners	10.5	4,086,872
Room Air Purifiers	9	1,967,105
Bathroom Exhaust Fan	19	308,772
Water Cooler	10	2,016,844
Total		**878,954,001**

4.4.4.1 LED Lamps

Three primary factors contributed to the high realization rates for LEDs. The first two factors are the adjustment to Hours and CF inputs explained in Cross-Sector Sales Adjustments. The third factor only affected the upstream path. The *ex ante* calculations

assigned a high baseline wattage to some reflector lamps. The affected reflector lamps are BR40, PAR16, PAR38, and R14. The AR TRM assigns default baseline wattages for pre-EISA incandescent equivalent lamps (Table 4-15 above). ADM verified the manufacturer incandescent equivalent wattage of all misclassified lamp models. The BR40 lamps (6 distinct models) incandescent equivalent wattage was 65 and 75 watts and was assigned 40 $Watts_{base}$. The PAR16 lamps (2 distinct models) incandescent equivalent wattage was determined to be 35 and 40 watts and was assigned 40 $Watts_{base}$. The PAR38 lamps (4 distinct models) incandescent equivalent wattage were determined to be 45 and 70 watts and were assigned 40 (determined to be 45 watts), 55 (determined to be 70 watts), and 70 $Watts_{base}$ (correctly determined to be 70 watts). The R14 lamp (2 distinct models) equivalent incandescent wattage was determined to be 25 watts and was assigned 20 $Watts_{base}$.

Additionally, as explained in section 4.3.4.1 of this report, we applied an ISR of 90% to the food bank lamps.

4.4.4.2 Advanced Power Strip

The TPI used AR TRM for energy savings calculations, except an ISR wasn't applied to the energy savings and demand reductions. ADM applied the ISR from Tier 2 APS to the savings calculations.

4.4.4.3 Window Air Conditioners

With a realization rate of 98% and savings attributing to less than 1% of total channel savings, window air conditioners had minimal effect on the overall channel realization rate.

4.4.4.4 Room Air Purifiers

The TPI's *ex ante* energy-savings calculations used CADRs based on the CADR range defined in the AR TRM table 190, whereas ADM used the CADR identified in the ENERGY STAR database. The demand savings realization rate varies from the energy savings realization rate due to differences in rounding. The *ex ante* data provides demand savings to three decimal places, whereas ADM calculated savings to four decimal places.

4.4.4.5 Bathroom Exhaust Fan

The TPI used one deemed *ex ante* savings value from Table 2-94 in the 2016 PA TRM for all units. ADM used the $\eta_{efficient}$ and CFM of the fans listed in the ENERGY STAR database to calculate energy and demand savings. The difference in realization rate is, therefore, due to more accurate inputs.

4.4.4.6 Water Cooler

Two primary factors contributed to the realization rate difference for Water Coolers The TPI used deemed *ex ante* savings values from the default table in the Illinois TRM v7.0. ADM used the kWh_{ee} of the water coolers listed in the ENERGY STAR database to calculate energy and demand savings. The difference in realization rate is, therefore, due to more accurate inputs. The second factor that decreased the realization rate is the introduction of two additional models (Model 601141 and 601142) that had significantly higher kWh_{ee} than other models distributed. These water coolers accounted for 39% of all water coolers distributed.

4.4.5 Positive Energy – New Home Construction (PE-NHC)

For PY2021, ADM analyzed a sample of participating homes and calculated realization rates, energy savings, and demand savings for each sampling strata. Results for the homes included in the M&V sample are shown in Table 4-41.

Table 4-41: Ex Ante and Ex Post Savings per Strata

Stratum	kWh Threshold	Number of Sampled Homes	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	*Ex Ante Demand Reductions (kW)*	*Ex Post Demand Reductions (kW)*
1	0	23	654,698	655,751	260	260
2	1,500	20	649,495	621,678	253	244
3	3,000	13	406,986	476,647	57	67
Total		**56**	**1,711,179**	**1,754,076**	**570**	**571**

4.4.5.1 Sampling Plan

ADM was able to verify energy model inputs for a sample of homes. The sampling approach was able to achieve sampling criteria requirements. See below for the PE-NHC evaluation sampling strategy.

Table 4-42: Sampling Plan

Stratum	kWh Threshold	*Ex Ante* Energy Savings (kWh)	CV	Measures	Number of Sampled Homes	Relative Precision	Absolute Precision
1	0	654,698	0.40	565	23	13.4%	87,979
2	1,500	649,495	0.40	357	20	14.3%	92,847
3	3,000	406,986	0.40	83	13	16.8%	68,209
Total		**1,711,179**		**1,005**	**56**	**8.47%**	**172,557**

4.4.5.2 Verified Savings

The strata savings totals are found by multiplying the established stratum realization rates by the *ex ante* stratum totals. The Channel savings and reductions per strata are outlined in Table 4-43 and Table 4-44 below.

Table 4-43: Gross Program Energy Savings

Stratum	kWh Threshold	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Realization Rate
1	0	654,698	655,751	100%
2	1,500	649,495	621,678	96%
3	3,000	406,986	476,647	117%
Total		**1,711,179**	**1,754,076**	**103%**

Table 4-44: Gross Program Demand Reduction

Stratum	kWh Threshold	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Realization Rate
1	0	260	260	100%
2	1,500	253	244	96%
3	3,000	57	67	119%
Total		**570**	**571**	**100%**

4.5 Net Savings Summary and Findings

The following section summarizes the methodology and results of OG&E's HEEP net savings methodology and findings for PY2021.

4.5.1 Residential Solutions

4.5.1.1 Net Savings Methodology

ADM administered a survey and asked participants a series of questions on their financial ability to implement the measures without inducements, plans to implement the project before learning of the rebate, the likelihood of implementing the measure in the absence of the Channel, and the impact of the Channel on the timing of the project.

Several criteria were used for determining the likelihood that a customer was a free rider. The methodology for determining free ridership differed for direct install measures (advanced power strips, faucet aerators, Omni-directional LEDs, and low-flow showerheads) and "major measures" (ENERGY STAR windows, ENERGY STAR doors, ENERGY STAR pool pumps, and ceiling insulation).

For the “major measures,” the first criterion was based on responses to a question regarding a customer’s financial ability to pay for efficient measures. It was assessed with the following question:

- FR1: Would you have been able to make the financial investment to complete the [MEASURE] project if the rebate was not available?

Respondents who indicated that they were not able to afford the efficiency measure without the financial support provided by the Channel were deemed not to be free riders. For all others, a free ridership score was assigned based on a combination of their reported prior plans to implement the measure, the reported likelihood they would have installed one without the Channel, and the reported effect of the Channel on the likely timing of the installation.

The presence of plans before involvement with the Channel was assessed through the following questions:

- FR2: Before learning about the rebate, did you have plans to purchase or install the [MEASURE] that you received a rebate for?
- FR3: Did you [INSTALL/COMPLETE] [A MORE EFFICIENT] [MEASURE] than you would have if you had not received a rebate through the [PROGRAM]?

Respondents who answered “Yes” to the first and “No” to the second question were assigned a plans score of 1. All other respondents were assigned a prior plans score of 0.

The respondents’ stated likelihood of implementing the measure in the absence of the Channel was assessed through the following two questions:

- FR4: Using a scale where 1 means not at all likely and 5 means very likely, how likely is it that you would have [INSTALLED/COMPLETED] the same [MEASURE] if the rebate was not available?
- FR5: [IF HAD AN ASSESSMENT AND MEASURE WAS RECOMMENDED DURING IT] Using a scale where 1 means not at all likely and 5 means very likely, how likely is it that you would have [INSTALLED/COMPLETED] the same [MEASURE] if it was not recommended [through the home energy assessment/by your service provider]?

Based on the responses to the likelihood question, the following point values were assigned to each of the responses:

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

The likelihood score was based on the lowest-rated likelihood provided to the two questions. The Program effect on the timing is assessed with the following two questions:

- FR6: Did you [INSTALL/COMPLETE] the [MEASURE] sooner than you would have if the [PROGRAM] rebate had not been available?
- FR7: When might you have installed/completed the same [MEASURE] if you had not participated in the [PROGRAM]?

The information provided in response to these questions was used in the following manner:

- If the respondent stated that they would have installed the measure in more than one year, the preliminary free ridership score was multiplied by 0, resulting in a final free ridership score of 0. This is consistent with the AR TRM definition of a free rider as someone who would have implemented a program measure within one year of when it was installed through a program.
- If the respondent stated that they would have installed the measure in 6 months to one year, the preliminary free ridership score was multiplied by 0.25.
- If the respondent stated that they would have installed the measure within 6 months of when it was installed, the preliminary free ridership score was multiplied by .5.
- If the respondent states that they did not install the measure sooner because of the program, the preliminary free ridership score was not adjusted.

Figure 4-1 summarizes the calculation of the free ridership score for “major measures.” Participants who report that they did not have the financial ability to pay for the efficiency improvement were assigned a free ridership score of 0. For all other participants, the free ridership score was based on the average of the plans score and the likelihood of installing the measure without the Program, multiplied by the timing score.

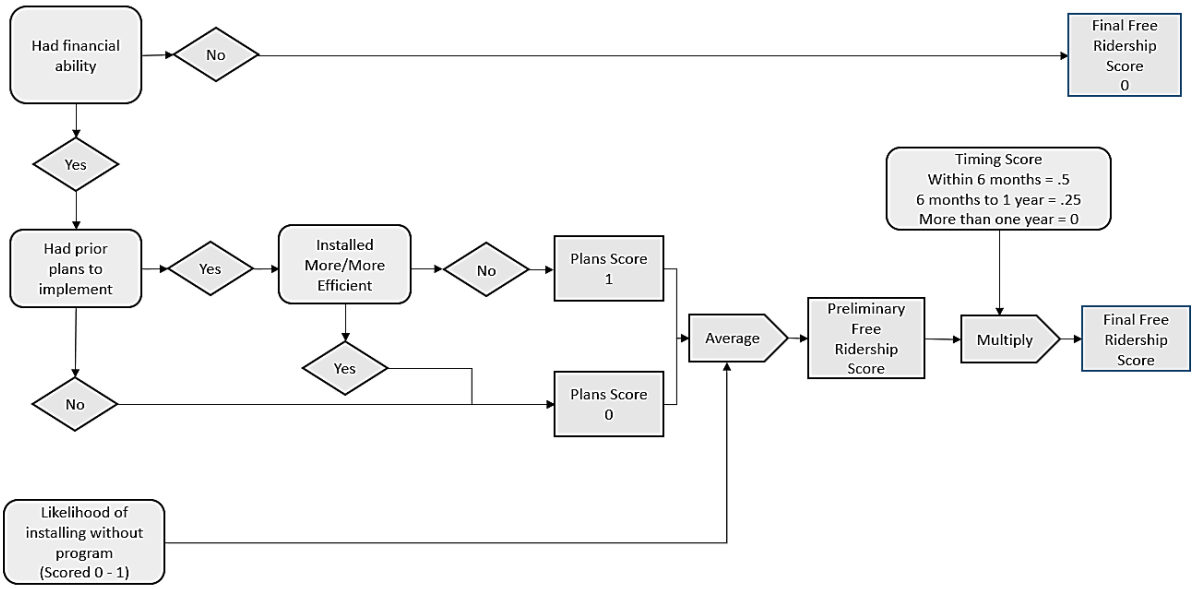


Figure 4-1: Free Ridership Scoring for "Major Measures"

The approach to estimating free ridership for the direct install measures was similar to the approach used for major measures but differed in three regards. First, because direct install items are relatively low-cost items, the financial ability was less likely to be a factor for participants. Second, because of their relatively low cost and the ability to easily self-install the items, it was unlikely that participants would have had plans to install the equipment for an extended period. As such, the free ridership methodology did not factor in financial ability or the Program's impact on the projects' timing. Third, since they receive multiple units from the Program, the respondents' plans may have been to install fewer than the total number received through the Program. Consequently, the plans score was factored by a quantity adjustment based on the number of units the respondent reports would have been installed without the Program.

The questions for assessing prior plans were as follows.

- DIFR1: Did you have plans to install the [MEASURE] before you learned you could receive them for free through [PROGRAM]?
- DIFR2: [For Advanced Power Strips] Just to be clear, did you have plans to purchase an energy-saving power strip or plans to purchase a standard power strip?
- DIFR3: Had you ever purchased & installed [MEASURE] before you received them for free through the program?

Respondents who say yes to the first and third question and yes to the second question, as applicable, are assigned a prior plans score of 1. All other respondents are assigned a score of 0.

A quantity adjustment score was calculated as a percent of the items the customer would have installed if they were not provided for free through the Program based on responses to the following questions.

- DIFR4: If you had not received them for free through the [PROGRAM], would you have purchased & installed all of the [MEASURE], some of them, or none of them?
- DIFR5: How many of the [MEASURE_QTY] [MEASURE] that you received for free would you have purchased & installed if they had not been provided through the [PROGRAM]?

A likelihood of installing the measure without the Program score was calculated based on the response to this question.

- DIFR6: Using a scale where 1 means not at all likely and 5 means very likely, how likely is it that you would have installed the same [MEASURE] within 12 months of when you received them if you had not received them for free?

Based on the responses to the likelihood question, the following point values were assigned to each of the responses:

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

Customers that indicate they did not have plans to install the measure were assigned a free ridership score of zero, regardless of their likelihood score. The direct install free ridership score is summarized in Figure 4-2.

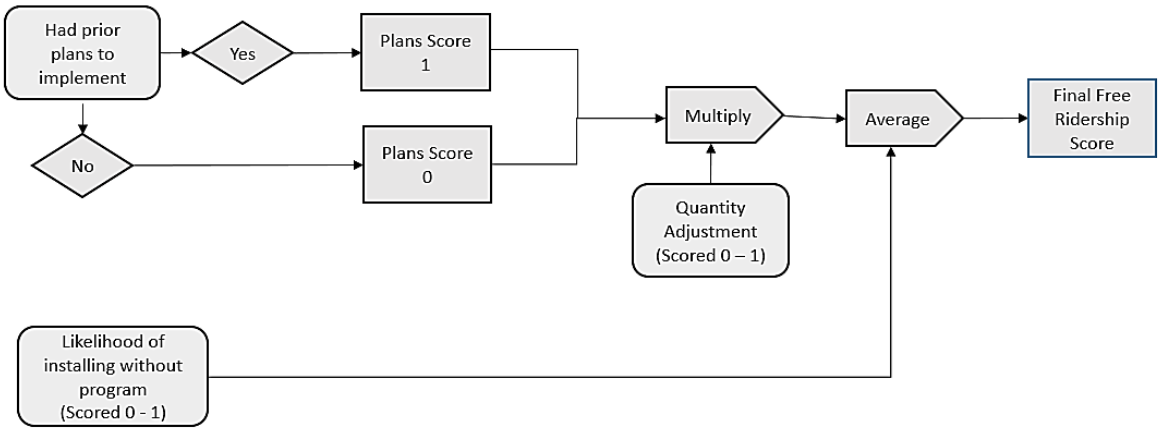


Figure 4-2: Free Ridership Scoring for Direct Install Measures

The participant survey did not include questions related to additional energy efficiency purchases made due to the customers' experience with the Channel to calculate spillover.

We did not inquire with participants regarding spillover for two primary reasons: past survey efforts resulting in minimal attributable spillover and the additional time and administrative burden on customers to gather accurate and usable spillover information. In both 2019 and 2020, spillover impacted the RSOL Channel level NTG ratio by less than one percent and had less than a one percent impact on HEEP net savings.

4.5.1.2 Net Savings Results

ADM administered surveys to 11 multifamily and 251 single family decision-makers who participated in the RSOL Channel.

ADM used the methodology described in Section 4.5.1.1 to determine free ridership ratios for advanced power strips, ceiling insulation, ENERGY STAR Windows, and LEDs.

Because of limited participation and survey response, ADM assigned free ridership scores to faucet aerators, ENERGY STAR Pool Pumps, ENERGY STAR Doors and low flow showerheads.

We based scores for faucet aerators, ENERGY STAR Pool Pumps, and low flow showerheads on a literature review (see Table 4-45, Table 4-46, and Table 4-47).

ADM assigned the free ridership score for ENERGY STAR Windows to ENERGY STAR Doors as the same TRM method savings calculation is applied for both measures.

Table 4-45 Faucet Aerator Free Ridership Literature Review

Reference Number	Free ridership	Spillover	Net-to-Gross	Program Year	State
1	19%	0%	81%	2015	IN
2	13%	0%	87%	2016	NC
3	7%	0%	93%	2016	NC
Average	13%	0%	87%		

1. https://www.indianamichiganpower.com/global/utilities/lib/docs/info/projects/IMDemandSideManagement/44841%20Jon%20C.%20Walter%20Direct%20Testimony%20&%20Attachments%20Vol%20II.pdf
2. http://www.researchintoaction.com/wp-content/uploads/2018/12/P421-Duke-SEWKP-DEP-DEC-2016-PY-Evaluation-Report.pdf
3. https://dms.psc.sc.gov/Attachments/Matter/01a3c15f-c2bf-440c-93b3-0b4d3c7dfe60

Table 4-46 ENERGY STAR Pool Pumps Free Ridership Literature Review

Reference Number	Free ridership	Spillover	Net-to-Gross	Program Year	State
1	7%	7%	100%	2017	Toronto, ON
2	0%	7%	107%	2015	MO
3	5%	0%	95%	2018	TX
4	30%	0%	70%	2017	NV
5	20%	0%	80%	2016	CO
Average	12%	3%	90%		

1. http://www.ieso.ca/-/media/Files/IESO/Document-Library/conservation/EMV/2017/2017-Swimming-Pool-Efficiency-Program-Evaluation-Report.pdf?la=en
2. https://energy.mo.gov/sites/energy/files/ameren-missouri---py15-ep-evaluation.pdf
3. https://www.sanantonio.gov/Portals/0/Files/Sustainability/STEP/FY2018Annual.pdf
4. http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2015_THRU_PRESENT/2016-7/13015.pdf
5. https://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/CO-DSM/Residential-Pool-Pumps-File.pdf

Table 4-47 Low Flow Showerhead Free Ridership Literature Review

Reference Number	Free ridership	Spillover	Net-to-Gross	Program Year	State
1	12%	0%	88%	2016	WI
2	25%	0%	75%	2015	IN
3	2%	0%	98%	2017	IN
4	16%	0%	84%	2016	NC
Average	14%	0%	86%		

1. https://www.focusonenergy.com/sites/default/files/Evaluation%20Report%20-%202016%20Appendices.p
2. https://www.indianamichiganpower.com/global/utilities/lib/docs/info/projects/IMDemandSideManagement/44841%20Jon%20C.%20Walter%20Direct%20Testimony%20&%20Attachments%20Vol%20II.pdf
3. https://iurc.portal.in.gov/_entity/sharepointdocumentlocation/86b05142-05c8-e811-8143-1458d04eaba0/bb9c6bba-fd52-45ad-8e64-444aef13c39?file=43827DSM8%20IM%20WP%20WP%20JCW%201%20Residential%20100418.pdf
4. http://www.researchintoaction.com/wp-content/uploads/2018/12/P421-Duke-SEWKP-DEP-DEC-2016-PY-Evaluation-Report.pdf

Table 4-48 summarizes the measure level free ridership results for the single-family path.

Table 4-48: RSOL SF Measure Level Free Ridership

Measure	Energy Free Ridership	Demand Free Ridership	Free Ridership (kWh)	Free Ridership (kW)
Advanced Power Strips	8%	8%	28,486	3
Aerators	13%	13%	4,302	0.24
Ceiling Insulation	33%	30%	174,586	102
ENERGY STAR Doors	51%	51%	2,460	2
ENERGY STAR Pool Pumps	12%	12%	12,233	3
ENERGY STAR Windows	51%	51%	98,036	76
LEDs	38%	37%	252,499	31
Low Flow Showerheads	14%	14%	9,165	2

Table 4-49 summarizes the measure level free ridership results for the multifamily path.

Table 4-49: RSOL MF Measure Level Free ridership

Measure	Energy Free Ridership	Demand Free Ridership	Free Ridership (kWh)	Free Ridership (kW)
Advanced Power Strips	0%	0%	0	0
LEDs	13%	13%	105,773	17
Aerators	0%	0%	0	0
Showerheads	0%	0%	0	0

Table 4-50 and Table 4-51 summarize the results of the net savings analysis.

Table 4-50: Net Energy Savings for HEEP RSOL

Component	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Free Ridership (kWh)	*Ex Post* Net Energy Savings (kWh)	Net-to-Gross
Multifamily	2,731,965	2,742,001	105,773	2,636,228	96%
Single Family	1,997,197	1,918,082	714,331	1,341,436	70%
Total	**4,729,162**	**4,660,084**	**820,104**	**3,977,665**	**85%**

Table 4-51: Peak Demand Reductions for HEEP RSOL

Component	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Free Ridership (kW)	*Ex Post* Net Demand Reductions (kW)	Net-to-Gross
Multifamily	328	340	17	323	95%
Single family	648	645	219	426	66%
Total	**976**	**986**	**236**	**749**	**76%**

Table 4-52, Table 4-53, and Table 4-54 show the net lifetime energy savings for the Residential Solutions Channel by measure and market segment.

Table 4-52: SF and MF RSOL Combined Net Lifetime Savings Summary

Measure	Estimated Useful Life (yr)	Net Lifetime Energy Savings (kWh)
Advanced Power strips	10	10,590,835
Aerator	10	3,286,737
Attic Insulation	20	7,238,306
ENERGY STAR Doors	20	47,341
ENERGY STAR Pool Pumps	10	954,528
ENERGY STAR Window	20	1,887,187
LEDs	19	20,743,595
Showerhead	10	9,440,450
Total		**54,188,980**

Table 4-53: SF RSOL Net Lifetime Savings Summary

Measure	Estimated Useful Life (yr)	Net Lifetime Energy Savings (kWh)
Advanced Power strips	10	3,085,363
Aerator	10	153,507
Attic Insulation	20	7,238,306
ENERGY STAR Doors	20	47,341
ENERGY STAR Pool Pumps	10	954,528
ENERGY STAR Window	20	1,887,187
LEDs	19	7,736,088
Showerhead	10	562,923
Total		**21,665,244**

Table 4-54: MF RSOL Net Lifetime Savings Summary

Measure	Estimated Useful Life (yr)	Net Lifetime Energy Savings (kWh)
Aerators	10	3,133,230
Advanced Power Strips	10	7,505,472
LEDs	19	13,007,507
Showerheads	10	8,877,527
Total		**32,253,735**

4.5.2 LivingWise® Schools Outreach

The net-to-gross ratio was 100% for LivingWise® Schools Outreach. Students are not involved in the decision to participate in the Channel. The teachers have complete control over participation. Furthermore, it is unlikely that students would be purchasing the measures included in the kits. Thus, we assign a net-to-gross ratio of 100% to the LivingWise® Schools Outreach Channel. Table 4-55 and Table 4-56 outlines the net energy savings and net demand reduction results for LivingWise® Schools Outreach.

Table 4-57 shows the net lifetime energy savings for the LivingWise® Schools Outreach Channel by measure.

Table 4-55: Net Energy Savings for HEEP LivingWise® Schools Outreach

Ex Ante Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Free Ridership	Spillover	Net Energy Savings (kWh)	Net-to-Gross
1,287,855	1,239,782	0%	0%	1,239,782	100%

Table 4-56: Demand Reductions for HEEP LivingWise® Schools Outreach

Ex Ante Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Free Ridership	Spillover	Net Demand Reductions (kW)	Net-to-Gross
148	142	0%	0%	142	100%

Table 4-57: LivingWise® Schools Outreach Net Lifetime Savings Summary

Measure	Estimated Useful Life (yr)	Net Lifetime Energy Savings (kWh)
ENERGY STAR Omni-Directional LEDs	19	7,496,255
Faucet Aerators	10	1,619,625
Low-Flow Showerhead	10	6,832,794
Total		**15,948,674**

4.5.3 Residential HVAC Replacement and Tune-up Channel

4.5.3.1 Net Savings Methodology

ADM administered a survey to ask decision-makers that participated in the OG&E Residential HVAC Replacement and Tune-up Channel a series of questions on their financial ability to implement the measure without Channel inducements, plans to complete the project before learning of the Channel rebate, the likelihood of completing the project in the absence of the Channel, and the impact of the Channel on the timing of the project.

Several criteria were used for determining the likelihood that a customer was a free rider. The first criterion was based on a customer's financial ability to pay for efficient measures. It was assessed with the following question:

- FR1: Would you have been able to make the financial investment to complete the [MEASURE] project if the rebate was not available?

Respondents who indicated that they were not able to afford the efficiency measure without the financial support provided by the Channel were deemed not to be free riders. For all others, a free ridership score was assigned based on a combination of their reported prior plans to implement the measure, the reported likelihood they would have installed one without the Channel, and the reported effect of the Channel on the likely timing of the installation.

The presence of plans before involvement with the Channel was assessed through the following questions:

- FR2: Before learning about OG&E's HVAC program, did you have plans to complete the HVAC improvements that you received a discount or rebate for through this program?
- FR3: Did you [INSTALL/COMPLETE] [A MORE EFFICIENT/MORE] [MEASURE] than you would have if you had not received a rebate through the [PROGRAM]?

Respondents who answered "Yes" to the first and "No" to the second question were assigned a plans score of 1. All other respondents were assigned a prior plans score of 0.

The respondents' stated likelihood of implementing the measure in the absence of the Channel was assessed through the following question:

- FR4: Using a scale where 1 means not at all likely and 5 means very likely, how likely is it that you would have [INSTALLED/COMPLETED] the same [MEASURE] if the rebate was not available?

Based on the responses to the likelihood question, the following point values were assigned:

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

The Channel effect on the timing was assessed with the following two questions:

- FR6: Did you [INSTALL/COMPLETE] the [MEASURE] sooner than you would have if the [PROGRAM] rebate had not been available?
- FR7: When might you have installed/completed the same [MEASURE] if you had not participated in the [PROGRAM]? Would you say …

The information provided in response to these questions was used in the following manner:

- If the respondent stated that they would have installed the measure in more than one year, the preliminary free ridership score was multiplied by 0, resulting in a final free ridership score of 0. This is consistent with the AR TRM definition of a free rider as someone who would have implemented a program measure within one year of when it was installed through a program.

- If the respondent stated that they would have installed the measure in 6 months to one year, the preliminary free ridership score was multiplied by .25.
- If the respondent stated that they would have installed the measure within 6 months of when it was installed, the preliminary free ridership score was multiplied by .5.
- If the respondent states that they did not install the measure sooner because of the program, the preliminary free ridership score was not adjusted.

A service provider free ridership score was developed for customers who completed HVAC projects based on the participant and service provider survey responses.

Program education and outreach efforts may influence service providers selling of efficient equipment in ways that are not apparent to customers. To account for this, the assessment of free ridership for HVAC equipment included a service provider influence component. Specifically, participants were asked:

- FR8: Did the service provider that you worked with provide you with information, marketing material, or a recommendation to [INSTALL/COMPLETE] the energy efficient [MEASURE]?
- FR9: On a scale where 1 means “not at all influential and 5 means “very influential,” how influential was the information, marketing material, or recommendation provided by this service provider in your decision to [INSTALL/COMPLETE] the [MEASURE]?

For respondents who answered “Yes” to the first question and rated the second question as greater than 4, a service provider influence score was developed from service provider responses to a survey of service providers that complete projects through the Channel.

Specifically, for participants who rated the contractors' marketing material or recommendation as greater than 4, the participants' free ridership score was equal to the minimum of the free ridership score developed based on the participant responses or the contractor responses. The contractor free ridership score used for this was either the free ridership score for the contractor that completed the participants' project or the average contractor free ridership score if the participants' contractor did not respond to the survey.

To determine the influence of the Channel on the trade ally’s approach to and level of marketing energy efficient equipment, the evaluation team asked the following question:

- FR1: On a scale of 0 to 10 where 0 is “not at all important” and 10 is “extremely important,” how important was this Channel, including the rebates

and information provided through the Channel, in influencing your level of marketing to OG&E customers during 2021?

If the trade ally's answer to FR1 was greater than 2, then the survey administrator asked the following question:

- FR2: Please briefly describe the most significant ways in which this Channel influenced your level of marketing and selling of energy efficient items to customers during 2021.

The survey asked the following question to determine the effect on the types of equipment and services offered:

- FR3: Thinking about the projects that you completed as part of this Channel in 2021, did the availability of inducements from the Channel influence the type, quantity, or efficiency level of the items that you recommended to customers? In other words, would you have made different recommendations if the Channel were not available?

If the trade ally answers "Yes" to FR3, then the respondent was prompted with the following question:

- FR4: Please briefly describe the most significant ways in which this Channel influenced your decision to recommend energy efficient items to customers during 2021.
- To calculate the trade ally's free ridership score the evaluation team will subtract 1 from the answer of C1 in percentage form. If the trade ally answered "Yes" to question C3, the percentage from C1 was reduced by 50%.

To calculate the trade ally's free ridership score, the evaluation team subtracted 1 from the answer of C1 in percentage form. If the trade ally answered "Yes" to question FR3, the percentage from FR1 would be reduced by 50%.

The following table presents examples of how the free ridership score was determined. Figure 4-3 summarizes the free ridership scoring of Residential HVAC Replacement and Tune-up projects.

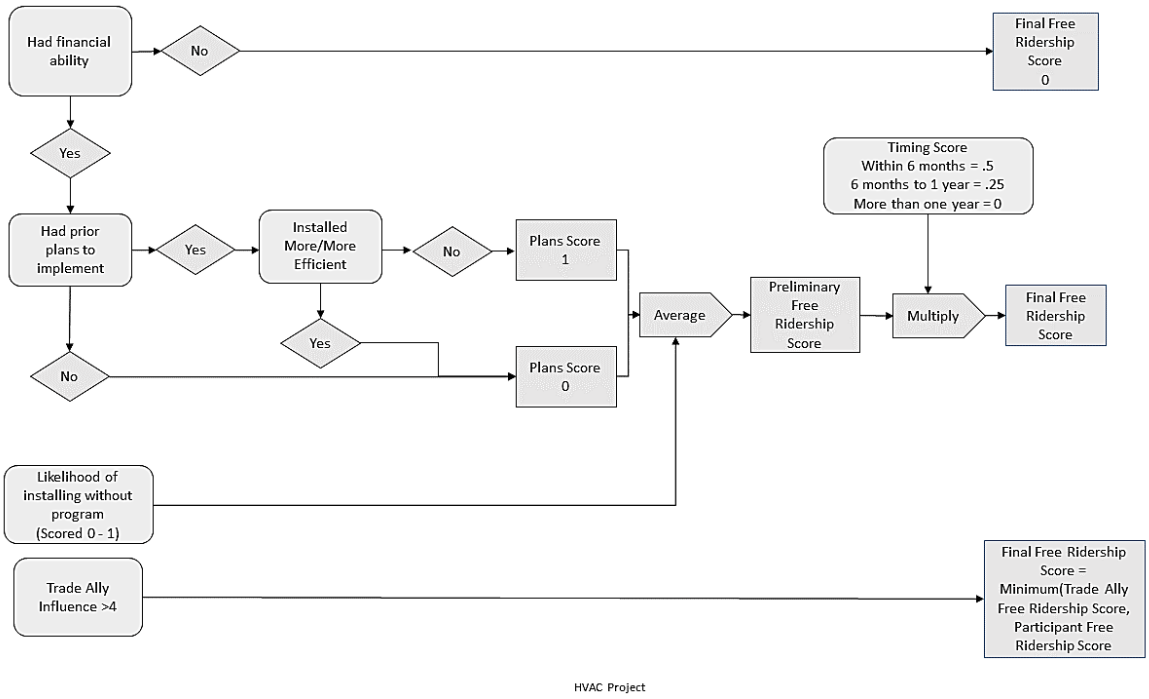


Figure 4-3: Non-Audit Free Ridership Scoring

The participant survey did not include questions related to additional energy efficiency purchases made due to the customers' experience with the Channel to calculate spillover.

We did not inquire with participants regarding spillover for two primary reasons: past survey efforts resulting in minimal attributable spillover and the additional time and administrative burden on customers to gather accurate and usable spillover information. In both 2019 and 2020, spillover impacted the HVAC Channel level NTG ratio by less than one percent and had less than a one percent impact on HEEP net savings.

4.5.3.2 Net Savings Results

We administered surveys to decision-makers who participated in the HEEP Residential HVAC Replacement and Tune-up Channel. In total, 165 single family and 6 multifamily participants responded to the survey.

Table 4-58 summarizes the measure-level free ridership results for the Residential HVAC Replacement and Tune-up Channel.

Table 4-58: Residential HVAC Replacement and Tune-up Channel Free Ridership Summary

Measure	Energy Free Ridership	Demand Free Ridership
Air Infiltration	0%	0%
Duct Sealing	0%	0%
HVAC Tune-up	15%	16%
Replace On Burnout	30%	32%

The tables below summarize the net savings analysis results for the Residential HVAC Replacement and Tune-up Channel. Table 4-61 outlines the net lifetime energy savings for the Channel.

Table 4-59: Net Energy Savings for Residential HVAC Replacement and Tune-up Channel

Measure	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Free Ridership (kWh)	Net Energy Savings (kWh)	Net-to-Gross
Air Infiltration	614,830	622,572	0	**15,466,038**	**96%**
Duct Sealing	11,867,638	11,787,061	0		
HVAC Tune-up	2,902,834	2,892,127	422,300		
Replace On Burnout	711,282	836,693	250,115		
Total	**16,096,584**	**16,138,453**	**672,415**		

Table 4-60: Net Demand Reductions for Residential HVAC Replacement and Tune-up Channel

Measure	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Free Ridership (kW)	Net Demand Reductions (kW)	Net-to-Gross
Air Infiltration	42	43	-	**2,507**	**89%**
Duct Sealing	1,074	1,067	-		
HVAC Tune-up	1,521	1,523	242		
Replace On Burnout	146	171	54		
Total	**2,783**	**2804**	**297**		

Table 4-61: Net Lifetime Energy Savings for Residential HVAC Replacement and Tune-up Channel

Measure	Estimated Useful Life (yr)	Net Lifetime Energy Savings (kWh)
Air Infiltration	11	6,848,293
Duct Sealing	18	212,167,089
HVAC Tune-up	6	15,758,671
Replace On Burnout	20	12,010,353
Total		**246,784,407**

4.5.4 Consumer Products

The following section summarizes the methodology and results of estimating the net savings of the Consumers Products Channel of the HEEP.

4.5.4.1 Net Savings Methodology

Determining the net effects of the in-store retail discounts requires estimating the percentage of energy savings from efficient product purchases that would have occurred without program intervention. Ideally, participating retailers could provide sales data for non-program periods and from similar non-participating retail locations. This data would provide adequate information to calculate the lift in LED sales attributable to the Channel's price markdowns. However, retailers in other evaluations have been reluctant to release sales data for this purpose, and non-participating retailer sales data may not be made available to the evaluation team.

As a result, evaluating the price discounts' net effect requires estimating free ridership without sales data. Various methodologies have been used in similar evaluations across the country, all of which have certain advantages and disadvantages. In past program years, the evaluators surveyed a random sample of OG&E customers via email to estimate the net-to-gross ratio.

This year the evaluators used an email recruitment method and a targeted approach of placing "tear-off" sheet pads with a short message, survey link, and QR code in stores near the discounted measures.

ADM asked survey respondents a series of questions to calculate free ridership for LED lamps. The questions elicited feedback regarding influences on their purchasing decisions. Each respondent was assigned a free ridership score based on a scoring algorithm. Three factors related to the likelihood of purchasing LED lamps without a Program sponsored discount were used in the algorithm to determine a free ridership score for each respondent.

The first factor, the “behavior without discount” factor, was the primary determinate of respondents’ free ridership scores. ADM developed the score for this factor from responses to questions on the likelihood of purchasing the energy efficient measure if they had cost the regular retail price. Specifically, ADM asked respondents how likely they would have been to purchase the LED lamps if they had cost more (i.e., it was not discounted). The likelihood score developed from this response was adjusted based on the percent of the total number of LED lamps that the respondent would have purchased if they had cost more. For example, if the respondent reported they would have purchased one-half of the LED lamps if they cost more, the likelihood score was reduced by 50%.

The second factor was the respondents’ previous experience with purchasing LED lamps. For example, respondents who reported that the LED lamps they purchased in the last six months replaced other LED lamps or had previously purchased LED lamps were assigned higher free ridership levels than respondents without previous experience with LED lamps.

The third factor was a mitigating factor based on the influence of Channel discounts on LED lamp purchases. ADM reduced the prior experience free ridership score for participants that reported that they had purchased LED lamps and that the discount was influential to the purchase.

Figure 4-4 summarizes the algorithm used for calculating free ridership for discounted LED light bulbs purchased through the Consumer Products Channel. The figure and above description highlight LEDs, but the methodology used for advanced power strips and window air conditioners would be similar.

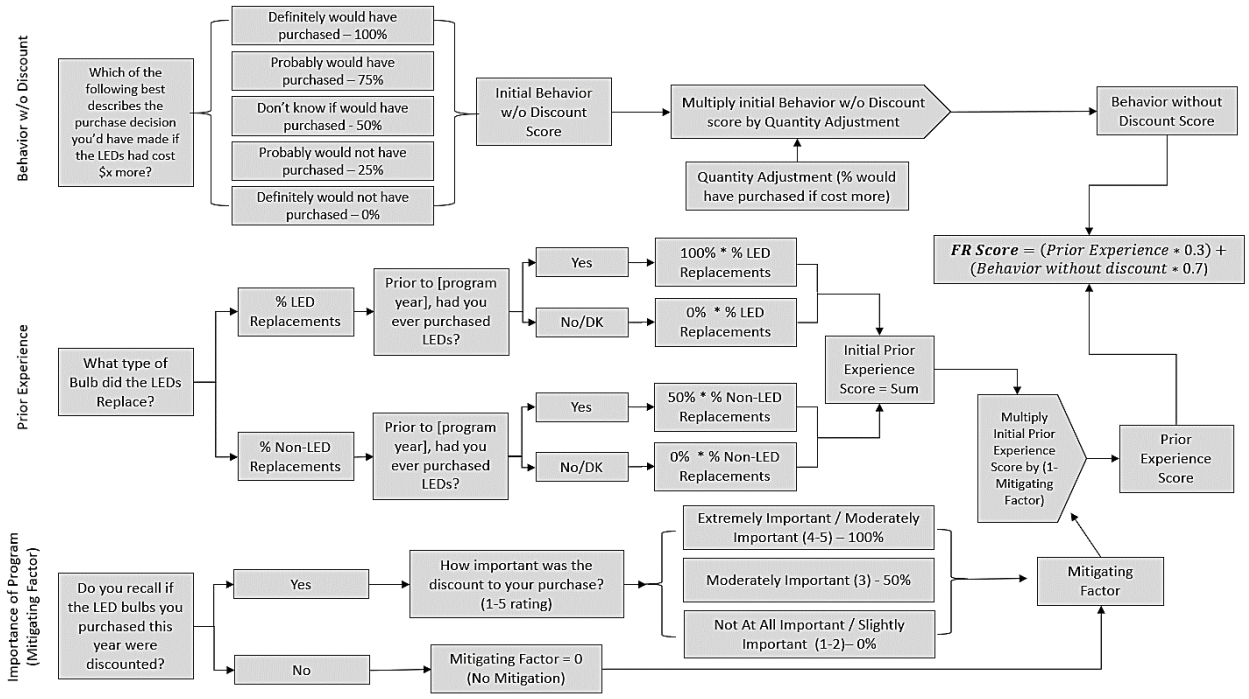


Figure 4-4: Consumer Products Channel Free Ridership Scoring

4.5.4.2 Net Savings Results

The tables below summarize the results of the net savings analysis. A total of 327 respondents to the Consumer Products Channel survey reported that they had purchased LED lightbulbs at a participating retailer in 2021. Deemed NTG ratios were used for non-lighting measures because insufficient customers reported purchasing the induced items at participating retailers to calculate NTG ratios and achieve a minimum 10% precision and 90 confidence level (90/10). Table 4-62 and Table 4-63 show the NTG ratios for energy saving and demand reduction for each measure in the channel. Table 4-64 outlines the net lifetime energy savings for the Consumer Products Channel in the HEEP.

Table 4-62: Net Energy Savings (kWh) for HEEP Consumer Products

Measure Category	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Net Energy Savings (kWh)	Net-to-Gross
Advanced Power Strips	1,584,441	1,410,152	1,410,152	100%
Bathroom Exhaust Fan	19,192	16,251	16,251	100%
Food Bank - Omni-directional LEDs	8,219,274	8,856,430	8,856,430	100%
Retail - Directional Lamps	2,838,518	3,349,472	1,641,241	49%
Retail - Omni-directional and Decorative LEDs	28,362,554	32,871,618	16,107,093	49%
Room Air Purifiers	254,971	218,567	218,567	100%
Water Cooler	221,628	201,684	201,684	100%
Window Air Conditioners	396,415	389,226	389,226	100%
Total	**41,896,993**	**47,313,401**	**28,840,646**	**61%**

Table 4-63: Net Demand Reductions (kW) for HEEP Consumer Products

Measure Category	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	*Ex Post* Net Demand Reductions (kW)	Net-to-Gross
Advanced Power Strips	180	160	160	100%
Bathroom Exhaust Fan	2	2	2	100%
Food Bank - Omni-directional LEDs	1,103	1,374	1,374	100%
Retail - Directional Lamps	381	520	255	49%
Retail - Omni-directional and Decorative LEDs	3,807	5,098	2,498	49%
Room Air Purifiers	29	25	25	100%
Water Cooler	25	23	23	100%
Window Air Conditioners	465	464	464	100%
Total	**5,992**	**7,665**	**4,800**	**63%**

Table 4-64: Net Lifetime Savings Summary for Consumer Products Channel

Measure Category	Estimated Useful Lifetime (yr)	Net Lifetime Energy Savings (kWh)
Advanced Power Strips	10	14,101,525
Bathroom Exhaust Fan	19	308,772
Food Bank - Omni-directional LEDs	19	168,272,179
Retail - Directional Lamps	19	31,183580
Retail - Omni-directional and Decorative LEDs	19	306,031,765
Room Air Purifiers	9	1,967,105
Water Cooler	10	2,016,844
Window Air Conditioners	10.5	4,086,872
Total		**527,971,641**

4.5.5 Positive Energy – New Home Construction (PE-NHC)

ADM interviewed three builders that participated in the PE-NHC Channel in 2021. We used these results as well as eight builder interviews from 2019 and seven from 2020 to assign free ridership scores. Builder's NTG responses were weighted by total Channel energy savings (kWh) and demand reduction (kW) to develop Channel level energy and demand NTG estimates.

We estimated a free ridership probability for each builder based on the average of the three scores described below. Free ridership scores were developed for the impacts resulting from the construction standards and geothermal heat pumps.

4.5.5.1 Program Components Score

A Program components score was calculated based on how influential various Program 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, where 1 means "not at all influential" and 5 means "extremely influential."

- 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 in the following manner:

- 1 (Not at all influential) = 0
- 2 = 0.25

- 3 = 0.50
- 4 = 0.75
- 5 (Extremely influential) = 1

The Program components score was calculated as equal to the highest-rated component:

MAX(Component1-4)

4.5.5.2 Program Influence Score

The Program influence score was based on respondents' ratings of how likely they would have been to build any efficient homes if the Channel 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) = 1
- 2 = 0.75
- 3 = 0.5
- 4 = 0.25
- 5 (Very likely) = 0

4.5.5.3 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 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 influence that the Channel has had on the builder's efficient construction practices. The goal was to separate the available rebates' effects and the Channel's prior educational efforts on builder's current construction practices. A critical component of the Channel is increasing builders' skill in

and knowledge of efficient construction. Using efficient construction techniques may lead to long term changes in building practices.

A score was developed based on the percent of homes that the builder reports would have been built if the Channel had never been available. Specifically, the no Program score was calculated as:

1 – % Homes Built in the absence of the Channel

4.5.5.4 Free Ridership Score

The free ridership score was calculated as follows:

1 – Average (Program Components Score, Program Influence Score, No Program Score)

4.5.5.5 Participant Spillover Methodology

Builders were asked if they completed any efficient homes inside the service territory that did not receive a Channel inducement and the Channel's influence on the decision to complete those additional homes to estimate participant spillover impacts.

4.5.5.6 Net Savings Results

Table 4-65 summarizes the net-to-gross results for the interviewed builders from PY2019-PY2021.

Table 4-65: Summary of Builder Net Savings Results

Year of Interview	Builder	Program Components	Program Influence	No Program	Spillover	Net-to-Gross	Weight
2019	Builder 1	100%	100%	100%	0%	100%	11%
2019	Builder 2	100%	100%	100%	0%	100%	0%
2019	Builder 3	100%	25%	0%	0%	42%	4%
2019	Builder 4	100%	100%	90%	0%	97%	26%
2019	Builder 5	100%	100%	50%	0%	83%	33%
2019	Builder 6	100%	75%	100%	0%	92%	6%
2019	Builder 7	100%	75%	70%	0%	82%	3%
2019	Builder 8	100%	75%	25%	0%	67%	12%
2020	Builder 9	100%	75%	90%	0%	88%	0%
2020	Builder 10	100%	0%	100%	0%	67%	1%
2020	Builder 11	100%	100%	0%	0%	67%	1%
2020	Builder 12	100%	100%	100%	0%	100%	0%
2020	Builder 13	100%	0%	0%	0%	33%	1%
2020	Builder 14	100%	0%	80%	0%	60%	0%
2020	Builder 15	100%	50%	50%	0%	67%	0%
2021	Builder 16	50%	0%	0%	0%	17%	1%
2021	Builder 17	100%	75%	100%	0%	92%	3%
2021	Builder 18	75%	50%	15%	0%	47%	1%

Table 4-66 and Table 4-67 summarize the net energy savings and demand reductions of the PE-NHC Channel.

Table 4-66: Summary of Net Energy Savings (kWh) for PE-NHC

Channel	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Realization Rate	Net-to-Gross	Net Energy Savings (kWh)	Net Lifetime Energy Savings (kWh)
PE - NHC	1,711,179	1,754,076	103%	88%	1,542,559	38,563,964

Table 4-67: Summary of Net Demand Reductions (kW) of PE-NHC

Channel	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Realization Rate	Net-to-Gross	Net Demand Reductions (kW)
PE - NHC	570	571	100%	88%	502

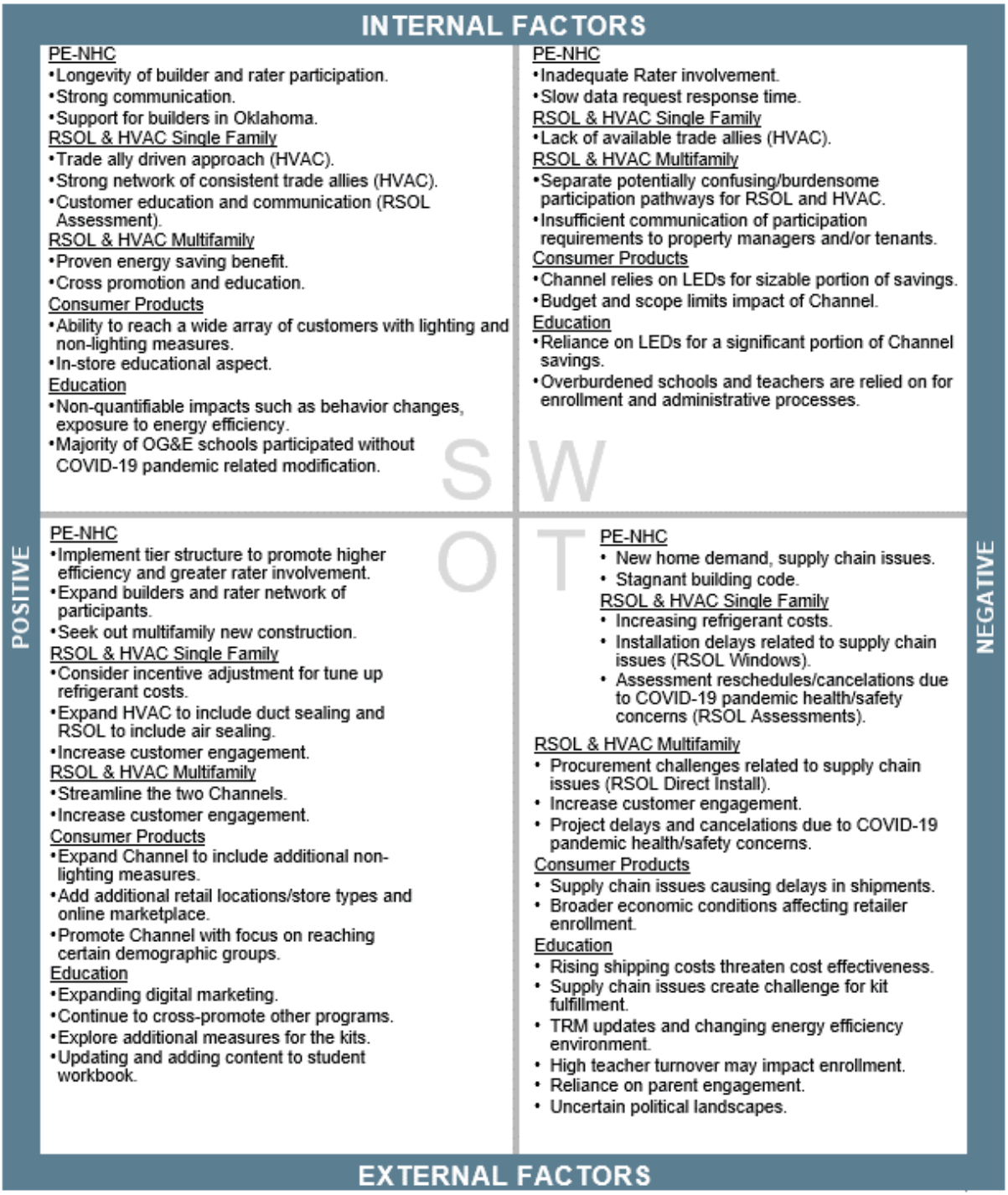
4.6 Process Evaluation Summary and Findings

This section provides a summary of ADM's process evaluation of the OG&E HEEP. Section 4.6.1 presents a summary of feedback from in-depth interviews with the Program and implementer staff. Section 4.6.2 through 4.6.6 have Channel-specific interview summaries as well as participant survey findings.

4.6.1 Program Staff Facilitated Discussions

ADM led two facilitated phone discussions with the OG&E and CLEAResult staff, in December 2021 and January 2022. The purposes of the calls were to investigate the OG&E HEEP's strengths, weaknesses, opportunities, and threats (SWOT). During the call, ADM staff shared their screen and took notes to ensure attendees' thoughts were accurately captured. The first call focused on the HEEP's RSOL, HVAC, and PE-NHC Channels. The second focused on the Education and Consumer Product Channels. After the discussions, ADM updated the SWOT matrix diagram and synthesized findings. Figure 4-5 summarizes key findings, with additional summary information provided below.

Figure 4-5: HEEP SWOT Analysis Diagram



The following summarizes key findings of the SWOT analysis for OG&E's HEEP:

- **Contacts observed the longevity of the PE-NHC, Single Family HVAC, and Education Channels as a key strength.** These Channels rely on trade allies, builders, raters, and teachers for successful implementation. Contacts noted that participating builders have been working with OG&E's PE-NHC Channel for years and are able to provide valuable insight and input to help improve program design. The single family pathway of the HVAC Channel has been administered by some trade allies for several years; these trade allies have established networks of customers and experience in the field to promoting the Channel. Regarding the Education Channel, AM Conservation staff noted that the Channel's longevity helps ensure it meets enrollment goals as it relies on repeat teacher participation; they mentioned that rising teacher turnover related to the COVID-19 pandemic was a threat to continued success.
- **The contacts noted there were opportunities to improve cross-promotion and education for the RSOL and HVAC Channels.** Though they observed promotion and education were a strength, they also suggested that there were opportunities to increase in-person promotion of energy efficiency and Program participation. They specifically mentioned ensuring tenants are made aware of the benefits of the improvements being made during RSOL and HVAC multifamily visits and potentially cross-promoting residential energy efficiency programs during in-person events promoting the CEEP's Continuous Energy Improvement Program. The contacts also observed that there are opportunities to improve communication with property managers and tenants that participate in the RSOL and HVAC Channels, as on occasion there is insufficient communication regarding participation requirements.
- **Contacts noted a lack of HERs rater involvement as both a current weakness and opportunity for improvement for the PE-NHC Channel.** The contacts observed that there are sometimes longer than expected paperwork and data request processing times from HERs raters. They noted that raters are overburdened, as there is currently a lack of active HERs raters in Oklahoma. To address this, CLEAResult staff indicated they have recruited an additional rater and in the next Program year the Channel will seek to make raters view themselves as "partners" by adding a bonus inducement, if they coach builders to higher levels of efficiency.
- **The PE-NHC Channel will seek to encourage more efficient building in Oklahoma in 2022 with the implementation of a tiered inducement structure and recruitment of additional builders and raters.** CLEAResult staff indicated that they will be implementing a tier structure for the PE-NHC in 2022. They observed that the building code in Oklahoma as remained consistent since 2009 and the motivation for implementing this new tiered structure will be to encourage building beyond the code. In 2022, the Channel will also seek to recruit additional

builders and raters and to encourage efficient practices in multifamily new construction projects.

Education and Consumer Products Channel contacts acknowledged reliance on lighting as a weakness. Consumer Products Channel staff stated that lighting was the Channel's "real strength" though they acknowledged that reliance on lighting was a weakness. The Education contacts also suggested updates to saving methodology documents were a threat.

Staff identified several potential non-lighting offerings for the Consumer Products Channel. OG&E staff noted EV Chargers, thermostats, and smart home technology as three areas to explore and better understand and potentially add to the Channel. ADM and OG&E staff also suggested the possibility of collaborating to investigate claiming savings for Home Energy Reports (HERs) or Smart Hours/Residential Demand Response. OG&E staff observed that HERs could be used to appropriately target marketing to customers to promote the next, best interaction or energy efficient measure to engage with next.

The RSOL, HVAC SF, and Education Channels' also have opportunities to bolster their offerings by expanding the measures offered. For the RSOL single family, the staff indicated the Channel's assessor staff would add air sealing. For HVAC single family, they mentioned expanding the Channel with duct sealing. However, they noted that duct sealing requires a sheet metal license and there are limited duct sealing contractors available currently. The staff indicated this was an opportunity to help grow the network of duct sealing trade allies in Oklahoma. The Education Channel staff noted that they are exploring additional measures (e.g., advanced power strips) or novel ways to quantify savings (e.g., quantifying behavior changes promoted with kit measures or curriculum).

The separate implementation of RSOL and HVAC multifamily measures creates a burdensome or confusing process for participants. There is an opportunity to streamline participation. Contacts observed that participating multifamily properties are currently required to engage with different trade allies for each Channel. Streamlining the two Channels will make participation easier for contractors, property managers, and tenants by reducing the need for multiple conversations with property managers and trade allies as well as multiple visits to make improvements inside tenants' residences.

The availability of trade allies and increasing refrigerant costs are two challenges facing the HVAC Channel's Single Family Tune Up offering. CLEAResult staff suggested that customer demand may outweigh the availability of trade allies to fulfill requests for tune ups; they identified recruiting additional trade allies to perform tune-ups to "right size" the Channel to meet demand as an opportunity for improvement. Regarding refrigerant costs, contacts noted that

customers tune-ups with charge adjustments have become much more costly because of rising refrigerant costs. They suggested that some HVAC trade allies may not participate in the Channel because of the cost. They said they are currently investigating an additional inducement for certain refrigerant types and the cost effectiveness of an added inducement.

There are several COVID-19 pandemic related external threats to Program implementation. The contacts identified supply chain, workforce, and COVID-19 pandemic health and safety related precautions or restrictions as challenges for all five Channels of the HEEP:

- **PE-NHC:** The contacts stated that builders had struggled to get materials to build homes in 2021 and this had caused delays in building timelines.
- **RSOL SF:** Customers seeking to install ENERGY STAR Windows have had an extended installation timeline because of product availability. COVID-19 pandemic health and safety related threats could also create challenges for the RSOL SF Channel if single family customers cancel assessments.
- **RSOL and HVAC MF:** Multifamily properties may opt to delay or cancel in-unit improvements because of safety, staffing, or financial challenges related to the COVID-19 pandemic.
- **Consumer Products:** Channel staff observed that supply chain and workforce issues had caused food bank LED shipments deliveries to be delayed and the Dollar General, a previously rapidly-growing, strong participant in the Channel had opted not to participate in OG&E's energy efficiency programs in 2022 because of a "lack of bandwidth."
- **Education:** Rising shipping costs, supply chain issues, and teacher turnover were identified as COVID-19 pandemic related threats to Channel success.

Both the Consumer Products and Education Channels were noted as having significant reach, though contacts also suggested there were still opportunities to expand and improve marketing efforts.

Consumer Products: The Channel is able to engage hard-to-reach customers with energy efficiency through its food bank component as well as smaller retailers, such as the Dollar Tree. CLEAResult staff suggested that the budget and specified scope of the Channel was a weakness. They observed that they could reach additional customers by engaging with local grocery and thrift stores. OG&E staff noted that a marketing strategist was starting in January 2021, and they would coordinate with CLEAResult to develop an online marketplace which could potentially be used to connect customers with energy efficient measures offered through

the Channel. Contacts also indicated increased marketing could be used to reach certain demographic groups (Latino, Asian, Native American).

Education: Contacts noted that longstanding relationships with teachers enable the Channel to meet "lofty" enrollment goals each year, but recent teacher turnover may necessitate expanding digital marketing and methods (other than phone calls) for recruitment. They also observed that the Education workbook's usage of the Oklahoma Thunder logo helps to spark family interest and get parents involved.

Education Channel contacts identified cross-promotion, integration with other OG&E programs, and potential to update curriculum as strengths and potential opportunities. They noted that Channel has great synergy with other portfolio offerings and one of the Channel's strengths is that it is an entry point or "first opportunity" to engage with students and potentially their parents. OG&E staff highlighted the Channel's strength as a cross-promotional tool by observing that in 2021 it had inspired a parent to engage their company and its employees with energy efficiency and OG&E regarding other energy efficiency programs. Further, the Education contacts mentioned that the Channel's curriculum could be updated to broaden its scope and include more topics related to energy and conservation (e.g., phantom loads, solar energy).

Education Channel contacts observed that the Channel relies on parent engagement for successful implementation. They stated that without active parent engagement the Channel would not be successful. Contacts also suggested that though energy efficiency has had bipartisan support in the past, shifting political landscapes present an uncertain future for the Channel and energy efficiency programs in general.

4.6.2 Residential Solutions Channel

The process-related data collection activities for the OK HEEP RSOL evaluation included a facilitated discussion with program staff and surveys of participating single family home customers, multifamily property owners/managers, and participating trade allies and contractors.

4.6.2.1 Single-family Customer Survey

ADM conducted a mixed mode (phone/email) survey of 251 RSOL channel participants in August-September and November-December 2021, and January 2022. The sample for the August-September and November-December 2021 survey administration periods included all participants through Q3. In January 2022, ADM conducted the survey with Q4 "major measure" customers, specifically ENERGY STAR windows, ceiling insulation, or ENERGY STAR door inducement recipients. ADM prioritized customers that that received an inducement for a major measure to bolster the reliability

of net-to-gross analysis findings (see 4.5.1.1 for net-to-gross methodology for the RSOL channel).

ADM randomly assigned 2,562 program participants to either a phone (1,274) or email group (1,288). Of these, 373 contacts assigned to the email group and 87 contacts assigned to the phone group had no contact information in Channel participation records (i.e., neither phone number nor email address included). ADM emailed all contacts with valid contact information that were assigned to the email group and called contacts that were assigned to the phone group. We attempted up to three contacts with 778 of the 1,187 participants in the phone group with available phone contact information. Nine contacts (5 email, 4 phone respondents) were disqualified from taking the survey as they either indicated they were not the correct contact or stated they had not participated in the Channel, and we did not call 409 as they were not needed to achieve measure-level completion quotas.

Both groups were offered a $10 inducement (either digital or physical gift card) for completing the survey and an additional $10 if they uploaded photos of the measures installed through the Channel. Additional information regarding the photo upload/visual verification of RSOL Channel measures can be found in Section 4.3.6.

About 8% of the email survey invitations bounced, and call staff recorded about 14% of phone numbers on the call list as disconnected, having technical issues, or being the wrong number. In total there were 88 phone completions (11% response rate) and 163 email invitation completions (20% response rate).

ADM surveyed customers that participated in the home assessment and direct install track of the RSOL channel (n=159) as well as customers that received an inducement for a “major measure,” such as ENERGY STAR windows, ENERGY STAR doors, or ceiling insulation (n=96; see Table 4-68). Four respondents received direct install measures and an inducement for a major measure (2 windows, 2 ceiling insulation). Thus, there were 251 unique respondents for the RSOL Single Family survey.

Table 4-68: What Measures Did Respondents Receive?

Measure	n	Percentage of Respondents (n=251)
Direct Install/Home Assessment	159	63%
Assessment	*159*	63%
Direct Install	*141*	56%
LED Lightbulbs	135	54%
Advanced Power Strips	97	39%
Major Measure	96	38%
ENERGY STAR Windows	44	18%
Ceiling insulation	50	20%
ENERGY STAR Doors	5	2%

The vast majority of survey respondents were homeowners who lived with no more than three other persons in a small-to-moderate-sized single-family home. About two-thirds of respondents reported heating their home and water with natural gas, with most of the rest reporting electric heating. Table 4-69 summarizes these respondent characteristics.

Table 4-69: Single Family Survey Respondent Home Characteristics[13]

Question	Response	Percent (n=296)
Do you own or rent your home? (n=248)	Own	96%
	Rent	2%
	Prefer not to say	1%
Which of the following best describes your home type? (n=251)	Single-family	97%
	Other (Duplex, condo, townhouse, apartment, mobile home)	2%
	Prefer not to say	1%
Including yourself, how many people currently live in your household? (n=249)	1	16%
	2	49%
	3	10%
	4	9%
	5	1%
	6 or more	2%
	Prefer not to say	13%
About how many square feet is your home? (n=250)	Less than 1,000 square feet	4%
	1,000-1,999 square feet	44%
	2,000-2,999 square feet	36%
	3,000-3,999 square feet	5%
	4,000 or more square feet	2%
	Don't know	8%
What is the main fuel used to heat your home? (n=250)	Electricity	28%
	Natural gas	69%
	Propane	2%
	Don't Know/Prefer not to say	2%
What is the main fuel used to heat your water? (n=250)	Electricity	25%
	Natural gas	69%
	Propane	1%
	Don't Know/Prefer not to say	5%

ADM also asked respondents to provide demographic information. Consistent with the high prevalence of homeowners, the distribution of respondents skewed older and highly educated. When compared to the population as a whole in Oklahoma counties served by OG&E, people of color were somewhat under-represented; however, the distribution of respondents by race and ethnicity fit well with the distribution of homeowners in Oklahoma.[14] About half of survey respondents identified as male (49%)

[13] Percentages may sum to more than 100% because of rounding.

[14] U.S. Census Bureau, 2020 Decennial Census Table P1 (https://www2.census.gov/programs-surveys/decennial/2020/data/) and 2010 Decennial Census Table H14 (https://www2.census.gov/census_ 2010/08-SF1_Congressional_Districts_113/).

and the remaining respondents identified as female (43%) or preferred not to answer (8%). Table 4-70 provides additional self-reported survey-taker demographic information.

Table 4-70: Additional Single Family Survey Respondent Characteristics[15]

Question	Response	Percent (n=296)
What is your age (n=250)	25-34 years old	1%
	35-44 years old	8%
	45-54 years old	12%
	55-64 years old	10%
	65-74 years old	12%
	75-85 years old	29%
	86 years old or older	15%
	Prefer not to say	2%
How would you identify your race or identify? (n=249)	Asian	3%
	Black/African American	7%
	Caucasian/White	71%
	Hispanic or Latino	3%
	Native American or Alaska Native	5%
	Prefer not to say	16%
What's the highest level of education you've completed? (n=249)	Less than high school	<1%
	High School Graduate/GED	12%
	Associates Degree, Vocation/Technical School, Or some college	22%
	Four-year college degree	25%
	Graduate or professional degree	26%
	I prefer not to answer	14%

Program Awareness & Decision to Participate

ADM inquired with respondents regarding how they first learned about OG&E's HEEP.

Figure 4-6 shows major measure respondents' source of channel awareness (n=96). Figure 4-7 displays assessment/direct installation respondents' source of channel awareness (n=159).

Respondents that received inducements for a major measure primarily learned about the channel from contractors (36%), friends, neighbors or colleagues, or relatives (15%), or the OG&E or HEEP website (15%). Home assessment/direct measure

[15] Sums to more than 100% because respondents could select more than one race or ethnicity.

installation RSOL participants primarily learned about the RSOL channel through the mail, from a bill insert or message on their bills (44%).

Figure 4-6: HEEP RSOL Major Measure Respondents' Sources of Program Awareness

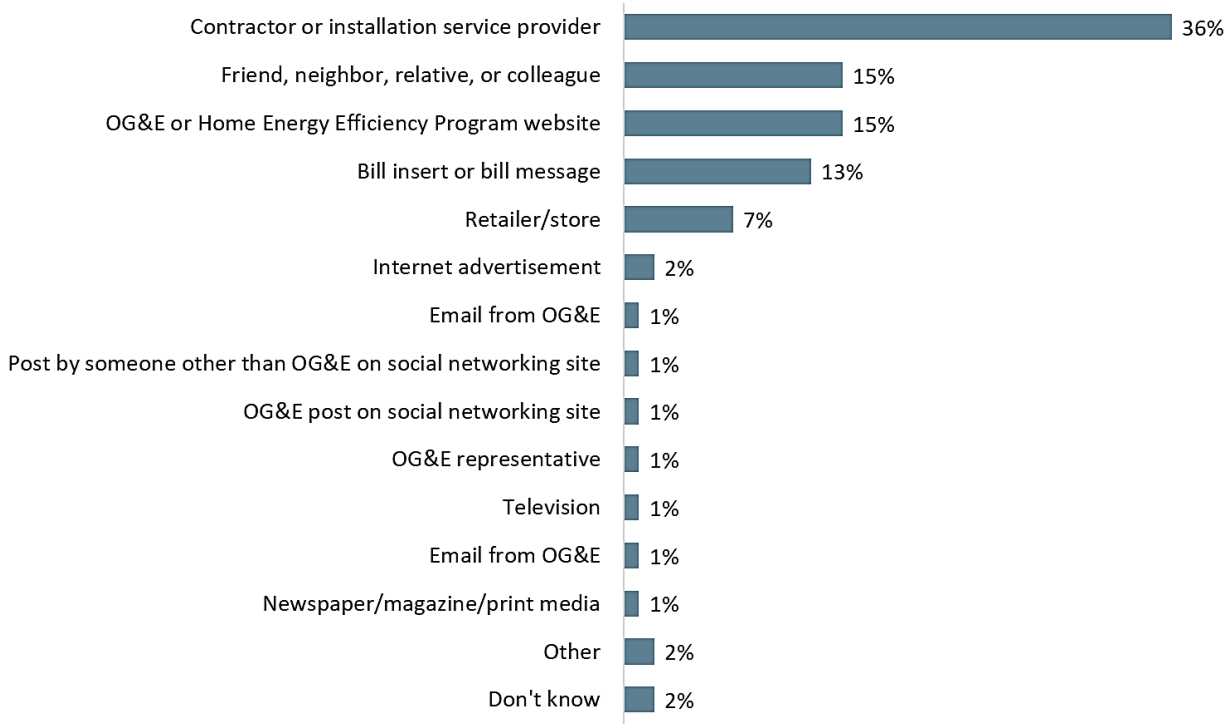
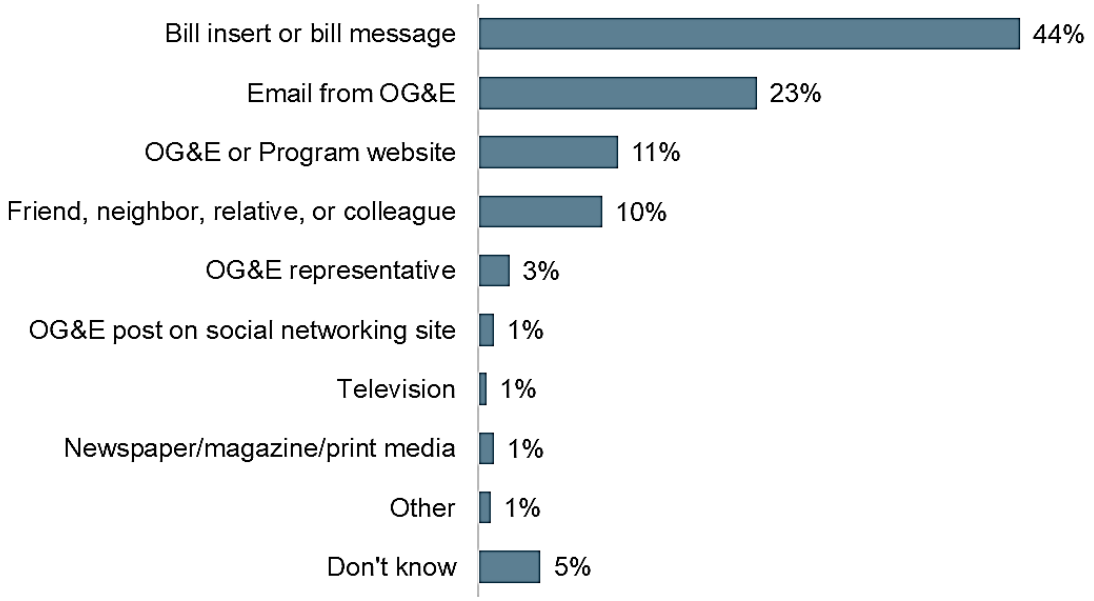


Figure 4-7: HEEP RSOL Direct Install/Assessment Respondents' Sources of Program Awareness



Energy assessment experience

One hundred and fifty-eight survey takers that participated in the RSOL Channel's in-home energy assessment provided feedback regarding the sign-up process, assessment, and direct-installation of measures (if applicable). All questions had 158 responses except where it is noted that fewer responses were obtained due to question nonresponse.

The vast majority of these respondents said they requested their home energy assessment in one of two ways: by calling the customer service center (68%) or by visiting the website (26%). The remaining respondents were unable to recall how they requested their assessment (6%).

Similar to ADM's 2019 and 2020 survey results, at least 95% of respondents rated the ease of signing up highly, regardless of whether they used the website[16] or called the customer service center[17] to sign up.

About three-quarters (73%) of respondents noted that their assessor provided them an energy assessment report with energy efficiency recommendations,[18] the vast majority

[16] n=41. Ninety-five percent rated the website a 4 or 5 out of 5 on a scale from 1 (very difficult) to 5 (very easy)
[17] n=107. Ninety-seven percent rated the call center a 4 or 5 out of 5 on a scale from 1 (very difficult) to 5 (very easy)
[18] n=157.

(87%) of whom said that the report was helpful.[19] Further, three-quarters (76%) said their assessor discussed the potential energy savings they could achieve by implementing the report's recommendations.

Just over half (52%) of the in-home assessment respondents noted that their assessor had provided them with information regarding other OG&E energy efficiency programs during their appointment.

Of respondents that recalled discussing potential energy savings with their assessor, two thirds (68%) said they had completed an improvement that had been recommended.[20] Those 82 respondents noted completing an assortment of energy efficiency improvements. Forty-one percent of those respondents said they had installed LED lightbulbs. One-fifth said they had either completed weatherstripping, caulking, or air sealing improvements. Respondents also noted other improvements that included adding insulation (12%), replacing an appliance like a water heater, AC unit or refrigerator (11%), or making behavioral changes such as changing thermostat setpoints, removing old appliances, or unplugging appliances that were not in use (5%). A smaller portion of these respondents noted making other improvements including installing additional advanced power strips (5%), windows (4%), thermostat (2%), showerhead (1%), or having an AC tune up (3%).

Of the 31 respondents who stated that they had not completed the recommendations that their assessor provided, 29% said they were still planning on making the improvements in the future.

Figure 4-8 illustrates the outcome of in-home assessments in terms of recommendations made and implemented. The percentages in each circle represent the percentage of the 159 in-home assessment respondents who provided the information indicated. Seventy-six percent of respondents recalled the assessor discussing the potential energy savings by implementing energy saving recommendations.

[19] n=114. Rated the helpfulness of the report a 4 (16%) or 5 (71%) on a scale from 1 (not at all helpful) to 5 (very helpful)
[20] n=120.

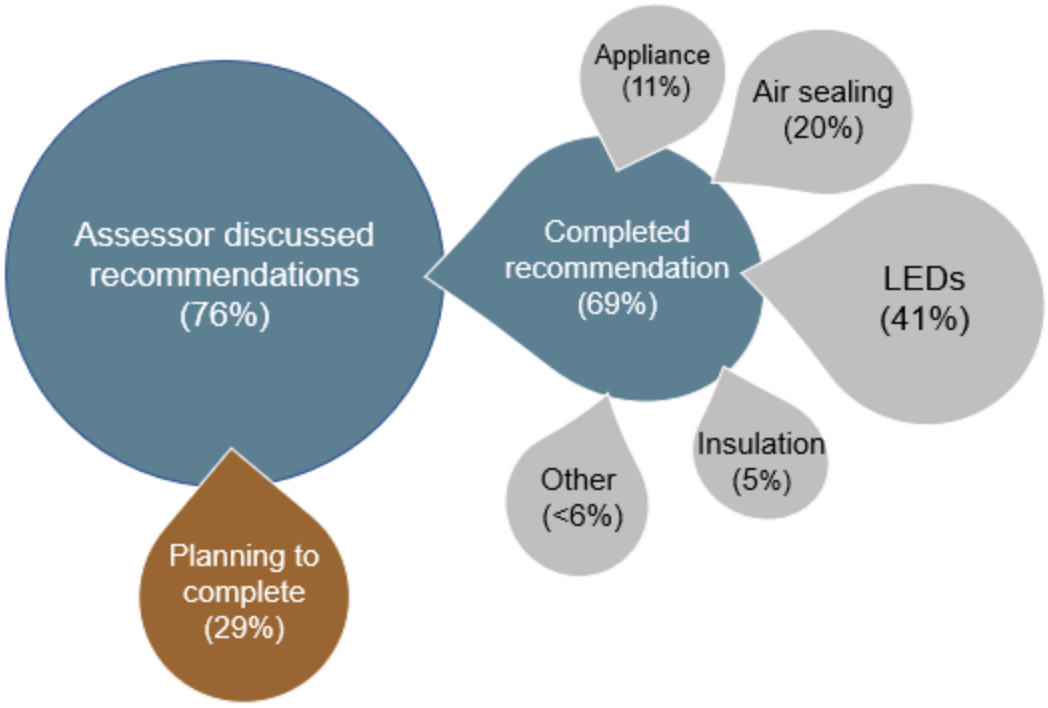


Figure 4-8: Outcome of In-Home Assessment: Recommendations and Installations

Of the 31 respondents that indicated they had not made the recommended improvements, 65% said they were not planning to in the future. Table 4-71 displays the reasons these customers noted for not planning to make the improvements that the OG&E RSOL assessor recommended.

Table 4-71: Reasons customers do not plan to make recommended improvements[21]

Response	Percent (n=20)
Cost	55%
Waiting for existing equipment to fail	30%
Other	20%
Do not think they need to be done/will save energy	5%
Don't know	18%

[21] Sums to more than 100% because respondents could select more than one reason.

Channel satisfaction

Most respondents were satisfied with their overall experience as well as individual aspects of their experience with the OG&E RSOL channel.[22] Figure 4-9 displays RSOL single family survey-takers' satisfaction with various aspects of the channel and the channel overall. Additionally, 75% of respondents reported recommending this OG&E channel to others (n=251). Of those who had not yet recommended the Channel, 67% said they would be likely to recommend participation to a friend or colleague (n=61).[23]

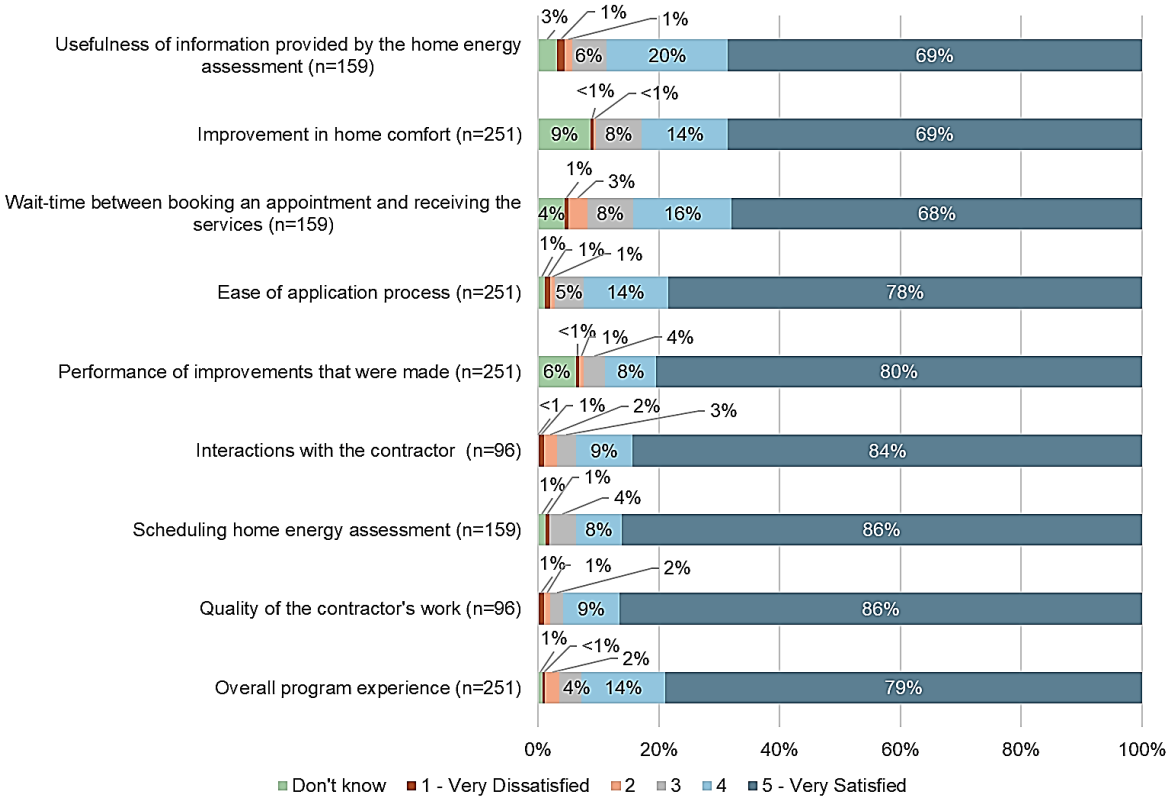


Figure 4-9: RSOL Single Family Respondent Satisfaction

Twenty-six of the survey respondents (10%) noted dissatisfaction with some aspect of the channel and were given an opportunity to elaborate. Half of these respondents received an inducement for a major measure while the others participated in the RSOL assessment/direct install track. These respondents noted a variety of issues :

8 (31%) noted issues receiving their major measure inducement. Three said it was challenging to fill out the required paperwork and complete the administrative

[22] 92% of respondents rated their overall experience with the channel a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied) and over 75% rated their experience a 4 or 5 with all other aspects of the channel.

[23] Rated their likelihood of recommending the channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

process. Four voiced dissatisfaction regarding the wait time for their inducement. One indicated they desired a larger inducement for the major measure purchase.

6 (23%) expressed dissatisfaction with their contractor. Of these, four indicated they desired more in-depth service, while the remaining two were unhappy with the quality of the contractor's work (4%) or ease of contacting the contractor (4%).

5 (19%) mentioned issues with obtaining their home assessment report.

5 (19%) noted a long wait time to receive services.

1 (4%) mentioned a desire for OG&E to trim trees affecting their powerlines.

1 (4%) indicated low overall satisfaction with OG&E but simply stated they preferred they were not called for follow-up survey efforts.

A large majority (90%) of respondents indicated that they were satisfied with OG&E as their electric service provider overall.[24]

Direct installation decision making

ADM inquired with RSOL participants regarding the items that were installed in their homes as a part of their participation in the channel. Ninety-five respondents confirmed installation of advanced power strips. One hundred and thirty-two respondents confirmed that their assessor installed LED light bulbs. Six reported receiving faucet aerators and seven said energy saving showerheads had been installed through the RSOL channel.

Of the 132 customers that confirmed receiving LED light bulbs through the Channel, 72% stated that they had purchased them in the past and 64% said that they had plans to install them before learning about the OG&E RSOL Channel.

By contrast, of the respondents who said they had received advanced power strip(s), 23% reported having purchased them before participating in the RSOL channel[25] and 21% that they had plans to install them before learning about the OG&E RSOL channel.[26]

These findings, consistent with 2020, indicate a relatively small portion of the discounted LED light bulbs might not have been sold without the OG&E RSOL channel, while a much larger portion of the power strips would not have been sold without the OG&E RSOL channel.

[24] Rated their satisfaction with OG&E a 4 (24%) or 5 (66%) on a scale from 1 (very dissatisfied) to 5 (very satisfied).
n=295.

[25] n=94.

[26] n=68.

A smaller portion of respondents indicated having past experience with or plans to purchase aerators or showerheads, though a small sample size for these measures limits the generalizability of survey findings.[27]

Major measure decision-making

Of the 96 survey-takers who reported installing a major measure, 50 confirmed that they had received a rebate for ceiling insulation, 44 confirmed that they received a rebate for ENERGY STAR windows and 5 received a rebate for ENERGY STAR doors. Four respondents confirmed receiving rebates for two measures.

Most of the respondents noted having had plans to install these measures before learning of the OG&E rebate. Eighty-four percent of the ENERGY STAR window respondents (n=44), 75% of the ceiling insulation survey respondents (n=48)[28], and all the ENERGY STAR door respondents (n=5) said they had plans to install these measures before learning of the OG&E rebate.

Similarly, about 80% of ENERGY STAR window and 56% of ceiling insulation respondents noted that they would have been able to make the financial investment to make the improvements without the OG&E RSOL Channel inducement. Three of the five ENERGY STAR door respondents said they would have been able to make the investment without the OG&E RSOL Channel inducement.

Thirty-four percent of the ENERGY STAR window and 48% of the ceiling insulation respondents said that they made the improvements sooner than they would have if the OG&E rebate had not been available. Two of the five ENERGY STAR door respondents said they made the improvements sooner than they would have if the OG&E rebate had not been available.

Consistent with ADM's 2019 and 2020 customer surveys, these survey findings indicate that a sizeable portion of respondents still would install the channel's major measures if the OG&E RSOL Channel did not offer an inducement. The percent of major measure respondents that said they had prior plans, could make the investment, and did not install the measure sooner because of the program is displayed in Figure 4-10.

[27] Seventeen percent of aerator (n=6) and 29% of low flow showerhead (n=7) respondents saying they had bought them in the past, respectively. Moreover, most said they did not have plans to purchase aerators or showerheads, with 33% of aerator (n=3) and 20% of low flow showerhead (n=5) respondents saying they planned to purchase them before learning about the channel.

[28] Two ceiling insulation respondents did not provide responses to questions regarding their decision-making process.

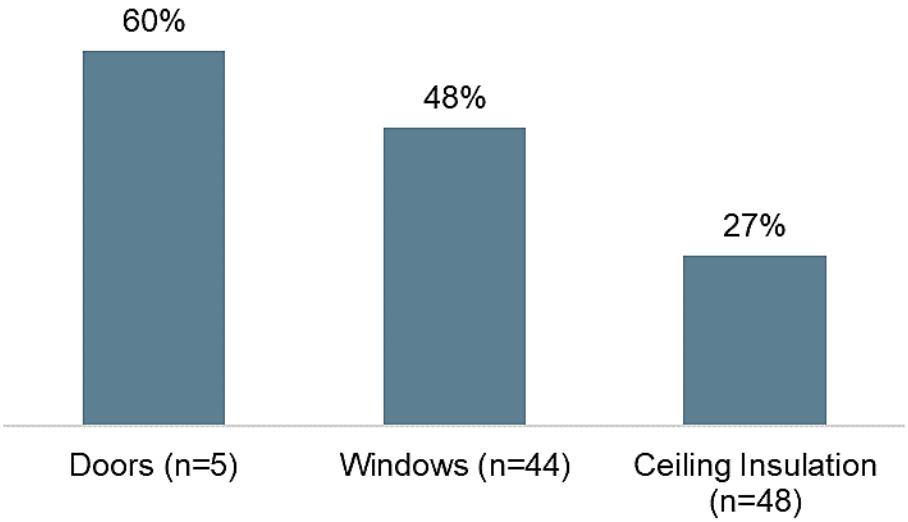


Figure 4-10: RSOL Channel Major Measure – Percent Complete Free Riders

4.6.2.2 Trade Ally Survey

ADM administered an online survey to collect feedback and net-to-gross information from HEEP RSOL trade allies. ADM received responses from nine contractors that participated in the Channel in 2021.

Eight respondents provided attic insulation, window, and door installations, and one provided direct installation measures to multifamily properties through the channel.

Seven trade allies said they had been participating in the channel for more than a year; the other two indicated they had participated for one year.

- **The RSOL trade allies generally perceive customer awareness of the program to be low.** Seven estimated that less than 40% of their customers know about the channel before they tell them about it. The other two trade allies indicated that between 50-79% of their customers knew about the channel before they told them about it.
- **Trade allies encourage participation in the Channel and their primary mode of promotion is word of mouth.** Eight trade allies said they always tell customers about the Channel if they are unaware; the remaining trade ally said they tell customers about 90% of the time. All nine said they promote the Channel during in-person sales visits. One trade ally also mentioned making sales calls and sending information in marketing emails.
- **Despite active Channel promotion, trade allies noted that some customers do not apply.** Five of the nine trade allies gave responses that indicated they may not have understood the question, referring to projects done outside of

OG&E territory or with nonqualifying measures. Of the other four, three said that they do not apply for inducements for 5% to 10% of their qualifying energy efficiency projects and one said that 60% of their projects do not apply for the inducement. Of these four respondents, only one gave a definitive reason for non-application ("they forget") while the others made guesses or gave ambiguous responses.

Word of mouth and online advertisement were the two primary ways that trade allies learned about the program. Two noted learning about the Channel from OG&E's website and two said they saw online advertisements sponsored by OG&E. Three trade allies noted learning about the Channel through word-of-mouth conversations. One each said they heard about the Channel from a manufacturer or supplier, business colleague, and a customer. One trade ally said they learned about the Channel from past employment at CLEAResult. The remaining contact could not recall how they first learned about the Channel.

Most trade allies did not receive training in 2021, but those who did found it useful. Six trade allies indicated that neither they nor their staff had attended training in 2021; one could not recall if they had attended training. Two trade allies noted that they received training in 2021 and both said that it had been helpful.[29] However, one noted "not much changed" from 2020.

All of the trade allies were satisfied with the Channel overall. Figure 4-11 displays trade ally satisfaction with the Channel.

[29] Rated the helpfulness of the training a 4 on a scale from 1 (not at all helpful) to 5 (very helpful).

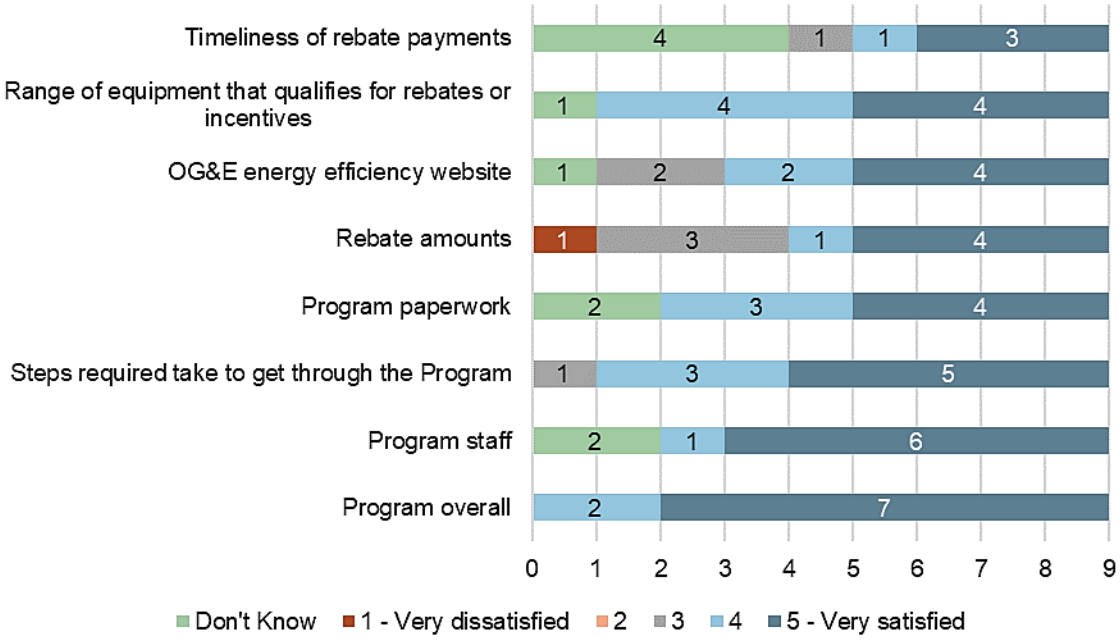


Figure 4-11: HEEP RSOL Trade Ally Satisfaction

Seven RSOL trade allies offered suggestions for Channel design and implementation improvement. The most common suggestions were to increase the inducement amount and to increase Channel awareness with increased advertising and publicity (six trade allies). Other recommendations for Channel improvement included:

- Increase frequency or level of Channel communication (four trade allies). Two suggested OG&E or channel staff additional information regarding savings or inducement calculations. One specified a desire for increased communication from OG&E regarding other available OG&E inducements/Programs.
- Improve the Program application process (two trade allies).
- Increase the maximum number of Channel incented measures allowed per customer (two trade allies). These trade allies mentioned increasing the maximum number of LEDs and ENERGY STAR windows allowed by the Channel.
- Increase types of equipment eligible for Program inducements (two trade allies).[30]
- Create list of preferred or qualified trade allies (one trade ally).
- Improve quality of kitchen aerators (one trade ally).

[30] Neither specified which types of equipment to expand the Channel to include.

The COVID-19 pandemic affected the RSOL trade allies' operations in 2021. Figure 4-12 displays the impacts that trade allies noted related to the COVID-19 pandemic. Some contacts provided additional detail regarding these impacts. The multifamily trade ally noted that recruiting properties had been a challenge in 2021 because property managers were working remotely, and some managers remain hesitant to allowing contractors work on units. One single family trade ally also said that some customers are still wary of health concerns. Three trade allies noted that their sales increased in 2021, though one said the rate of the increase was slower than in past years. The trade ally that noted the COVID-19 pandemic had impacted their in-store operating hours said that their physical location had been closed.

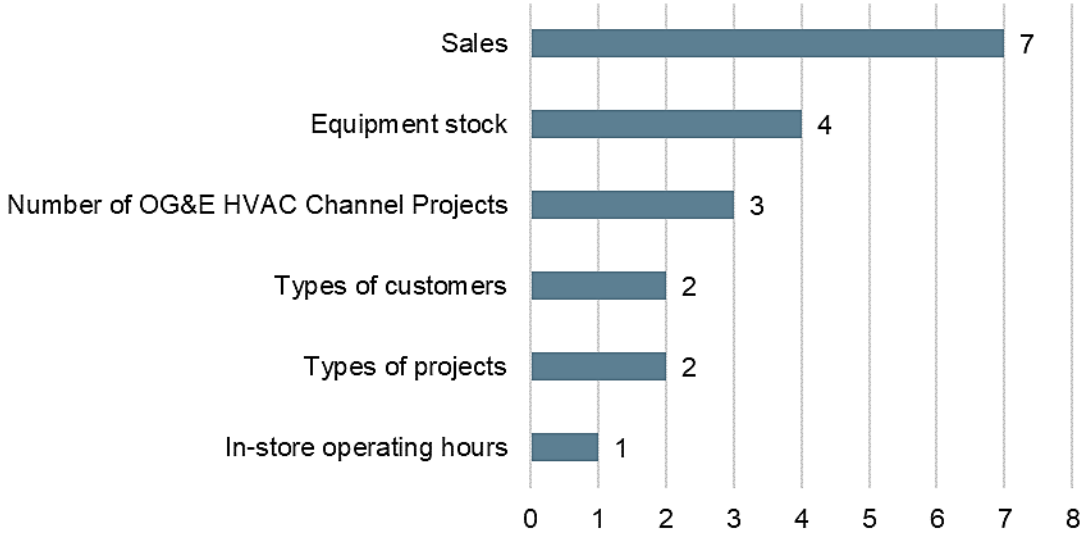


Figure 4-12: COVID-19 Impacts on RSOL Trade Allies

4.6.2.3 Multifamily Customer Survey

In August, September and December 2021 ADM conducted a mixed mode (phone/email) survey with 11 property owners or managers that participated in the OG&E RSOL Channel in 2021. All questions have 11 responses except where it is noted that fewer responses were obtained due to question nonresponse.

Survey findings indicate most of the respondents would have been unlikely to install the faucet aerators, low flow showerheads, and advanced power strips if they had not participated in the HEEP RSOL Channel. However, most respondents indicated they

had past experience with LED lightbulbs and would have installed them without the Channel within six months.[31]

Figure 4-13 displays the RSOL Channel's influence on the respondents' decision-making process. For prior plans and past experience, counts represent the number of respondents who answered affirmatively they had plans and past experience with each measure before participating. Figure 4-13's "Would have installed without the Channel" segment represents respondents who stated they would have installed all of the measure without the Channel.

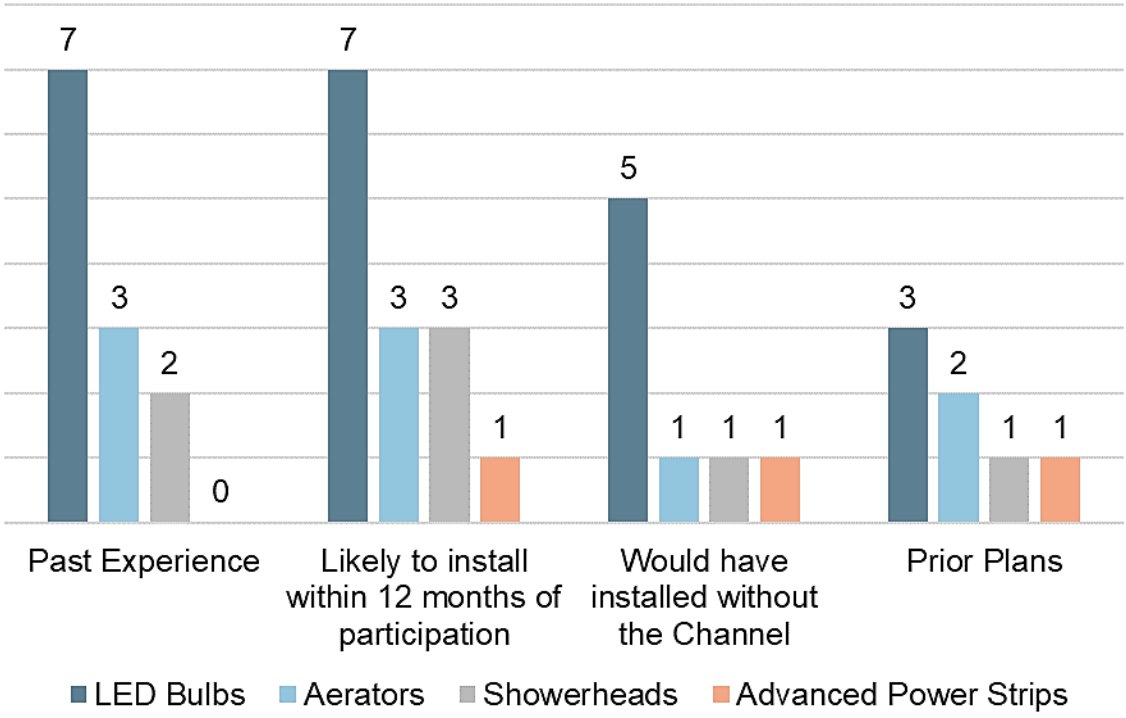


Figure 4-13: RSOL Channel Influence on Measure Installation

ADM asked the multifamily RSOL Channel participants about their satisfaction with various aspects of the Channel as well as the Channel overall (see Figure 4-14).[32] Nine respondents reported satisfaction with the Channel overall.[33] Six stated that they had recommended the Channel to a friend or colleague. Two respondents provided

[31] Seven respondents rated their likelihood of installing the LED lightbulbs within six month a 4 or 5 on a scale from 1 (not at all likely) to 5 (very likely).
[32] n=10. One respondent did not provide satisfaction ratings.
[33] Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied)

feedback to improve the Channel's implementation. Further, nine also said they were satisfied with OG&E as their electric utility provider.

One respondent noted that their participation required interaction with two contractors. The contact stated that the "first contractor left a mess," had poor communication, and had not completed the work in a timely manner. The contact informed OG&E of the issue and another contractor was assigned to their property. They stated the second contractor performed the improvements efficiently, without issue. The other respondent suggested a more thorough pre-inspection because many of their property's lights were unable to be upgraded as they were found to be incompatible with the Channel's LED lightbulbs.

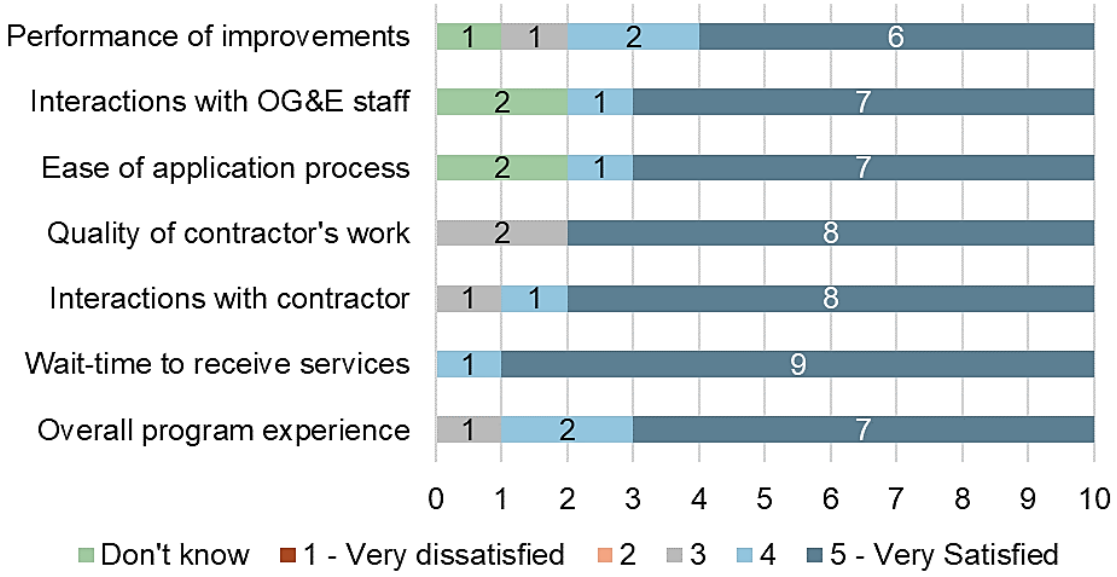


Figure 4-14: RSOL Multifamily Respondent Satisfaction

4.6.3 LivingWise® Schools Outreach Channel

The 2021 process evaluation activities included a review of updated Channel materials and a review of the student survey and quiz materials. The survey results were supplied to ADM by AM Conservation.

4.6.3.1 Geographic Distribution of School Outreach Kits

The geographic distribution of LivingWise® School Outreach kits by zip code is displayed below in Figure 4-15. The kits were distributed throughout OG&E's service territory.

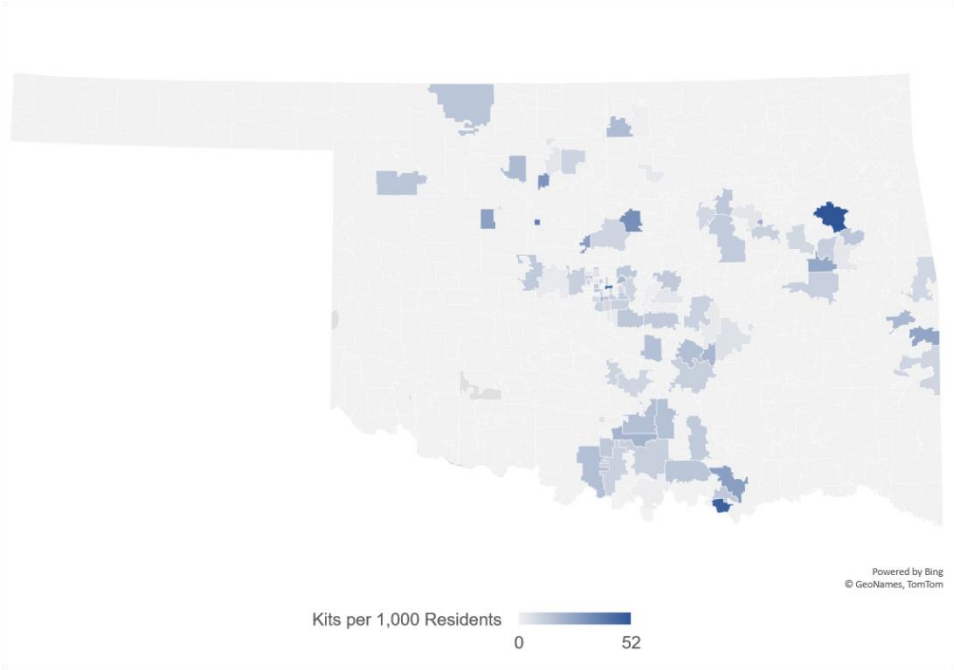


Figure 4-15: Distribution of LivingWise® Schools Outreach Kits

4.6.3.2 Responses to Kit Surveys/Quizzes

There were no significant changes to the program design in PY2021. It continued to include four surveys/quizzes within the course materials to help Channel administrators understand more about the Channel's efficacy. The surveys/quizzes are the Pre-Program Quiz, the Home Check-Up Survey, the Post-Program Quiz, and the Home Activities survey. The surveys included a mix of demographic and engagement questions. The Pre-Program Quiz and Post-Program quizzes each contained the same ten questions that assess students' energy knowledge. The quizzes were a mix of multiple-choice and true or false questions. They were administered in the classroom by teachers before and after teachers completed the curriculum.

In general, students performed better on the Post-Program quiz than on the Pre-Program quiz. The score for each quiz response ranged from 10% to 100%. Based on the number of questions answered correctly, the pre-Program quiz's average score was 56% compared to 72% for post-Program quizzes. Therefore, on average, post scores were 16 points higher than pre scores.[34] The mean difference between the average pre- and post-scores for teachers' classes varied greatly.

Past research has indicated that variability in scores is unrelated to demographics, kit distribution metrics, or duration of teacher enrollment. In 2020 when ADM investigated

[34] ADM conducted a one-sample *t*-test on the 2,433 students who took both the Pre-Program Quiz and Post-Program Quiz. The number of students who completed quizzes varied widely among teachers.

these relationships, we found that neither household income (% of households with income/benefits <$35k) nor race (% White-only households) was related to any of the performance indices (pre-test, post-test, or difference), either at the teacher level or the school district level. Nor were they related to the # of observations provided by each teacher (a proxy for class size) or school district (a proxy for size of school district). Date of enrollment was also found to be unrelated to any of the performance indices.[35]

Figure 4-16 shows the percent of students that answered individual questions correctly in the Pre-Program and Post-Program quizzes.

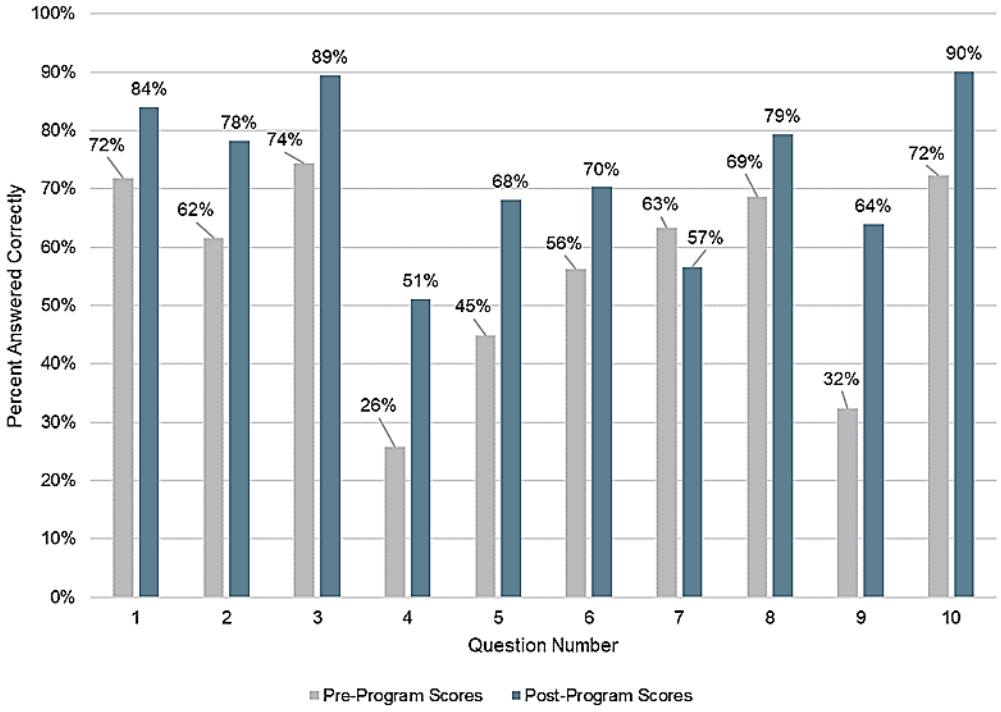


Figure 4-16: What percent of quiz questions did students answer correctly?

Consistent with 2019 and 2020, the only question that did not show improvement between Pre-Program and Post-Program was Question 7, which asks which appliance uses the most energy.[36] In ADM's 2019 and 2020 evaluation, it was suggested that

[35] Teachers with more students, therefore, have disproportionately larger influence on overall results. We computed a weighted mean difference score. The findings were dissimilar to the initial findings, with a weighted mean Pre-Post difference of 22 percentage points Bliss, Ryan, and Mike Soszynski. "Behavior, Energy, and Climate Change Conference (BECC)." 6 Dec. 2020, https://beccconference.org/wp-content/uploads/2020/10/Soszynski_abstract.pdf.

[36] Question seven has not shown improvement for three consecutive years. In PY2019, question seven received 1% fewer correct responses in the post-program quiz. In PY2020, question seven received 5% fewer correct responses in the post-program quiz. In PY2021, question seven received 6% fewer correct responses.

Question 7 be altered to be less ambiguous. As written, the answer to this question depends on whether the respondent considers the question to be asking which appliance uses the most energy when running (i.e., which one requires the highest wattage) or which appliance uses the most energy over time (i.e., which one uses the most kWh). A clothes dryer uses 400 to 1300W compared to about 100 to 400W for a refrigerator, so the clothes dryer uses more energy by the wattage criterion. However, a refrigerator is in continuous use, and so it uses more kWh than a clothes dryer over an extended period.

The Home Check-Up Survey contained questions regarding students' home characteristics. Teachers gave this survey to students to take home and fill it out with parental assistance if needed. That survey had 2,968 respondents. Table 4-72 displays a summary of selected home characteristics.

Table 4-72: Home Characteristics

Home Characteristics	Percentage of Respondents
Home Type (n=2,923)	
Single family	86%
Multifamily	14%
Own or Rent (n=2,856)	
Own	72%
Rent	28%
Home Heating Type (n=2,888)	
Natural Gas	26%
Electricity	59%
Propane	8%
Other	7%
Water Heating Type (n=2,884)	
Natural Gas	39%
Electricity	45%
Propane	16%
Air Conditioning Type (n=2,899)	
Central Air Conditioner	73%
Evaporative Cooler	6%
Room Unit	16%
Do Not Have One	5%
Number of People Living in Household (n=1,196)	
One	<1%
Two	3%
Three	13%
Four	31%
Five	25%

Six	14%
Seven+	14%

The Home Activities survey asked about the students' home energy use and about installing the measures they received in the LivingWise® Schools Outreach kits. The Home Activities Survey had 2,866 respondents. Fifty-four percent of students stated that they worked with their family on the Channel's activities. Most survey respondents rated the LivingWise® Schools Outreach favorably. Table 4-73 illustrates the ratings that students assigned to the Channel.

Table 4-73: How would you rate LivingWise® Schools Outreach?

Response	Home Activities Survey Respondents (n = 2,821)
Great	37%
Pretty Good	36%
Okay	24%
Not So Good	4%

Table 4-74 displays installation rates for the School Outreach Kit measures. Seventy percent of the survey respondents reported installing the LED nightlights. Fewer than half of respondents stated they had installed the high-efficiency showerhead, kitchen faucet aerator, or bathroom faucet aerator.

Table 4-74: Installation rates for LivingWise® Schools Outreach Kits

Measure	High-efficiency Showerhead (n=2,840)	Bathroom Faucet Aerator (n=2,832)	Kitchen Faucet Aerator (n=2,792)	1st 9W LED (n=2,816)	2nd 9W LED (n=2,803)	LED Night Light (n=2,826)
Installation rate	41%	32%	33%	58%	51%	70%

The Home Activities survey asked about four specific energy-saving activities (lowering heating/cooling setpoints, raising refrigerator temperature, lowering water heater setpoint). Sixty-six percent of survey respondents reported that their family took at least one of these actions. Students' reported energy saving actions are displayed in Figure 4-17.

Additionally, the survey asked if students' families had changed the way they use energy (Question 12). Just over half of survey respondents answered affirmatively, however some of these students indicated that they had not done any of the other energy-saving activities they were asked about. The current wording of the Home Activities' survey Question 12 is ambiguous: it does not ask whether students' families had changed their energy use other than, in addition to, or including by doing the other activities. Thus, it is difficult to interpret what it means if a student answered affirmatively to one of Q7-Q10 and negatively to Q12 or vice versa.

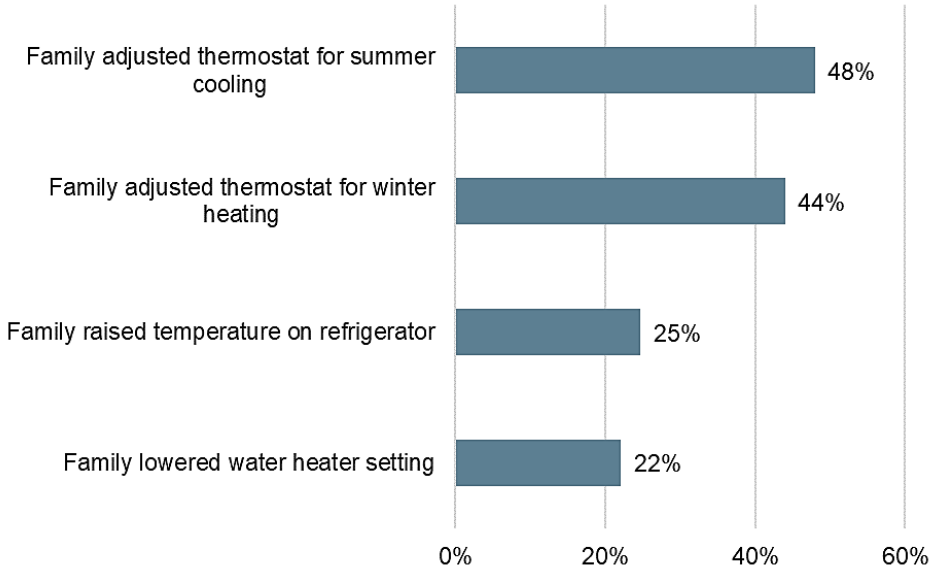


Figure 4-17: What energy saving actions did students report taking?

4.6.4 Residential HVAC Replacement and Tune-up Channel

The Residential HVAC Replacement and Tune-up Channel's process-related data collection activities included a facilitated discussion with program staff and surveys of participating single family home customers, multifamily property owners/managers, and participating trade allies and contractors.

4.6.4.1 Single Family Residential HVAC Replacement & Tune-up Channel Customer Survey

ADM conducted a survey of 165 Single Family Residential HVAC Channel participants in August and November 2021. ADM surveyed customers that participated in both the tune-up and installation tracks of the Channel. Table 4-75 displays additional detail regarding the response rates for the survey. Thirty-seven installation and 153 tune-up track customers responded to the survey. See Table 4-75 for more information.

Table 4-75: Survey response rate information

	Tune-Up	Install	Total
Initial email contact list	568	321	889
Invalid email addresses	6	0	6
Bounced email	67	36	103
Invalid email (%)	*13%*	*11%*	12%
Email invitations sent (unique valid)	495	285	780
Completions	128	37	165
Completes w/photo upload	50	18	68
Completes w/photo upload (%)	39%	49%	41%
Response rate (%)	26%	13%	21%

Most respondents reported owning a single-family home that uses natural gas as the main fuel for home and water heating. Table 4-76 summarizes respondent home characteristics. HVAC tune up and install respondents had similar characteristics, with one notable difference.[37] Consistent with ADM's 2020 survey, a larger portion of installation respondents than tune-up respondents identified as male (76% versus 48%).

[37] ADM compared the proportions with two proportion z-tests. These differences are significant with an alpha of 0.05.

Table 4-76: Single Family HVAC Survey Respondent Home Characteristics

Question	Response	Percent
Do you rent or your home? (n=163)	Own	98%
	Rent	2%
	Prefer not to answer	1%
Which of the following best describe your home? (n=165)	Single family home	96%
	Duplex, condo, townhouse, or apartment	2%
	Other	1%
	Don't know/Prefer not to say	2%
What is the main fuel used to heat your home?[38] (n=165)	Electricity	31%
	Natural Gas	68%
	Propane/Wood Stove	1%
	Don't know/Prefer not to say	1%
What is the main fuel used to heat your water? (n=164)	Electricity	22%
	Natural Gas	74%
	Propane	1%
	Don't know/Prefer not to say	4%
About how many square feet is your home? (n=164)	Less than 1,000 square feet	5%
	1,000-1,999 square feet	51%
	2,000-2,999 square feet	35%
	3,000-3,999 square feet	5%
	4,000 or more square feet	3%
	Don't know	1%
When was your home built? (n=163)	Before 1960	10%
	1960 to 1969	6%
	1970 to 1979	10%
	1980 to 1989	13%
	1990 to 1999	15%
	2000 to 2009	12%
	2010 to 2018	23%
	Don't know/Prefer not to say	2%
Including yourself, how many people currently live in your household? (n=155)	1	22%
	2	46%
	3	17%
	4	8%
	5	6%
	6	1%

About half of survey respondents identified as male (54%) and the remaining respondents identified as female (41%), some other gender (1%), or preferred not to

[38] Percentages may not total 100% due to rounding or respondents selecting more than one option.

identify their gender (5%). Most survey respondents (58%) identified as being 55 years of age or older. The majority of survey-takers (79%) identified as Caucasian or white.

Table 4-77: Additional Single Family Survey Respondent Characteristics

Question	Response	Percent
What is your age? (n=165)	Under 24 years old	1%
	25-34 years old	6%
	35-44 years old	16%
	45-54 years old	16%
	55-64 years old	18%
	65-74 years old	22%
	75-85 years old	17%
	86 years old or older	1%
	Prefer not to say	4%
What's the highest level of education you've completed?	High School Graduate/GED	13%
	Associates Degree, Vocation/Technical School, Or some college	29%
	Four-year college degree	22%
	Graduate or professional degree	32%
	I prefer not to answer	4%

ADM asked the 128 HEEP HVAC tune-up participants questions about their past experience with HVAC tune-ups, Channel awareness, decision to participate in the OG&E HEEP, and satisfaction with the Channel. Questions have 128 responses except where it is noted that fewer responses were obtained due to question nonresponse.

Past Experience

Fifty-five percent of respondents said that their HVAC system had been tuned up in the past before they had the OG&E-sponsored HVAC tune-up through this program (n=127).

Of the 70 respondents that said they had previously had tune-ups, more than half (69%) reported having had a contractor perform a tune-up of their equipment twice or more. Eighty-nine percent of those respondents with prior tune-up experience said that their equipment had been functioning properly at the time of their prior tune-up(s). The other respondents said that their equipment was not functioning properly (10%) or were unsure about its operational status (1%).

Eighty-two percent of respondents said their contractor explained the important elements of an effective tune-up with them (n=127). Table 4-78 displays the elements of an effective tune-up that customers recalled their contractor discussing with them.

Table 4-78: What Elements Did The Tune-Up Contractor Say Were Important?[39]

Element	Percent
Condenser coil cleaning	57%
Evaporator coil cleaning	40%
Cleaning blower	40%
Accurate refrigerant recharge	43%
Verifying airflow	39%
Another element	6%
Don't recall	27%

Decision-making

Survey findings indicate that the HVAC Channel was an important factor in most customers' decision to tune up their HVAC system. Sixty-five percent of respondents said they would not have had a tune-up (44%) or did not know (21%) if they would have had a tune-up without the assistance of the program (n=127). Moreover, almost half of respondents said they did not have plans (44%) or could not recall if they had plans (2%) to tune up their HVAC system before learning about the program (n=127).

Forty-three percent of respondents noted that the service provider they worked with provided information, marketing material, or a recommendation to complete their HVAC tune-up project. Seventy-five percent of these respondents reported that the information, marketing material, or recommendation they provided was influential in their decision to complete their tune-up (n=68).[40] Over half of respondents (58%) noted that the OG&E HEEP HVAC Channel influenced them to conduct the tune-up project sooner.

Figure 4-18 displays how respondents reported learning about the HVAC tune-up Channel. The most common ways that respondents learned about the HVAC tune-up Channel were through a bill insert or an email from OG&E.

[39] Other elements that customers recalled included the timeline for filter replacement, unit cleaning, and capacitor replacement and ensuring the unit was using the appropriate refrigerant and was the appropriate size for the home.

[40] Rated the level of influence a 4 (25%) or 5 (47%) on a scale from 1 (not at all influential) to 5 (very influential)

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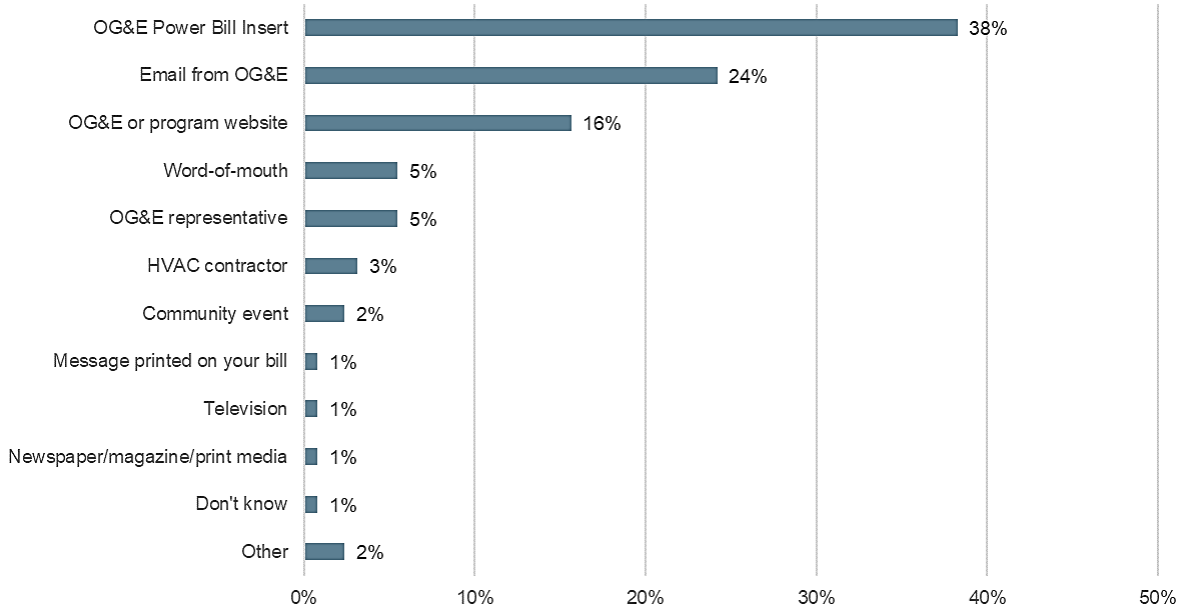


Figure 4-18: How Did HVAC Tune-Up Participants Learn About The Channel?[41]

Forty-eight percent of respondents noted that the OG&E tune-up had been recommended to them. Most of these respondents said that it was either recommended by an OG&E representative (63%), a friend, relative, neighbor, or landlord (17%). Ten percent of respondents noted that a contractor had recommended the tune-up. The remaining 5% of respondents said they learned about the program at an event, through an app, or did not mention how they learned about the program.

Satisfaction

Most HVAC tune-up respondents reported being satisfied with various aspects of participation as well as their overall experience. Seventy-four percent of respondents indicated that they had recommended the OG&E HVAC tune-up track to someone else after participating (n=122). This finding indicates the HEEP HVAC tune-up track's design and implementation remain consistent and participation procedures are well established, and well-functioning.

Figure 4-19 displays HVAC tune-up track survey respondents' satisfaction with various aspects of their participation as well as their experience with the HEEP Channel overall.

[41] n=127.

Ninety percent of HVAC tune-up track respondents were satisfied with OG&E as their electric utility.[42] Correspondingly, 89% said it was likely they would recommend OG&E to a friend or colleague (n=123).[43]

Twenty-three percent of respondents noted some sort of dissatisfaction with their experience with the HVAC tune-up track or an opportunity for OG&E to improve its services. These respondents noted opportunities to improve scheduling (8%), the quality or speed of the contractor's work (7%), or Channel offerings or communication about OG&E services (6%). Customers that noted dissatisfaction or made suggestions for improvement worked with various HVAC trade allies, indicating no sole or clear trade ally responsible for Channel dissatisfaction.

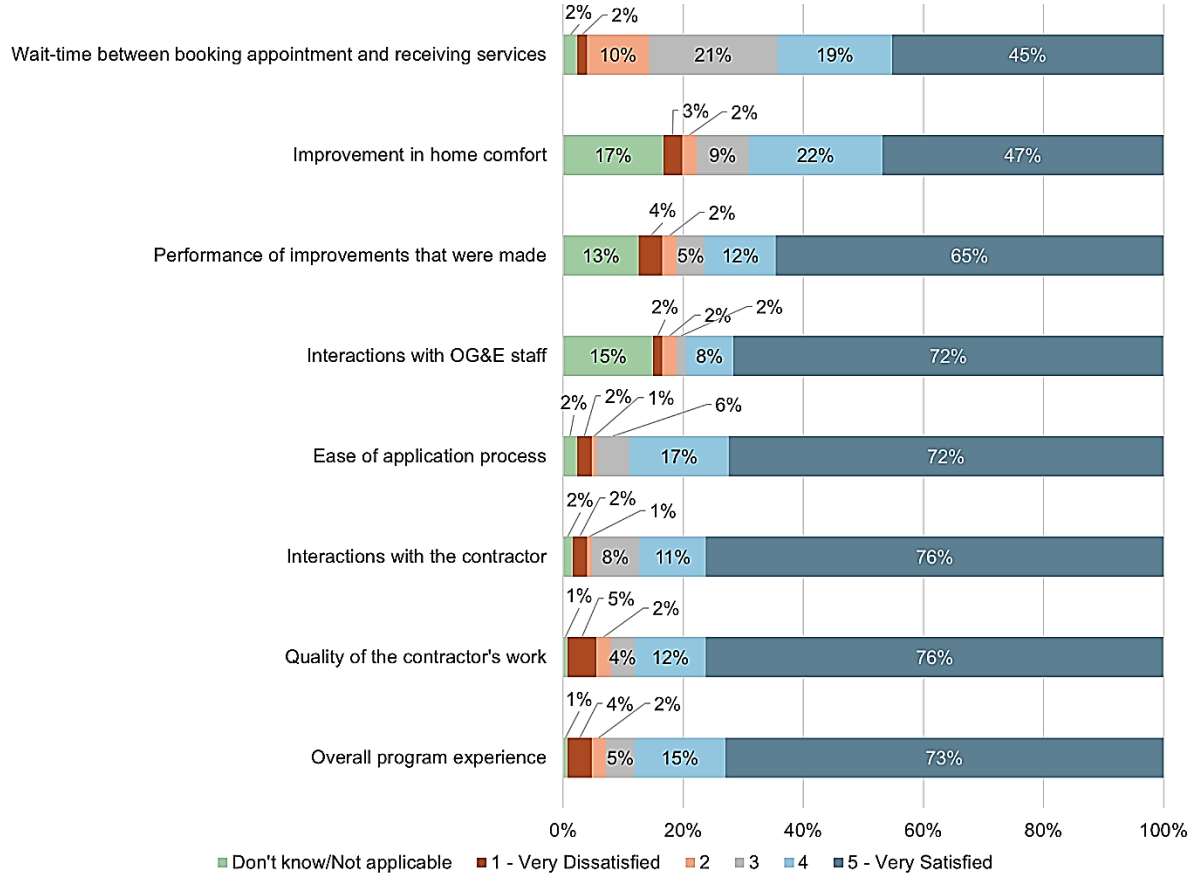


Figure 4-19: HVAC Tune-Up Customer Satisfaction

[42] Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).
[43] Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

4.6.4.2 Single Family HVAC Installation Customer Survey

Thirty-seven HVAC installation participants responded to ADM's email survey invitation in August and November of 2021. All questions in the survey have 37 responses except where it is noted that fewer were obtained due to question nonresponse.

Installation Experience

Seventy-six percent of survey-takers said that their HVAC installation was not part of a new construction or major renovation project, indicating most OG&E HEEP HVAC installation participants are replacing older, less efficient units.

Decision-making

Survey findings indicate that a considerable portion of OG&E HVAC installation participants would still have installed a new unit if OG&E did not offer an inducement. However, the inducement is often important in influencing customers to buy more efficient units and the Channel's trade allies are influential in customer decision-making.

Forty-nine percent of respondents said they planned on installing a new unit before learning about the OG&E inducement and 59% of respondents said they would have been financially able to complete the project without the OG&E inducement. Similarly, 59% said they would have likely completed HVAC installation if the program was not available.[44] Seventy percent said they installed a more efficient unit than they otherwise would have if they had not received an inducement through the Channel.

Eighty-nine percent of respondents recalled their service provider offering them information, marketing material, or a recommendation to complete their HVAC installation project, and 70% of these respondents (n=33) said that this information or recommendation had been influential in their decision to complete their HVAC installation project.[45]

Forty-one percent of respondents said they completed their HVAC installation project sooner than if the Channel had not been available and 47% of these respondents (n=15) said they would have completed the project over a year later.

Eighty-six percent of respondents said they learned about the program from an HVAC contractor. The remainder mentioned the OG&E or Home Efficiency Program website (5%), an email from OG&E (3%), or past experience (3%). One respondent (3%) did not specify the method in which they learned about the HVAC Channel. Eighty-six percent

[44] Rated their likelihood of completing the project a 4 or 5 on a scale from 1 (not at all likely) to 5 (very likely).

[45] Rated the contractor's influence on their decision a 4 or 5 on a scale from 1 (not at all influential) to 5 (very influential)

of respondents noted that the OG&E tune-up had been recommended to them. All these respondents said that it was recommended by an HVAC contractor.

Satisfaction

Ninety-seven percent of the HVAC installation survey respondents were satisfied with their overall Channel participation experience. Figure 4-20 displays HVAC installation survey respondents' satisfaction with various aspects of their participation as well as their experience with the HEEP Channel overall.

Forty-six percent said they had recommended this program to someone else. Seventy-three percent of respondents that had not yet recommended the Channel said they were likely to recommend it in the future (n=9).[46]

Five respondents (14%) provided written comments and provided additional detail. Four of these respondents mentioned dissatisfaction with OG&E and their service's reliability. One mentioned that their HVAC installer placed their unit in a position that blocked access to their trash dumpster.

ADM found that 73% of the HVAC installation survey respondents were satisfied with OG&E as their electric utility.[47] Correspondingly, 72% said it was likely they would recommend OG&E to a friend or colleague (n=36).[48]

[46] Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

[47] Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied). Twenty-two percent of respondents provided a rating of 3. The remaining respondent (5%) rated their satisfaction with OG&E a 2 out of 5.

[48] Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

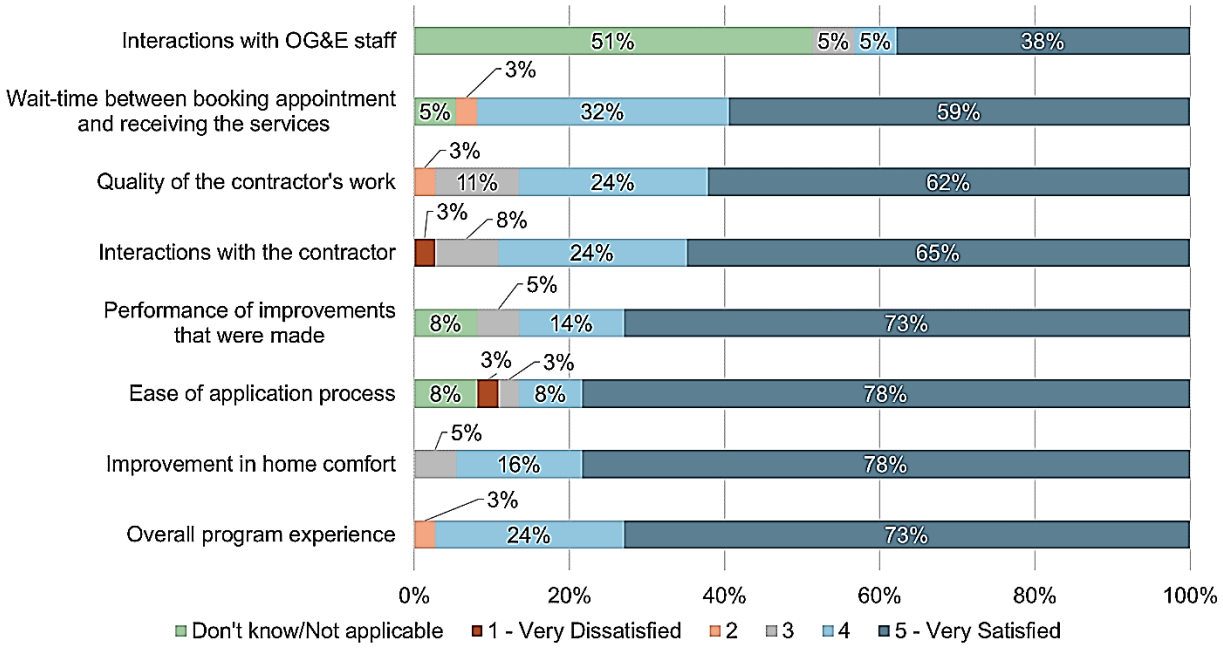


Figure 4-20: HVAC Installation Satisfaction

4.6.4.3 Multifamily Owner/Manager Survey

In August, September and December 2021, ADM conducted a mixed-mode (phone/email) survey with six representatives from the properties that participated in the OG&E HEEP HVAC Channel that received air and duct sealing improvements.

Survey findings indicate the respondents would have been unlikely to complete the improvements if the HEEP HVAC Channel was not available. Moreover, most respondents were unaware there was a need to make improvements before participating in the Channel. Five respondents said that before their participation in the program, they were unaware that the duct system(s) at their property were leaky. Three were also unaware residences were drafty. Correspondingly, all six respondents indicated the contractor provided useful information.[49] None of the respondents noted having plans to make the air or duct sealing improvements before they learned about OG&E's HVAC Channel.

Two respondents said their organization would not have been financially able to make the improvements and two were not sure about their organization's financial ability.

Five respondents said they completed this project sooner than they would have if this OG&E Channel had not been available. One respondent said they never would have

[49] Rated their satisfaction with the usefulness of the information provided a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).

made these improvements without the Channel. The other four respondents said they either did not know when they would have completed the improvements (two respondents), they would have completed the same improvements in two or more years (two respondents).

ADM asked the multifamily HVAC Channel participants about their satisfaction with different aspects of the Channel as well as the Channel overall (see Figure *4-21*). Five respondents reported satisfaction with the Channel overall.[50] Three said they had recommended the Channel to a friend or colleague; two of the remaining contacts said they would be likely to recommend it to someone else.[51]

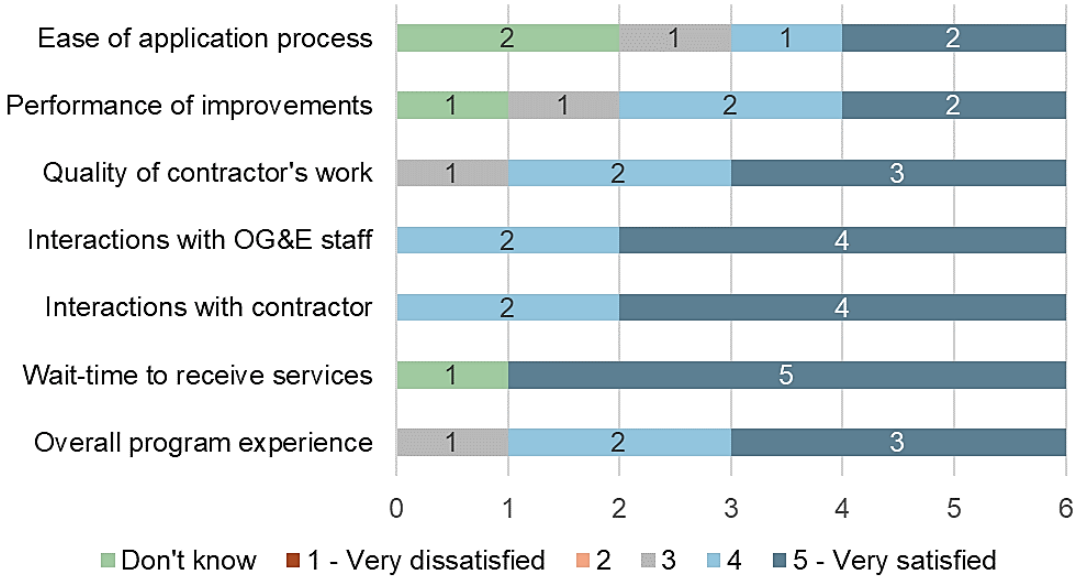


Figure 4-21: Multifamily Participant Satisfaction

One contact noted that the contractor "did not do much work" and they did not perceive the benefits of participation to be in line with the amount of tenant and contractor coordination required to participate in the Channel. Further, they mentioned dissatisfaction with the quality and amount of work completed through the channel. They noted that "(duct) tape was coming off" and suggested adding door sweeps and sealing to add value to the air infiltration improvements. The contact also suggested improving Channel communication regarding the required blower door and duct blaster testing as he was not aware of the extent of the testing when their property signed up.

[50] Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied)
[51] Rated their likelihood of recommending the Channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Five were also satisfied with OG&E as their utility, and four said they would recommend OG&E to a friend or colleague. The same participant that indicated a lack of satisfaction with the HVAC Channel noted some dissatisfaction with OG&E's service as their electric utility provider (they stated tenants had billing issues).

4.6.4.4 Residential HVAC Replacement & Tune-up Trade Ally Survey

ADM administered an online survey to collect feedback and net-to-gross information from HEEP HVAC trade allies. ADM received responses from seven contractors that participated in the Channel in 2021.

The respondents participated in the single-family pathway of the Channel. Five offered both tune-up and replacement services and the other two trade allies only offered replacement services through the Channel. Five said they had been participating in the Channel for three or more years; the other two indicated they had participated for one to two years.

- **Trade allies shared mixed perceptions regarding customer awareness of the program.** Five estimated that fewer than 40% of their customers knew about the program before they told them about it. The other two trade allies indicated most of their customers knew about the Channel before they told them about it. One said all of their customers knew about the Channel, while the other estimated between 60-69% of customers knew about it before they told them. Reported level of awareness did not appear to be related to trade ally size or activity level.
- **The trade allies recalled learning about the Channel several different ways.** Four trade allies mentioned learning about the Channel from a manufacturer or supplier. Two said a business colleague had informed them of the Channel. The remaining trade ally could not recall how they first learned of the Channel.
- **The Channel is viewed as a way to expand business, increase sales.** Five of the interviewees mentioned that they decided to participate to grow their customer base or to expand their business. Three mentioned that participating in the Channel helped them promote energy efficiency or clean energy by helping them sell more high-efficiency equipment.
- **There was mixed feedback regarding the usefulness of training.** Six of the trade allies noted that they had received training from Channel staff in 2021. Three trade allies that had training said it had been very helpful.[52]

[52] Rated the helpfulness of the training a 5 on a scale from 1 (not at all helpful) to 5 (very helpful).

Trade allies were asked to elaborate on their ratings. Two of the other trade allies noted that training was consistent with past years' training and indicated that they did not find the training beneficial. The third observed that the online format was "not easily understandable."

- **Participating in the Channel is generally an important factor in trade ally marketing and selling of incentivized measures and services.** Five of the trade allies noted that inducements and information provided through the Channel had been important in influencing their level of marketing and selling of the incentivized energy efficient measures to OG&E customers in 2021.[53] Moreover, three of the HVAC tune-up and installation trade allies said they would not have made the same recommendations to customers if the Channel was not available.
- **Most of the trade allies were satisfied with the Channel overall.** Four respondents indicated dissatisfaction with the range of equipment that qualifies for rebates or inducements and three with program paperwork.
- Figure 4-22 displays trade ally satisfaction with the Channel. Four respondents indicated dissatisfaction with the range of equipment that qualifies for rebates or inducements and three with program paperwork.

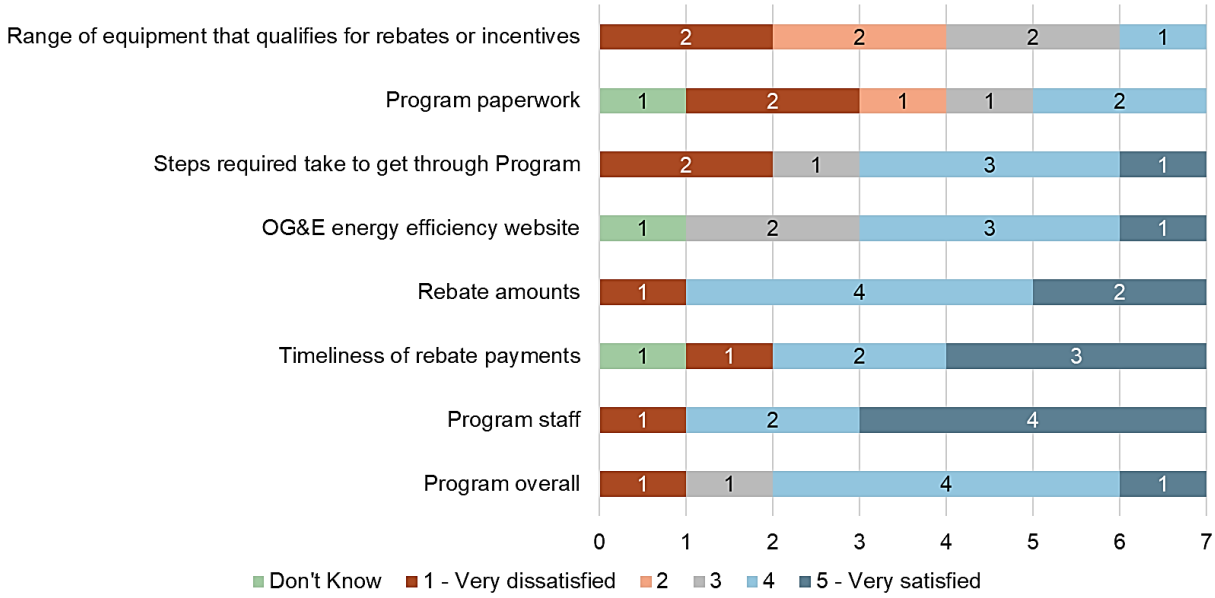


Figure 4-22: HEEP HVAC Trade Ally Satisfaction

[53] Rated the level of importance of the Channel in influencing them a 7 or higher on a scale from 0 (not at all important) to 10 (very important).

- **The trade allies suggested various opportunities for Channel design and implementation improvement.** The most common recommendations were to increase the types of equipment types (four trade allies) and to increase the inducement amount (three trade allies). Two of the four trade allies that suggested increasing the range of equipment available elaborated. One suggested adding inducements for mini-splits and higher inducement levels for high end equipment. The other observed that sales of induced equipment are dependent on supplier availability of equipment that meets Channel requirements.
- Other recommendations for Channel improvement included:
  - Increasing marketing and promotion of the Channel (two trade allies).
  - Improving the application process and processing time (two trade allies). These trade allies both observed that the Channel requires a significant amount of information for each project and the application process is onerous and time-intensive. Further, one stated that the replace on burnout submissions are “awkward” and “time-consuming” and both voiced frustration with the required instrumentation to participate in the Channel.
  - Maintain continuous operation (two trade allies). One of these trade allies further recommended allowing tune-ups in the winter.
  - Working with other utilities in the state to design and implement one program available for all Oklahoma ratepayers (one trade ally).
- **The COVID-19 pandemic impacted the HVAC trade allies’ operations in 2021.** Figure 4-23 displays the impacts that trade allies noted related to the COVID-19 pandemic. Some contacts provided additional detail regarding these impacts. Three of the trade allies that mentioned an impact on sales said their sales had been adversely affected because of supply chain issues, while two suggested they had increased sales related to the COVID-19 pandemic. Regarding the types of projects, one trade ally suggested customers are interested in ensuring their homes are comfortable in order to work from home. None indicated that the COVID-19 pandemic had hindered their ability to participate in the Channel or take advantage of OG&E programs, outside of supply chain issues and one contact having reduced hours when they were infected with COVID-19.

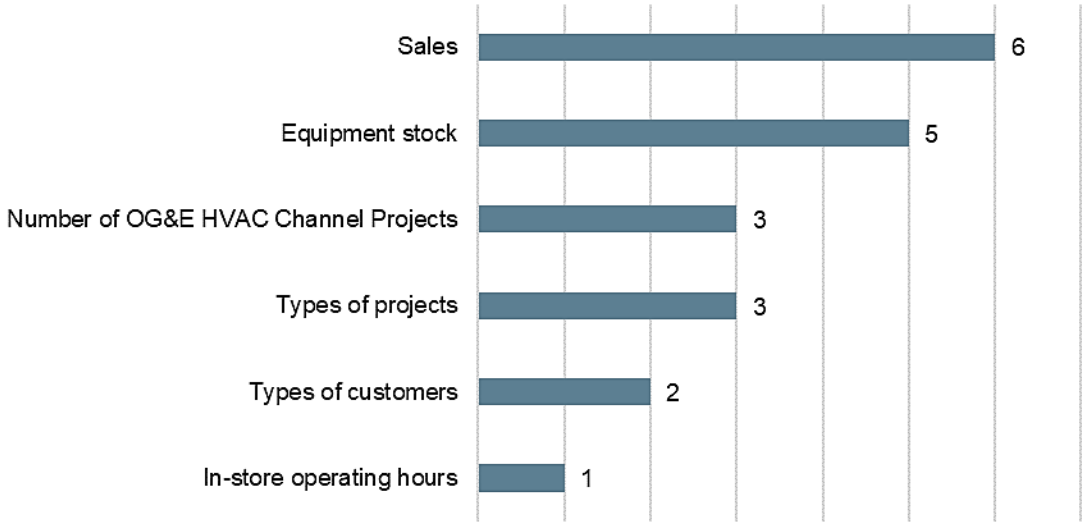


Figure 4-23: COVID-19 Impacts on HVAC Trade Allies

4.6.5 Consumer Products Channel

The following section provides an overview of the methods used and detailed findings from the process evaluation for the Consumer Products Channel of OG&E's HEEP. The process-related data collection activities for the HEEP Consumer Products Channel included program staff interviews and a survey of OG&E customers.

4.6.5.1 OG&E Customer Survey

Methods & Description of Survey

ADM gathered survey responses from 330 customers using two methods: an email invitation and an in-store "tear-off" sheet pad. To recruit customers for the email survey, ADM requested a random sample of 10,000 customers from OG&E and contacted customers with one invitation and two reminders. ADM administered the email survey in November 2021 and received 323 responses (3% response rate).

For in-store survey recruitment, ADM worked with CLEAResult to place "tear-off" sheet pads with a short message about the survey, a survey link, and a QR code in stores close to discounted measures (a QR code is a barcode that can be scanned by a smartphone to automatically direct individuals to a web page). CLEAResult placed the in-store recruitment "tear-off" sheet pads by non-lighting measures (room air conditioners, water dispensers, air purifiers, and bathroom ventilation fans) at ten participating Home Depot stores in April 2021. ADM received seven responses from the in-store recruitment method.

The survey asked respondents whether they had bought measures induced through the OG&E HEEP Consumer Products Channel at a participating retailer in 2021. It also asked about their decision-making process that went into buying energy efficiency products.

The survey collected limited household and demographic information; the typical respondent owned a single-family home, relied on natural gas for home and water heating, and lived with one or more other people (see Table 4-79).

Table 4-79: Survey Respondent Home Characteristics

Question	Response	Percent
Do you rent or your home? (n=329)	Own	79%
	Rent	20%
	Prefer not to say	1%
Which of the following best describe your home? (n=329)	Single family home	86%
	Duplex, condo, townhouse, or apartment	11%
	Mobile home	3%
	Prefer not to say	1%
What is the main fuel used to heat your home? (n=329)	Electricity	43%
	Natural Gas	53%
	Propane/Wood Stove	3%
	Geothermal	<1%
	Don't know/Prefer not to say	1%
What is the main fuel used to heat your water? (n=328)	Electricity	38%
	Natural Gas	58%
	Propane	2%
	Don't know/Prefer not to say	2%
About how many square feet is your home? (n=329)	Less than 1,000 square feet	12%
	1,000-1,999 square feet	47%
	2,000-2,999 square feet	23%
	3,000-3,999 square feet	8%
	4,000 or more square feet	2%
	Prefer not to say/No response	8%
When was your home built? (n=330)	Before 1960	21%
	1960 to 1969	11%
	1970 to 1979	17%
	1980 to 1989	11%
	1990 to 1999	8%
	2000 to 2009	11%
	2010 to 2021	12%
	Don't know/Prefer not to say	10%

Including yourself, how many people currently live in your household? (n=328)	0	<1%
	1	18%
	2	36%
	3	14%
	4	12%
	5	5%
	6 or more	3%
	Prefer not to say	13%

ADM also asked respondents to provide information regarding ethnicity, educational background, gender, and age (Table 4-80). Most respondents identified as Caucasian or white and reported being employed and having completed some education beyond high school. Of the respondents who identified their gender (n=327), forty-eight percent said they were female, while the remaining respondents identified as male (45%) or described themselves as non-binary (<1%). Six percent of respondents declined to identify their gender.

Table 4-80: Respondent Age, Race, Employment, and Education

Question	Response	Percent (n=328)
What is your age? (n=328)	18-24 years old	2%
	25-34 years old	11%
	35-44 years old	19%
	45-54 years old	17%
	55-64 years old	22%
	65-74 years old	18%
	75-85 years old	7%
	86 years old or older	1%
	Prefer not to say	4%
How would you identify your race or identify? [54] (n=328)	Asian	3%
	Black/African American	5%
	Caucasian/White	74%
	Hispanic or Latino	6%
	Native American or Alaska Native	9%
	Prefer not to say	9%
What's the highest level of education you've completed? (n=328)	Less than high school	2%
	High School Graduate/GED	15%
	Associates Degree, vocation/technical school, or some college	30%
	Four-year college degree	27%
	Graduate or professional degree	21%
	I prefer not to answer	5%

Energy-Efficient Product Purchases at Participating Retailers

Eighty-nine percent of survey-takers (n=327) reported buying LED light bulbs from a retail store chain that participated in the OG&E Consumer Products channel. A much smaller portion of respondents noted buying non-lighting measures at participating retailers (see Table 4-81).

[54] Sums to more than 100% because respondents could select more than one race or ethnicity.

Table 4-81: Respondent Induced Measure Purchases

Measure	Percent of Respondents (n=330)
LED light bulbs	99%
ENERGY STAR room air conditioners	2%
ENERGY STAR bathroom ventilation fans	1%
ENERGY STAR room air purifiers	1%
Energy-Saving Advanced Power Strips	1%
ENERGY STAR Water dispensers	1%

ADM investigated the experience and decision-making of OG&E customers that bought LED lightbulbs and other induced measures in 2021. ADM presents details about LED lightbulb purchasers below. The investigation of non-lighting measures was omitted from this report because fewer than ten respondents reported purchasing each type of program-induced non-lighting measure.

LED Lightbulb Purchases at Participating Retailers

ADM asked survey-takers what kind of lightbulb(s) they replaced with the LED bulb(s) they bought in 2021. Table 4-82 displays the types of bulbs respondents reported replacing. Each respondent could select more than one type of bulb replacement, though twenty-four percent of respondents said they only replaced LEDs, and 4% said they only installed bulbs where none had been installed previously. Ten percent indicated they only replaced incandescent or CFLs with the OG&E discounted LEDs.

Table 4-82: What Types of Bulbs Did Respondents' Replace With OG&E Discounted LEDs?[55]

Response	Percent of Respondents (n=327)
Traditional Incandescent/Halogen	63%
LEDs	38%
CFLs	50%
Installed bulbs in fixture or socket where there was none before	22%
I do not recall	9%

The reasons that respondents gave for buying LED lightbulb(s) were consistent with the reasons provided in ADM's 2019 and 2020 surveys of OG&E customers. Eighty percent of respondents said that they replaced burnt-out bulbs. A smaller portion noted they bought LED lightbulb(s) to replace working lightbulbs (27%), stock up (17%), or install new fixtures or lamps (12%).

[55] Sums to more than 100% because respondents could select more than replacement response.

Eighty-seven percent of respondents could not recall whether the LED lightbulb(s) they bought were discounted. Of the customers that did recall their LED purchase was discounted (n=43), 30% recalled that OG&E was responsible for the discount. Seventy-nine percent of these customers (n=13) said they learned about the discount from an in-store display. The other respondents could not recall their source of awareness (14%) or said they learned about it from a bill insert (7%).

This is consistent with ADM's 2019 and 2020 survey findings and may signal there is a continuing opportunity to increase awareness.

Seventy-nine percent of these respondents said that the discount was at least moderately important in their decision-making process (see Figure 4-24).

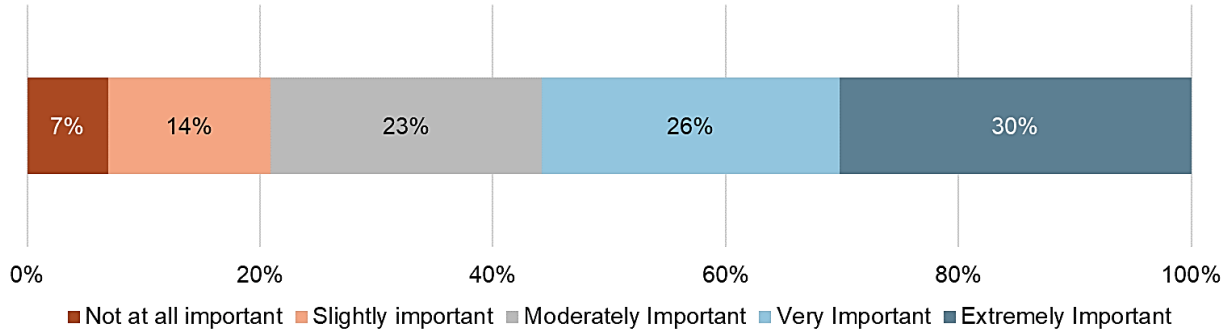


Figure 4-24: How Important Was the Discount on the Decision to Purchase LEDs?[56]

About half of the respondents that bought LED bulbs at a participating retail store said that they would have either probably or definitely still bought the bulbs if they had cost $2 more per bulb (see Figure 4-25).

[56] n=43

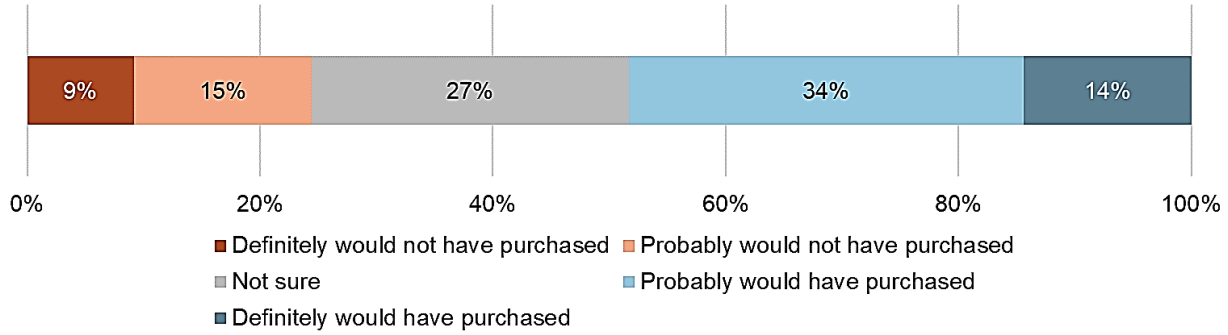


Figure 4-25: would you have purchased the LED light bulbs instead of another type of light bulb if it had cost $2 more per bulb?[57]

Seventy-nine percent of respondents who bought LEDs at participating retail stores reported that they had bought LED bulbs before 2021. This is a similar portion of respondents as in 2020 and is larger than in 2018 (68%) and 2019 (71%), indicating increasing LED lightbulb purchase experience among OG&E customers in Oklahoma. Consistent with ADM's 2018-2020 customer surveys, most respondents (92%) said the LED lightbulb(s) that they had bought in the past were not discounted by OG&E (60%) or did not recall (32%) if they had been.

4.6.6 Positive Energy - New Home Construction (PE-NHC) Channel

ADM conducted a facilitated discussion with staff and PE-NHC Channel participating builders to investigate Channel design, marketing and outreach, participation, processes, satisfaction, and any significant changes to the Channel, as well as key barriers and drivers to Channel success. Participating builders also provided insight into their decision-making processes to help to support the estimation of Channel net savings.

4.6.6.1 Builder Interviews

In November 2021, ADM conducted phone interviews with builders that participated in OG&E's PE-NHC Channel. ADM verified contact and participation information with the Program Manager and attempted to speak with six participating builders that had built homes to the Channel's standards in 2021. ADM spoke with three participating builders.

Two builders noted having participated for several years, while the other said they began participating in 2020. The builder that began participating in 2020 mentioned learning about the Channel through a HERs rater.

[57] n=327

The two builders with longer tenures with the PE-NHC Channel reported that all of the new homes they had built within OG&E territory in 2021 received OG&E PE-NHC inducements. The builder with less experience in the Channel noted that some of the homes they built in OG&E territory had not received PE-NHC inducements because of administrative challenges.[58]

- **PE-NHC Channel promotional material supports customer awareness of the benefits of energy-efficient homes.** All of the builders noted that they inform their customers of the channel. They all also mentioned using promotional materials provided by OG&E to inform them of the benefits of homes that meet the channel's building standards.
- **Builders are satisfied with the Channel overall.** All the builders said they were satisfied with the communication and support from OG&E staff and the Channel overall. However, two builders noted a lack of satisfaction with various aspects of the Channel including the required paperwork, the rebate check processing time, and the HERs rating process.[59]
- **There is an opportunity to improve the HERs rating process and Channel communication.** Two builders noted that the HERs rating process could improve. One builder mentioned that half the homes they built in OG&E territory in 2021 would not receive inducements because the HERs raters did not submit or complete the required paperwork and there was delayed communication with the PE-NHC Channel manager. Regarding the rebate processing time, they stated it took 3-4 months to get their first inducement payment. The other builder observed that the paperwork process can take up to a year and suggested three reasons for this: there are not many HERs raters in Oklahoma, performance and quality of current HERs raters in Oklahoma is not high and they "seem a bit disorganized," and there has been a learning curve associated with the recent shift from Resnet to Ekotrope.
- **Channel could consider updating design and inducement.** One builder suggested updating the Channel design to encourage building homes that are more efficient than the Channel standard. They suggested considering a tiered financial inducement that could provide a higher inducement for homes based on the HERs score. They also stated that the inducement had remained unchanged for years while home building costs have increased.
- **The PE-NHC Channel played a unique role in each builders' decision to build energy-efficient homes in 2021.** Two of the builders said the Channel's

[58] The builder stated that paperwork for sixteen homes had not been submitted by the HERs rater and they had not received timely communication from Channel staff.
[59] Rated their satisfaction a 3 or lower on a scale from 1 (very dissatisfied) to 5 (very satisfied).

inducement was an important factor in their decision to build qualifying homes. They also said they would have built fewer homes in OG&E's service territory that met the Channel's efficiency standards if the Channel was not available. These two gave very different estimates, however, of the inducements' effects: one stated they would not have built any homes to the OG&E standard, while the other said they still would have built 85% of the homes to the PE-NHC standard. The third builder said if the Channel was not available, they would have built the same number of homes to the OG&E standard, and it was very likely they would have built homes in OG&E's service territory that met the Channel efficiency standards if the Channel was not available.

- **Builders' motivation to participate was consistent with 2019 and 2020.** All builders indicated that the financial inducement is an important factor that motivated them to participate in OG&E PE-NHC Channel.[60] Two builders also indicated that the ability to differentiate themselves from other builders, customer demand for energy-efficient homes, and other Channel assistance also played important roles in motivating them to participate in the Channel. These motivations may indicate that the PE-NHC inducements help builders position themselves as leaders in the market and help drive energy-efficient new home construction.
- **Two builders noted changes to customer priorities related to COVID-19.** Two builders stated that COVID-19 had increased demand for new homes. One noted that customers were less interested in rentals and purchasing homes in big cities, while another observed that customers are growing more interested in energy efficiency because they are spending more time at home.
- **Builders suggested that COVID-19 caused building challenges related to supply chain issues.** Two builders noted that obtaining building supplies had been a challenge in 2021; one also noted that supply prices had increased.
- **Builders rated general appearance and interior features as the most important factors in customers' homebuying decision-making process.** All three builders said that the general appearance was an important factor in customers' decision to buy a home, while two also noted interior features are important to customers.

[60] Rated the importance of the factor a 7 or higher on a scale from 0 (not at all important) to 10 (very important)

4.7 Conclusions & Recommendations

4.7.1 Conclusions

Based on the findings from the 2021 evaluation of OG&E's HEEP, we have developed the following conclusions:

HEEP Awareness (Cross-Channel)

- Customers were very satisfied with OG&E overall and individual HEEP Channels, although some customers noted areas for potential improvement.

RSOL Channel

- Survey findings indicate an opportunity to increase the education and promotion of energy efficiency through the in-home assessment portion of the channel, with one in four saying that they didn't get recommendations and the assessor did not discuss savings with them.

School Outreach Channel

- The program operated as usual and reached its goals. Survey data suggests student satisfaction with the Channel with over three-quarters of survey respondents rated the program as "pretty good" or better.
- ADM's analysis of student survey results indicates opportunities to update question wording to improve the Channel's ability to gauge its impact on students and their families.

Residential HVAC Replacement & Tune-up Single family

- ADM's customer surveys in 2019 and 2020 found that a larger portion of installation respondents than tune-up respondents identified as male. Conducting additional research to understand why this is the case (i.e., does it reflect differences in household make-up, wealth, or division of decision-making responsibilities?) could help inform OG&E and CLEAResult's marketing of the Channel.
- Survey findings indicate that the Channel is providing educational value to HVAC tune-up participants. Most customers recalled the tune-up contractor explaining the important elements of an effective tune-up, though survey responses indicate about one-quarter do not recall the information that was shared.
- The Channel continues to be an effective method for encouraging residential customers to install high efficiency equipment and to have tune-ups. The trade ally survey also suggested that the Channel acts as an important lever in

influencing the trade allies' level of marketing and selling of the incentivized energy efficient measures to OG&E customers.

- Trade ally training survey responses indicate there is an opportunity to improve or update training curriculum. Though half of the trade allies that received training in 2021 perceived it as very helpful, the others commented that the training's content had not changed from previous years, or its format could be improved. Further, two trade allies voiced dissatisfaction with the application process, indicating an opportunity to help trade allies navigate requirements with greater ease.

RSOL and Residential HVAC Replacement & Tune-up Multifamily

- The Multifamily tracks of the RSOL and HVAC Channels made up 69% and 80% of total Channel savings, respectively. This indicates that though improvements and services provided to single family homes remain an important service, multifamily energy efficiency is the driver of savings for these Channels.
- Interviews with property managers/owners indicate the RSOL and HVAC Channels are being implemented effectively, though some feedback indicates opportunity for improving the quality control/consistency of service and communication with customers.
- During the HEEP staff facilitated discussion, CLEAResult staff indicated that the OG&E HEEP's multifamily energy efficiency improvement efforts will be streamlined in the upcoming program year. ADM's past evaluation results coupled with responses from this year's multifamily decisionmaker surveys indicate this shift will enable more property managers/owners to make more comprehensive improvements, with fewer administrative and operational requirements.

Consumer Products Channel

- Energy efficient lighting continues to make up the majority of the Consumer Products Channel's energy savings (kWh). The portion of savings from other measures decreased from 2020 to 2021, dropping below 5% of Channel savings.

- Findings from the Consumer Products Channel survey indicate Channel awareness remains low. Most survey respondents said they were unaware that the LEDs they purchased were discounted. This is consistent with results from ADM's 2018-2020 surveys. This may indicate that the Channel could still meet its savings goals, while potentially using less time and resources for advertising, as only a small portion of Channel participants are aware of the Channel's point-of-sale inducements at the time of their purchase.

PE-NHC Channel

- ADM's interviews with participating builders and program staff suggest the introduction of a tiered inducement design will bolster the Channel and further influence builders operating in OG&E's service territory by encouraging building to new, updated higher standards.
- Builder and staff interviews suggest the Channel could improve communication and coordination with HERs raters. Two of the three builders ADM interviewed in 2021 observed challenges with the Channel related to working with HERs raters. Program staff observed that there may be opportunities to increase engagement with the raters and to increase the number of raters in Oklahoma to assist with Channel implementation.

4.7.2 Recommendations

ADM offers the following recommendations for the OG&E HEEP:

- To bolster the evaluation and verification efforts for the HEEP HVAC Multifamily offering:
    - Provide supporting documentation for air and duct sealing pre-leakage values; pictures of pre-testing equipment and tests could further verify the pre-leakage conditions for these measures. Furthermore, including the square footage of air sealing participant home in the tracking data would validate the pre-conditions.
    - Require billing analysis be conducted for past duct sealing, air sealing and HVAC Tune-Up on a sample of participants to help validate claimed savings.
- Ensure the RSOL Channel's in-home assessors are using the assessment as an opportunity to promote additional energy efficiency actions and OG&E's other HEEP offerings. This could be achieved by providing additional training or giving assessors specific instruction on appropriate methods for promoting additional energy efficiency actions and OG&E's other HEEP offerings. Alternatively, OG&E and CLEAResult could encourage assessors to promote its other HEEP offerings

by creating a referral system to reward assessors that successfully encourage additional energy saving actions.

- For the Residential HVAC Replacement and Tune-up Channel, CLEAResult and OG&E should consider updating the required training for participating trade allies. Updates could include revisiting curriculum and presentation format to ensure attendees are getting key take-aways. Program staff may consider a pre- and post-assessment or questionnaire to verify the training's efficacy.
- Focus on ensuring effective communication and consistent, quality service while streamlining the outreach and implementation of the HEEP Multifamily Channel. Use multifamily property manager feedback to continue to improve the implementation of the Residential HVAC and RSOL Channels. Though the Channels' multifamily interviews indicate overall satisfaction, a portion of respondents shared dissatisfaction and suggestions to improve communication and the services provided through the Program.
- Consider reviewing trade ally suggestions to adjusting the range, quantity, and inducement levels of measures available to customers through the HEEP's HVAC and RSOL Channels and assess whether expanding the Program could be done cost-effectively. Nine of the 16 surveyed HEEP trade allies suggested higher inducement levels. Five also suggested expanding the range of induced measures available through the Channels, though only one provided a specific recommendation, suggesting an inducement for mini split air conditioning units. Two RSOL trade allies mentioned expanding the quantity of induced measures available to each participant through the RSOL Channel (LEDs, ENERGY STAR Windows).
- Revise Question 7 of the LivingWise® Schools Outreach Channel survey, which asks which appliance uses the most energy. This question is ambiguous and so does not allow for a single correct answer. A clothes dryer uses 400 to 1300W compared to about 100 to 400W for a refrigerator, so the clothes dryer uses more energy while it is running. However, a refrigerator is in continuous use, and so it uses more kWh than a clothes dryer over an extended period. Since the question is ambiguous and does not permit a single correct answer, it does not provide an opportunity to give reliable feedback to students, undermining the learning objective. The question should be revised to ask either which appliance uses the most energy *when it is running* or *over the course of a specified period of time (e.g., a year)*.
- Revise Question 12 of the LivingWise® Schools Home Activities survey. This question asks whether students' families had changed the way they use energy. This question is ambiguous since it does not specify whether the question

pertains to changes in energy use *other than*, *in addition to*, or *including* taking energy-saving identified in other survey questions. As such, it does not allow for a clear interpretation of the response, particularly if respondents answer Question 12 affirmatively but the others negatively or vice versa. The question should be revised to make the meaning of the question unambiguous. Possible rewordings include:

- Did your family change the way they use energy *other than* by [list of other activities]?
- Are there any other ways, *other than by* [list of other activities] that your family changed the way they use energy?

In addition, if respondents answer in the affirmative, they should be asked to name the ways their family changed their energy use.

- For the PE-NHC, OG&E should consider revisiting the builders selected to participate in the Channel. Survey findings indicated that though the builders perceive the inducement to be important in their decision-making, at least one would have still built the same number of homes to the OG&E standard if the Channel was not available.

5 Weatherization Residential Assistance Program (WRAP)

5.1 Evaluation Findings

Table 5-1 outlines the *ex ante* and verified *ex post* energy savings by measure for the PY2021 Weatherization Residential Assistance Program (WRAP).

Table 5-1: Gross Electric Savings Summary, by Measure, for PY2021

Measure	*Ex Ante* Energy Savings (kWh)	*Ex Post* Energy Savings (kWh)	Energy Realization Rate	*Ex Ante* Demand Reductions (kW)	*Ex Post* Demand Reductions (kW)	Demand Realization Rate
Air Infiltration	3,283,869	3,283,869	100%	636	636	100%
Ceiling Insulation	1,058,974	1,058,974	100%	357	357	100%
Duct Sealing	6,768,692	6,842,771	101%	2,171	2,193	101%
ENERGY STAR Ceiling Fans	689	761	110%	0.73	0.73	100%
ENERGY STAR Windows	1,202	1,202	100%	0.12	0.12	100%
LED	1,428,611	1,429,188	100%	72	184	254%
Water Heater Jackets	275	275	100%	0.03	0.03	100%
Water Heater Pipe Wraps	2,247	2,263	101%	0.19	0.19	101%
Total	**12,544,560**	**12,619,303**	**101%**	**3,237**	**3,371**	**104%**

Table 5-2 outlines the *ex post* lifetime energy savings, by measure, for the PY2021 WRAP.

Table 5-2: Gross Lifetime Savings Summary by Measure for PY2021

Measure	Estimated Useful Lifetime (yr)	*Ex Post* Lifetime Energy Savings (kWh)
Air Infiltration	11	36,122,559
Ceiling Insulation	25	26,474,362
Duct Sealing	18	123,169,879
ENERGY STAR Ceiling Fans	10	7,611
ENERGY STAR Windows	20	24,047
LED	19	27,154,564
Water Heater Jackets	13	3,573
Water Heater Pipe Wraps	13	29,415
Total		**212,986,008**

Additional details, including approaches, are found in the following sections.

5.2 Program Overview

OG&E's WRAP seeks to generate energy and demand savings for limited income residential customers through the installation of a range of cost-effective weatherization and other measures in eligible dwellings. The purpose of the program is to provide OG&E's limited income residential customers the assistance they need to make their homes more energy efficient, increase comfort levels, and reduce their utility bills.

The program focuses on residential customers who own or rent homes within OG&E's service territory and have an income of less than $60,000 a year or are enrolled in OG&E's Low-Income Assistance Program (LIAP).

The program is designed to facilitate the installation of a wide range of cost-effective weatherization measures, including:

- Ceiling Insulation
- Air Infiltration
- Duct Sealing
- Lighting LEDs
- Water Heater Pipe Wrap
- Water Heater Jackets
- Ceiling Fans

The following measures may be installed by participating non-profit organizations:

- Floor Insulation
- Wall Insulation
- ENERGY STAR Windows
- ENERGY STAR Ceiling Fan with Light Kit

Measures are selected for individual homes through a contractor assessment which identifies a list of cost-effective improvements. OG&E works with Skyline Energy Solutions and non-profit organizations such as the Central Oklahoma Habitat for Humanity to implement the program.

Table 5-3 presents the number of participating customers per residence type for PY2021. Eighty-eight percent of participating residences were single-family homes.

Table 5-3: Participation by Residence Type

Residence Type	Number of Participating Residences	Percentage of Participating Residences
Single-family	3,183	88%
Multi-family	282	8%
Duplex	123	3%
Mobile Home	26	1%
Total	**3,614**	**100%**

Table 5-4 displays the number of residences receiving each of the measure types offered in 2021.[61] Similar to 2019 and 2020, air infiltration reduction was the most common improvement made.

Table 5-4: Number of Residences Receiving Measure Types

Measure	Number of Residences Receiving Measure
Air Infiltration	3,582
Duct Sealing	3,414
ENERGY STAR Ceiling Fans	4
ENERGY STAR Windows	4
LED	3,105
Ceiling Insulation	1,202
Water Heater Jackets	1
Water Heater Pipe Wraps	34

5.3 Gross Impact Evaluation Approach

This section presents gross impact methodologies and key findings for WRAP's PY2021 evaluation. For measures implemented through the PY2021 program, savings verification was performed per methodology described in the 2017 Update to the Oklahoma Deemed Savings (OKDS).

The calculation methodologies for Program measures are detailed in the following sections. In these examples, energy units are expressed in kWh.

5.3.1 Air Infiltration Reduction Savings Calculations

The deemed savings algorithms in the OKDS for air infiltration reduction were developed through simulation modeling using BEopt 2.6, running EnergyPlus 8.4 as the underlying simulation engine. Multiple equipment configurations were simulated in each of the five Oklahoma weather zones in developing savings values denominated in

[61] The values represent the number of homes receiving the measure, rather than the total number of measures installed at all homes. Thus, the values for LEDs do not present the total number of bulbs installed, but the total number of participants receiving at least one of that measure type.

deemed savings per CFM_{50} of air leakage rate reduction. The following table summarizes the infiltration reduction deemed savings values for all Oklahoma weather zones.

Table 5-5: Deemed Savings Values for Air Infiltration Reduction

Zone	AC/Gas Heat kWh	Gas Heat (no AC) kWh	AC/Electric Resistance kWh	Heat Pump kWh	Summer Peak kW Savings
9	0.15	0.06	1.99	0.72	0.0000913
8A	0.22	0.07	2.39	0.96	0.000128
8B	0.25	0.07	2.34	0.97	0.000146
7	0.22	0.05	1.79	0.75	0.000152
6	0.18	0.03	1.18	0.51	0.000119

Baseline assumptions used in developing of these deemed savings are based on a 2013 ASHRAE Handbook of Fundamentals, Chapter 16, which provides typical infiltration rates for residential structures. In a study of low-income homes reported in ASHRAE, approximately 95% of home infiltration rates were below 3.0 Air Changes per Hour (ACH) ACH_{Nat}[62]. Therefore, savings should only be applied to homes with infiltration rates at or below ACH_{Nat} of 3.0 to avoid inducing homes with envelope problems that are not easily remedied through typical weatherization procedures or improperly conducted blower door tests. With this baseline in effect, the pre-installation ACH value is calculated as follows:

Equation 5-1: Pre-Installation ACH Value

$$ACH_{Nat,pre} = \frac{CFM_{50,pre} \times 60}{Vol \times N}$$

Where:

$CFM_{50,pre}$ = Pre-installation infiltration rate (CFM50)
60 = Constant to convert from minutes to hours
Vol = Square footage of treated space multiplied by the weighted average ceiling height of treated space (8.5 by default)[63]
N = N factor (deemed value based on the type of wind shielding and number of stories in the home)

Pre-retrofit leakage rates are limited to the maximum per square foot values specified in OKDS, as this generally indicates severe structural damage not repairable by typical

[62] 2013 ASHRAE Handbook of Fundamentals, Chapter 16, p. 15.18, Figure 12.
[63] Typical ceiling height of 8 feet adjusted to account for greater ceiling heights in some areas of a typical residence.

infiltration reduction techniques. The maximum allowable pre-infiltration rate allowance may be waived for residences implementing the measure through low-income programs at the utility's discretion. [64.]

The deemed savings are expressed as linear functions of the leakage reduction achieved (in CFM_{50})[65]. The following formula must be used to calculate deemed savings for infiltration efficiency improvements. The formula applies to single family and multifamily dwellings and all building heights and shielding factors. Only structures with electric refrigerated air conditioning systems are eligible.

The deemed savings algorithms in the OKDS for ceiling insulation were developed through simulation modeling in BEopt 2.6, running EnergyPlus 8.4 as the underlying simulation engine. Multiple equipment configurations were simulated in each of the five Oklahoma weather zones using R-38 insulation in developing savings values denominated in deemed savings per square footage of ceiling area. The deemed savings provided in Table 5-6 are normalized to the square footage of affected conditioned space, calculated as the floor area projected vertically downward from the bounds of the attic space receiving upgraded ceiling insulation or encapsulation for Weather Zone 8A.[66]

Table 5-6: Deemed Savings Values for R-38 Ceiling Insulation, Zone 8A

R-Value of Preexisting Ceiling Insulation	AC/Gas Heat kWh	Gas Heat (no AC) kWh	AC/Electric Resistance kWh	Heat Pump kWh	Summer Peak kW Savings
	per sq. ft.	per sq. ft.	per sq. ft.	per sq. ft.	per sq. ft.
R-0	1.06	0.17	6.03	3.25	0.000718
R-1 to R-4	0.89	0.14	5.10	2.74	0.00065
R-5 to R-8	0.43	0.07	2.49	1.37	0.000319
R-9 to R-14	0.24	0.04	1.44	0.79	0.000168
R-15 to R-22	0.12	0.02	0.74	0.40	0.0000849

The OKDS specifies an efficiency standard of R-38, meaning that to qualify for deemed savings, the combined R-value of existing and added insulation should be at least R-38.

[64] Low-income customers are income-eligible customers served through a low-income or hard-to-reach program.
[65] Model testing indicates that a straight line relationship between demand and energy savings achieved and CFM_{50} reductions is appropriate with beginning and ending leakage rates within the ranges permitted by the measure.
[66] If the R-38 ceiling insulation option is implemented and an adjoining knee wall(s) is simultaneously insulated as well, savings from the knee wall insulation measure should also be claimed. If attic encapsulation is chosen, any knee wall(s) adjoining the encapsulated attic need not be insulated and knee wall deemed savings may not be claimed.

Additionally, pre-insulation R-value must not exceed R-22. If this eligibility criterion is not met, deemed savings default to 0 kWh.

5.3.2 Duct Sealing Savings Calculations

All residential customers with refrigerated air cooling are eligible to claim cooling savings for this measure. Customers must have central heating with either a furnace (gas or electric resistance) or a heat pump to claim heating savings. The annual savings for the installation of duct sealing in residence, which primarily depends on the home's cooling and heating type, can be calculated using the following equations:

Equation 5-2: Duct Sealing Electric Cooling Energy Savings

$$kWh_{savings,C} = \frac{\left(DL_{pre} - DL_{post}\right) \times EFLH_C \left(h_{out}\rho_{out} - h_{in}\rho_{in}\right) \times 60}{1{,}000 \times SEER}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft^3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft^3/min)
$EFLH_c$ = Equivalent full load cooling hours
h_{out} = Outdoor seasonal specific enthalpy (Btu/lb)
h_{in} = Indoor seasonal specific enthalpy (Btu/lb)
ρ_{out} = Density of outdoor air (lb/ft^3)
ρ_{in} = Density of conditioned air at 75˚F=0.0756 (lb/ft^3)[67]
60 = Constant to convert from minutes to hours
1,000 = Constant to convert from W to kW
SEER = Seasonal Energy Efficiency Ratio of the existing system (Btu/W○hr) =11.5[68]

Equation 5-3: Duct Sealing Heat Pump Heating Energy Savings

$$kWh_{savings,H} = \frac{\left(DL_{pre} - DL_{post}\right) \times 60 \times HDD \times 24 \times 0.018}{1{,}000 \times HSPF}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft^3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft^3/min)
60 = Constant to convert from minutes to hours
HDD = Heating degree days
24 = Constant to convert from days to hours

[67] ASHRAE Fundamentals 2009, Chapter 1: Psychometrics, Equation 11, Equation 41, Table 2
[68] Average of US U.S. DOE minimum allowed SEER for new air conditioners from 1992-2006 (10 SEER) and from 2006-2015 (13 SEER).

0.018 = Volumetric heat capacity of air (Btu/ft^3 ˚F)
HSPF = Heating Seasonal Performance Factor of the existing system (Btu/WOhr) =7.3[69]

Equation 5-4: Duct Sealing Electric Resistance Heating Energy Savings

$$kWh_{savings,H} = \frac{\left(DL_{pre} - DL_{post}\right) \times 60 \times 0.77\, HDD \times 24 \times 0.018}{3{,}412}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft3/min)
60 = Constant to convert from minutes to hours
0.77 = Factor to correlate design load hours to EFLH under actual working conditions (to account for the fact that people do not always operate their heating system when the outside temperature is less than 65°F)[70]
HDD = Heating degree days
24 = Constant to convert from days to hours
0.018 = Volumetric heat capacity of air (Btu/ft^3°F)
3,412 = Constant to convert from Btu to kWh

Equation 5-5: Duct Sealing Gas Furnace Heating Energy Savings

$$kWh_{savings,H} = \frac{\left(DL_{pre} - DL_{post}\right) \times 60 \times HDD \times 24 \times 0.018}{100{,}000 \times AFUE}$$

Where:

DL_{pre} = Pre-improvement duct leakage at 25 Pa (ft^3/min)
DL_{post} = Post-improvement duct leakage at 25 Pa (ft^3/min)
60 = Constant to convert from minutes to hours
HDD = Heating degree days
24 = Constant to convert from days to hours
0.018 = Volumetric heat capacity of air (Btu/ft^3°F)
100,000 = Constant to convert from Btu to therms
AFUE = Annual Fuel Utilization Efficiency of existing system = 0.78 (default)[71]

The required site-specific inputs, as stated in OKDS for duct sealing, are as follows:

- The pre-and post-improvement duct leakage

[69] Average of DOE minimum allowed HSPF for new heat pumps from 1992-2006 (6.8 HSPF) and from 2006-2015 (7.7 HSPF).
[70] Manual J, Volume 7: Appendix A-4
[71] Department of Energy minimum allowed AFUE for new furnaces manufactured before May 1, 2013: 0.78 AFUE

- The weather zone of the residence
- The cooling and heating type of residence

OKDS for duct sealing also includes specifications for demand (kW cooling) savings, calculated as follows:

Equation 5-6: Duct Sealing Cooling Demand Reduction

$$kW_{savings,C} = \frac{kWh_{savings,C}}{EFLH_C} \times 1.163 \times CF$$

Where:

$kWh_{savings,C}$ = Calculated cooling energy savings (kWh)
$EFLH_C$ = Equivalent full load cooling hours
1.163 = Constant to convert efficiency from SEER to EER
CF = Coincidence factor = 0.87[72]

5.3.3 Light-emitting Diodes (LEDs) Savings Calculations

The deemed savings for LEDs can be calculated by using the following equation.

Equation 5-7: LED Energy Savings

$$kWh_{savings} = ((Watts_{base} - Watts_{post})/1{,}000) \times Hours \times ISR \times IEF_E$$

Where:

W_{base} = Based on wattage equivalent of the lumen output of the purchased Omni-directional LEDs and the program year purchased/installed; for Omni-directional LEDs, use the following base and post case wattages

Table 5-7: ENERGY STAR Omni-Directional LEDs – EISA Baselines

Minimum Lumens	Maximum Lumens	Incandescent Equivalent EISA 2007 (W_{base})
310	749	29
750	1,049	43
1,050	1,489	53
1,490	2,600	72

W_{post} = Wattage of Omni-directional LED purchased/installed.
$Hours$ = Average hours of use per year = 961 hours/year (assuming 2.63 hours/day and 365.25 days/year operation)[73]

[72] Air Conditioning Contractors of America (ACCA) Manual S recommends that residential air conditioners be sized at 115% of the maximum cooling requirement of the house. Assuming that the house's maximum cooling occurs during the hours 4 to 5 PM, the guideline leads to a coincidence factor for residential HVAC measures of 1.0/1.15 = 0.87.

ISR = In-Service Rate, or the percentage of rebate units that get installed, to account for units purchased but not immediately installed

IEF_E = Interactive Effects Factor to account for cooling energy savings and heating energy penalties.

The required site-specific inputs as stated in the OKDS are as follows:

- The quantity and lumen output of post fixtures
- Whether or not the retrofits were a time-of-sale or direct install (this defines the in-service rate)
- Whether or not the bulbs were installed indoors or outdoors
- The heating type of the residence

5.3.4 Water Heater Jackets Savings Calculations

The energy savings for the water heater jackets can be calculated by using the following equation:

Equation 5-8: Water Heater Jacket Annual Energy Savings

$$kWh_{savings} = \left(U_{pre} - U_{post}\right) \times A \times (T_{tank} - T_{ambient}) \times \frac{1}{RE} \times \frac{Hours_{Total}}{Conversion\ Factor}$$

Where:

U_{pre} = 1 ÷ 5 = 0.2 BTU/h °F ft^2

U_{post} = 1 ÷ (5 + $R_{Insulation}$)

$R_{Insulation}$ = R-Value of installed insulation; if unknown, assume a default R-value of 6.7

A = Insulated tank surface area in square feet (πDL) with L (length) and D (tank diameter) in feet; if unknown, use the default assumptions from OKDS

T_{tank} = Water heater temperature setpoint (°F); if unknown, assume the default value of 120°F

$T_{ambient}$ = Average ambient temperature (°F); if installed in an unconditioned space, use value from OKDS's Table 38, and if installed in a conditioned space, assume the default value of 78°F

[73] ADM Associates, Inc., "Residential Lighting Hours of Use (HOU) for the Oklahoma Demand Programs in 2016." Prepared for Oklahoma Gas & Electric. September 2016.

RE = Recovery Efficiency (or in the case of HPWH, EF); if unknown, use 0.98 as a default for electric resistance water heaters, 0.79 for natural gas water heaters, or 2.2 for heat pump water heaters[74]

$Hours_{Total}$ = 8,760 hours per year

Conversion Factor = 3,412 BTU/kWh for electric water heating of 100,000 BTU/Therm for gas water heating

The required site-specific inputs, as stated in the OKDS for Water Heater Jackets, are as follows:

- The length and the nominal diameter of the water tank
- The R-value of installed insulation
- The water heater space type (condition or unconditioned)
- The weather zone of the residence
- The water heating type of residence

The peak demand savings for water heater jackets can be calculated using the following formula.

Equation 5-9: Water Heater Jackets Peak Demand Savings

$$kW_{savings} = (U_{pre} - U_{post}) \times A \times (T_{tank} - T_{ambient,MAX}) \times \frac{1}{RE} \times \frac{1}{3{,}412}$$

Where:

$T_{ambientMAX}$ = Average maximum ambient temperature (°F); the average ambient temperature of 78°F was used for water heaters inside the thermal envelope; the weather zone-dependent annual maximum ambient temperature from OKDS table 39 was used for unconditioned spaces. Note that all other variables are the same as the previous equation.

5.3.5 Water Heater Pipe Insulation Savings Calculations

The deemed savings for the installation of water heater pipe insulation can be calculated by using the following equation:

Equation 5-10 Water Heater Pipe Insulation Annual Energy Savings

$$kWh_{savings} = (U_{pre} - U_{post}) \times A \times (T_{Pipe} - T_{ambient}) \times \left(\frac{1}{RE}\right) \times \frac{Hours_{Total}}{Converison\ Factor}$$

[74] Default values based on median recovery efficiency of residential water heaters by fuel type in the AHRI database, at https://www.ahridirectory.org

Where:

U_{pre} = 1 ÷ 2.03 = 0.49 BTU/h °F ft^2

U_{post} = 1 ÷ (2.03 +$R_{Insulation}$)

$R_{Insulation}$ = R-Value of installed insulation

A = Insulated pipe surface area in square feet (πDL) with L (length) and D (pipe diameter) in feet; if unknown, use the default assumptions from OKDS.

T_{pipe} = Average temperature of the pipe (°F); assume a default value of 120°F (assumed water heater setpoint)

$T_{ambient}$ = Average ambient temperature (°F); if installed in an unconditioned space, use value from Table 41 of the OKDKD, and if installed in a conditioned space, assume the default value of 78°F

RE = Recovery Efficiency (or in the case of HPWH, EF); if unknown, use 0.98 as a default for electric resistance water heaters, 0.79 for natural gas water heaters, or 2.2 for heat pump water heaters[75]

$Hours_{Total}$ = 8,760 hours per year

$Conversion\ Factor$= 3,412 BTU/kWh for electric water heating or 100,000 BTU/Therm for gas water heating

The required site-specific inputs, as stated in the OKDS for Water Heater Pipe Insulation, are as follows:

- The length and the nominal diameter of the water heater pipe;
- The R-value of installed insulation;
- The water heater space type (condition or unconditioned);
- The weather zone of the residence; and
- The water heating type of the residence.

OKDS for Water Heater Pipe Insulation includes specifications for demand savings from water heater pipe insulation, calculated as follows:

Equation 5-11 Water Heater Pipe Insulation Demand Reduction

$$kW_{savings} = \left(U_{pre} - U_{post}\right) \times A \times \left(T_{Pipe} - T_{ambientMAX}\right) \times \left(\frac{1}{RE}\right) \times \frac{1}{3{,}412\ Btu/kWh}$$

[75] Default values based on median recovery efficiency of residential water heaters by fuel type in the AHRI database, at https://www.ahridirectory.org/ahridirectory/pages/rwh/defaultSearch.aspx

Where:

$T_{ambientMAX}$ = Average maximum ambient temperature (°F); the average ambient temperature of 78°F was used for water heaters inside the thermal envelope; the weather zone-dependent annual ambient temperature from OKDS was used for unconditioned spaces.

5.3.6 Windows Savings Calculations

The deemed savings algorithms in the OKDS for ENERGY STAR (ES) Windows were developed through simulation modeling developed in BEopt 2.6, running EnergyPlus 8.4 as the underlying simulation engine. For this measure, there are two different baseline assumptions and two sets of deemed savings values:

- One set of deemed savings values is applicable where single-pane windows, without storm windows, are replaced. The baseline assumptions are single-pane clear glass with an aluminum frame without a thermal break, having a U-factor of 1.16, and a solar heat gain coefficient (SHGC) of 0.76.
- The other set of deemed savings values is applicable when an ENERGY STAR window is replacing a double-glazed (i.e., double-pane), clear window with an aluminum frame, a U-factor of 0.76, and a solar heat gain coefficient (SHGC) of 0.67. These deemed savings would also be applicable when the window being replaced is a single-pane with a storm window.

For a window to qualify for these deemed savings, it must meet the most recent ENERGY STAR criteria for the EPA's South-Central climate zone. The criteria include a U-factor less than or equal to 0.30 and an SHGC of less than or equal to 0.2576. Multiple equipment configurations were simulated in each of the five Oklahoma weather zones using the ENERGY STAR Requirement. Deemed savings are calculated per square foot of window installed, inclusive of frame and sash. Table 5-8 summarizes the deemed savings values for Weather Zone 8A.

[76] These requirements reflect the ENERGY STAR® specifications for windows in the South-Central region as of January 1, 2015. These values are subject to updates in ENERGY STAR® specifications and are subject to change at any time.

Table 5-8: Deemed Savings Values for ENERGY STAR Windows, Zone 8A

Existing Windowpane Type	AC with Gas Heat (kWh/ft²)	Gas Heat (no AC) (kWh/ft²)	AC with Electric Resistance heat (kWh/ft²)	Heat Pump (kWh/ft²)	Demand Reductions (kW/ft²)
Single Pane	5.13	5.13	9.88	7.78	0.00323
Double Pane	3.76	3.76	6.09	5.33	0.00234

5.4 Net Savings Approach

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.

5.5 Survey Sampling, Verification Procedures, and Findings

5.5.1 Survey Sampling Plan

ADM conducted a mixed-mode survey (text invite/online and phone) in PY2021. We designed the survey's sample to be a statistically representative of the program population to ensure accurate program insights. Our sample approach was designed to achieve a minimum 10% precision and 90 confidence level (90/10).

For the calculation of sample size for survey completes, a coefficient of variation of 0.5 was assumed.[77] With this assumption, a minimum sample size of 68 participants was required, as shown in the following formula:

Equation 12: Minimum Sample Size Formula for 90 Percent Confidence Level

$$n_0 = \left(\frac{Z*CV}{RP}\right)^2 = \left(\frac{1.645*0.5}{0.10}\right)^2 = 68$$

Where:

n_0 = minimum sample size

Z = Z-statistic value (1.645 for the 90% confidence level)

CV = Coefficient of Variation (assumed to be 0.5)

RP = Relative Precision (0.10)

[77] The coefficient of variation, cv(y), is a measure of variation for the variable to be estimated. Its value depends on the mean and standard deviation of the distribution of values for the variable (i.e., cv(y) = sd(y)/mean(y)). Where y is the average savings per participants. Without data to use as a basis for a higher value, it is typical to apply a CV of 0.5 in residential program evaluations.

Although 68 was the minimum sample size, ADM collected survey responses from 278 participants. The reason ADM collected additional survey responses was two-fold. First, we did not perform on-site verification in 2021. Second, we sought to strengthen the robustness of survey findings. See Section 5.7.2 for additional detail regarding survey data collection efforts.

5.5.2 Survey Verification Procedure

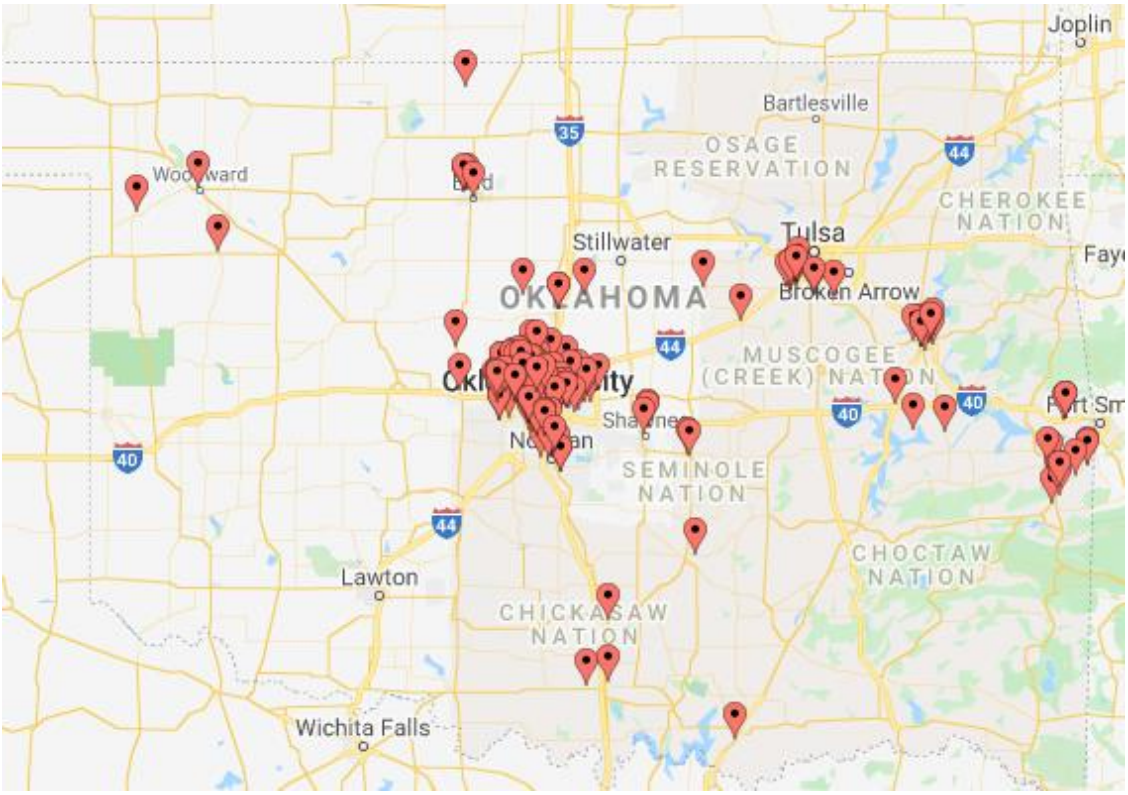
The survey informed the gross impact analysis by verifying the presence of reported tracking data measures. ADM asked customers to confirm the measures they received through the program. Twenty-five respondents indicated that they did not recall receiving an improvement or that there was an error in the program records, and they had not received a claimed measure. However, ADM verified receipt of these measures through program records. See Table 5-9 for the measures that were confirmed through ADM's customer survey.

Table 5-9 Survey Confirmation of WRAP Measures

Measure	Confirmed	Not Confirmed
Attic Insulation	84	2
Air Sealing	263	11
Duct Sealing	230	37
LED light bulbs	219	19
Water Heater Pipe Wrap	1	1

The following figure presents the geographic distribution of surveyed homes for PY2021. The survey gathered feedback from customers representing 25 counties and 81 zip codes across OG&E's service territory.

Figure 5-1 Geographical Distribution of WRAP Survey Responses



5.5.3 Survey Verification Findings

ADM's survey verification effort showed that overall, the weatherization measures had been installed in the quantities reported within program tracking data. Specific notes illustrating the accuracy of program tracking data include:

Contact information: Program tracking data provided accurate information regarding the addresses of homes that were weatherized. Given the large participant population, contact information was sufficient for EM&V purposes.

Air infiltration: We contacted 285 homes that tracking data indicated received air infiltration improvements. Ninety-six percent confirmed receiving these improvements. No verification rate adjustments were made to this measure.

Ceiling Insulation: ADM conducted phone surveys with 86 customers that tracking data indicated had ceiling insulation installed. Ninety-eight percent confirmed the installation of the insulation and therefore no verification rate adjustments were made to this measure.

Water Heater Pipe Wrap: ADM conducted surveys with two customers that tracking data indicated had water heater pipe wrap installed. One confirmed the installation of water heater pipe wrap. Based on the small number of installations

in the tracking data and limited number of verifications ADM was able to complete, no verification rate adjustments were made to this measure.

Water Heater Jacket: Based on the small number of installations in the tracking data no verification surveys were completed for this measure. No verification rate adjustments were made to this measure.

LEDs: ADM contacted 238 homes to verify LED installations. Ninety-two percent confirmed receiving LED lightbulbs. The remaining respondents said they had not received LEDs (5%) or could not recall (3%) if they had received LEDs through the program. Of the respondents that confirmed receiving LED lightbulbs (n=219), most (91%) confirmed that the number they received was reflected in OG&E's WRAP tracking data. One respondent (>1%) that confirmed receiving LEDs provided a correction on the number of lightbulbs they received, while the other 9% of respondents could not recall how many they had received. The respondents that recalled the number of LEDs they received reported the number that were currently installed; these respondents reported 99% of LEDs received through the program were currently installed. Based on these findings, no verification rate adjustments were made to this measure.

Duct sealing: We called 267 homes that tracking data noted as receiving duct sealing work. Eighty-six percent of respondents confirmed duct sealing improvements had been made. Visually identifying duct sealing is not apparent; no verification rate adjustments were made to this measure.

5.6 Impact Evaluation Summary and Findings

This section presents the *ex post* gross savings resulting from the impact evaluation activities described above.

There is one discrepancy that has persisted since 2018 that relates to the WRAP claimed peak demand reduction for LED lighting. The realization rate for LED lighting's peak demand reduction is 254%. The energy realization rate is 102%. The only unique variable for the demand calculation is coincidence factor. Therefore, it's likely that the EnerTrek database is using a different CF than 0.10 (OKDSD).

The main driver of the greater than 100% realization rate for energy is duct sealing. Discrepancies between *ex ante* tracking data calculations and *ex post* savings for two homes led to the 101% realization rate. One home is not assigned *ex ante* savings for heating, and one is not assigned *ex ante* savings for cooling, despite ex ante records indicating these homes had heating and cooling types that use ducts.

Regarding ES Ceiling Fans, the main reason for the greater than 100% realization rate for energy savings is because *ex ante* savings calculations consider homes with window AC units as having no air conditioning. In the OKDSD air infiltration savings

calculations, homes with window AC units are considered to have AC. ADM assigned IEFe values consistently for ES Ceiling Fans and air infiltration. This discrepancy did not contribute significantly to the overall realization rate. Table 5-10 summarizes the *ex ante* gross energy, demand savings.

Table 5-10 Ex Ante Savings by Measure

Measure	*Ex Ante* Annual Energy Savings (kWh)	*Ex Ante* Demand Reductions (kW)
Air Infiltration	3,283,869	636
Ceiling Insulation	1,058,974	357
Duct Sealing	6,768,692	2,171
ENERGY STAR Ceiling Fans	689	0.12
ENERGY STAR Windows	1,202	0.73
LED	1,428,611	72
Water Heater Jackets	275	0.03
Water Heater Pipe Wraps	2,247	0.19
Total	**12,544,560**	**3,237**

Table 5-11 summarizes the *ex post* gross energy, demand savings, and lifetime gross savings for WRAP, by measure, for PY2021.

Table 5-11 Ex Post Gross Savings by Measure

Measure	*Ex Post* Energy Savings (kWh)	*Ex Post* Demand Reductions (kW)	*Ex Post* Lifetime Savings (kWh)
Air Infiltration	3,283,869	636	36,122,559
Ceiling Insulation	1,058,974	357	26,474,362
Duct Sealing	6,842,771	2,193	123,169,879
ENERGY STAR Ceiling Fans	761	0.12	7,611
ENERGY STAR Windows	1,202	0.73	24,047
LED	1,429,188	184	27,154,564
Water Heater Jackets	275	0.03	3,573
Water Heater Pipe Wraps	2,263	0.19	29,415
Total	**12,619,303**	**3,371**	**212,986,008**

Table 5-12 presents overall energy savings and demand ex *post* realization rates by measure. These *ex post* realization rates are representative of all program savings, including all electric savings presented above.

Table 5-12: Overall Realization Rates by Measure

Measure	Energy Realization Rate	Demand Realization Rate
Air Infiltration	100%	100%
Ceiling Insulation	100%	100%
Duct Sealing	101%	101%
ENERGY STAR Windows	100%	100%
ENERGY STAR Ceiling Fans	110%	100%
LED	100%	254%
Water Heater Jackets	100%	100%
Water Heater Pipe Wraps	101%	101%
Total	**101%**	**104%**

The net-to-gross ratio for WRAP is 100%, and the gross savings by measure displayed above are equal to net savings.

Table 5-13: Ex Post Net Electricity Savings, OG&E WRAP

Number of Homes	*Ex Post* Net Annual Savings (kWh)	*Ex Post* Net Demand Reductions (kW)	*Ex Post* Net Lifetime Savings (kWh)	Net-to-Gross
3,614	12,619,303	3,371	212,986,008	100%

5.7 Process Evaluation Findings

ADM's 2021 process evaluation of OG&E's WRAP was designed to answer the following research questions:

- Did the program implementation reflect its current design? In what ways did it deviate and how did that affect program success?
- Do program utility and implementation contractor staff effectively coordinate to deliver the program?
- How have the program implementation and delivery changed, if at all since the previous program years? How are these changes related to previous evaluation results and how are they expected to change program impacts going forward?
- Are there ways to improve the design or implementation process?
- How do participants hear about the program? Are there any changes in how participants learn of the program as compared to the prior year?
- Were program participants satisfied with their experience? What was the level of satisfaction with the work performed, the scheduling/application process, and other aspects of program participation? What are the perceived energy and non-energy benefits associated with the program?
- Were there any significant challenges or new obstacles during the program year?

- Looking forward, what, if any, are key barriers and drivers to program success within OG&E's market?

To address these questions, ADM's process evaluation activities included a participant survey, interviews with program staff, and a review of program tracking data to investigate the geographic spread of projects in PY2021. The data collection activities are summarized in Table 5-14.

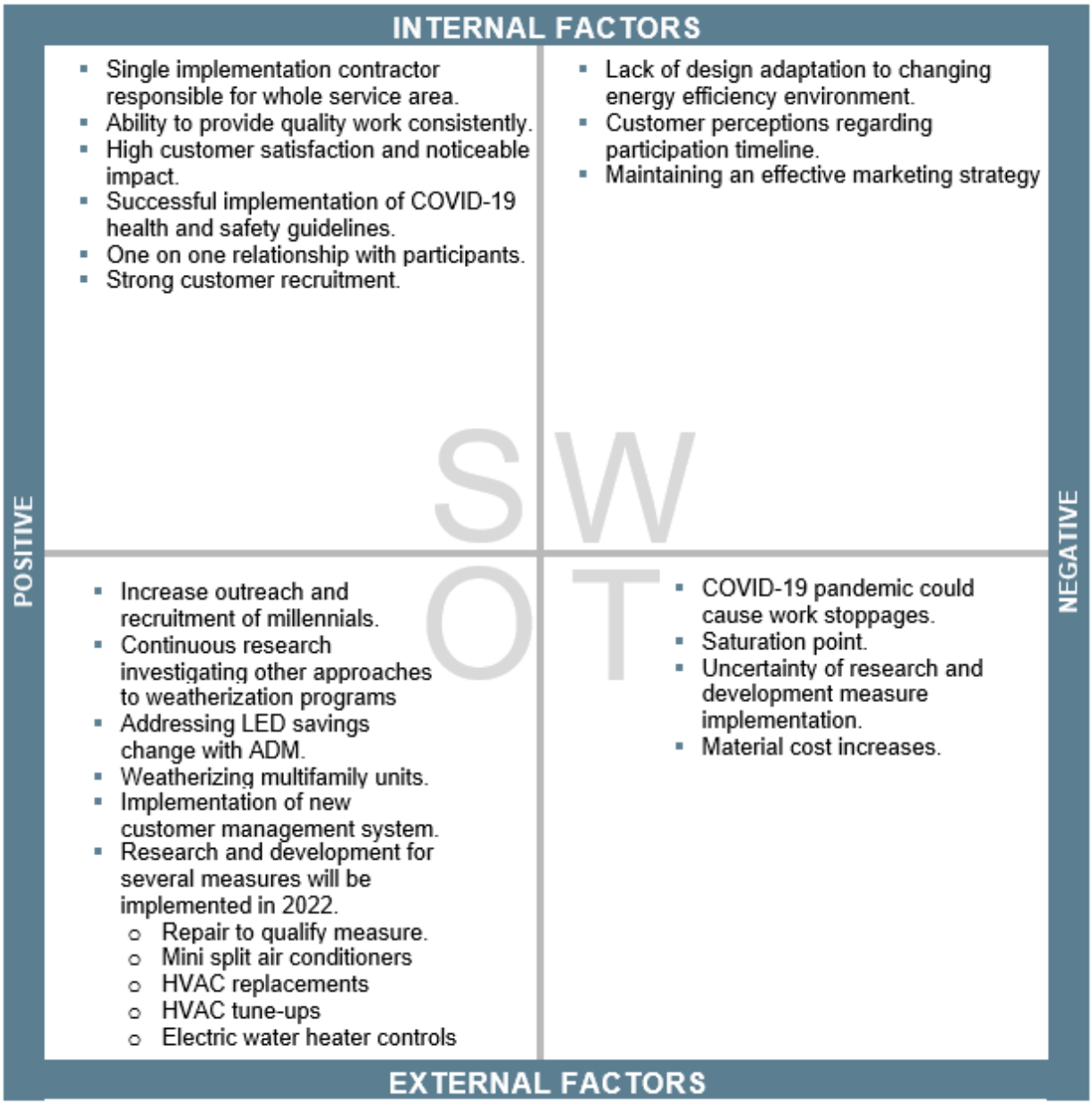
Table 5-14: Process Evaluation Data Collection Activities Summary

Data Collection Activity	Process Evaluation Research Objectives
Program Staff Interviews	Assess staff perspectives regarding the impact of the COVID-19 pandemic on program design, implementation, operations, strengths, weaknesses, barriers to success, and opportunities for improvement.
Participant Survey	Assess participant's reasons for participating and experience with the program, including satisfaction.
Program Tracking Data Review	Investigate geographic spread of projects in 2021.

5.7.1 Program Staff Facilitated Discussion

ADM led a facilitated discussion with the OG&E and Skyline staff in December 2021. The purpose of the call was to investigate OG&E WRAP's strengths, weaknesses, opportunities, and threats (SWOT). During the call ADM staff shared their screen and took notes to ensure attendees' thoughts were accurately captured. After the discussion, ADM updated the SWOT matrix diagram and synthesized findings. Figure 5-2 summarizes key findings, with additional summary information provided below.

Figure 5-2: WRAP SWOT Analysis Diagram



The following summarizes key findings of the SWOT analysis for OG&E's WRAP:

- **The WRAP provides an impactful, high-quality service to customers**. Contacts noted that the program's core strength was its ability to engage with customers one-on-one and leave them satisfied after providing an impactful service.
- **Implementation staff noted effective implementation of required COVID-19 pandemic health and safety measures as a strength.** They observed that the

Program had visited and made improvements at over 7,000 homes in 2020 and 2021 and had no knowledge of cases or their work spreading the virus.

- **The lack of change in the program's design may be a weakness; updating it is an opportunity.** The program has been run with a consistent design for years and may have been administered with an "if it's not broken, don't fix it" mentality. Staff noted that the Program foresees several updates, including a new customer management system in the near future and pilot-level implementation for several additional measures in 2022. These include mini-split installation, HVAC replacement and tune-ups, electric water heater controls, and "repair to qualify" measures. Regarding the "repair to qualify" measure, staff suggested that there are many homes that get disqualified because customers cannot afford to repair their homes and qualify from the Program. This new measure will allow them to weatherize homes additional homes which previously would not have qualified. OG&E's Program manager also mentioned continually observing the design and implementation of other weatherization programs with a focus on opportunities and ideas for improvement.
- **There is an opportunity to continue to achieve savings through the installation of efficient lighting.** Contacts will work to understand low-income customers' baseline lighting conditions and lighting use patterns, with the intention of continuing to install efficient lighting for WRAP participants.
- **Increased focus on weatherizing multifamily units is an opportunity.** Program staff indicated there are no barriers to this opportunity and the Program had weatherized multifamily homes. The opportunity exists in the extent to which the Program pursues weatherizing multifamily homes.
- **Contacts identified marketing and transitioning to a new vendor as potential weaknesses, though they also cited social media marketing as an opportunity.** Staff indicated that reaching customers and understanding the most effective marketing techniques is a perpetual challenge. OG&E's Program manager noted that the transition to a new marketing vendor may be a short-term challenge. He stated that the Program focusing more on social media use to reach millennials was an opportunity.
- **The program has strong recruitment and is able to serve customers throughout OG&E's service territory.** Contacts mentioned that the program is able to recruit participants through word-of-mouth referrals and outreach campaigns. Moreover, OG&E staff said that the implementation contractor "does a great job recruiting rural customers."
- **Program staff said having a single implementation contractor was a strength.** Staff noted that Skyline is responsible for the whole service area, and this ensures customers are receiving a consistent, quality experience with the

Program. They also suggested that having one contractor has allowed customers to become familiar with the "brand" or delivery method of the Program.

- **Contacts mentioned four potential threats to program success.** These threats included the program reaching a saturation point, rising equipment costs, uncertainty regarding proposed new measures, and the potential for COVID-19 pandemic related work stoppages or health and safety restrictions.
    - A diminishing pipeline of participants is "always in the back of their minds." However, they stated that currently the challenge is recruitment rather a lack of eligible customers and that adjusting the household income-level requirement from less than $50,000 to $60,000 four years ago helped bring in customers.
    - Rising equipment costs may make keeping the Program cost-effective challenging.
    - Continued uncertainty surrounding the COVID-19 pandemic and the public health response could impact implementation.
    - Though the Program has many opportunities to adapt and change to the shifting energy efficiency environment, uncertainty regarding the viability of fully implementing pilot measures was noted as a threat to the program's future success.

5.7.2 Program Activity by Location

ADM investigated the geographic distribution of OG&E's WRAP from PY2016 through PY2021. We also explored PY2020 exclusively. ADM found that WRAP's distribution of projects remained largely consistent from 2016 to 2021. Figure 5-3 displays the geocoded WRAP projects that have been completed from 2016 to 2021.

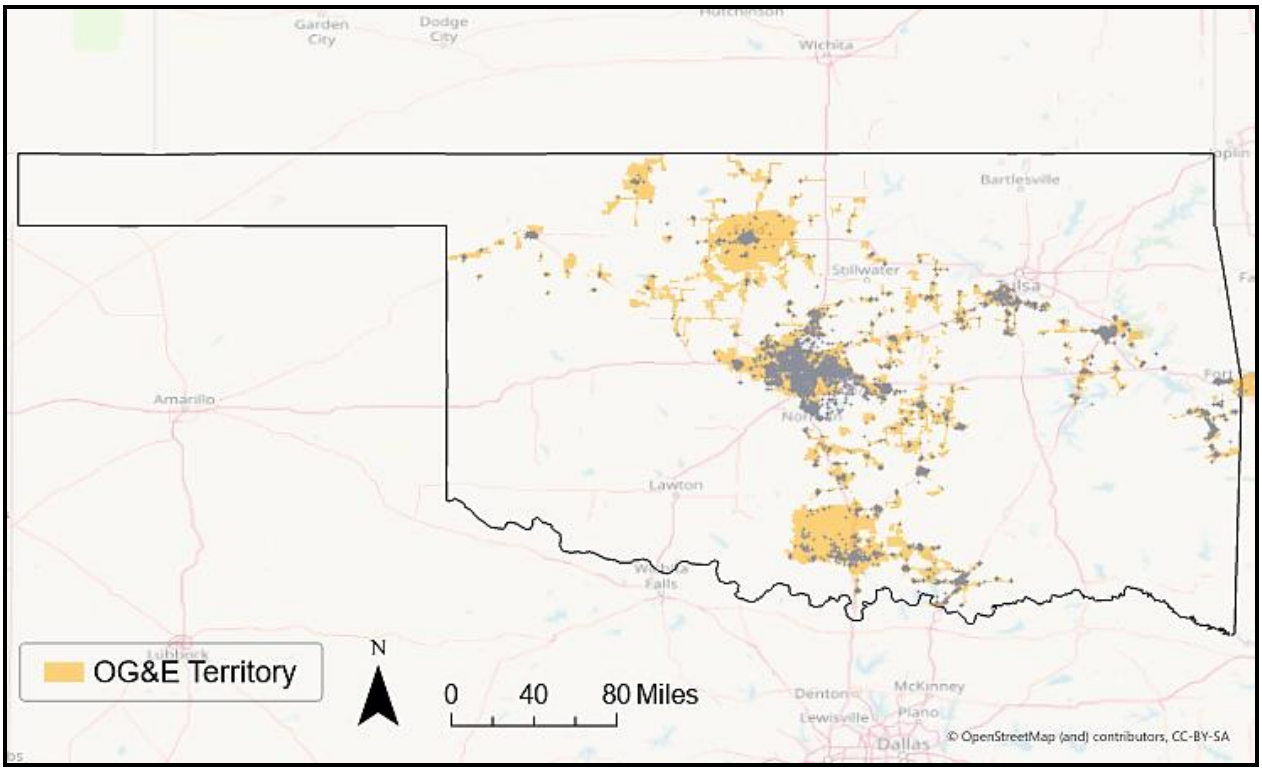


Figure 5-3: WRAP Projects from 2016-2021

We also explored the portion of projects completed in the Oklahoma City metro area to other districts (see Figure 5-4). OG&E has served all areas in its service area through its WRAP; though, the Oklahoma City metro area has consistently received a larger portion of projects. This is partly due to the higher density of housing in the OKC metro area, though comparing 2016-2021 shows that the portion of projects completed in the OKC metro area has varied from year to year.

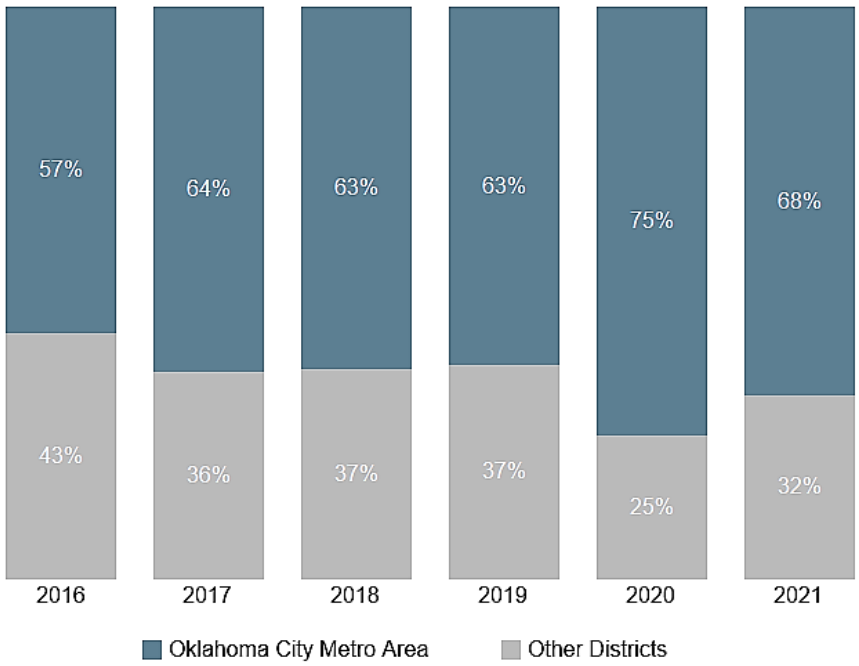


Figure 5-4: WRAP Project by District by Year (Percentage)

Figure 5-5 further illustrates the number of projects completed in districts outside the OKC metro area was below average in 2021, though the number of projects was within one standard deviation of the mean.

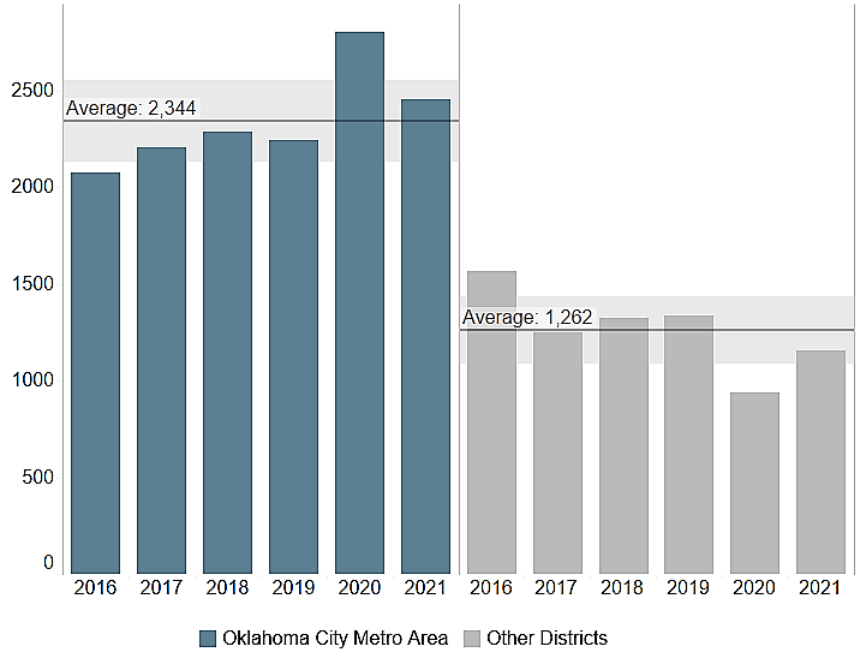


Figure 5-5: WRAP Projects by District by Year (Number)

5.7.3 WRAP Participant Survey

ADM collected feedback from 278 WRAP participants in August and September 2021. We randomly assigned 1,509 program participants to either a text invitation (750) or phone call group (759). In total there were 115 phone call invitations (22% response rate) and 163 text invitation survey completes (24% response rate). Both groups were offered a $10 inducement (either digital or physical gift card) for completing the survey.

5.7.3.1 Program Awareness, Communication and Marketing

Consistent with the past three program years, ADM's survey findings indicate that most customers report learning about the program from a utility message they receive in the mail or through word-of-mouth from a friend, relative, or colleague. Over half of the survey respondents (62%) in PY2021 reported hearing about WRAP through a utility bill message they received in the mail (36%) or through some other sort of information that came in the mail (26%). Word-of-mouth (22%) was the second most cited manner in which survey respondents learned about the program. Of the respondents that noted hearing about the program through word-of-mouth, 70% said that the person who told them about the program had already participated in it themselves (n=60). When asked what the person who told them about WRAP said, respondents said they mentioned it was free (42%), they had saved money or energy (30%), or it was easy to participate (20%). Eighteen percent of these respondents simply noted the person who referred them had a positive experience, could not recall, or did not clarify the content of what the person who recommended the program said.

The majority of respondents (93%) did not have any reservations or concerns before signing up. Six percent of respondents indicated they had initial reservations. One percent could not recall if they had concerns before signing up. Most of these respondents said their concerns were alleviated by speaking with a customer service representative or through the participation process, however one noted that their concerns remained and that there had been insufficient communication regarding the improvements made through the program.

5.7.3.2 Program Participation Experience

Sixty-seven percent of respondents said that they called OG&E's customer service center to request their home visit. Other respondents noted visiting OG&E's website (27%) or not recalling how they had signed up (6%). Ninety-six percent of survey respondents said signing up for the program was easy.[78]

Survey results indicate wait times were shorter in 2021 than in 2020. Table 5-15 displays survey respondents' reported wait time between scheduling and their initial assessment appointment date.

Table 5-15: Length of wait between scheduling and appointment

Wait Length	n	Percent
Less than one week	2	1%
One week to two weeks	76	27%
Three to four weeks	69	25%
More than four weeks	92	33%
Don't Know	39	14%

Table 5-16 displays survey respondents' reported wait time between their first home energy assessment and the day contractors returned to install energy efficiency equipment and re-examine their house.

Table 5-16: Length of wait between first assessment and return visit

Wait Length	n	Percent
Less than one week	18	6%
One week to two weeks	79	28%
Three to four weeks	62	22%
More than four weeks	78	28%
Don't Know	41	15%

Survey findings indicate that the wait times to receive services were in line with customer expectations. Of the respondents that recalled this wait time, 77% felt the wait time between scheduling and appointment was shorter than they had expected (8%) or about what they expected (69%), and 84% said the wait time for their workday was less than expected (8%) or about what they expected (76%).

Twenty-one percent of respondents (n=58) said either the wait time for the initial visit or their workday was longer than they expected and were asked to elaborate on their

[78] Rated the ease of signing up a 4 or 5 on a scale from 1 (very difficult) to 5 (very easy). The remaining respondents rated the level of difficult of signing up a 3 out of 5 (4%) or could not recall how difficult it was to sign up for the program (>1%). One respondent stated it was difficult to sign up for the program (rated the difficulty a 1 out of 5), though their other survey responses indicated satisfaction with the sign up process and the program overall.

experience. Of these respondents, 38% said they encountered scheduling or communication-related challenges that caused their wait time to be longer than expected. Twenty-two percent noted COVID-19 health concerns, lockdowns, or related delays had caused their wait time to be more than expected. Other respondents noted weather or storms (9%) or program demand (4%) had caused their wait time to be longer than expected.

Similar to survey findings from 2020, more than half of respondents (62%) said they had experienced an improvement in home comfort since participating in the program.[79]

Respondents also observed that information that they received through program participation was valuable. Eighty percent of respondents said the information provided by the person who did their home assessment was useful.[80]

5.7.3.3 Customer Satisfaction

Consistent with past program years, the vast majority of 2021's WRAP survey respondents stated they were satisfied with the performance of the wait time to receive services, the performance of improvements, scheduling of the assessment, and quality of the contractor's work. Eighty-four percent of respondents said that they had recommended the program to someone else (n=275). Furthermore, of those that said they had not yet recommended the program to someone else, 67% said they would be likely to recommend the program.[81]

[79] Sixty-three percent of respondents rated the change in home comfort a 4 (20%) or 5 (42%) out of 5 using a scale where 5 means "a substantial improvement" and 1 means "no improvement."

[80] Eighty percent of respondents rated the information they received from the assessor a 4 (16%) or 5 (64%) on a scale from "not at all useful" to "extremely useful." Seventeen percent of respondents rated the information a 3 or lower and the remaining 3% said they did not know or did not recall.

[81] Rated their likelihood of recommending the program to someone else a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

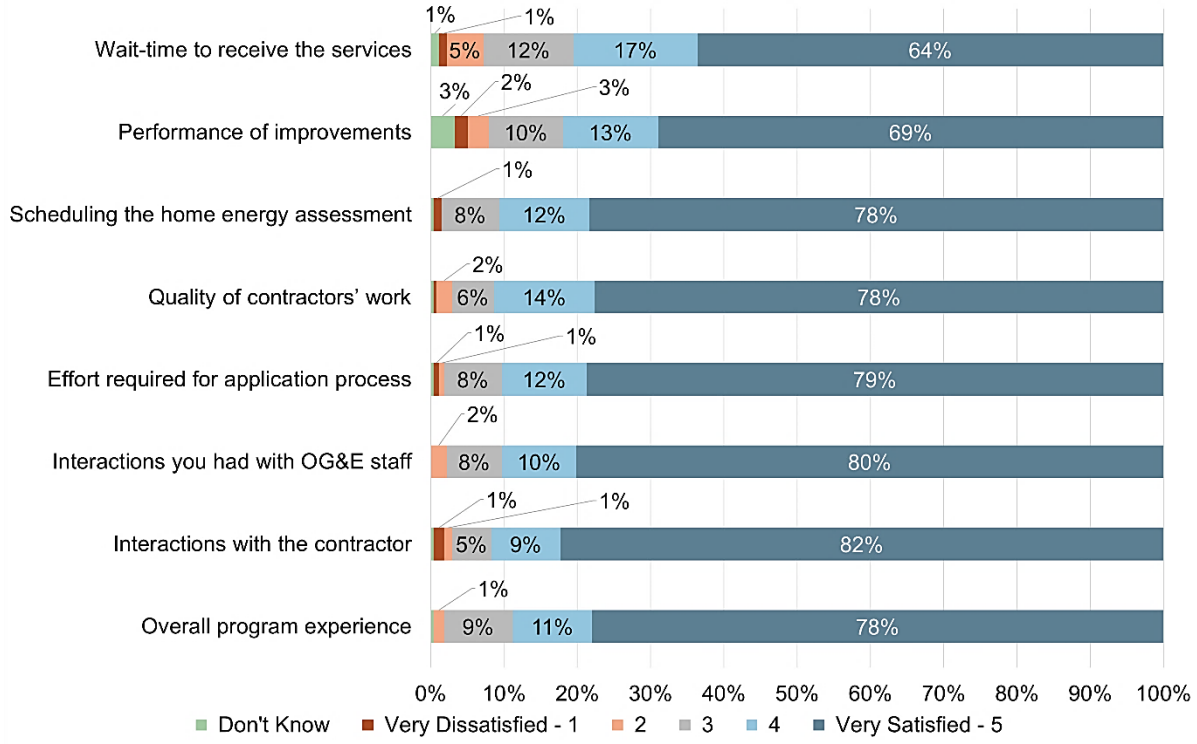


Figure 5-6: Customer Satisfaction

Thirty-five percent of respondents (n=96) provided written feedback with recommendations to improve the program or aspects of the program that they were not satisfied with. Some comments provided some additional detail or insights beyond their ratings, while other comments did not provide detail beyond their ratings.

- Fifteen percent wrote in some detail regarding an issue related to a longer than expected wait time to receive services.
- Ten percent of respondents mentioned dissatisfaction with the program contractor and either noted dissatisfaction with the amount, quality, or cleanliness of the contractor's work.
- Three percent noted an opportunity to improve program communications, while 4% said they were interested in receiving additional measures or improvements through the program.
- Two percent of customer comments included interest in other OG&E programs or services or suggested OG&E work to increase awareness about its offerings.
- One percent of respondents said that they had not noticed any savings since participating or noted general dissatisfaction with their bill.

Nearly all survey respondents indicated satisfaction with their overall program experience and said they were satisfied with OG&E as their electric utility.[82] Furthermore, 79% of respondents said that if everyone could choose their utility providers, they would recommend OG&E.[83]

5.7.3.4 General respondent characterization

Table 5-17 summarizes basic home demographic information of the OG&E WRAP survey respondents. Survey respondents' demographic and home information was similar to 2020; respondents typically owned the home that participated in the program, had natural gas home and water heating, and lived in a moderately sized, slightly older home. [84, 85] About half of the WRAP survey respondents indicated that the person who signed up for the program was 55 years or older (see Table 5-17).

[82] Eighty-nine percent of respondents rated their overall satisfaction with OG&E a 4 (20%) or 5 (69%).
[83] Rated their likelihood of recommending OG&E to someone else a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).
[84] Sixty-nine percent of respondents said their home was less than 2,000 square feet.
[85] Sixty-one percent said their house was built before 1990.

Table 5-17: Respondent Characteristics[86]

Question	Response	Percent
Do you rent or your home?	Own	79%
	Rent	21%
	Prefer not to say	>1%
What is the main fuel used to heat your home?	Electricity	43%
	Natural gas	55%
	Don't Know	3%
What is the main fuel used to heat your water?	Electricity	33%
	Natural gas	62%
	Don't Know/Prefer not to say	5%
Including yourself, how many people lived in your household last year?	1	26%
	2	33%
	3	15%
	4	10%
	5 or more	9%
	Prefer not to answer	7%
How old is the person who signed up for OG&E's home weatherization program?	24 years old or younger	3%
	25-34 years old	12%
	35-44 years old	15%
	45-54 years old	16%
	55-64 years old	19%
	65-74 years old	18%
	75-85 years old	7%
	86 years old or older	2%
	I prefer not to answer	7%

ADM also inquired with customers regarding their employment status, ethnicity or race, and gender (see Table 5-18). Most respondents identified as being white and retired or not working and having completed at least some college or education beyond a high school.

[86] Percentages may not total 100% due to rounding.

Table 5-18: Respondent Characteristics

Question	Response	Percent
• What is your race or ethnicity?	▪ Caucasian/White	▪ 64%
	▪ Black/African American	▪ 14%
	▪ Hispanic or Latino	▪ 6%
	▪ Native American or Alaska Native	▪ 9%
	▪ Asian	▪ 1%
	▪ Middle Eastern or North African	▪ 1%
	▪ Prefer not to answer	▪ 10%
	▪ Other	▪ >1%
• What is your gender?	▪ Male	▪ 31%
	▪ Female	▪ 64%
	▪ Prefer Not to Answer	▪ 5%
• Which of the following categories best describes your employment status?	▪ Employed, working up to 30 hours per week	▪ 12%
	▪ Employed, working 30 or more hours per week	▪ 42%
	▪ Not employed, looking for work	▪ 4%
	▪ Not employed, Not retired or disabled	▪ 3%
	▪ Retired	▪ 30%
	▪ Disabled, not able to work	▪ 3%
	▪ Prefer not to answer	▪ 7%
• What's the highest level of education you've completed?	▪ Less than high school	▪ 3%
	▪ High School Graduate/GED	▪ 22%
	▪ Associates Degree, Vocation/Technical School, Or some college	▪ 33%
	▪ Four-year college degree	▪ 21%
	▪ Graduate or professional degree	▪ 11%
	▪ I prefer not to answer	▪ 11%

5.8 Conclusions and Recommendations

5.8.1 Conclusions

The key conclusions from the PY2021 evaluation of the WRAP are as follows:

- **Program design and implementation are strong and consistent, though there are opportunities to update.** WRAP was first offered as a full program in 2010. Staff believe it is running very well though they identified opportunities for improvement during ADM's facilitated discussion. No changes were made to the delivery and participation process in 2021. The Program foresees several updates, including a new customer management system in the near future, pilot-level implementation for several additional measures in 2022, additional consideration of multifamily weatherization projects, and new marketing strategies.

- **High Participant Satisfaction:** Most survey respondents indicated they were satisfied with their overall experience with the WRAP and rated their experiences with the assessment and measure installation process as positive. Only a small portion of participants expressed dissatisfaction. The most frequently cited element of the program that participants were not satisfied with the wait time to receive services.
- **Adequate Database Quality:** ADM identified minor database and savings methodology issues and worked with the appropriate OG&E and Skyline staff to ensure aligned and appropriate savings calculations were used. Continued collaboration will help move the program closer to 100% realization rates for all program measures.

5.8.2 Recommendations

The WRAP was very successful in PY2021. The following recommendations are offered for continued improvement of the Home Weatherization program:

- **Continue to align program tracking data *ex ante* savings and peak demand reduction methodologies.** Minor adjustments to the program's tracking data are needed to align savings calculations for LED light bulbs, duct sealing, air infiltration, and ENERGY STAR Ceiling Fans with Light Kits.
  - **ENERGY STAR Ceiling Fans:** Add motor wattage to tracking data.
  - **Duct Sealing:** Ensure only homes with ductwork receive duct sealing savings. Verify all homes that use ducts for heating or cooling are attributed savings.
  - **LED Light bulbs:** Verify the EnerTrek database is using a coincidence factor of 0.10, to be consistent with the OKDSD.
  - **Air Infiltration:** Add electric space heat options to tracking data heat type selections. Current tracking data does not enable differentiation between participants with electric baseboard heaters from participants with portable electric space heaters.

    Advise ADM if OG&E foresees increased participation for customers with homes that have window AC units and portable electric space heaters. If the number of air sealing participants with windows AC and/or portable space heaters increases, we will look for solutions to calculate savings more accurately.
- **Add customer email addresses to WRAP data tracking system.** If customer email addresses were added to program tracking data, it would enable ADM to

conduct mixed-mode surveys. It would expand survey efforts and allow additional participants to provide feedback to improve the program.

6 Commercial Energy Efficiency Program (CEEP)

6.1 Summary of Impact Evaluation Findings

The verified *ex post* kWh and kW savings for the PY2021 CEEP are summarized below in Table 6-1.

Table 6-1: Ex Ante and Ex Post kWh Savings

Stratum Name[87]	*Ex Ante* kWh Savings	*Ex Post* kWh Savings	Gross kWh Realization Rate	*Ex Ante* kW Savings	*Ex Post* Gross kW Savings	Gross kW Realization Rate
CIS, SAGE, SBDI 1	6,605,334	7,004,535	106%	1,033	1,108	107%
CIS, SAGE, SBDI 2	11,962,674	12,621,046	106%	1,692	1,843	109%
CIS, SAGE, SBDI 3	13,620,538	13,619,879	100%	1,814	1,888	104%
CIS, SAGE, SBDI 4	12,221,672	12,250,434	100%	1,521	1,555	102%
CIS, SAGE, SBDI 5	7,627,273	7,460,890	98%	476	468	98%
Small Business Midstream	24,064,601	23,919,865	99%	3,656	3,626	99%
HVAC Replacement and Tune-Up	5,247,410	5,186,587	99%	3,001	2,969	99%
CEI	28,201,243	28,681,617	102%	5,868	5,860	100%
Total	**109,550,746**	**110,744,854**	**101%**	**19,060**	**19,317**	**101%**

Table 6-2 and Table 6-3 present the CEEP net kWh and kW savings summary by Channel, respectively.

Table 6-2: CEEP Net kWh Savings Summary

Program Channel	Gross Annual Energy Savings (kWh)		Gross Realization Rate	Net Impacts	
	Ex Ante	*Ex Post*		NTG Ratio	Net Annual Energy Savings (kWh)
CIS	34,944,323	35,364,850	101%	100%	34,814,211
SAGE	9,837,975	9,992,672	102%	100%	9,998,743
SBDI	7,255,194	7,599,262	105%	100%	7,566,505
Small Business Midstream	24,064,601	23,919,865	99%	88%	21,069,193
HVAC Replacement and Tune-Up	5,247,410	5,186,587	99%	99%	5,140,502
CEI	28,201,243	28,681,617	102%	100%	28,681,617
Total	**109,550,746**	**110,744,854**	**101%**	**97%**	**107,270,771**

[87] Strata are ordered by project size with the smallest projects in each sampling group being included in stratum "1" and the largest projects being included in stratum "4" or "5." Strata 5 contains all the multi-year large projects.

Table 6-3: CEEP Net kW Savings Summary

Program Channel	Gross Annual Energy Savings (kW)		Gross Realization Rate	Net Impacts	
	Ex Ante	*Ex Post*		NTG Ratio	Net Annual Energy Savings (kW)
CIS	4,023	4,208	105%	97%	4,076
SAGE	1,562	1,625	104%	100%	1,624
SBDI	952	1,029	108%	100%	1,025
Small Business Midstream	3,656	3,626	99%	88%	3,194
HVAC Replacement and Tune-Up	3,001	2,969	99%	99%	2,938
CEI	5,868	5,860	100%	100%	5,860
Total	**19,060**	**19,317**	**101%**	**97%**	**18,718**

Table 6-4 outlines the verified *ex post* lifetime energy savings by channel for the PY2021 CEEP.

Table 6-4: CEEP Gross Lifetime Savings by Channel

Program Channel	*Ex Post* Savings (kWh)	Effective Useful Life (years)	*Ex Post* Lifetime Energy Savings (kWh)	*Ex Post* Net Lifetime Savings (kWh)
CIS	35,364,850	14	487,098,279	479,514,037
SAGE	9,992,672	14	143,432,210	143,519,359
SBDI	7,599,262	13	101,435,977	100,998,725
Small Business Midstream	23,919,865	14	333,555,737	293,803,926
HVAC Replacement and Tune-Up	5,186,587	4	22,854,755	22,651,681
CEI	28,681,617	1	28,681,617	28,681,617
Total	**110,744,854**		**1,117,058,575**	**1,069,169,344**

6.2 Program Overview

In July of 2008, OG&E implemented a portfolio of Demand Side Management (DSM) Quick Start programs. Those programs were the starting point for many of the programs implemented in OG&E's first Comprehensive Demand Portfolio in program years 2010-2012. The first demand portfolio included a Standard Offer Program that provided financial inducements to C&I customers who installed equipment that reduced peak demand. In 2013, OG&E separated the Standard Offer Program into Commercial Lighting, Commercial Energy Efficiency, and Industrial Energy Efficiency Programs. In 2016, these Programs were combined and implemented as a single Program, the Commercial Energy Efficiency Program (CEEP). The CEEP provides financial inducements to all C&I customers and includes a variety of Channels for participation. The Channels are designed to maximize participation among the C&I customer base.

OG&E's CEEP seeks to generate energy and demand savings for large and small C&I customers by promoting high efficiency electric end-use products, including (but not limited to): lighting, retrofit of existing equipment, HVAC replacement, operational changes and education, and retro-commissioning. The Program provides OG&E's C&I customers with flexibility in choosing how to participate, either self-sponsoring or working through a third-party service provider to leverage technical expertise. The Program offers financial inducements and technical assistance to all eligible C&I customers who seek to improve existing facilities' efficiency, the efficiency of new equipment purchases, facility modernization, new construction projects, and industrial improvement projects. Both prescriptive and custom inducement structures are available to maximize customer participation across various energy efficiency measures.

In 2021, the evaluation of CEEP grouped projects into six Program Channels. Note that the grouping of program offerings for evaluation purposes is not the same as the program channels as outlined in the portfolio plan described in the Program Description section of this report. The description of each Channel below details how the planned Channels fit into the evaluation grouping.

- **Small Business Midstream**: The Small Business Midstream Channel of CEEP encourages customers to participate by providing point of sale (POS) discounts on selected products through local lighting distributors. Through this Channel, financial inducements are paid to the lighting distributor to reduce costs for the end customer.
- **Schools and Government Efficiency (SAGE)**: The SAGE Channel is marketed towards public school districts, private schools, universities and colleges, and government agencies. This Channel includes financial inducements for both lighting and non-lighting measures and both prescriptive and custom projects.
- **Commercial and Industrial Solutions (CIS)**: The CIS Channel offers inducements to customers with a peak demand greater than 150 kW at a single site or greater than 250 kW at multiple sites with the same tax ID. Inducements are paid directly to customers who install energy efficient equipment. This Channel focuses on four key areas; lighting, retrofit of existing equipment, HVAC replacement, and retro-commissioning. The Retro Commissioning (RCx) Channel mentioned in the portfolio plan was grouped with CIS for evaluation purposes. There were five RCx projects in the population for 2021, so they were included in the sampling strata for CIS, SAGE, and SBDI.
- **Small Business Direct Install (SBDI)**: The SBDI Channel offers inducements to customers with a peak demand of less than 150 kW at a single site or less than 250 kW at multiple sites with the same tax ID. The SBDI Channel provides lighting audits and equipment installation through approved trade allies.

- **HVAC Replacement and Tune-Up**: The HVAC Replacement and Tune-Up Channel offers inducements to customers for HVAC replacements and tune-ups. Tune-Up services include cleaning, duct sealing, and refrigerant charge adjustments. The portfolio plan lists the HVAC Tune-up effort as an offering within CIS, but due to the homogenous population of projects, this is considered a separate channel in the evaluation and associated sampling plan.
- **Continuous Energy Improvement (CEI)**: The CEI Channel was offered to C&I customers. This Channel includes energy benchmarking, walk-through energy assessments, and energy efficiency training. This behavioral component focuses mainly on low-cost/no-cost improvements to facilities.

CLEAResult was contracted to implement all aspects of CEEP including planning, marketing materials, quantifying *ex ante* energy savings estimates, and paying appropriate inducements to customers. CLEAResult also identified and approved trade allies and distributors. Furthermore, CLEAResult was responsible for recruiting customers to participate in the CEI Channel.

Service providers (trade allies and distributors) were recruited to submit rebate applications on behalf of customers implementing qualifying energy efficiency measures. OG&E's website lists service providers and the associated products/services they provide.

The Program seeks to combine financial inducements with access to technical expertise to maximize Program penetration across the range of potential C&I customers. The Program has the following additional goals:

- Increase customer awareness of applicable energy saving measures
- Achieve customer cost savings
- Increase the market share of commercial-grade high efficiency technologies sold through market Channels
- Increase the installation rate of high-efficiency technologies in C&I facilities by businesses that would not have done so absent the Program

The Program's impact evaluation results are intended to provide 10% precision at the 90% confidence interval for the overall Program based upon site-by-site verification activities.

A summary of CEEP performance metrics is displayed in Table 6-5.

Table 6-5: CEEP Program Summary

Program Pathway	Number of Projects	*Ex Ante* kWh Savings	*Ex Ante* Peak kW Savings	Percent of Program kWh Savings	Total Inducement ($)
CIS	185	34,944,323	4,023	32%	$3,193,547
SAGE	57	9,837,975	1,562	9%	$1,351,680
SBDI	308	7,255,194	952	7%	$1,026,848
Small Business Midstream	2,491	24,064,601	3,656	22%	$1,656,651
HVAC Replacement and Tune-Up	88	5,247,410	3,001	5%	$371,925
CEI	24	28,201,243	5,868	26%	$586,032
Total	**3,153**	**109,550,746**	**19,060**	**100%**	**$8,186,683**

Figure 6-1 below shows the *ex ante* savings and completed projects by month.

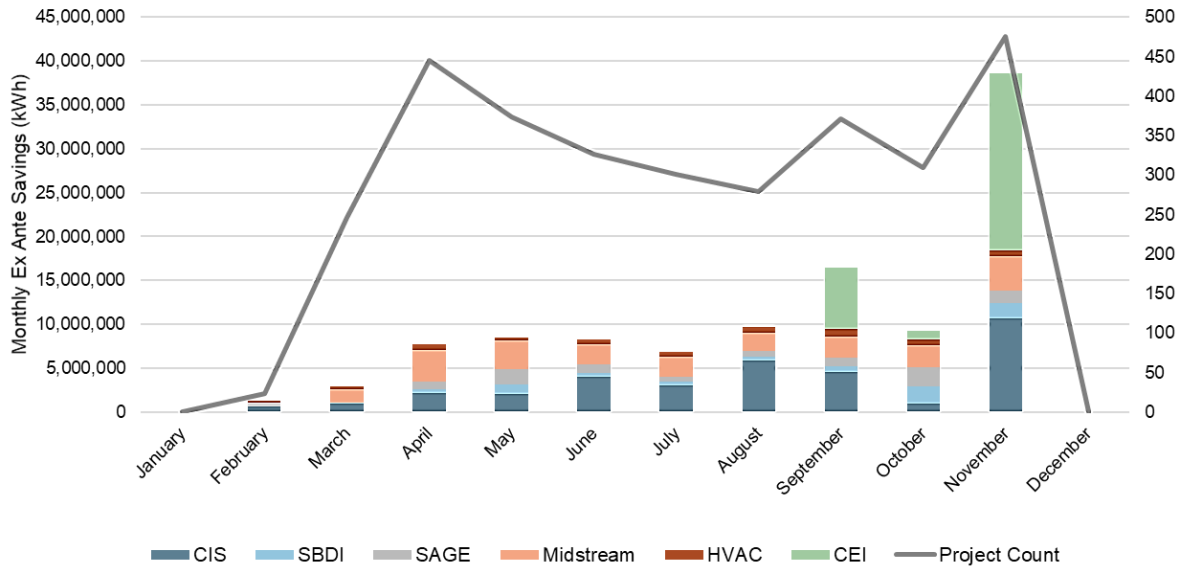


Figure 6-1: CEEP Energy Savings and Participation per Month

Due to the comprehensive design of the CEEP, energy savings occur in a wide range of measure categories, depending on the Program Channel. The CIS Channel had savings in numerous measure groups, shown in Figure 6-2. The Lighting measure category was the single highest contributor to *ex ante* savings. This specific measure category includes interior and exterior lighting retrofits and lighting controls. Compressed air and custom projects, which includes a wide range of measures that do

not have prescriptive inducements and use custom energy savings algorithms, accounted for next highest saving contributions.

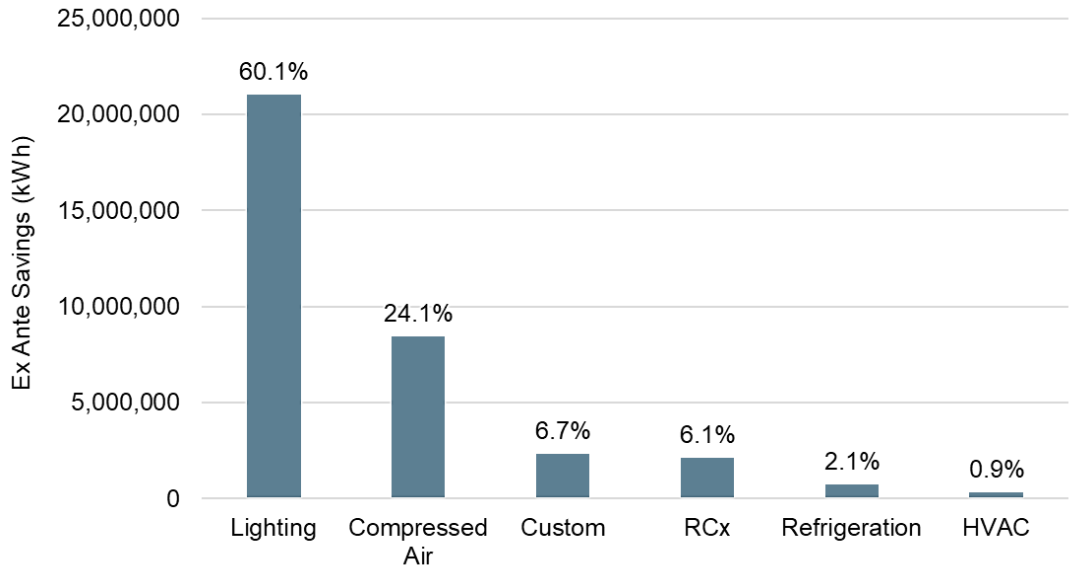


Figure 6-2: CIS Ex Ante Savings (kWh) per Measure Group

The SAGE Channel offers prescriptive inducements for measures similar to CIS but has typically had less participation in fewer measure categories. The SAGE Channel included lighting and non-lighting measure categories. The measure categories for SAGE are shown in Figure 6-3 below.

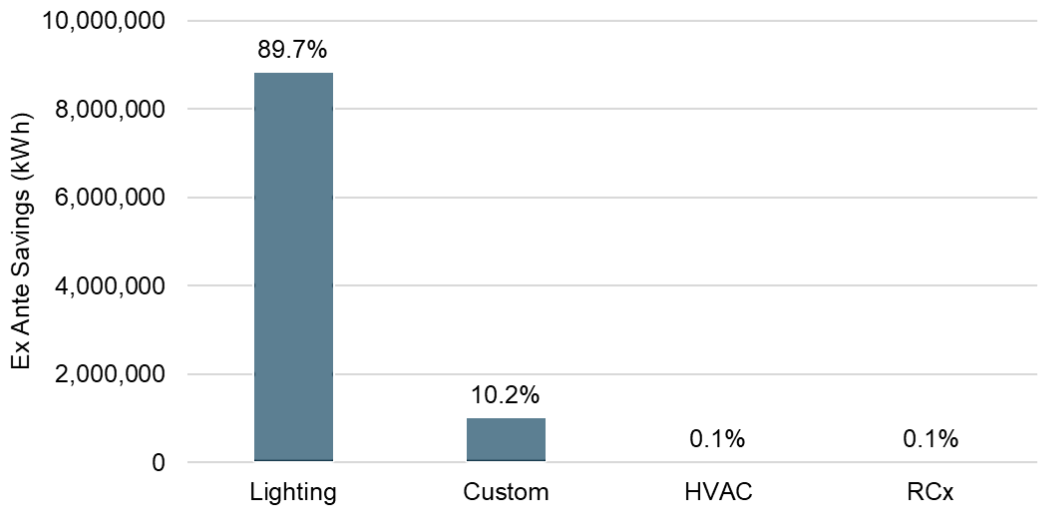


Figure 6-3: SAGE Ex Ante Savings (kWh) per Measure Group

SBDI is a trade ally driven Channel that focuses on the retrofitting of existing lighting fixtures and lamps, installation of refrigeration gaskets and strip curtains, and installation of weatherstripping. The categories that were included within this Channel are shown in Figure 6-4.

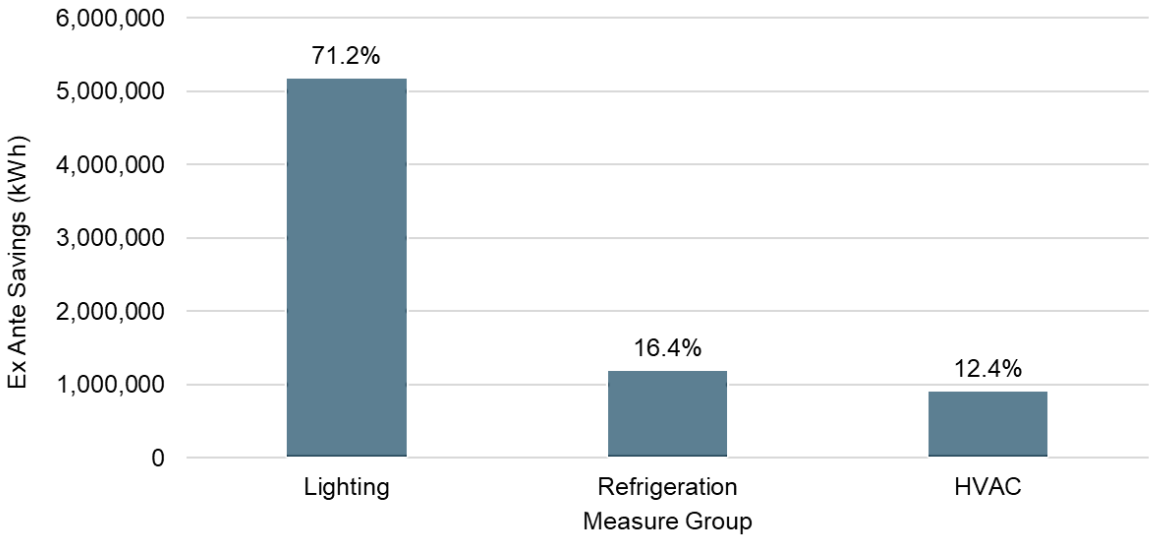


Figure 6-4: SBDI Ex Ante Savings (kWh) per Measure Group

The Small Business Midstream Channel is specifically designed to offer inducements for high efficiency lighting. Thus, all savings associated with this Channel are due to lighting measures. The Small Business Midstream Channel's reported energy savings are categorized by lamp or fixture type, as shown in Figure 6-5. The final PY2021 Program data for Small Business Midstream included numerous different lighting categories.

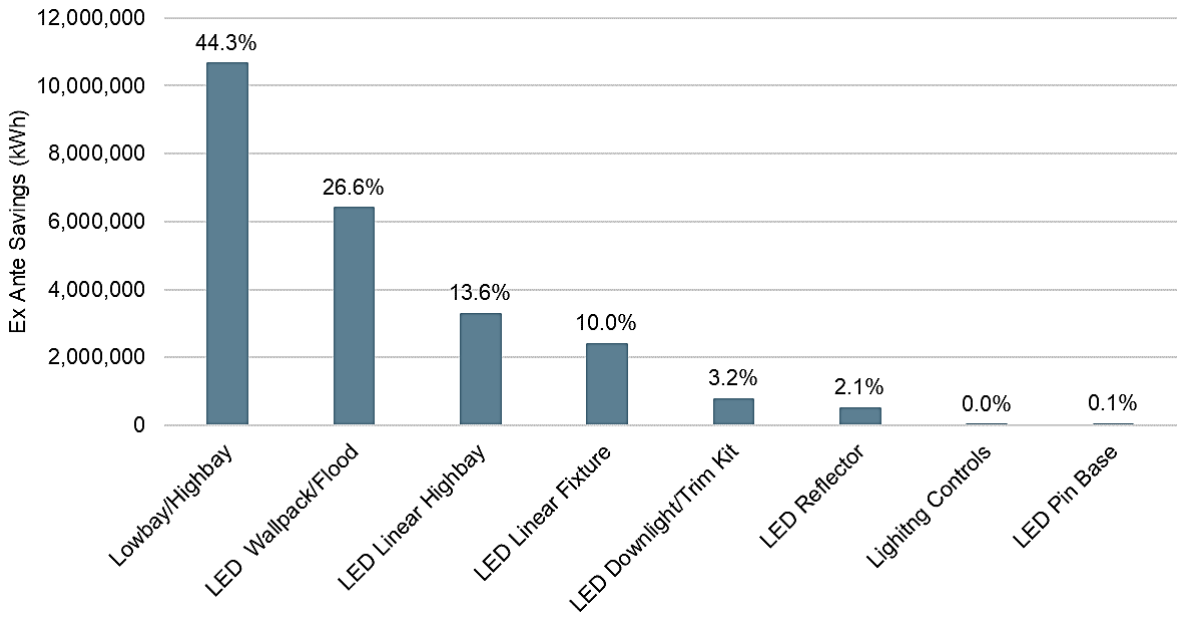


Figure 6-5: Contributions to Savings by Measure – Small Business Midstream

The HVAC Replacement and Tune-Up Channel included only HVAC tune-up measures. There were four types of Tune-Up measures: Pre-clean, Post measurement, Modeled and M&V. Full HVAC tune-ups are Modeled, and M&V tune-ups are a pre-clean plus a post measurement tune-up. Pre-clean and post measurement tune-ups can be completed on different days by different technicians. Figure 6-6 shows the saving per HVAC Tune-up measure type.

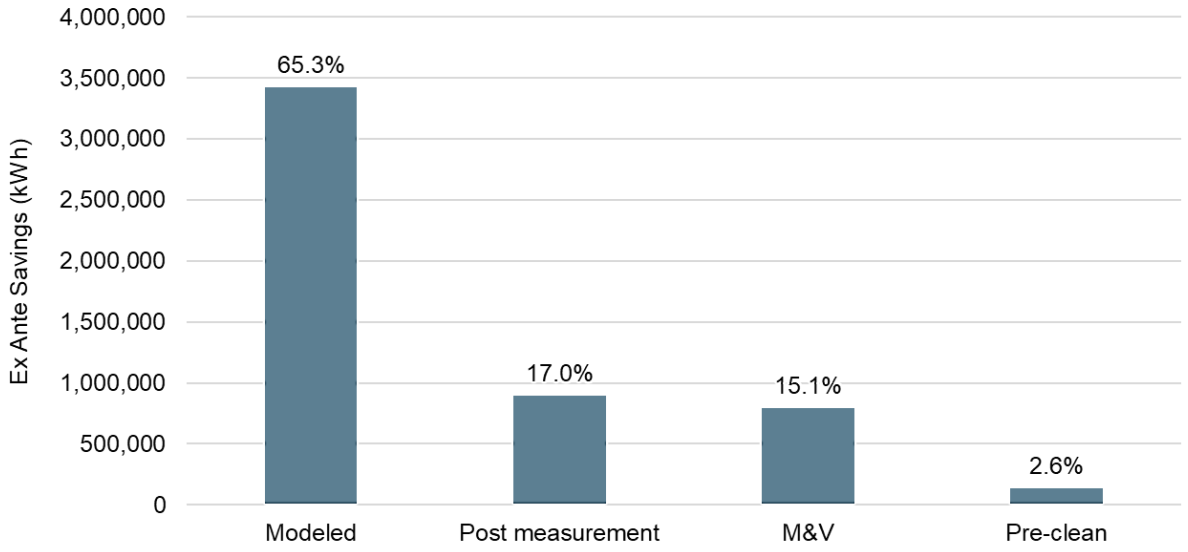


Figure 6-6: HVAC Ex Ante Savings (kWh) per Measure Type

The final Channel, CEI, included a mix of behavioral and low or no-cost measures. This Channel used an International Performance Measurement Verification Protocol[88] (IPMVP) Option C approach to calculate savings using whole building meter data. This approach does not allow for disaggregation of savings by measure type.

6.3 Gross Impact Evaluation

The evaluation of gross energy savings and peak demand reduction from projects rebated through the CEEP can be broken down into the following steps:

First, the implementation contractor's Program tracking database was reviewed to determine the Program's scope and to ensure there were no duplicate project entries. The tracking database was used to define a discrete set of projects that made up the Program population. A random sample of projects was then drawn from the population established in the tracking system review. ADM reviewed a census of projects in the Small Business Midstream, HVAC Replacement and Tune-Up, and CEI Channels.

Next, a detailed desk review was conducted for each project sampled for measurement and verification. The desk review process includes a thorough examination of all project materials, including invoices, equipment cut sheets, pre-and post-inspection reports, and estimated savings calculators. This review process informed ADM's fieldwork by identifying potential uncertainties, missing data, and sites where monitoring equipment was needed to verify key inputs to the reported savings calculations. Additionally, the

[88] https://evo-world.org/en/products-services-mainmenu-en/protocols/ipmvp

review process involved assessing the reasonableness of deemed savings values given in the AR TRM and calculation input assumptions.

After reviewing the project materials, if deemed needed, virtual or on-site verification and data collection visits were scheduled for selected sampled projects in the CIS, SBDI, and SAGE Channels. The virtual or on-site visit was used to collect data for savings calculations, verify measure installation, and determine measure operating parameters.

Next, the data collected during the on-site verification or virtual visit was used to revise savings calculations as necessary. For example, if the reported savings calculations relied on certain measure operating hours that were determined inaccurate based on the facility type or the facilities' actual schedule, changes were made to reflect actual operating conditions.

For the Small Business Midstream, HVAC Replacement and Tune-Up, and CEI Channels, no on-site or virtual inspections were conducted. Instead, we reviewed the implementation contractor's databases to determine methodologies and assumptions used to determine *ex ante* savings. For these Channels, *ex post* savings are determined through the database review process.

Finally, after determining the *ex post* savings impacts for each sampled project, results were extrapolated to the Program population using project-specific sampling weights. This allows for the estimation of Program *ex post* gross energy savings with a given amount of sampling precision and confidence. For the CEEP, the sample was designed to ensure ±10% or better relative precision at the 90% confidence level for kWh reductions.

6.3.1 Small Business Midstream Impact Evaluation Activities

Ex post savings from the Small Business Midstream Channel were determined by reviewing the database used by CR for tracking lamps and fixtures sold through the Program. CLEAResult collected Point of Sale (POS) data from distributors throughout the Program year. The POS data included information on the quantities of each lamp type sold, model, numbers of lamps, customer or contractor names who purchased the lamps, and customer or business name where the lamps would be installed. The POS data also included lighting distributor invoice numbers that were used to support the lamp sales.

We employed an engineering analysis to determine the *ex post* verified energy savings for each lamp or fixture type sold. The verified energy savings per fixture or lamp were calculated with methods consistent with Chapter 6 of *The Uniform Methods Project:*

Methods for Determining Energy Efficiency Savings for Specific Measures.[89] The calculations used the following equations and baseline:

Equation 6-1: Small Business Midstream Lighting Annual Energy Savings

$$Annual\ kWh\ savings = Q * \left(\frac{(Wbaseline - Wmeasure) * AOH * IEF * ISR}{1000}\right)$$

Equation 6-2: Small Business Midstream Lighting Demand Reduction

$$Peak\ kW\ savings = Q * \left(\frac{(W_{baseline} - W_{measure}) * IEF * CF * ISR}{1000}\right)$$

Where:

Q = quantity purchased
$W_{measure}$ = measure wattage
$W_{baseline}$ = baseline wattage per category
1000 = conversion factor for Watts per kW
AOH = annual hours of use determined by lamp type installed
IEF_e = Heating & Cooling Interactive-Effects Factor, determined to be 1.07 for kWh, and 1.15 for kW, except for exterior fixtures, which was set at 1.0
ISR = In-Service Rate, the percentage of Program units that are installed, estimated to be 0.98 for all screw-in lamps, and 1.0 for all other fixtures
CF = Coincidence factor, a ratio between 0.0 and 1.0 that adjusts the change in connected electric load from lighting efficiency projects for electric peak demand savings.

To verify the number and types of lamps sold through the Program, we requested a random selection of distributor invoices. These invoices were reviewed and cross-checked against the POS data to verify the model numbers and quantities of lamps sold. Additionally, the invoices were used to verify correct lamp quantities, and model numbers were claimed in the final *ex ante* savings.

Lamp and fixture wattages for units sold through the Program were calculated using manufacturer name, make and model, and SKU numbers provided by the lighting distributors and included in the implementation contractor's POS data. Using the provided SKU number for each lamp or fixture, specifications were found via manufacturer catalogs, including wattage, lumens, and rated hours of life. Other sources such as Design Lights Consortium (DLC), ENERGY STAR, and Rebate Bus were also used to verify replacement wattages and specifications.

[89] https://www.nrel.gov/docs/fy18osti/70472.pdf

Baseline lamp wattages used in both *ex ante* and *ex post* analyses were determined based on the purchased lamp wattage and lumen output. Once the replacement wattage and lumen output were determined for the actual lamp or fixture sold through the Program, a baseline wattage was determined using data from the PA and IL TRMs. These TRMs provide baseline wattage for lamps and fixtures based on the lumen output of the replacement fixture. Given a verified lumen output for a given LED fixture, the data provided in these TRMs can be used to determine a reasonable wattage estimate for a standard (non-high efficiency) lamp or fixture that produces a similar lumen output. The lumen ranges and lamp designations were then used to determine the baseline wattage. The resulting baseline lamp wattages and respective lumen outputs per lamp type are shown in Table 6-6. Due to unknown heating/cooling equipment types in the facilities where the lamps are installed, all fixture types used the same IEF_e, 1.15 for kW savings and 1.07 for kWh, except for exterior wall packs and floodlights, for which both were assumed to be 1.0.

The AOH and CFs used in the *ex ante* calculations were developed using the 2015 Energy Information Administration's Commercial Buildings Energy Consumption Survey (CBECS) and the 2010 U.S. Department of Energy Lighting Market Characterization Study. The studies were used to determine both the mix of businesses in the OG&E service territory and the estimated mixture of lamp types within each business. The CBECS report provides estimated square-footage of commercial spaces by industry (or facility) type regionally throughout the US. This report was used to estimate the mixture of commercial facility types within the Small Business Midstream Channel territory, allowing a weighted average of AR TRM deemed values to be calculated for AOH, IEFe, and CF. The DOE Lighting Market Characterization study identifies the mixture of lighting in various commercial facility types throughout the US. This study was used to estimate the mixture of lamps within each facility type and informed the use of deemed AOH and CF specified in the AR TRM. Using the DOE study and the results of the CBECS, it was possible to estimate AOH, IEFe, and CF per lamp type.

Table 6-6: Baseline Watts by Fixture Type and Lumen Output

Lamp Type	Min Lumen	Max Lumen	$W_{baseline}$
2x2 Troffer and Linear Ambient LED	1,500	3,499	54
2x2 Troffer and Linear Ambient LED	3,500	5,999	94
2x2 Troffer and Linear Ambient LED	6,000	7,000	126
2x4 Troffer and Linear Ambient LED	3,500	5,999	94
2x4 Troffer and Linear Ambient LED	6,000	10,000	126
4 Pin-Base Lamp LED (G24)	700	2,500	33
A-Line (A15, A17, A19)	450	799	29
A-Line (A15, A17, A19)	800	1,099	43
A-Line (A15, A17, A19)	1,600	1,999	72
A-Line (A21, A23)	1,600	2,549	72
A-Line (A21, A23)	2,550	3,000	150
Downlight Retrofit LED	500	649	50
Downlight Retrofit LED	650	1,199	65
Downlight Retrofit LED	1,200	2,174	49
Exterior Wall Pack/Flood 7-29 Watts	1,000	2,999	101
Exterior Wall Pack/Flood 30-80 Watts	3,000	4,999	183
Exterior Wall Pack/Flood 30-80 Watts	5,000	8,999	288
Exterior Wall Pack/Flood 30-80 Watts	11,051	11,500	462
Exterior Wall Pack/Flood >80 Watts	9,000	19,999	448
Exterior Wall Pack/Flood >80 Watts	20,000	54,999	1,078
Linear Lamp T5 LED - 4 ft	3,200	6,000	58
Linear Lamp T8 LED - 4 ft & U-Bend	1,500	3,199	28
Linear Lamp T8 LED - 8 ft	3,000	6,399	57
Lowbay/Highbay LED 30-60 Watts	3,000	7,499	208
Lowbay/Highbay LED 61-100 Watts	7,500	11,999	288
Lowbay/Highbay LED 61-100 Watts	12,000	15,000	289
Lowbay/Highbay LED >100 Watts	12,000	24,999	443
Lowbay/Highbay LED >100 Watts	25,000	60,000	1,065
Parabolic Reflector LED - MR16	473	524	45
Parabolic Reflector LED - MR16	525	714	50
Parabolic Reflector LED - PAR20	473	524	45
Parabolic Reflector LED - PAR30	800	937	65
Parabolic Reflector LED - PAR38	715	937	65
Parabolic Reflector LED - PAR38	938	1,259	75
Parabolic Reflector LED - PAR38	1,260	1,399	90
Parabolic Reflector LED - PAR38	1,400	1,739	100
Parabolic Reflector LED - PAR38	2,175	2,624	150
Parabolic Reflector LED - PAR38	2,625	2,999	175
Parabolic Reflector LED - PAR38	3,000	4,500	200
Reflector LED - BR30	650	1,199	65
Reflector LED - BR40	650	1,199	65
Specialty LED – Decorative	300	499	40
Specialty LED – Decorative	500	699	60
Specialty LED – Globe	350	499	29
Specialty LED – Globe	650	1,099	72

The AOH and CFs used in the *ex post* analysis were based on the lamps' installation facility. Using the Program and POS data provided by the implementation contractor, the facility type was identified for each lamp sold through the Program. The deemed AOH and CF from the AR TRM were then applied to the respective building types.

Verified savings associated with occupancy sensors were based on each sensor using a deemed change in wattage provided by CLEAResult. The wattage change in ceiling occupancy sensors was 312.88 watts and 187.73 watts for wall occupancy sensors. Using a deemed wattage change, savings come from a 30% reduction in AOH which was assigned according to the facility location of installation.

To determine the Small Business Midstream Channel's net impact, we conducted a survey on a random sample of end-users in the Program. The POS data included end user business names, addresses, and phone numbers.

For the calculation of NTG sample size for survey completes, a coefficient of variation of 0.5 was assumed.[90] With this assumption, a minimum sample size of 68 participants was required, as shown in the following formula:

Equation 6-3: NTG Sample Size Calculation

$$n_0 = \left(\frac{Z * CV}{RP}\right)^2 = \left(\frac{1.645 * 0.5}{0.10}\right)^2 = 68$$

Where:

n_0 = minimum sample size

Z = Z-statistic value (1.645 for the two-sided 90% confidence level)

CV = Coefficient of Variation (assumed to be 0.5)

RP = Relative Precision (0.10)

ADM sent email invitations to 728 Midstream lighting unique addresses and up to two reminder emails (all customers with valid email addresses in tracking data through Q3). We also made 53 phone calls to 47 customers. Ninety-six end users completed the survey. Obtaining 28 more survey completes than the minimum sample size of 68, increased the chances that all measure types in channel were captured in survey responses.

6.3.2 HVAC Replacement and Tune-Up Impact Evaluation Activities

HVAC Replacement and Tune-Up *ex ante* savings were claimed using the CLEAResult CoolSaver™ Program. The HVAC Replacement and Tune-Up Channel provided financial inducements to encourage commercial customers to improve their HVAC systems' efficiency.

[90] The coefficient of variation, cv(y), is a measure of variation for the variable to be estimated. Its value depends on the mean and standard deviation of the distribution of values for the variable (i.e., cv(y) = sd(y)/mean(y)).

The HVAC equipment tune-ups were provided by a qualified technician and involved testing the unit's performance before and after measures were implemented. Typical measures implemented as part of the tune-up procedure include airflow correction, cleaning of the indoor blower, evaporator coils, condenser coils, and refrigerant charge correction.

Evaluation of the Channel was based on the CoolSaver™ M&V plan provided by CLEAResult. ADM reviewed a census of Channel database participants to assess savings by measure. We examined the data and re-created the overall savings calculations. Savings from Air Conditioner (AC) and Heat Pump (HP) tune-ups were based on AR TRM stipulated equivalent full-load hours (EFLH) along with unit-specific capacity and deemed efficiency loss recovered due to work performed in accordance with the Channel.

6.3.3 CEI Impact Evaluation Activities

The *ex ante* savings associated with this Channel are determined through an IPMVP Option C, whole building meter data analysis. This analysis approach uses linear regression models to predict the baseline energy usage during the treatment period. The regression model inputs include whole building meter data (monthly or weekly intervals depending on availability), weather data, and any other applicable modeling variables (production data, infrastructure projects, changes in manufacturing processes, school days, and other variables with significant energy usage). The regression models were used to estimate baseline energy usage after the CEI curriculum has been initiated. Program savings was calculated as the difference between the baseline energy usage and actual billed energy usage.

Ex ante savings were based on preliminary models submitted in late October 2021. The preliminary models include forecasted savings for November and December 2021. Final models were submitted in February 2022. The final models replaced the forecasted savings in November and December 2021 with measured savings.

To determine *ex post* savings, we first re-created the regression models using the implementation contractor's data. The *ex post* models used final model inputs and actual data provided by the implementer. Furthermore, we checked to ensure no input or model errors were included in the *ex ante* analysis. The *ex post* regression savings were calculated by subtracting the actual billed usage from the model estimated baseline usage.

Next, we subtracted any *ex ante* savings found in other CEEP Channels from the CEI *ex post* regression savings. Energy saving projects completed outside of the CEI Channel affected the regression models and were accounted for with this subtraction.

6.4 Impact Data Collection Activities

Data for the evaluation were collected through review of Program materials, virtual or on-site inspections, end-use metering, and interviews with participating customers and service providers. Based on Program tracking data provided by CLEAResult, sample design was developed for M&V data collection. The central Program database, where Program activities are tracked, and project documentation is stored, was developed and managed by CLEAResult. The verification and data collection samples were drawn to provide gross impact estimates with ±10% precision or better at the 90% confidence level for the overall Program. The sample was designed to meet the ±10% precision for the overall Program population and the combined population of the CIS, SBDI, and SAGE Channels. The Small Business Midstream, HVAC Replacement and Tune-Up, and CEI Channels included a census review of projects.

Virtual and on-site visits, interviews, and desk reviews of project documentation were used to collect data for gross impact calculations, to verify measure installation, and to determine measure operating parameters. When deemed values were used to determine *ex post* energy savings, including EFLH for heating and cooling projects, or AOH for lighting projects, we referred to the AR TRM. Facility staff members were interviewed to determine the AOH of the lighting projects and to provide any additional operational characteristics relevant to calculating energy savings. When accurate operating hours could be determined through an interview with facility staff, custom hours were used in energy savings calculations.

Table 6-7 below shows the sample design that was used. Projects were sampled randomly from the CIS, SAGE, and SBDI Channels. We reviewed all the projects in the Small Business Midstream, HVAC Replacement and Tune-Up, and CEI Channels.

Table 6-7: Sample Design

Stratum Name	Ex Ante kWh per Strata	Strata Minimum (kWh)	Strata Maximum (kWh)	Population of Projects	Design Sample Size
CIS, SAGE, SBDI 1	6,605,334		60,000	384	29
CIS, SAGE, SBDI 2	11,962,674	60,000	200,000	111	12
CIS, SAGE, SBDI 3	13,620,538	200,000	750,000	36	15
CIS, SAGE, SBDI 4	12,221,672	750,000	infinite	11	11
CIS, SAGE, SBDI 5	7,627,273		infinite	8	8
Small Business Midstream	24,064,601	N/A	N/A	2,491	2,491
HVAC Replacement and Tune-Up	5,247,410	N/A	N/A	88	88
CEI	28,201,243	N/A	N/A	24	24
Total	**109,550,746**			**3,153**	**2,678**

6.5 Net-to-Gross (NTG) Evaluation Activities

ADM collected free ridership and spillover data for the CEEP Downstream and HVAC Replacement and Tune-Up Channels. The CEI Channel's savings were based on behavioral changes and have an estimated NTG ratio of 1.0. The following sections summarize the methodologies used to estimate free ridership impacts for the Small Business Midstream Channel, the downstream Channels, as well as the HVAC Replacement and Tune-Up Channel in PY2021.

Net savings analysis determined what portion of gross savings was the direct result of Program influence. Net savings may be less than gross savings because of free ridership impacts. Free riders for a program were defined as those who would have installed the same energy efficiency measures without the Program. Conversely, net savings may be greater than gross savings due to energy saving spillover attributable to the Program. Participants implementing additional energy efficiency measures due to the Program's influence without receiving inducements for those measures were considered spillover.

Information collected from a sample of Program participants through customer decision-maker surveys was used for NTG analysis. These responses were reviewed to assess the likelihood that participants were free riders or had spillover savings.

6.5.1 Small Business Midstream NTG Methodology

ADM used self-reported responses from a random sample of customers who had purchased efficient lamps and fixtures to estimate free ridership.

Free Ridership Methodology

ADM administered a survey about lamp and fixture purchases made to a random sample of OG&E customers. As it relates to net impacts, the goal of these surveys was to elicit information from which to estimate the number of lamps or fixtures that the customer would have purchased in the counterfactual scenario where the efficient light bulbs were not discounted.

ADM did not assess spillover for the Small Business Midstream Channel for two reasons. ADM's surveys of participating end-users from 2016 to 2019 have not yielded spillover.[91] Additionally, the information required to calculate spillover accurately is burdensome and difficult for survey respondents to provide or estimate.

[91] Because of the Midstream Channel's design, it is unlikely to influence customers as a downstream program might. Thus, there have been no or very low reports of buying un-incented energy efficient equipment and being influenced by the Midstream Channel for these purchases.

Survey respondents were asked a series of questions to elicit feedback regarding influences on their purchasing decisions. Each respondent was then assigned a free ridership score based on a consistent free ridership scoring algorithm. The scoring algorithm used is based on the methodology described in the AR TRM.

The final respondent net-to-gross score was calculated as follows:

Equation 6-4: Small Business Midstream NTG

$$NTG = 1 - Free\ ridership + Spillover$$

The free ridership scoring algorithm for Small Business Midstream purchases from the surveys is shown in Figure 6-7.

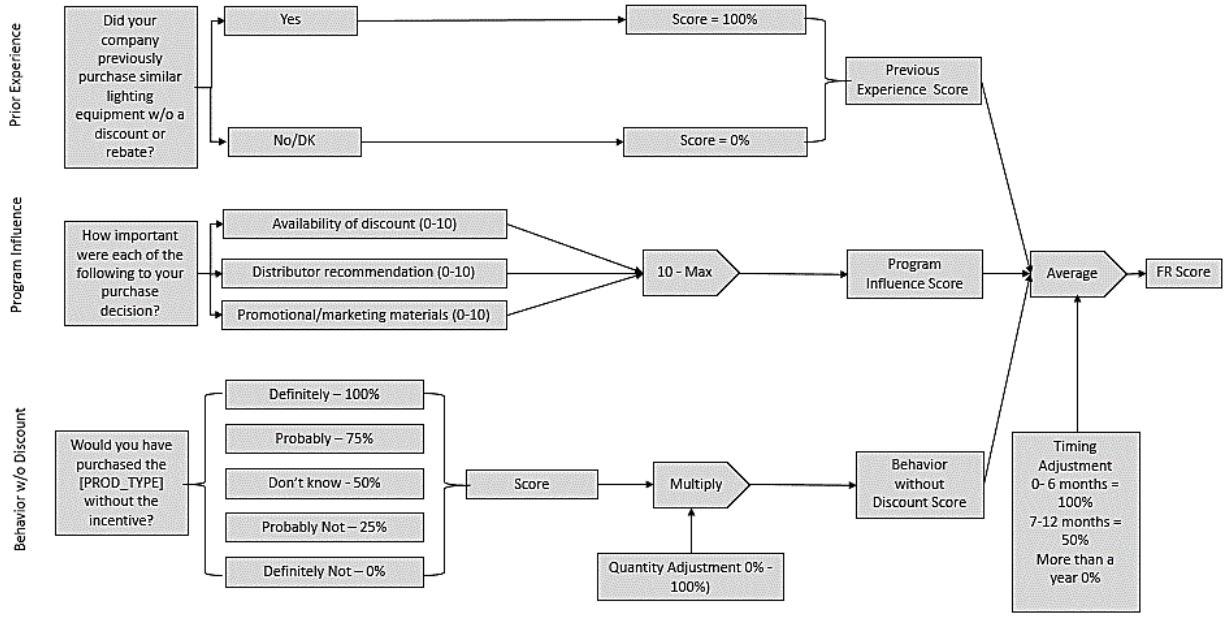


Figure 6-7: Free ridership Scoring for Small Business Midstream Survey Respondents

6.5.2 Downstream and HVAC Replacement and Tune-Up Channels NTG Methodology

Free Ridership Methodology

Information collected from a sample of Program participants through a customer decision-maker survey was used to estimate free ridership. These survey responses were reviewed to assess the likelihood that participants were free riders.

Several criteria were used for determining the likelihood that a customer was a free rider. The first criterion was based on the response to the following questions:

- "Would you have been financially able to complete energy efficient [Measure/Equipment project] at the location without the financial inducement from the program?"
- "To confirm, your organization would NOT have allocated the funds to complete a similar [Measure/Equipment] project if the program inducement was not available. Is that correct?"

Customers who answered "no" to the first question and "yes" to the second question were not deemed free riders.

The second criterion was the impact of the Program timing on 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. ADM 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 implement the measure earlier than you otherwise would have because of the information and inducements available through the program?"
- "When would you otherwise have installed the measure?"

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.

For decision-makers that indicated that they were able to undertake energy efficiency projects without financial assistance from the Program and would have done so within one year of when they undertook it, three factors were analyzed to determine the likelihood of free ridership. The three factors were:

- Plans and intentions of the firm to install a measure even without support from the Program
- The influence that the Program had on the decision to install a measure
- A firm's previous experience with a measure installed under the Program

For each of these factors, rules were applied to develop binary variables indicating if a participant's behavior indicated free ridership.

The first factor required determining if a participant stated they intended to install an energy efficiency measure even without the Program. The answers to a combination of several questions were used with a set of rules to determine whether a participant's behavior indicated likely free ridership. Two binary variables were constructed to account for customer plans and intentions: one, based on a more restrictive set of criteria that may describe a high likelihood of free ridership, and a second, based on a

less restrictive set of criteria that may describe a relatively lower likelihood of free ridership.

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

- The respondent answered, “yes” to the following two questions: “Did you have plans to install energy efficient [Measure/Equipment] before deciding to participate in the program?” and “Would you have gone ahead with this planned project if you had not received the inducement through the program?”
- The respondent answered, “definitely would have installed” to the following question: “If the inducements from the program had not been available, how likely is it that you would have installed energy efficient [Measure/Equipment] at the location anyway?”
- The respondent answered “no, program did not affect level of efficiency chosen for equipment” in response to the following question: “Did you choose equipment that was more energy efficient than you would have chosen had you not participated in the program?”
- The respondent answered, “no, the program did not affect timing of project” in response to the following question: “Did you install the [Equipment/Measure] earlier than you otherwise would have because of the information and inducements from [UTILITY]’s program?”

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

- The respondent answered, “yes” to the following two questions: “Did you have plans to install energy efficient [Measure/Equipment] at the location before participating in the program?” and “Would you have gone ahead with this planned installation even if you had not participated in the program?”
- The respondent answered, “definitely would have installed” or “probably would have installed” to the following question: “If the inducements from the program had not been available, how likely is it that you would have installed energy efficient [Measure/Equipment] at the location anyway?”
- The respondent answered, “no, program did not affect level of efficiency chosen for equipment” in response to the following question: “Did you choose equipment that was more energy efficient than you would have chosen had you not participated in the program?”
- The respondent answered, “no, the program did not affect timing of project” in response to the following question: “Did you install the [Equipment/Measure]

earlier than you otherwise would have because of the information and inducements from [UTILITY]'s program?"

The second factor requires determining if a customer reported that a recommendation from a program representative or past experience with the program was influential in the decision to install a particular piece of equipment or measure.

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

- The respondent answered, "very important" to the following question: "How important was previous experience with the program in making your decision to install energy efficient [Measure/Equipment] at the location?"
- The respondent answered, "probably would not have" or "definitely would not have" to the following question: "If the program representative had not recommended [Measure/Equipment], how likely is it that you would have installed it anyway?"

The third factor required determining if a participant indicated they had previously installed an energy efficiency measure similar to one that they installed under the Program without an inducement in the last three years. A participant indicating that he or she had installed a similar measure is considered to have a likelihood of free ridership.

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

- The respondent answered, "yes" to the following question: "Before participating in the Program, had you installed any equipment or measure similar to energy efficient [Measure/Equipment] at your facility?"
- The respondent answered, "yes, purchased energy efficient equipment but did not apply for financial inducement." to the following question: "Has your organization purchased any energy efficient equipment in the last three years for which you did not apply for a rebate through the program?"

The four factors described above were used to construct four different indicator variables that address free ridership behavior. For each customer, a free ridership value was assigned based on the combination of variables. The four indicator variables result in 12 possible combinations for assigning free ridership scores for each respondent. Table 6-8 shows these values, and Figure 6-8 further illustrates the scoring methodology.

Table 6-8: Free Ridership Scores for Combinations of Indicator Variable Responses

Had Plans and Intentions to Install Measure without C&I Program? (Definition 1)	Had Plans and Intentions to Install Measure without C&I Program? (Definition 2)	C&I Program influenced Decision to Install Measure?	Had Previous Experience with Measure?	Free Ridership Score
Y	N/A	Y	Y	100%
Y	N/A	N	N	100%
Y	N/A	N	Y	100%
Y	N/A	Y	N	67%
N	Y	N	Y	67%
N	Y	N	N	33%
N	Y	Y	N	0%
N	Y	Y	Y	33%
N	N	N	Y	33%
N	N	N	N	0%
N	N	Y	N	0%
N	N	Y	Y	0%

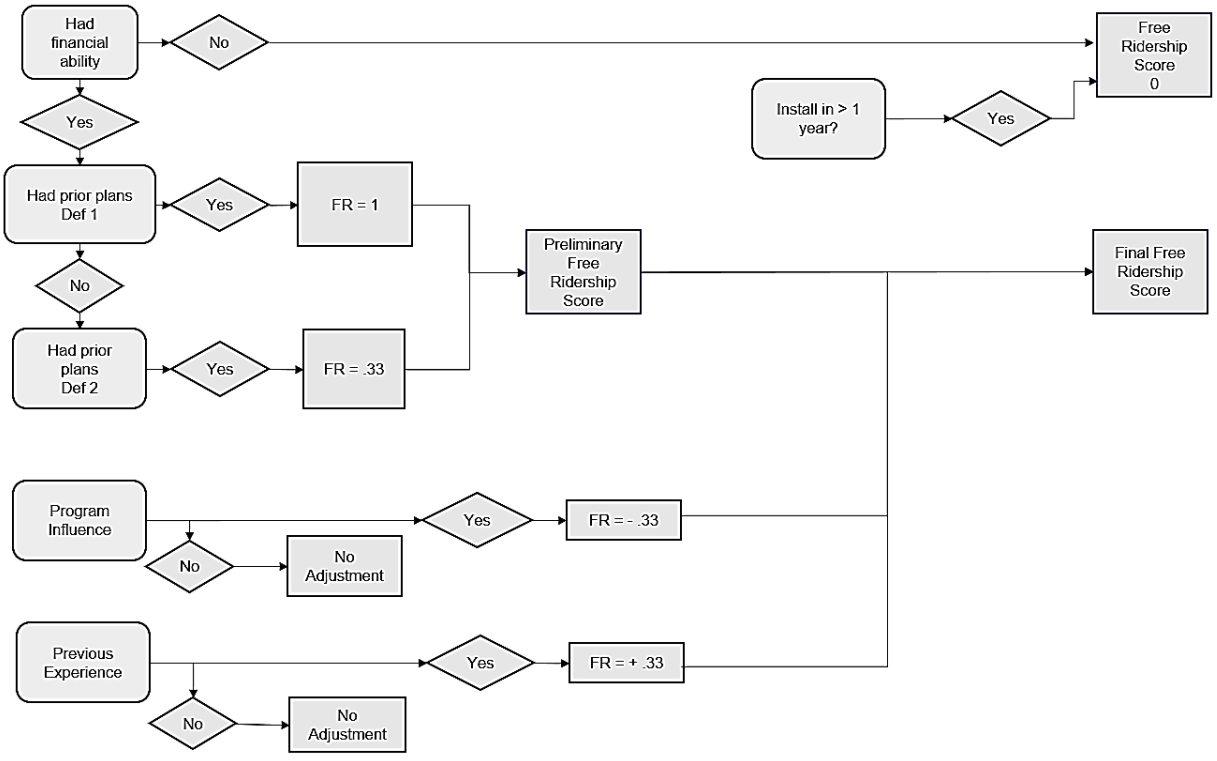


Figure 6-8: Free ridership Scoring for Downstream and HVAC Tune-up Survey Respondents

Spillover Estimation

The customer decision-maker survey included a series of questions used to analyze potential spillover effects associated with non-rebated purchases by Program participants.[92] Specifically, survey respondents were asked:

- "We would like to know if you have installed any additional energy efficient equipment because of your experience with the program that you DID NOT receive an inducement for. Since participating in the program, has your organization installed any ADDITIONAL energy efficiency measures at this facility or at your other facilities within [UTILITY]'s service territory that did NOT receive inducements through [UTILITY]'s program?"

Customers who indicated "yes" were identified as potential spillover candidates. Potential spillover candidates were also asked to identify the type of additional equipment installed and provide information about the equipment for estimating energy savings. For each type of equipment that respondents report installing, respondents were asked the following two questions, which were used to assess if any savings resulting from the additional equipment installed was attributable to the Program.

- [SP1] "How important was your experience with the program in your decision to install this [Equipment/Measure]?" [Rated on a scale where 0 means not at all important and 10 meant very important]
- [SP2] "If you had NOT participated in the program, how likely is it that your organization would still have installed this [Equipment/Measure]?" [Rated on a scale where 0 means not at all likely and 10 meant very likely]

A spillover score was developed based on these responses as follows:

Equation 6-5: Downstream and HVAC Replacement and Tune-Up Spillover

$$Spillover\ Score\ =\ Average\ (SP1, 10 - SP2)$$

The energy savings of equipment installations associated with a spillover score greater than six are attributed to the Program.

[92] The spillover analysis is limited to participant spillover. Non-participant spillover effects may exist for the program, but they are not estimated and therefore assumed to be zero.

6.6 Gross Impact Findings

The CEEP Program results are shown in Table 6-9.

Table 6-9: Ex Ante and Ex Post kWh Savings

Program Channel	Gross Annual Energy Savings (kWh)		Gross Realization Rate	Gross Annual Energy Savings (kW)		Gross Realization Rate
	Ex Ante	*Ex Post*		*Ex Ante*	*Ex Post*	
CIS	34,944,323	35,364,850	101%	4,023	4,208	105%
SAGE	9,837,975	9,992,672	102%	1,562	1,625	104%
SBDI	7,255,194	7,599,262	105%	952	1,029	108%
Small Business Midstream	24,064,601	23,919,865	99%	3,656	3,626	99%
HVAC Replacement and Tune-Up	5,247,410	5,186,587	99%	3,001	2,969	99%
CEI	28,201,243	28,681,617	102%	5,868	5,860	100%
Total	**109,550,746**	**110,744,854**	**101%**	**19,060**	**19,317**	**101%**

The achieved sample design resulted in gross *ex post* kWh estimate with a relative precision of less than 10% at the 90% confidence interval. The most significant cause for a realization rate variance was the verification of saving through the CEI channel. This channel has a gross realization rate greater than 100%. The greater *ex post* savings associated with the channel are mostly due to model versioning, model calculations methods, and the identification of participation in other Program Channels.

6.6.1 CIS, SAGE, SBDI

The CIS, SBDI, SAGE Channels were grouped and evaluated as one Channel for our gross evaluation. The sampling plan for the CIS, SAGE, SBDI Channels included five sampling strata. Sampled sites were chosen randomly based on project savings from all three Channels. See Table 6-10 for a summary of savings by stratification. Strata 5 contained the multi-year projects.

Table 6-10: CIS, SAGE, SBDI, PY2021 Savings by Strata

Stratum Name	*Ex Ante* kWh Savings	*Ex Post* kWh Savings	Gross kWh Realization Rate	*Ex Ante* kW Savings	*Ex Post* Gross kW Savings	Gross kW Realization Rate
CIS, SAGE, SBDI 1	6,605,334	7,004,535	106%	1,033	1,108	107%
CIS, SAGE, SBDI 2	11,962,674	12,621,046	106%	1,692	1,843	109%
CIS, SAGE, SBDI 3	13,620,538	13,619,879	100%	1,814	1,888	104%
CIS, SAGE, SBDI 4	12,221,672	12,250,434	100%	1,521	1,555	102%
CIS, SAGE, SBDI 5	7,627,273	7,460,890	98%	476	468	98%
Total	**52,037,491**	**52,956,784**	**102%**	**6,536**	**6,862**	**105%**

Most sample sites had a gross realization rate (GRR) between 95% and 100%. The distribution of projects by GRR is shown in Figure 6-9.

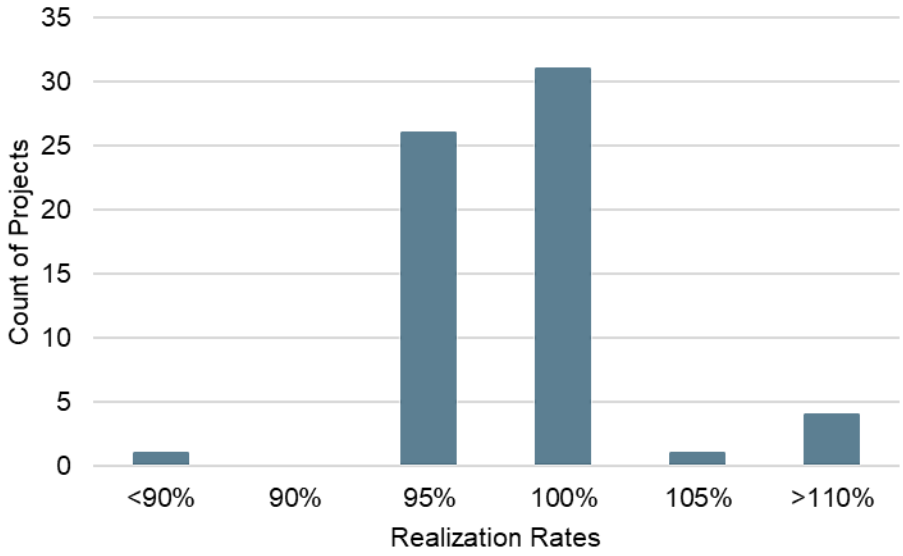


Figure 6-9: Distribution of Project Level GRR - CIS, SAGE, SBDI

The high number of projects with GRRs between 95-105% indicates that the *ex ante* and *ex post* methodologies are well aligned. Those projects with low GRRs typically had project-specific conditions that lead to the lower *ex post* savings and were relatively infrequent. The project with the lowest realization rate had raw data differences used to calculated *ex ante* and *ex post* savings.

The majority of sampled sites were lighting sites. These sites had an average kWh and kW realization rate near 100%. For those sites that did have differing *ex post* savings, the most common difference between *ex ante* and *ex post* calculations was the AOH value used. During our verification efforts, site contacts were interviewed to determine actual annual operating hours of the lighting fixtures. This allowed for the use of custom operating hours wherever possible. However, if the interviewed site contact was not knowledgeable about operating hours, or if no contact was available for interview, the *ex post* analyses defaulted to TRM prescriptive values.

Of all projects sampled in the CIS, SBDI, and SAGE Channels, 33% were non-lighting sites. The kWh and kW GRRs being close to 100% indicates the methodologies of the implementation and M&V contractors are aligned, or no significant or systematic discrepancies are being found during the M&V process.

6.6.2 Small Business Midstream

The Small Business Midstream Program Channel accounted for 22% of the overall Program claimed energy savings and included 83,870 items sold with *ex ante* energy

savings of 24,064,601 kWh and *ex post* savings of 23,919,865 kWh, resulting in a GRR of 99%. The Program Channel also claimed a peak demand savings of 3,656 kW, while we calculated an *ex post* peak demand savings of 3,626 kW, a realization rate of 99%. A summary of the Channel level savings is shown in Table 6-11.

Table 6-11: Summary of Small Business Midstream Savings

Ex Ante kWh Savings	*Ex Post* kWh Savings	Gross kWh Realization Rate	*Ex Ante* kW Savings	*Ex Post* kW Savings	Gross kW Realization Rate
24,064,601	23,919,865	99%	3,656	3,626	99%

We determined *ex post* savings for this Channel by reviewing two tracking databases provided by the implementation contractor. We reviewed the databases to ensure there were no input errors or repeat entries and used the data provided to determine quantities and wattages of each lamp type sold. The Program Summary database was used to determine the final *ex ante* kWh and kW savings and distributor names. The POS database was reviewed to determine the number of lamps sold, end customer name, lamp type, inducement amount, and sold lamp wattage. All *ex post* savings were calculated using lamp types, wattages, and quantities provided in the POS database.

A component of the *ex post* analysis for this Channel was determining what business types are participating in the program. This was determined by reviewing POS data provided by the implementation contractor and categorizing program sales according to the AR TRM's facility types. A summary of *ex post* savings by business type is shown in Figure 6-10. For the third consecutive year, the most common facility type was Exterior Lighting, accounting for 27% of *ex post* savings. Offices were the second largest contributor to program sales, accounting for roughly 13% of *ex post* savings.

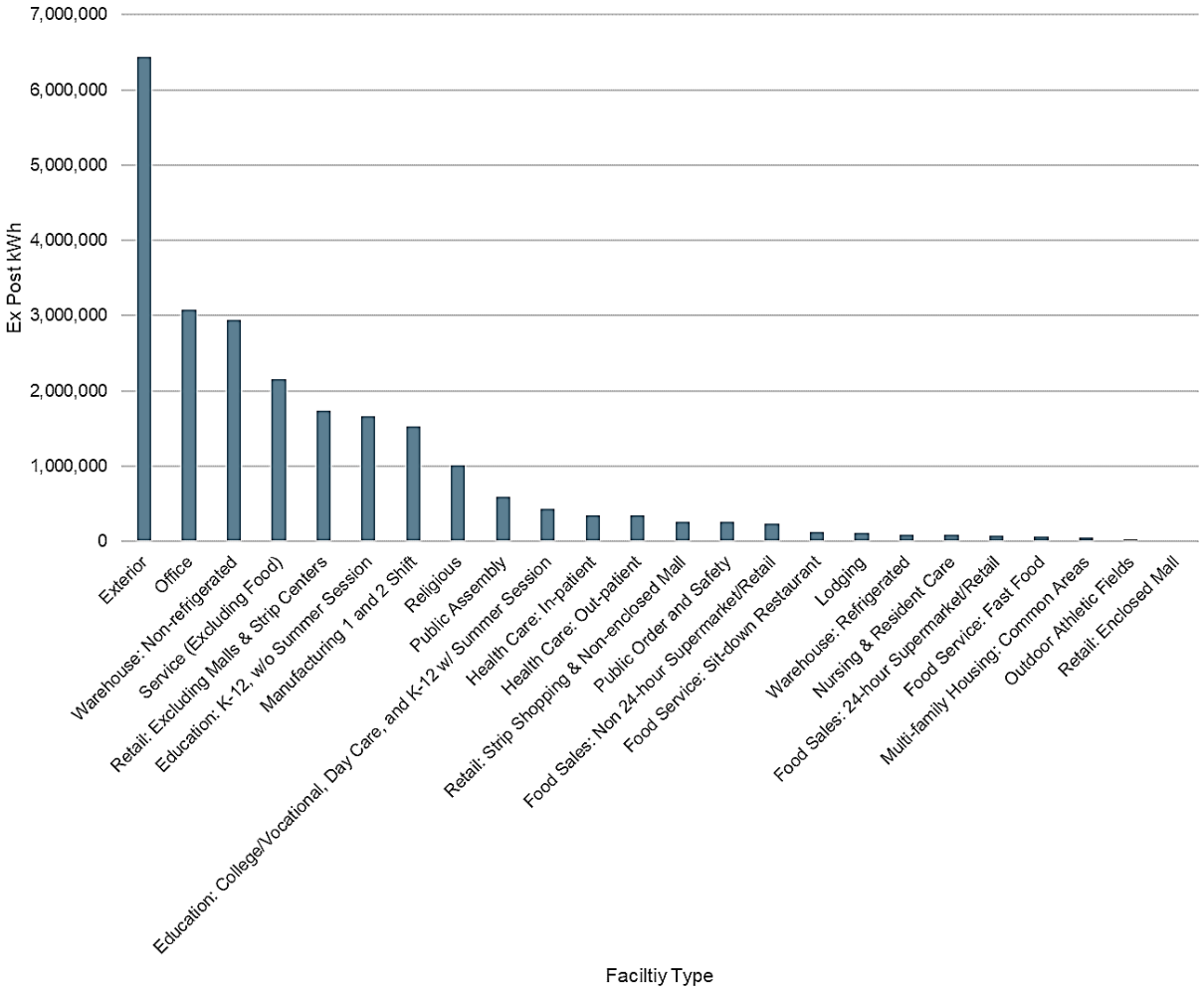


Figure 6-10: Small Business Midstream Contribution to Savings (ex post) by Building Type

For PY2021, AOH and CF were applied by lamp type. Each AOH and CF per lamp type was calculated using a 3-year weighted average from program data in PY2018, PY2019, and PY2020. The AOH and CF applied in PY2021 are shown in Table 6-12.

Table 6-12: PY2021 Small Business Midstream Ex Post AOH and CF

Lamp Type	AOH	CF
2x2 Troffer and Linear Ambient LED	3,613	0.67
2x4 Troffer and Linear Ambient LED	3,289	0.65
4 Pin-Base Lamp LED (G24)	3,596	0.70
A-Line (A15, A17, A19)	4,082	0.77
A-Line (A21, A23)	3,902	0.73
Ceiling Occupancy Sensor	3,409	0.71
Downlight Retrofit LED	4,079	0.52
Exterior Wall Pack/Flood >80 Watts	3,996	0.00
Exterior Wall Pack/Flood 30-80 Watts	3,996	0.00
Exterior Wall Pack/Flood 7-29 Watts	3,996	0.00
Linear Florescent	3,228	0.54
Linear Lamp T5 LED - 4 ft	3,523	0.66
Linear Lamp T8 LED - 4 ft & U-Bend	3,278	0.68
Linear Lamp T8 LED - 8 ft	3,429	0.65
Lowbay/Highbay LED >100 Watts	3,476	0.68
Lowbay/Highbay LED 30-60 Watts	3,313	0.70
Lowbay/Highbay LED 61-100 Watts	3,423	0.69
Parabolic Reflector LED - MR16	3,735	0.75
Parabolic Reflector LED - PAR20	3,914	0.69
Parabolic Reflector LED - PAR30	3,904	0.71
Parabolic Reflector LED - PAR38	3,453	0.73
Parabolic Reflector LED - PAR16	3,735	0.74
Reflector LED - BR20	4,017	0.78
Reflector LED - BR30	3,619	0.66
Reflector LED - BR40	3,794	0.71
Reflector LED - R20	3,386	0.77
Reflector LED - R30	3,715	0.66
Reflector LED - R40	3,965	0.90
Specialty LED - Decorative	3,875	0.75
Specialty LED - Globe	3,935	0.73
Wall Occupancy Sensor	3,227	0.61

Per the 2020 M&V Portfolio Report, ADM recommended *ex ante* estimates apply the AOH and CF in Table 6-12 above. Table 6-13 shows a summary of Channel level kWh savings by quarter and the respective realization rates.

Table 6-13: Summary of kWh Savings by Quarter

Quarter	*Ex Ante* kWh Savings	*Ex Post* kWh Savings	Gross kWh Realization Rate
1	1,558,761	1,598,873	103%
2	9,244,409	9,232,812	100%
3	6,829,435	6,764,029	99%
4	6,431,997	6,324,151	98%

The differences between *ex ante* and *ex post* calculations were attributable to minor differences in ADM verified efficient wattages and claimed efficient wattages from the tracking data. Given the efficient lamp lumen output, there was also minor baseline wattage variation between *ex ante* and *ex post* calculations.

PY2020 was the first year to use the methodology to determine AOH and CF values and has removed prior uncertainty in the Channel evaluation. ADM has calculated the 3-year rolling average AOH and CF using data from PY2019-PY2021. ADM recommends using the 3-year rolling average AOH and CF in future *ex ante* and *ex post* estimates. A summary of the recommended values can be found in Table 6-14.

Table 6-14: Recommended Three Year Rolling Average AOH and CF Values

Lamp Type	Recommended PY22 AOH	Recommended PY22 CF
2x2 Troffer and Linear Ambient LED	3,635	0.68
2x4 Troffer and Linear Ambient LED	3,399	0.66
4 Pin-Base Lamp LED (G24)	3,662	0.66
A-Line (A15, A17, A19)	3,938	0.77
A-Line (A21, A23)	2,819	0.60
Ceiling Occupancy Sensor	3,684	0.75
Downlight Retrofit LED	3,927	0.72
Exterior Wall Pack/Flood >80 Watts	3,996	0.00
Exterior Wall Pack/Flood 30-80 Watts	3,996	0.00
Exterior Wall Pack/Flood 7-29 Watts	3,996	0.00
Linear Florescent	3,228	0.54
Linear Lamp T5 LED - 4 ft	3,716	0.66
Linear Lamp T8 LED - 4 ft & U-Bend	3,260	0.63
Linear Lamp T8 LED - 8 ft	3,598	0.73
Lowbay/Highbay LED >100 Watts	3,490	0.68
Lowbay/Highbay LED 30-60 Watts	3,172	0.64
Lowbay/Highbay LED 61-100 Watts	3,475	0.67
Parabolic Reflector LED - MR16	3,470	0.63
Parabolic Reflector LED - PAR20	3,882	0.69
Parabolic Reflector LED - PAR30	3,888	0.78
Parabolic Reflector LED - PAR38	3,315	0.73
Parabolic Reflector LED - PAR16	3,931	0.88
Reflector LED - BR20	4,017	0.78
Reflector LED - BR30	3,462	0.63
Reflector LED - BR40	3,314	0.78
Reflector LED - R20	3,395	0.83
Reflector LED - R30	3,715	0.66
Reflector LED - R40	3,965	0.90
Specialty LED - Decorative	2,999	0.62
Specialty LED - Globe	3,597	0.69
Wall Occupancy Sensor	2,801	0.56

6.6.3 HVAC Replacement and Tune-Up

The HVAC Replacement and Tune-Up Channel accounted for a small portion of the overall Program claimed savings. Its Channel savings are shown in Table 6-15.

Table 6-15: Summary of HVAC Replacement and Tune-Up Savings

Ex Ante kWh Savings	*Ex Post* kWh Savings	Gross kWh Realization Rate	*Ex Ante* kW Savings	*Ex Post* kW Savings	Gross kW Realization Rate
5,247,410	5,186,587	99%	3,001	2,969	99%

ADM determined *ex post* savings for the HVAC equipment that received treatment through this Channel by reviewing the implementation contractor's tracking database. We reviewed the database to ensure there were no input errors or repeat entries and verified the savings were calculated as described in the CLEAResult CoolSaver™ M&V plan. Two parameters used in the *ex post* savings were obtained independently and used in the calculation. We used a zip code lookup to identify the correct weather zone for each participating customer. Using the weather zone, and the building type included in the *ex ante* database, we determined the EFLH for the *ex post* calculations using deemed values from the AR TRM.

6.6.4 CEI

During the M&V process, we reviewed the regression models created for each CEI participant. Through this review, the savings model was recreated by re-calculating regression coefficients using the provided energy usage, production, and weather data. Next, energy efficiency measures installed at participants' facilities induced through other CEEP Channels were identified, quantified, and subtracted from a site's modeled savings.

Furthermore, any savings attributed to site-level facility changes due to the COVID-19 pandemic were subtracted from the energy models. These pandemic-related energy impacts were summed across all facilities and subtracted from total energy savings in the program year.

A summary, by customer/location, of the *ex ante* and *ex post* savings is shown in Table 6-16.

Table 6-16: CEI Findings Summary

Company	*Ex Ante* kWh Savings	*Ex Post* kWh Savings	Gross kWh Realization Rate (%)	*Ex Ante* kW Savings	*Ex Post* kW Savings	Gross kW Realization Rate (%)
Company 1	4,189,595	3,825,805	91%	620	620	100%
Company 2	3,593,120	3,434,135	96%	373	373	100%
Company 3	3,128,682	3,189,175	102%	349	349	100%
Company 4	2,440,178	2,562,930	105%	337	337	100%
Company 5	1,980,570	2,025,669	102%	544	448	82%
Company 6	1,791,170	1,896,194	106%	1,233	1,233	100%
Company 7	1,767,185	1,793,324	101%	234	260	111%
Company 8	1,424,302	1,573,977	111%	275	275	100%
Company 9	1,244,564	1,871,652	150%	387	387	100%
Company 10	1,210,039	1,347,786	111%	320	395	123%
Company 11	1,131,161	918,952	81%	174	174	100%
Company 12	799,099	720,710	90%	95	95	100%
Company 13	715,878	597,415	83%	187	187	100%
Company 14	683,990	633,562	93%	186	186	100%
Company 15	535,551	564,734	105%	129	178	138%
Company 16	525,937	695,993	132%	77	77	100%
Company 17	251,214	201,821	80%	82	82	100%
Company 18	230,144	373,761	162%	137	100	73%
Company 19	153,216	128,980	84%	40	35	86%
Company 20	144,150	129,449	90%	39	34	89%
Company 21	87,596	77,352	88%	20	27	137%
Company 22	69,016	70,812	103%	11	0.20	2%
Company 23	65,066	31,696	49%	10	8	81%
Company 24	39,820	15,733	40%	10	1	8%
Total	**28,201,243**	**28,681,617**	**102%**	**5,868**	**5,860**	**100%**

The general modeling methodology used in both the *ex ante* and *ex post* models is well aligned. Both analyses use the same input data in the regression models, except for the last portion of the program year when the *ex post* analysis replaced forecasted savings with measured savings.

The most significant difference between the *ex ante* and *ex post* was due to model versioning. The *ex ante*, or preliminary models, used measured savings and forecasted savings. Whereas the *ex post*, or final models, used only measured savings. CLEAResult forecasts Program year savings before the end of the year to allow for final inducement payments to be paid before the Program year's end. No forecasting was included in the *ex post* models because the forecasted savings were replaced with measured savings using actual weather, production, and energy usage data.

Other differences between the *ex ante* and *ex post* come from cross participation identification. We reviewed the claimed savings from all other CEEP Channels, removing any savings associated with capital projects that have been induced through other Program Channels. The removal of these cross-participation savings is a requirement of the IPMVP Option C analysis approach, which would cause savings to be double-counted if they are not removed. During the PY2021 analysis, it was found that the *ex ante* estimates removed most, but not all of the savings claimed through other Program Channels.

6.7 Net Savings Results

The following sections summarize the net savings results of each Channel of CEEP. Table 6-17 summarizes the number of respondents used to analyze net savings and the calculated NTG ratio for each CEEP Channel.

Table 6-17: Sample Sizes for CEEP Participant Surveys

Program Channel	Sample Size	PY2021 kWh NTG Ratio
CIS	23	98%
SAGE	11	100%
SBDI	41	100%
Small Business Midstream	96	88%
HVAC Replacement and Tune-Up	11	99%
CEI	15	100%
Total	**197**	**97%**

Channel free ridership was estimated by weighting each participant's response by the gross energy savings or peak demand reductions associated with the measures.

Table 6-18 and Table 6-19 summarize the realized net kWh savings and peak kW demand reductions for each CEEP Channel.

Table 6-18: Summary of CEEP Net Annual Energy Savings

Program Channel	Annual Energy Savings (kWh)		Gross Realization Rate	Net Impacts	
	Ex Ante	*Ex Post*		NTG Ratio	Net Annual Energy Savings (kWh)
CIS	34,944,323	35,364,850	101%	98%	34,814,210
SAGE	9,837,975	9,992,672	102%	100%	9,998,743
SBDI	7,255,194	7,599,262	105%	100%	7,566,505
Small Business Midstream	24,064,601	23,919,865	99%	88%	21,069,193
HVAC Replacement and Tune-Up	5,247,410	5,186,587	99%	99%	5,140,502
CEI	28,201,243	28,681,617	102%	100%	28,681,617
Total	**109,550,746**	**110,744,854**	**101%**	**97%**	**107,270,771**

Table 6-19 Summary of CEEP Net Peak Demand Reductions

Program Channel	Peak Demand Reduction (kW)		Gross Realization Rate	Net Impacts	
	Ex Ante	*Ex Post*		NTG Ratio	Net Peak Demand Reduction (kW)
CIS	4,023	4,208	105%	97%	4,076
SAGE	1,562	1,625	104%	100%	1,624
SBDI	952	1,029	108%	100%	1,025
Small Business Midstream	3,656	3,626	99%	88%	3,194
HVAC Replacement and Tune-Up	3,001	2,969	99%	99%	2,938
CEI	5,868	5,860	100%	100%	5,860
Total	**19,060**	**19,317**	**101%**	**97%**	**18,718**

6.8 Process Evaluation Summary and Findings

This section provides a summary of ADM's process evaluation of the OG&E HEEP. Section 6.8.1 presents a summary of feedback from CEEP trade allies. Section 6.8.3 have Channel-specific interview summaries as well as participant survey findings.

6.8.1 Program Staff Facilitated Discussion

ADM led three facilitated discussions with the OG&E and CLEAResult staff to discuss the strengths, weaknesses, opportunities, and threats to the Commercial Energy Efficiency Program (CEEP). The discussions were held in December 2021 and January 2022. During the calls, ADM staff shared their screen and took notes to ensure attendees' thoughts were accurately captured. The first call focused on the CEEP CIS and SAGE. The next call investigated SBDI, HVAC Tune Up, and Midstream. The final call considered the CEI Channel. After the discussions, ADM developed a SWOT matrix diagram and synthesized findings for all the CEEP Channels. Figure 6-11 summarizes key findings, with additional summary information provided below.

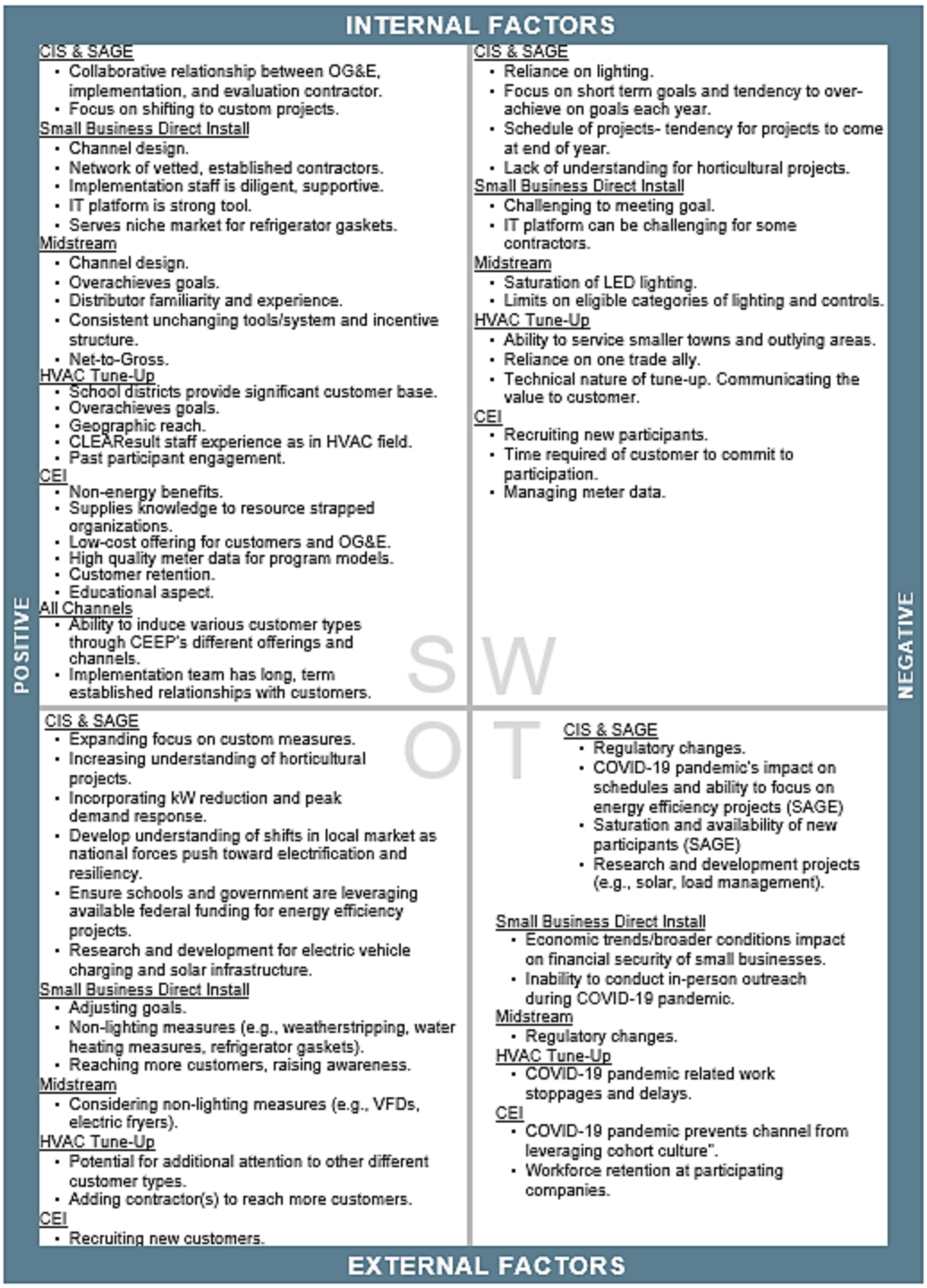


Figure 6-11: SWOT CEEP Analysis

The following summarizes key findings of the SWOT analysis for OG&E's CEEP:

- **The Program has an experienced, established implementation team with a strong collaborative relationship with OG&E and many commercial customers**. CLEAResult's long-term management of the implementation of CEEP has led to established relationships with customers in the commercial sector that enable them to understand customers' circumstances and needs to make appropriate recommendations for potential energy-saving actions. Their relationship with OG&E has developed into a solid collaborative partnership, with strong communication and forward-thinking engagement with the ADM evaluation team as well. Additionally, CLEAResult's experience across markets in different areas across the country. enables them to work with and promote energy savings and demand reductions with different measures for its customers in OG&E territory.
- **CLEAResult has an opportunity to act as a resource for OG&E commercial customers interested in matters such as electrification and resiliency.** CLEAResult suggested that there is an ongoing shift toward electrification nationally, and OG&E customers are just starting to engage with these subjects. They stated that there is an opportunity to be a resource for customers when they are ready to engage with these topics. Contacts also noted that there is an opportunity for the Program to assist commercial customers navigate federal funding for energy efficiency projects. They specifically mentioned helping schools access COVID-19 pandemic-related funding that could be leveraged for lighting and HVAC projects and exploring solar power generation through research and development projects with schools.
- **The contacts identified the CEEP's ability to induce various customer types in the assorted Channels of the Program as a strength.** The contacts noted that there is "no customer they cannot service" and that the CEEP has various Channels to engage with diverse commercial customer types. The different options ensure a pathway to participate for all customers and create a journey for customers to be able to address their company's energy usage through different inducement opportunities (e.g., starting with lighting, moving to HVAC tune-ups, then enrolling in the CEI Channel).
- **Program reliance on lighting savings was identified as an opportunity for diversification. The contacts mentioned expanding focus on custom measures was a strength and opportunity.** Though the contacts mentioned the Program's reliance on lighting savings, they also observed that a strength of the Program was how it had expanded custom measure participation to about 20-25% of Program savings in 2021. Contacts suggested custom measures presented an opportunity for further focus for the SAGE and CIS Channels and would likely range from 30-40% of savings for those Channels in the future. For Midstream, they suggested various opportunities for non-lighting measures, such

as VFDs, motors, and electric fryers. The SBDI Channel staff indicated there would be an increased focus on direct install measures such as weatherstripping, refrigerator door gaskets, strip-curtains, and packaged terminal air conditioner units.

- **Regulatory changes are a threat to Program success.** It is possible regulatory changes related to lighting baselines could impact the claimable savings. Additionally, regulatory decisions may impact OG&E's involvement in supporting the development of electric vehicle infrastructure and may direct the nature of OG&E's involvement in new, emerging, or additional measures.
- **SAGE Channel may need to shift focus from schools to government.** Contacts said it was possible that most eligible large school districts have all participated or upgraded their lighting through the SAGE Channel. They suggested they may need to focus greater attention on more government and smaller school district opportunities next year. Other measures may be considered for school districts.
- **Contacts perceive the schedule of projects as a challenge; there is an opportunity to improve forecasting of participation and project close dates.** Many CEEP projects do not close or enter Program tracking data until the end of the year. Some of this challenge is outside of the Program's control (e.g., supply chains and labor market issues but there is an opportunity to better anticipate project schedules and work to avoid the "hockey stick savings" in the future (i.e., a substantial amount of savings coming in late in the program year). Additionally, the contacts suggested that there may be too strong a focus on short-term goals, which results in over-achieving on kWh savings goals each year while leaving an empty pipeline to start the next year.
- **Understanding how to engage with horticultural new construction was identified as an opportunity.** The contacts observed that they had increased their ability to analyze savings for horticultural new construction projects as well as engaging with out-of-state vendors. However, they noted that there are still opportunities to increase Program participation from this market sector and to continue to build understanding of savings methodologies for these projects.
- **There is an opportunity to increase focus on peak kW reduction and load management.** Contacts suggested there were opportunities to incorporate load management and peak kW reduction strategies when engaging with horticultural new construction projects as well as with electric vehicle projects (e.g., fleets at commercial companies).
- **Staff indicated similar strengths for the SBDI and Midstream Channels.**
    - **Channel design:** The SBDI and Midstream Channels both have designs that enable customers to participate easily. End-use customers and contractors are easily able to purchase products through the Midstream

Channel without any paperwork requirements. Contractors are responsible for the administrative and implementation process for SBDI as well, ensuring an easy participation process for customers. The clear communication and nature of the Midstream design helps enable participation; CLEAResult staff informs customers and distributors of set inducement amounts each year and customers are easily able to purchase needed equipment with the discount applied at the point-of-sale.

Staff also noted that the Midstream Channel offers a wide variety of lighting and control equipment. Though they noted it could potentially expand, they observed that this would potentially enable residential customers to take advantage of a channel geared toward commercial projects. The SBDI Channel's higher inducement levels were also highlighted as key strengths.

- **IT platforms:** Contacts suggested that both SBDI and Midstream have established IT platforms that are generally well understood and used without issue by distributors and contractors. These platforms are used to submit invoices and track project and inducement status. Contacts indicated that contractors that infrequently participate in the SBDI Channel may find the IT platform challenging, but there are ongoing efforts to constantly improve the user experience and accessibility of the software. CLEAResult has a regional support team that can "flex in and out" to support SBDI Channel implementation.
- **Strong implementation networks:** Both the SBDI and Midstream Channel also have strong networks (of contractors and distributors) that ensure successful implementation. One contact suggested that CLEAResult's relationship with the Midstream Channel's distributors are its "secret sauce." Similarly, contacts observed that CLEAResult's strong relationship with ten primary SBDI contractors is a strength as they work closely with them to ensure the program is well understood and being implemented effectively. SBDI contractors are required to be vetted (e.g., show license, and liability insurance).

- **The HVAC Tune-Up Channel's ability to engage with schools was noted as a strength, though staff also suggested there was potential to shift attention to other customer types.** Schools were identified as the HVAC Tune-Up Channel's primary participant type. Correspondingly, staff observed that large customers (such as schools) take a significant amount of contractor time.
- **The CLEAResult HVAC Tune-Up staff indicated its reliance on one trade ally for implementation of the Channel was a potential challenge.** The majority of Channel savings are attributed to one contractor. This was identified as a potential challenge because if the trade ally decided to no longer participate in the future, the Channel would need to seek another contractor. However, the

contacts noted that in 2022 the Channel would be adding an additional contractor to reach customers in Eastern Oklahoma and potentially recruiting more contractors to share the workload.

- **Adjusting the SBDI Channel's goals and continuing to promote the Channel were opportunities for the Channel in 2022 and future program years.** Staff acknowledged that the SBDI Channel was particularly threatened by broader economic conditions and their impacts on small businesses' budgets and decision-making processes. They observed that many small businesses had closed, and others were not able to engage with energy efficiency improvement projects due to budget and/or staffing constraints. CLEAResult indicated that 2022 Channel level goals would be "right-sized and want to achieve more kWh from non-lighting projects."
- **Staff suggested that the CEI Channel's low-cost energy and non-energy benefits were key strengths.** CEI Channel staff can supply technical knowledge to resource-strapped organizations and encourage energy saving through equipment replacements and low/no-cost changes to control systems and implementing program policies or procedures to reduce energy use. The Channel also provides non-energy benefits such as water savings, gas savings, fuel savings, and employee engagement through its collaborative efforts with the OG&E Education Channel which brings energy education to teachers and students at participating schools.
- **The CEI Channel staff indicated that no significant weaknesses existed but noted three challenges and one opportunity to bolster the Channel's success.**
    - **Recruitment.** Channel relies on established relationships to recruit new participants. Cold recruiting of new participants is very challenging as it is sometimes difficult to identify the appropriate contact or decisionmaker.
    - **Time requirement.** The Channel relies on customers' ability to invest their time to participate. If customers lack the time to engage with the Channel, staff will not be able to successfully engage and promote energy-saving actions through the Channel.
    - **Accurate meter/utility data.** This is a challenge specifically for schools as they can have hundreds of meters. Staff also noted that it can be difficult to manage the sheer volume of meter data.
    - **Consider updating Channel year timeline.** The OG&E reporting cycle is on an annual basis, so savings need to be forecasted for the last months of the year. Changing the program year timeline to be able to claim a full 12 months of savings is a possible solution, however, discussion is needed to potentially implement this solution.

- **CEEP contacts observed that the continued threat of the COVID-19 pandemic may threaten successful implementation.** COVID-19 pandemic-related health and safety concerns or public health restrictions could impact project schedules because of work stoppages and delays for the CIS, SAGE, HVAC Tune Up Channels. The CEI Channel staff noted that restrictions on in-person gatherings hindered their ability to have cohort meetings that are useful for developing a culture of energy reduction in which participants can share their experiences and learn new methods for engaging with energy efficiency. Workforce retention at participating companies was also identified as a challenge for the successful implementation of the CEI Channel. CLEAResult has built relationships with staff at participating companies, and it takes the Channel time to educate and re-engage with new company staff. Further, some companies may not replace or fill roles and that lack of staff may create a situation in which there is less focus on energy management and the Channel.

6.8.2 CEEP Trade Ally Survey

ADM sent a survey invitation to all trade allies with valid contact information included in program tracking data through Q3 of 2021. Twelve trade allies responded to the survey invitation (21% response rate). All questions in the survey have 12 responses except where it is noted that fewer responses were obtained due to question nonresponse.

The twelve trade allies participated in the Commercial and Industrial Solutions (CIS), Small Business Direct Install (SBDI), and Schools and Government Efficiency (SAGE) Channels. Table 6-20 displays a summary of the Channels that the interviewees reported participating in during the past program year.

Table 6-20: CEEP Participant Channel of Trade Ally Interviewees

Channel	n	Also Participated in Other Channels
CIS	10	5
SBDI	6	5
SAGE	3	3

Most interviewed trade allies described their businesses as either a lighting or electrical contractor company. Respondents could choose more than one business type. Eight trade allies chose one business type. Three trade allies indicated their business was classified as both a lighting/electrical contractor and distributor; one of these trade allies also noted they were an energy service company. One trade ally said they were a lighting/electrical and HVAC contractor, though program records indicate this trade ally did not participate in OG&E's CEEP HVAC Tune-Up Channel in 2021.

Table 6-21: Business Types of Trade Ally Interviewees

Type of Business	Count
Lighting/Electrical Contractor	9
Lighting/Electrical Distributor	4
Energy Service Company/ Energy Consultant	3
HVAC Contractor	1

Trade allies noted various ways in which they learned about the program. Five stated they learned about the program from OG&E or the program implementer. Three trade allies said they had heard about the program through word-of-mouth conversations; one specified that they heard about it through a trade organization. One noted that they participated in other programs and had found OG&E's Program through additional research. Three could not recall the manner that they first learned about the program.

- **All trade allies observed that customers' ability or willingness to pay was the most important barrier to program participation.** All trade allies said that companies lacking upfront capital was an important factor or reason businesses decide not to participate in the program.[93] Further, seven trade allies cited unwillingness to pay upfront costs and the ability to secure financing as barriers to program participation. Trade allies generally did not note customer concerns or skepticism regarding increased comfort, reliability, productivity, or anticipated energy or maintenance savings. Three or fewer trade allies noted customer concerns or skepticism to each of those items.
- **The program is marketed primarily through in-person discussions during sales visits.** All trade allies stated that they market the program through in-person discussions with customers during sales visits. Other modes of marketing the trade allies used included marketing emails (five trade allies), posting information on their websites (four trade allies), and sending information via US mail (two trade allies).
- **Trade allies noted telling customers about various benefits to promote the program.** The trade allies rated how much they focused on various benefits to energy efficiency upgrades or improvements when they were speaking with customers. Trade allies (11) most often focused on lowering monthly energy

[93] Rated the importance of these factors a 4 or 5 on a scale from 1 (not at all important) to 5 (very important) in businesses decision not to participate in the program.

costs.[94] Also important were the payback period, decreased operations and maintenance costs, and greater equipment reliability (Figure 6-12).

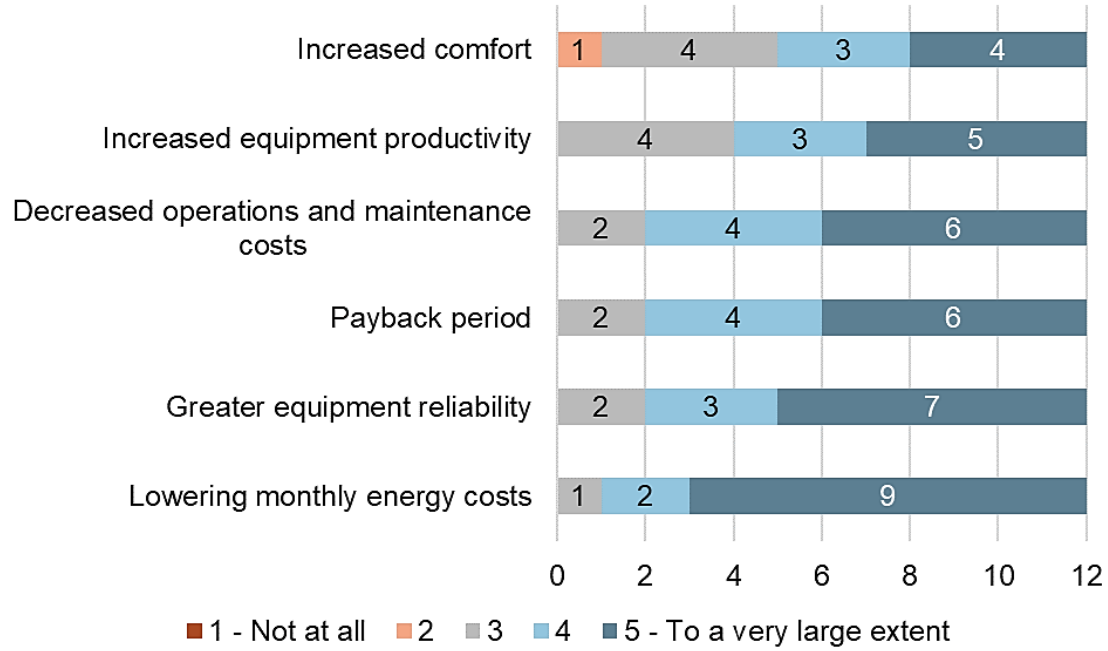


Figure 6-12: How much do you focus on each of the following when discussing the advantages of high-efficiency equipment with customers?

- **Three trade allies made suggestions to update program offerings.** Measures recommended include dehumidifiers, smart motor technology, and grow lights.
- **Most trade allies indicated they were satisfied with the program.** Figure 6-13 displays trade ally satisfaction (n=11). All said they were very satisfied with the program staff. Most reported that they were satisfied with the amount of time it takes to get the rebate or inducement and the range of equipment that qualifies for rebates or inducements. Furthermore, six trade allies noted that they were very satisfied with the program and its staff when they were asked if they had any additional comments. One suggested increasing the CIS Channel's advertising, marketing and outreach efforts.

[94] Rated the amount they focus on this benefit a 4 or 5 on a scale from 1 (not at all) to 5 (to a large extent).

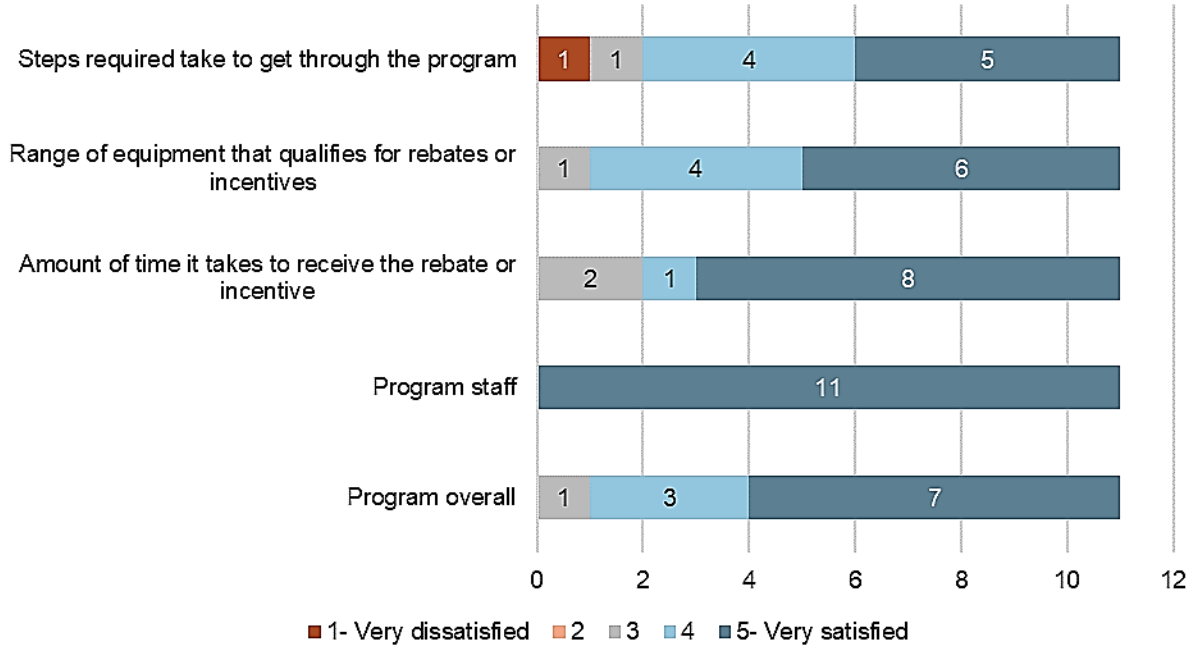


Figure 6-13: Trade Ally Satisfaction

- **Trade allies shared feedback or recommendations to improve the application process.** All the trade allies had experience filling out program applications in 2021; seven had suggestions to improve the process. Two trade allies suggested easing the application process for the CIS Channel, with one requesting OG&E make the CIS and SAGE Channel application process "like SBDI." Other suggestions included:
  - Increasing the speed of the engineering evaluation process.
  - Offering a bonus or inducement to third-party consultants/contractors.
  - Allowing projects to proceed without pre-inspection if the rebate is below a threshold (e.g., $5,000 or less).
  - Allowing trade allies to edit their proposals until the project is completed.
  - Improving the online application portal to better support documentation upload (e.g., multiple pictures).
- **Most trade allies suggested current inducement levels should be adjusted to better motivate customers to choose high-efficiency equipment.** Though seven indicated current inducement levels were sufficient, eight indicated

opportunities for improvement.[95] Seven trade allies suggested higher inducement for the CIS Channel would better motivate customers to install high-efficiency equipment. Three specifically requested the SBDI Channel program design be adopted for other CEEP Channels. None of the trade allies said that there were any measures for which a lower inducement would still motivate customers to buy high-efficiency equipment instead of standard.

- **Trade allies provided mixed perceptions regarding industry trends.** Two trade allies indicated growing market penetration and understanding of LED lighting, with one stating that customers "choose LED over 90% of the time" and another stating that customers are more familiar with LED flat panels. Some trade ally observations were contradictory: For instance, one trade ally suggested customers were motivated to purchase the lowest cost fixtures, regardless of quality and labor costs while another said their customers wanted "the best equipment, that lasts the longest." A third trade ally stated that they make equipment recommendations to customers. One trade ally observed customers are more interested in controls.
- **The COVID-19 pandemic had various impacts on the trade allies, but primarily affected sales and ability to maintain inventory.** Nine noted that COVID-19 has impacted their business in at least one way such as their sales, number of OG&E CEEP projects, ability to maintain inventory, types of customers, or operating hours. Most said it had impacted sales (eight trade allies) and half said it affected their ability to maintain inventory (six trade allies). Figure 6-14 displays the COVID-19 pandemic's impact on CEEP trade allies in 2021 (n=11).

[95] Seven interviewees gave a rating of 4 or 5 on a scale from 1 (not at all effective) to 5 (very effective) for the inducements at motivating customers. Eight trade allies offered comments or open-ended feedback regarding inducement adjustments needed to improve measure uptake.

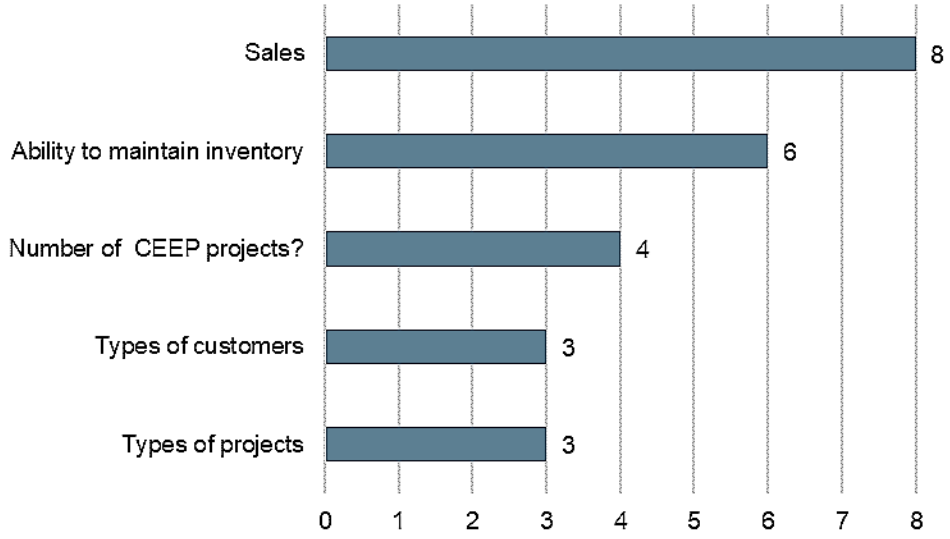


Figure 6-14: How has the COVID-19 pandemic impacted CEEP trade allies in 2021?

6.8.3 Downstream Channel & HVAC Replacement and Tune-Up Channel Participant Surveys

ADM surveyed the CEEP downstream Channel (Small Business Direct Install, Schools and Government Efficiency, and CIS) and HVAC Replacement and Tune-Up Channel participants using an online survey administered via email and through ADM's in-house survey team from September 2021 to January 2022. The survey gathered information regarding OG&E CEEP participants' Program awareness, decision making, satisfaction, and participation process.

A total of 85 Program participants completed the survey, representing 43% of OG&E CEEP downstream and HVAC Tune-up Channels' total kWh savings. Table 6-22 displays the email and telephone surveys completed by the CEEP Channel. The following subsections provide Channel-specific characterizations of survey respondents and summaries of their responses.

Table 6-22: Survey Completes by Channel

Channel	# of Respondents	% of Participants	% of Savings
CIS	23	28%	42%
Small Business Direct Install	41	26%	29%
Schools and Government Efficiency	11	55%	64%
HVAC Replacement and Tune-up	10	44%	68%
All Downstream & HVAC	85	40%	43%

6.8.3.1 Commercial and Industrial Solutions Participants

ADM conducted a mixed-mode survey to 23 CEEP Commercial and Industrial Solutions (CIS) Channel participants in September and December 2021 and in January 2022. ADM attempted to gather responses from 82 CIS participants with an email invitation and reminder and then conducted targeted phone calls to 33 contacts. The group of program participants that responded to the survey had diverse titles and roles, but most respondents indicated that they worked in facilities management roles (see Table 6-23).

Table 6-23: CIS Survey Respondents' Title or Roles

Response	Count	Percentage of Respondents (n=23)
Facilities or energy management/maintenance	12	52%
Other facilities management/maintenance position	7	30%
Facilities Manager	4	17%
Energy Manager	1	4%
Owner or officer	6	26%
President/CEO/Other Executive Position	5	22%
Proprietor/Owner	1	4%
Other financial/administrative position	3	13%
Manager, not otherwise specified	1	4%

About half of respondents said their budget decisions were made locally (57%). Thirty percent indicated decisions were made regionally and the remaining 13% said decisions were either made nationally (9%) or on a worldwide basis (4%).

All respondents said their organization paid the electric bill. Eighty-six percent said their company owns the facility that participated in the CIS Channel, with 78% indicating their organization also occupies the facility and 9% stating they own and lease to another organization. Thirteen percent said their company leased the facility that participated in OG&E's CIS Channel from someone else.

ADM inquired with respondents regarding their businesses' monthly utility bill cost and the length of time they had been an OG&E customer. A significant portion did not know or could not recall answers to these questions.[96]

Twenty-six percent of respondents said their monthly utility bill was $10,000 or more. Thirty percent said it was less than $5,000.

Respondents represented businesses with varying experience with OG&E as their electric utility. Thirty-nine percent said their organization had been an OG&E customer for 10 years or longer, while 22% said their business had been an OG&E customer for under one year and 4% said they had been an OG&E customer for two to three years. Figure 6-15 displays the CIS Channel survey respondents' reported business types.

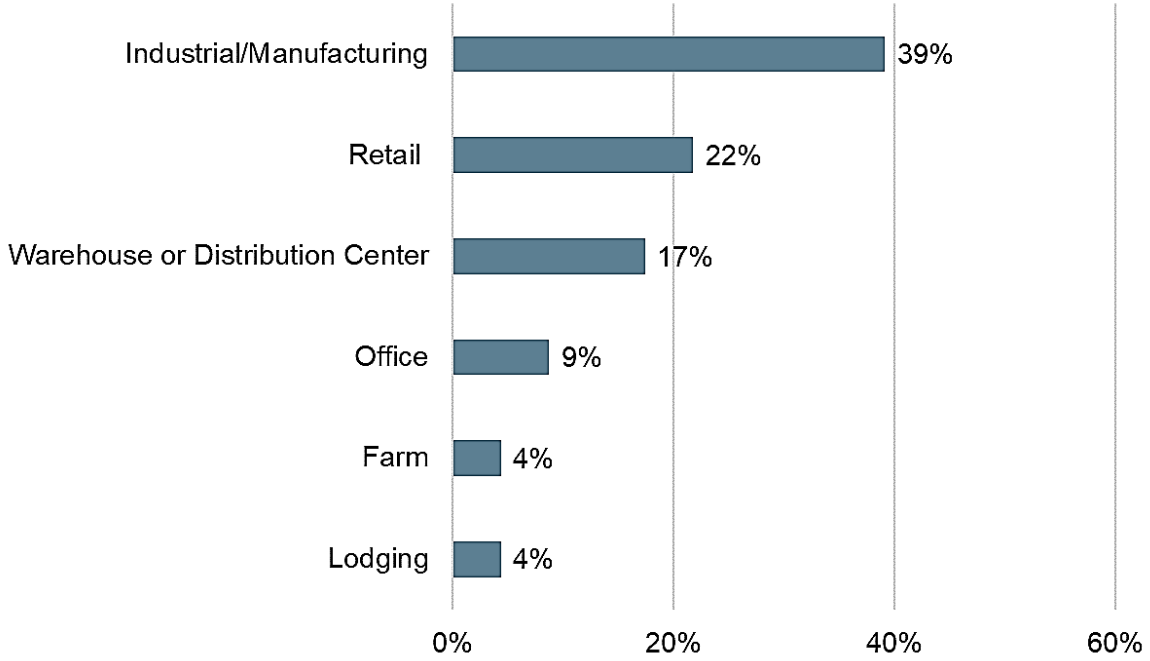


Figure 6-15:CIS Channel Participant Business Classification

Awareness & Participation Process

ADM asked respondents how they heard about the OG&E CEEP CIS Channel. Fifty-six percent said they heard about the Channel from a contractor or vendor. The other respondents cited word-of-mouth (35%), the OG&E website (4%), through an OG&E or CLEAResult representative (4%).

Thirty-nine percent of respondents said they completed the paperwork or application themselves and they all indicated they were satisfied with the process.[97]

[96] Thirty-five percent did not know or could not recall how long their business had been an OG&E customer and 43% said they did not know their business' average monthly utility bill.

Seventy-nine percent of respondents said that a contractor or vendor implemented the project completely (70%) or with substantial help from their organization (9%). Seventeen percent said the project was either done mainly (13%) or completely (4%) by their organization. One respondent (4%) did not recall the manner in which the project was implemented.

The two most commonly cited reasons for participating in the Channel were to reduce energy costs or use, and to replace old or outdated equipment (see Table 6-24).

Table 6-24: CIS Respondents' Reasons for Participating[98]

Response	n	Percent
To reduce energy costs	19	83%
To reduce energy use	15	65%
To replace old or outdated equipment/ get the latest technology	11	48%
To improve worker environment	10	43%
Improve/increase lighting levels	10	43%
To improve equipment performance	6	26%
To improve the product quality	6	26%
To protect the environment	5	22%
As part of a planned remodeling, build-out, or expansion	4	17%
The maintenance downtime and associated expenses for the old equipment were too high	3	17%
Old equipment had failed	1	4%

Channel Satisfaction

Figure 6-16 displays respondents' satisfaction with various aspects of the Channel as well as the Channel overall. One respondent noted dissatisfaction with the technical assistance they received from the contractor or vendor and noted they "would have loved to learn more about what else could have been done." Fifty-two percent of respondents mentioned recommending the CEEP to someone else. Of those that had not yet recommended the CEEP to someone else (n=11), all said they would be likely to recommend the Program to a friend or colleague.[99]

[97] Rated their satisfaction a 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).
[98] Respondents could cite multiple reasons for participating.
[99] Rated their likelihood of recommending the Channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

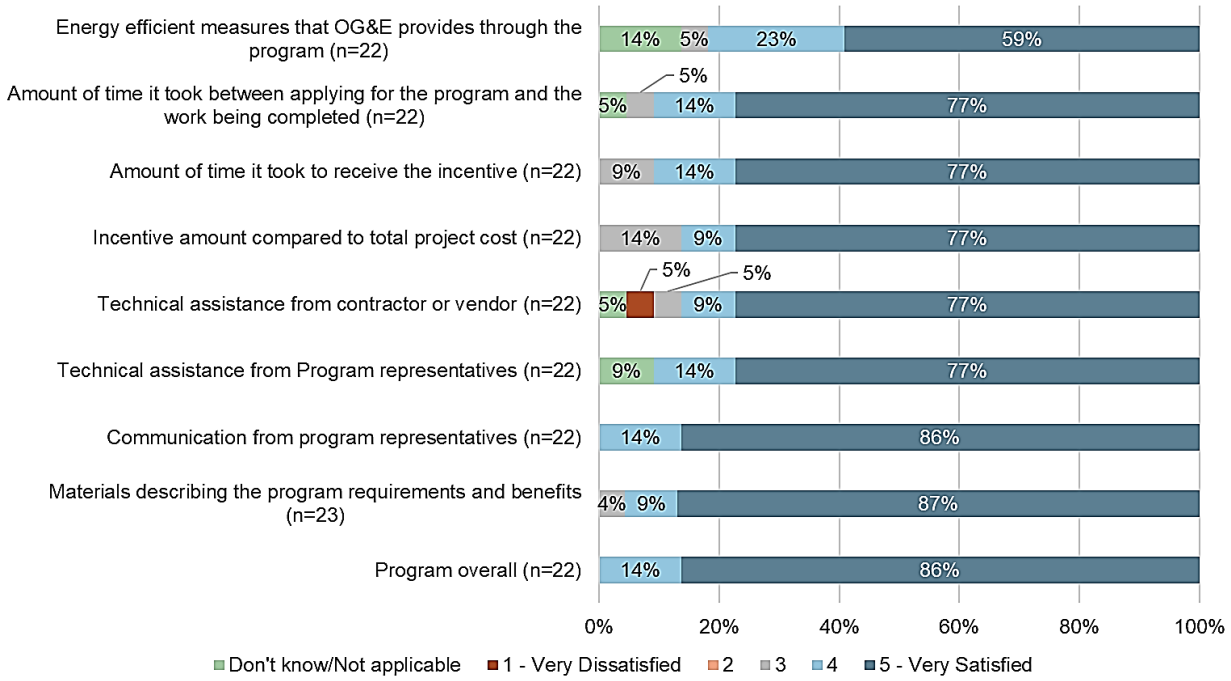


Figure 6-16: CIS Channel Participant Satisfaction

Sixty-five percent of respondents said they either would not change anything about the CIS Channel (43%) or did not know what they would change (22%). The other 38% of respondents (n=8) made one or more recommendations to improve the Channel (see Table 6-25).

Table 6-25: CIS Respondents' Recommendations to Improve Channel[100]

Response	Count	Percent
Prompted Responses – Selected All That Apply		
Increase inducement amount	6	26%
Increase program advertising and publicity	5	22%
Increase communication from OG&E regarding other available OG&E inducements/programs	3	13%
Improve the program application process	1	4%
Unprompted Responses – Open-end or "Other" Recommendations		
Add an inducement for HVAC unit air handler units	1	4%

Ninety-one percent of respondents said they were satisfied with OG&E as their electric service provider.[101] Correspondingly, 96% said they would recommend OG&E to a friend or colleague if everyone could choose their utility provider.[102]

[100] Respondents could provide more than one recommendation.

[101] Eight rated their satisfaction a 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied). One respondent (5%) selected "Don't know" and the other marked their satisfaction a 3 out of 5 (5%).

6.8.3.2 SBDI Participants

ADM surveyed 41 CEEP Small Business Direct Installation (SBDI) Channel participants in September and December 2021, and in January 2022. ADM first attempted to gather participants' responses with an email invitation, a reminder, and then conducted targeted phone calls. ADM invited 157 Channel participants to take the survey, and 41 replied (response rate of 26%).

The respondents reported filling an assortment of roles at their respective organizations (see Table 6-26). Thirty-seven percent identified as holding a facilities or energy management or maintenance-related role, while about a third noted being an owner/proprietor or holding an executive role such as president, CEO, or superintendent.

Table 6-26: SBDI Respondents' Role or Title

Response	Count	Percentage of Respondents (n=41)
Facilities or energy management/maintenance	15	37%
Other facilities management/maintenance position	5	12%
Facilities Manager	9	22%
Energy Manager	1	2%
Owner or officer	13	32%
President/CEO/Other Executive Position	2	5%
Proprietor/Owner	11	27%
Other financial/administrative position	5	12%
Manager, not otherwise specified	4	10%
Church member or elder	2	5%
Property manager	1	2%
Service Writer	1	2%

Most of the respondents (64%) said their organization owned and occupied the facility that had participated in the OG&E CEEP SBDI Channel. Ten percent of respondents said they owned the facility and leased it to someone else, while 18% said their company leases the facility from someone else. Eight percent did not know or could not recall the ownership of the participating facility.[103]

Most said that budget decisions were made locally (85%), though some noted that they made decisions regionally (10%), on a worldwide basis (3%), or did not know the

[102] Rated their likelihood of recommending the Channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).
[103] n=39.

manner in which budget decisions were made (3%). Eighty-seven percent said their company paid the electric bill at the property that participated in the SBDI Channel.

Similar to ADM's 2019 and 2020 surveys, the SBDI survey respondents represented an array of business types and sizes (see Table 6-27).

Table 6-27: SBDI Survey Respondent Business Types[104]

Response	Count	Percent (n=39)
Office	9	23%
Retail	7	18%
Restaurant	7	18%
Public Assembly	4	10%
Religious Worship	3	8%
Institution/Government	3	8%
Education	2	5%
Grocery	2	5%
Don't know	1	3%

ADM asked SBDI Channel participants about their company's number of employees, monthly utility bill, length of time as an OG&E customer, and their facility's square footage.

Most respondents indicated they had been an OG&E customer for 10 years or longer (71%). Eight percent said they had been an OG&E customer for 5-10 years. The remaining 21% of respondents did not know how long their business had been an OG&E customer (n=38).

Fifty-nine percent of respondents indicated their business spent $5,000 or less each month on their electric utility bill (n=38). Eight percent said their business spent between $5,000-$19,999, and 3% said they spent over $20,000 a month. Thirty-one percent of respondents did not know how much their business spent on their electric utility bill each month.

Eighty-four percent of respondents reported having 50 or fewer full and part-time employees; of these, 21% indicated they had fewer than 10 employees and 63% said they had 11-50 employees. The other 16% of respondents said their business had 51 or more employees (13%) or did not know (3%) the number of employees at their business (n=38).

Fifty-nine percent of respondents said their business had 20,000 or fewer square feet of indoor space at their property, 8% said their business had between 20,001-75,000

[104] Does not sum to 100% because one respondent indicated multiple business types.

square feet of indoor space, and the remaining 33% did not know how much indoor space there was at their property (n=39).

ADM's survey results indicate a substantial portion of respondents did not know or were unable to answer firmographic questions regarding monthly utility bill costs, length of time as an OG&E customer, and facility square footage (see Table 6-28).

Table 6-28: SBDI Firmographic Don't Know Responses

Response	Count	Percent
How many square feet (indoor space) is the part of the property that your firm or organization occupies? (n=39)	13	33%
On average, how much does your business spend on electric utility service each month? (n=39)	12	31%
How long has your business been a customer of OG&E? (n=38)	8	21%

Channel Awareness

The most commonly cited ways that respondents noted learning about the SBDI Channel were through a vendor or contractor or word of mouth conversations with friends, colleagues, or others (see Table 6-29).

Table 6-29: SBDI Respondent Sources of Channel Awareness

Response	n	Percent
Contractor/vendor	26	63%
Word of mouth (e.g., colleague/another business)	6	15%
OG&E website	3	7%
Business Energy Advisor or Program representative	2	5%
Past experience	2	5%

Twenty-two percent of respondents mentioned having experience with OG&E's energy efficiency programs before participating in the SBDI Channel in 2021. Seventy-eight percent of these respondents said that their experience was very important in their decision to complete their SBDI Channel project.[105]

Participation Process

Similar to ADM's 2019 and 2020 SBDI Channel surveys, most respondents (80%) noted that a vendor or contractor completed their required paperwork. Ten percent of respondents said they completed the paperwork or application themselves. The other respondent noted an OG&E or CLEAResult representative (5%) completed their

[105] Rated the importance a 4 on a scale from 1 (not at all important) to 4 (very important). The remaining respondents rated the importance a 1 (11%) and a 3 (11%).

application. The four respondents that noted completing the paperwork themselves were all very satisfied with the application process.[106]

The respondents all indicated that a contractor or vendor implemented the project completely (95%), with substantial help from their organization (2%), or completely or nearly completely by their organization (2%).

The two most commonly cited reasons for participating in the Channel were to reduce energy costs and replace outdated equipment/get the latest technology (see Table 6-30).

Table 6-30: SBDI Respondents' Reasons for Participating[107]

Response	n	Percent (n=41)
To reduce energy costs	28	68%
To replace old or outdated equipment/ get latest technology	21	51%
To reduce energy use	19	46%
To improve equipment performance	14	34%
Improve/increase lighting levels	14	34%
Old equipment had failed	8	20%
To improve the product quality	7	17%
The maintenance downtime and associated expenses for the old equipment were too high	6	15%
To improve worker's environment	6	15%
As part of a planned remodeling, build-out, or expansion	3	7%
To protect the environment	2	5%
To reduce power outages	1	2%
Don't know	1	2%

Channel Satisfaction

The SBDI survey respondents indicated that they were satisfied with specific aspects of the Channel and with their participation in the Channel overall (see Figure 6-17). Additionally, 59% of survey respondents stated that they had recommended the SBDI Channel to someone else. And of those who had not yet recommended the channel, 81% said they would be likely to recommend it to a friend or colleague in the future (n=16).[108]

[106] Rated their satisfaction a 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).
[107] Respondents could cite multiple reasons for participating.
[108] Rated their likelihood of recommending the channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Correspondingly, 87% of respondents indicated they were satisfied with OG&E as their electric service provider (n=38) and 95% said they would be likely to recommend OG&E to a friend or colleague if everyone could choose their own electricity provider (n=38).[109]

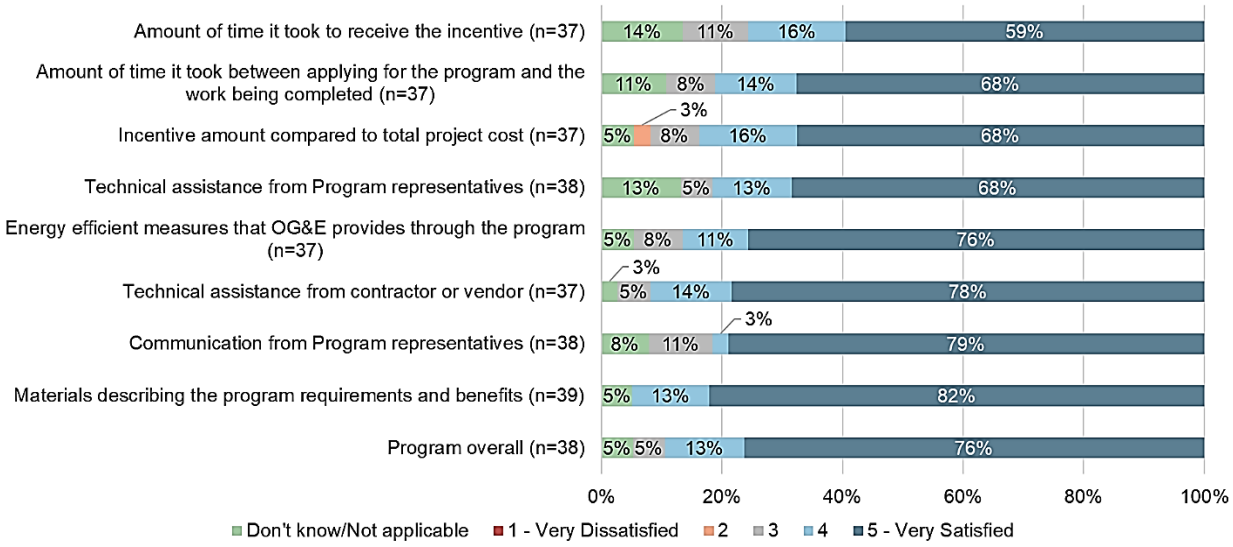


Figure 6-17: SBDI Channel Participant Satisfaction

Though most respondents were satisfied with their experience, 41% provided recommendations or suggestions to improve the Channel. Table 6-30 displays respondents' recommendations for Channel implementation or design improvements.

[109] Rated their likelihood of recommending OG&E a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Table 6-31: SBDI Respondents' Recommendations to Improve Channel[110]

Response	Count	Percent (n=39)
Prompted Responses — Selected All That Apply		
Increase communication from OG&E regarding other available OG&E inducements/programs	10	26%
Increase program advertising and publicity	4	10%
Increase inducement amount	5	13%
Program could provide more information about savings/inducement calculations	2	5%
Improve initial processing time	1	3%
Unprompted Responses — Open-end or "Other" Recommendations		
Allow inducement for work already completed	1	3%
Improve quality of contractor work	1	3%

6.8.3.3 SAGE Participants

ADM conducted a mixed-mode survey to eleven CEEP Schools and Government Efficiency (SAGE) Channel participants in September and December 2021. ADM attempted to gather responses from twenty SAGE participants with an email invitation and reminder and then conducted targeted phone calls to four contacts. The group of program participants that responded to the survey had diverse titles and roles, but most respondents indicated that they worked in facilities management or financial roles (see Table 6-32).

Table 6-32: SAGE Survey Respondents' Title or Roles

Response	Count
Facilities or energy management/maintenance	5
Energy Manager	2
Other facilities management/maintenance position	2
Facilities Manager	1
Financial/administrative	4
Chief Financial Officer	2
Other financial/administrative position	2
President/CEO	1
Chief Operating Officer	1

The typical survey respondent represented a locally owned and operated educational organization that was a long-term OG&E customer. Ten respondents said their organization paid the electric bill, owned the facility that had participated in the OG&E CEEP SAGE.

[110] Respondents could provide more than one recommendation.

A significant portion did not know or could not recall answers to questions regarding their organization's monthly utility bill cost and the length of time they had been an OG&E customer.[111]

Six said their organization had been an OG&E customer for 10 years or longer. Regarding average monthly electric utility costs, five said they did not know their monthly electric bill; and the others either indicated their monthly electric bill was typically $20,000 or more (three respondents), $10,000-$19,999 (one respondent), $7,500-$9,999 (one respondent), or $2,500-$4,999 (one respondent).

Eight respondents that represented educational facilities participated in ADM's survey. Two others represented government or institutional facilities and one was a non-profit shelter.

Awareness & Participation Process

ADM asked respondents how they heard about the OG&E CEEP SAGE Channel. Nine respondents recalled their original source of awareness. The most commonly cited ways that respondents noted learning about the Channel were through a vendor or contractor or through an OG&E or CLEAResult representative (see Table 6-33).

Table 6-33: SAGE Respondent Sources of Channel Awareness

Response	n
Contractor/vendor	5
OG&E or CLEAResult representative	2
Word of mouth	1
Conference/trade show/expo	1
OG&E Website	1
Past experience	1

Four respondents said they completed the paperwork or application themselves and they all indicated they were satisfied with the process.[112]

Ten respondents said that a contractor or vendor implemented the project completely (eight respondents) or with substantial help from their organization (two respondents). The other respondent did not recall the manner in which the project was implemented.

The two most commonly cited reasons for participating in the Channel were to reduce energy costs and to replace old or outdated equipment (see Table 6-34).

[111] Five did not know or could not recall how long their business had been an OG&E customer and did not know their company's monthly utility bill.

[112] Three rated their satisfaction a 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied). The fourth respondent rated their satisfaction 1, however they noted the "application process is great" when ADM asked how the program could improve the process.

Table 6-34: SAGE Respondents' Reasons for Participating[113]

Response	n
To reduce energy costs	8
To replace old or outdated equipment/ get latest technology	7
To reduce energy use	6
Improve/increase lighting levels	5
Old equipment had failed	3
To improve equipment performance	3
To improve the product quality	2
As part of a planned remodeling, build-out, or expansion	1
The maintenance downtime and associated expenses for the old equipment were too high	1
To reduce power outages	1
To improve workers' environment	1

Channel Satisfaction

Figure 6-18 displays respondents' satisfaction with various aspects of the Channel as well as the Channel overall. Findings indicate respondents had mixed satisfaction for specific aspects of the Channel, though most were satisfied with their overall SAGE Channel experience. Three respondents mentioned recommending the CEEP to someone else. Of those that had not yet recommended the CEEP to someone else (n=7), five said they would be likely to recommend the Program to a friend or colleague.[114]

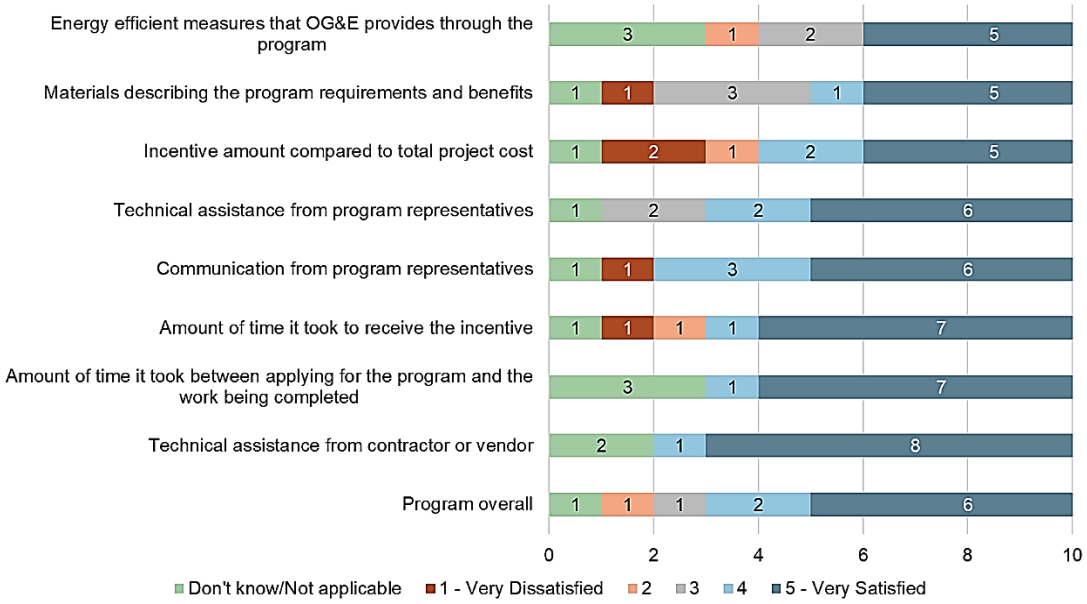


Figure 6-18: SAGE Channel Participant Satisfaction

[113] Respondents could cite multiple reasons for participating.
[114] Rated their likelihood of recommending the Channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Three respondents indicated dissatisfaction with the inducement amount compared to their total project cost; one clarified that their organization had not yet received the inducement at the time of their survey response.

Four respondents said they would not make any improvements (three respondents) or did not know what aspect of the SAGE Channel they would improve (one respondent). The remaining seven respondents made one or more recommendations to improve the Channel (see Table 6-36).

Table 6-35: SAGE Respondents' Recommendations to Improve Channel[115]

Response	Count
Prompted Responses – Selected All That Apply	
Increase inducement amount	5
Increase communication from OG&E regarding other available OG&E inducements/programs	4
Increase program advertising and publicity	2
Improve the program application process	1
Program could provide more information about savings/inducement calculations	1

Nine of the eleven respondents said they were satisfied with OG&E as their electric service provider.[116] Correspondingly, nine said they would recommend OG&E to a friend or colleague if everyone could choose their utility provider.[117]

6.8.3.4 HVAC Replacement and Tune-Up Participant Survey

ADM administered a survey to the CEEP HVAC Tune Up participants in September and December 2021. ADM first attempted to gather responses from participants with an email invitation and reminder and then conducted targeted phone calls. ADM attempted to reach 25 program participants up to four times each (two emails, two telephone calls) and received 10 responses (40% response rate). All questions have 10 responses except where it is noted that fewer responses were obtained due to question nonresponse.

Survey respondents mentioned having various job titles or roles (see Table 6-36).

[115] Respondents could provide more than one recommendation.

[116] Eight rated their satisfaction a 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied). One respondent selected "Don't know" and the other marked their satisfaction a 3 out of 5.

[117] Rated their likelihood of recommending the Channel a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Table 6-36: HVAC Tune Up Respondent Job Titles or Roles

Title or role	n
Proprietor/Owner	2
Director of Operations	2
Facilities Manager	1
Energy Manager	1
Chief Financial Officer	1
Other financial/administrative position	1
HVAC Supervisor	1
Manager	1

Most respondents represented schools that owned the facilities that participated in the OG&E HVAC Tune-Up Channel. Seven respondents said their organization owned the facility that had received the OG&E HVAC Tune-up. The other respondents either did not provide ownership information (two respondents) or did not know the ownership of the facility (one respondent). Seven respondents that represented schools participated in ADM's survey. The other three respondents represented various organization types including retail, contracting, and a warehouse/distribution center.

Moreover, most reported that their organization was responsible for paying the electric bill at the facility. Six respondents stated that their company paid the electric bill at their facility. Two did not provide information about their electric bill; the other two respondents said their company did not pay the electric bill.

Six respondents were able to provide an estimate of their monthly utility bill and the length of time they had been OG&E customers.[118] Three said their bill was $20,000 or more each month, two said their bill was between $2,500 and $7,499, and one said it was between $100-$999. Six respondents indicated their business had been an OG&E customer for 10 or more years.

Channel Awareness

The most commonly cited ways that respondents noted learning about the Channel were through a contractor/vendor or through OG&E or CLEAResult representative (see Table 6-37).

[118] n=8. Two respondents did not know their monthly utility bill or length of time as an OG&E customer.

Table 6-37: HVAC Tune Up Respondent Sources of Channel Awareness[119]

Response	n
Contractor/vendor	5
OG&E or CLEAResult representative	3
Word of mouth	1
Email from OG&E	1

Six respondents noted that they or their organization had previous experience with OG&E's energy efficiency programs before participating in the CEEP HVAC Tune Up Channel in 2021.

Customer Prior Tune-up Experience

Six respondents said their organization had tune-ups of their HVAC equipment performed by a contractor every year. Three said their organization had a tune-up every two years. The remaining respondent said their organization had tune-ups every three to five years.

Four respondents said their organization had never had a tune-up before participating in the CEEP Tune Up Channel.

Participation Process

Six respondents said that a contractor or vendor had completed their application, three said OG&E or CLEAResult completed the required paperwork, and one said someone else at their company completed the application to participate in the HVAC Channel.

Eight said their equipment was functioning properly before participating in the CEEP HVAC Tune Up Channel. The other two respondents said their equipment was not functioning properly.

Six respondents recalled that the contractor that performed their tune up explained the difference between an OG&E HVAC Tune Up and a standard tune up. Of these respondents, only two recalled what the contractor said. One respondent noted the contractor said that the OG&E HVAC Tune Up was "more efficient" and the other recalled the contractor stating the tune-up was part of OG&E's energy efficiency program.

Channel Satisfaction

Six respondents indicated that they were satisfied with their participation in the HVAC Tune Up Channel overall. Figure 6-19 displays respondents' satisfaction with various aspects of the HVAC Tune Up Channel as well as the Channel overall.

[119] Respondents could cite multiple sources of awareness.

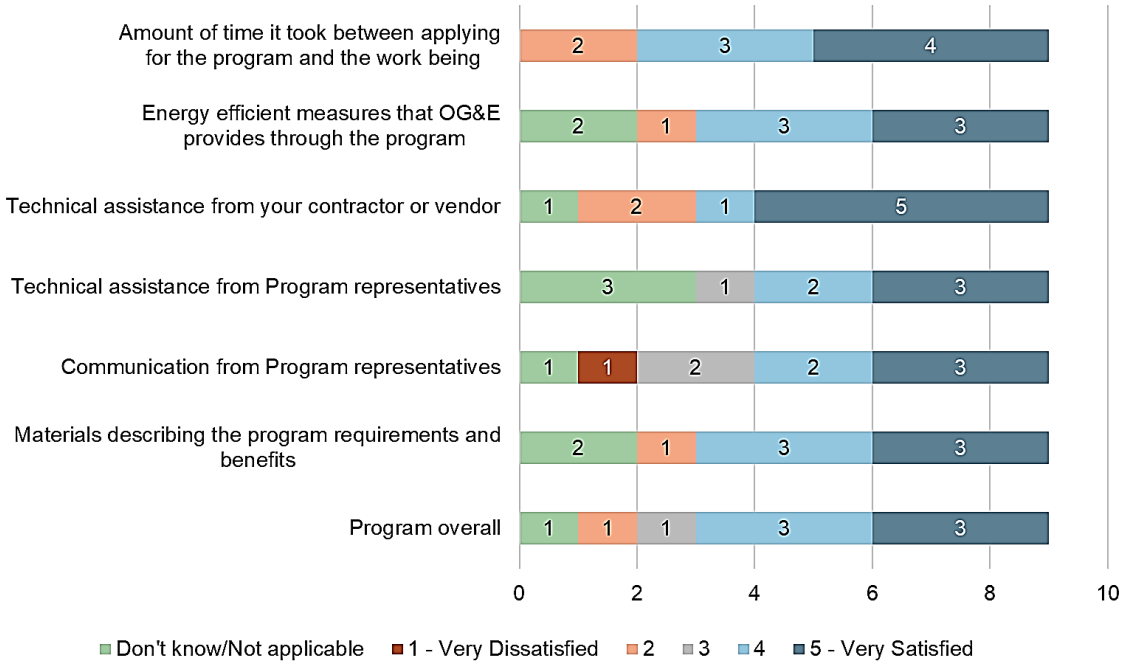


Figure 6-19: HVAC Tune Up Channel Participant Satisfaction

Six respondents stated that they would not change anything about the Channel. Four mentioned that they had recommended the Channel to someone else (n=8). Of those that had not recommended the Channel, two said they would be likely to recommend it (n=4).[120] Three respondents provided recommendations to improve the Channel. Two suggested increasing advertising and publicity, two said the Channel should provide more information about savings and inducement calculations, and one suggested increasing the inducement amount.

Further, the customer that indicated dissatisfaction with communication from program representatives said they were interested in more communication regarding the services provided.

6.8.4 CEI Participant Survey

ADM conducted a mixed-mode survey (phone/email) of Continuous Energy Improvement (CEI) Channel participants in January 2022. Fifteen participants responded to the survey (50% response rate). ADM collected nine responses via phone call and six participants responded to an email invitation. Twelve respondents to the 2021 CEI participant survey had taken a past ADM survey regarding their participation

[120] Two respondents that indicated they had not recommended the Channel indicated they would be likely to recommend it, with a rating of 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

in the channel in 2019 or 2020. ADM used past firmographic and background responses from these respondents to shorten the survey and reduce the participant survey burden.

All respondents noted that their organization owned and occupied the facility that participated in the OG&E CEI Channel. Thirteen respondents said that their company paid the electric bill at that address; the other two respondents did not know whether their company paid the electric bill at that address. All respondents that could recall their facility size indicated it was 100,000 or more square feet. Table 6-38 displays CEI Channel survey respondents' reported facility sizes.

Table 6-38: CEI Channel Survey Respondent Facility Sizes

Size of Facility	n
More than 1,000,000 sq. ft.	7
500,001 to 1,000,000 sq. ft.	2
250,001 to 500,000 sq. ft.	2
100,001 to 250,000 sq. ft.	1
Don't Know	3

Eleven CEI participants said their company had 300 or more full and part-time employees. The remaining four respondents said their companies had 180 or fewer employees.

Ten respondents said that their organization's budget decisions were made locally. Three respondents said their budget decisions were made nationally. One respondent noted that budget decisions over $10,000 required approval from their overseas office. The remaining respondent described budget decision-making processes that varied by the type of decision.

All the CEI channel survey respondents indicated that they had been OG&E customers for 10 years or longer. Eleven respondents said their monthly utility bill was $20,000 or more and the others indicated their monthly electric bill was typically $100-$999 (one respondent), $2,500-$4,999 (one respondent), $10,000-$19,999 (one respondent), or did not know their monthly utility bill amount (one respondent).

6.8.4.1 Energy Saving Actions Implemented

ADM asked survey respondents whether they had implemented any of the energy-saving actions that were recommended through the Channels' energy scans since they enrolled in the Channel. Thirteen respondents confirmed making improvements or taking actions that had been recommended through the CEI Channel's energy scans.

Most respondents noted making equipment replacements or upgrades that had been recommended during an energy scan. Figure 6-20 shows the types of energy-saving improvements and actions that participants indicated making after they were recommended through the Channel's energy scans.

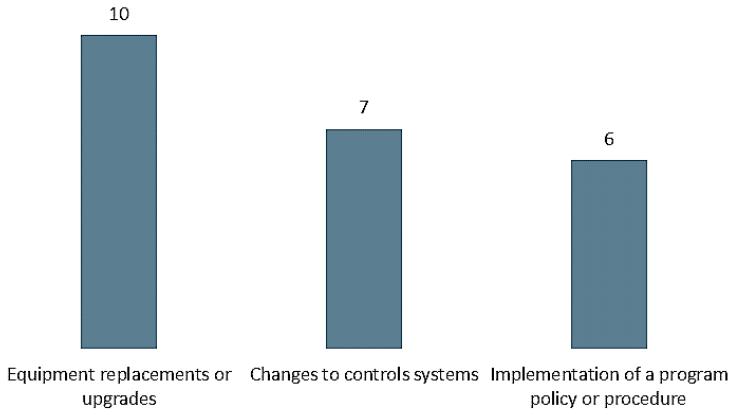


Figure 6-20: Types of improvements or actions taken recommended after CEI energy scans[121]

The most common equipment replacement or upgrade type that respondents indicated making was installing energy efficient lighting (8 respondents). Other equipment respondents reported installing included lighting controls, LED exit signs, cooling tower upgrades, VFD pumps, HVAC equipment, and efficient motors. All ten of these respondents observed that the equipment they had installed was still in use.

For PY2021, five participants indicated they had taken actions that had been recommended or discussed at a CEI Channel cohort workshop. Three said they had made changes to control systems and three indicated they had installed energy efficient equipment because of attending a cohort workshop. One said they had implemented program policies or procedures because of attending a cohort workshop. The remaining respondent did not recall details regarding the recommended energy efficient improvements they made after attending cohort workshops.

Eleven respondents rated the Channel's energy scans as useful. Eight rated the cohort workshops as useful.[122]

Seven of the thirteen respondents who mentioned taking action recommended during a CEI Channel energy scan or cohort workshop stated that some or all of the actions they had taken were discounted through another OG&E program (e.g., the OG&E Commercial Energy Efficiency Program's CIS or HVAC Replacement and Tune-Up Channel).

[121] Totals more than n=15 because respondents could select more than one option.
[122] Rated the usefulness a 4 or 5 on a scale from 1 (not at all useful) to 5 (extremely useful).

One respondent stated that they had not completed any energy efficiency upgrade, improvement, or action that had been recommended at either their site's energy scans or the CEI Channel's 2021 cohort workshops.

6.8.4.2 Satisfaction

ADM found that all of the survey respondents were satisfied with their overall experience with the CEI Channel, and most were satisfied with different aspects of the Channel (see Figure 6-21).[123] Seven of the CEI survey-takers stated that they had recommended it to someone else, the other eight said they would be likely to recommend the channel.[124]

All the survey-takers were satisfied with OG&E as their electric service provider. Thirteen said that if everyone could choose their utility providers, they would recommend OG&E.[125]

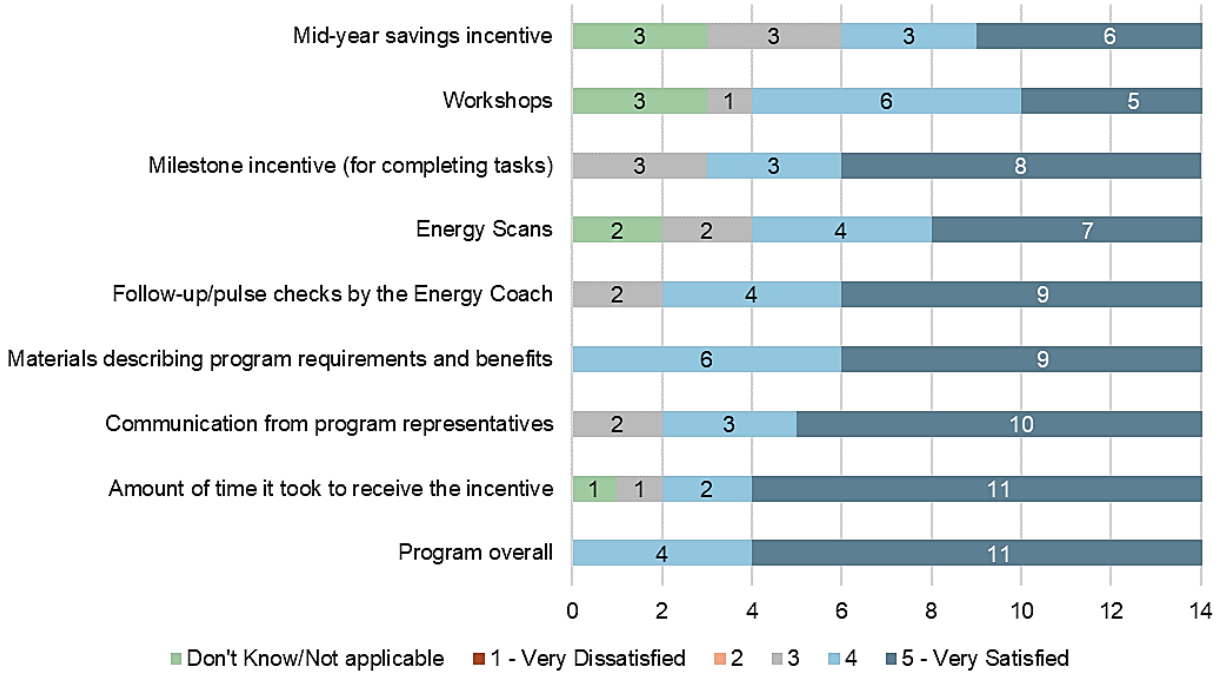


Figure 6-21: CEI Channel Participant Satisfaction

Seven of the respondents said they would not change anything about the Channel (5 respondents) or did not know (2 respondents) what they would change to improve it.

[123] Rated their satisfaction with a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).
[124] Rated their likelihood of recommending the Channel to a friend a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).
[125] Rated their likelihood of recommending OG&E a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

The other eight respondents provided various ideas to improve the CEI Channel (see Table 6-39).

Table 6-39: How could the CEI Channel improve?

Response	Count
Prompted Responses – Selected All That Apply	
Increase inducement amount	2
Increase communication from OG&E regarding other available OG&E inducements/programs	2
Increase number of workshops	1
Decrease frequency of pulse check (status) calls	1
Unprompted Responses – Open-end or "Other" Recommendations	
Consider additional energy scans or in-person site visits	2
Increase in-person aspects of the channel (e.g., site visits and cohort workshops)	2
Provide in-person training for new CEI Channel participants	1
Improve channel software's ease-of-use and ensure customers can compare past and present usage	1

6.8.5 Small Business Midstream End-User Survey

In August, September, and December 2021 ADM surveyed customers that purchased lighting through the OG&E Midstream lighting Channel. ADM sent email invitations to 728 Midstream lighting unique addresses and up to two reminder emails. ADM also made 53 phone calls to 47 customers. A total of 96 customers completed the survey (13% response rate). Seven customers completed the survey via telephone; the remaining 89 customers completed the survey online. All questions have 96 responses except where it is noted that fewer responses were obtained due to question nonresponse. Table 6-40 shows the different types of lighting respondents purchased through OG&E's Midstream Channel in 2021. On average the respondents reported that the discounted lighting was turned on for 78 hours per week or about 4,061 hours annually.

Table 6-40: Midstream Survey Respondent Purchase Type[126]

Measure	Number of Respondents	Percentage of Respondents
LED Lowbay/Highbay Fixture(s)	36	38%
LED Linear Lamp(s)	33	35%
LED Wall Pack/Flood Lamp(s)	27	28%
LED Linear Fixture(s)	21	22%
LED Downlight(s)/Trim kit(s)	10	10%
LED CFL Pin Base Direct Replacement Lamp(s)	3	3%
PAR Lamp(s)	2	2%
BR Type Lamp(s)	1	1%

Customers reported that discounted lighting had been installed in a variety of work settings. Table 6-42 displays the type of work done in the buildings where survey respondents stated that the discounted lights were installed.

The average utility bill for participating Midstream End-Use survey respondents varied, though slightly more than half indicated their monthly bill was $4,999 or less (see Table 6-41). Eighty-one percent of respondents said they had been an OG&E customer for 10 years or more, 10% said they had been a customer for 2-10 years, 4% said they had been an OG&E customer for 2 years or less. The remaining 5% of respondents did not know how long their company had been a customer of OG&E. This survey finding may indicate an opportunity to increase marketing to newer OG&E customers with less experience with its energy efficiency offerings.

Table 6-41: Midstream Survey Respondent Average Utility Bill

Measure	Number of Respondents	Percentage of Respondents
Less than $100 monthly	1	1%
$100 - $999	28	30%
$1,000- $2,499	13	14%
$2,500 - $4,999	7	7%
$5,000 - $7,499	6	6%
$7,500 - $9,999	2	2%
$10,000 -$19,999	5	5%
$20,000 or more	11	12%
I don't know	21	22%

[126] Percentages exceed 100% because respondents may have purchased multiple discounted lighting product types.

Table 6-42: What type of work is done in the building where the lights were installed?[127]

Type of Work	Number of Respondents	Percent of Respondents (n=96)
Retail	20	21%
Industrial/Manufacturing	18	19%
Religious Worship	14	15%
Office	12	13%
Warehouse or Distribution Center	7	7%
School K-12	6	6%
College/University	5	5%
Healthcare	4	4%
Exterior (lamps installed only outside)	4	4%
Institution/Government	3	3%
Lodging	2	2%
Public Assembly	1	1%
Don't know	2	2%

6.8.5.1 Program Awareness & Experience

Eighty-two percent of respondents knew all of their lighting products were discounted (n=95). The remaining respondents either knew that some of their purchase had been discounted (12%) or did not know their purchase had been discounted at all (6%). All the respondents that were aware that their purchase had been discounted said they knew OG&E was responsible for providing the discount (n=88).

Respondents noted learning about the program from a variety of sources (see Table 6-43). The most commonly cited source of awareness of the program discounts were distributor store employees (56%).

[127] Percentages exceed 100% because some respondents installed lighting in multiple facility types.

Table 6-43: How did you first learn about the discounts?[128]

Method	Number of Respondents	Percent of Respondents (n=96)
From a lighting distributor employee	54	56%
Prior experience with the program or participating distributor	20	21%
Contractor/electrician	13	14%
From marketing materials displayed at the store	3	3%
Friend or colleague	2	2%
OG&E marketing email	1	1%
I do not recall	2	2%

Seventy-five percent of respondents recalled a sales representative at the lighting distributor discussing the benefits of the discounted lighting with them (n=92). Most of these respondents recalled them discussing energy savings (91%) or the discounts (78%) (n=68). A smaller portion of respondents recalled the salesperson discussing the long life of the bulb or fixture (60%) or the quality of the discounted bulbs or fixtures (34%). Two respondents (2%) recalled other benefits the sales representative mentioned including the quantity available and potential heating and cooling savings associated with LED lighting.

6.8.5.2 Decision-making and Other Program Experience

ADM inquired with survey respondents regarding the factors they consider when selecting lamps or fixtures. Respondents cited price and energy efficiency most frequently. Figure 6-22 displays the factors respondents noted considering when they purchase lamps or fixtures (n=95).

[128] Other methods of learning about the discount included word-of-mouth from customers, OG&E emails or other direct contact from OG&E, meetings, and participating in other states.

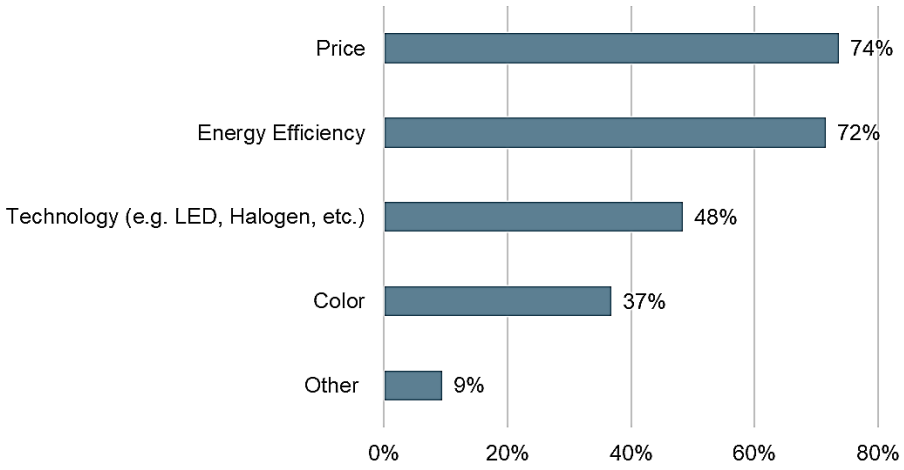


Figure 6-22: What factors do respondents consider when purchasing lamps/fixtures?[129]

Forty-two percent of survey respondents reported that they had completed a lighting project that applied for an OG&E efficiency program rebate.

Eleven percent said there were additional lamp or fixture types that they would like OG&E to incentivize. These respondents expressed interest in Midstream Channel discounts for high bay, outdoor security/parking, and emergency exit sign LED lighting as well as for 2x2 panels, 2-foot U-Tubes, and 5K LED bulbs. This finding indicates an opportunity for Program staff to communicate available inducements to customers and to ensure they are taking advantage of all available energy efficiency inducements, through the Midstream or other Commercial Channels.

6.8.5.3 General Feedback and Suggestions

Seventy-one percent of respondents said they had recommended the Midstream Channel to someone else (n=95) and of those who had not yet recommended the channel (n=26), 81% said they would be likely to recommend it.[130]

Eighty-seven percent of survey respondents indicated they were satisfied with OG&E as their electric utility provider.[131] Similarly, 84% said they would be likely to recommend OG&E to a friend or colleague if everyone could choose their utility provider. Respondents were given the opportunity to share comments, suggestions, and general feedback regarding Midstream Channel and OG&E's services. Nineteen percent

[129] Other important factors included the installation labor requirements, brightness or light temperature controls, and facility needs.
[130] Rated their likelihood of recommending OG&E to a friend or colleague a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).
[131] Rated their satisfaction a 4 or 5 on a scale from 1 (not at all satisfied) to 5 (very satisfied).

provided a recommendation. Table 6-44 provides a summary of the respondents' comments.

Table 6-44: Midstream Channel Survey Respondents' Comments[132]

Response	Count	Percent (n=96)
Increase the available inducements (add measures, expand eligibility, increase measure limits, programs, or offerings)	14	15%
General support, appreciation, or interest in the continuation of the channel's inducements	8	8%
Increase marketing or promotional efforts to ensure awareness of the available inducements and programs.	6	6%
Improve communication from OG&E staff (faster response time, send notification on day of service)	2	2%
Reduce the complexity of other energy efficiency rebate programs	1	1%

6.9 Program Conclusions and Recommendations

6.9.1 Conclusions

Based on the findings from the 2021 evaluation of CEEP, we have developed the following conclusions:

- Survey results and interviews indicate that OG&E's CEEP was implemented successfully in 2021 with minimal comments, complaints, or concerns from trade allies and participants.
- Participant and trade ally satisfaction is high with the Downstream Channel and HVAC Replacement and Tune-Up Channels though some trade allies noted opportunities to improve the application process and offer additional measures and customers suggested working to increase program advertising and publicity. Both trade ally and customers' most common recommendation was to increase the inducements amounts.
- Program participants want more information from OG&E about available inducement offerings. This is consistent with ADM's 2019 and 2020 findings.
- The majority of OG&E customers that participated in the Small Business Midstream, SAGE, SBDI, and HVAC Channels had been OG&E customers for 10 or more years, indicating an opportunity to focus outreach on newer OG&E customers.
- Survey findings indicate there is a need or demand for revisiting the Downstream Channel inducement levels. Most trade allies suggested current inducement

[132] Respondents could provide more than one recommendation.

levels should be adjusted to better motivate customers to choose high-efficiency equipment. Similarly, it was the most common way to improve the Program mentioned by CIS, SAGE, and SBDI survey respondents.

- There is an opportunity for continued measure diversification. Though staff suggested that CEEP's different options ensure a pathway to participate for all customers with different inducement opportunities, ADM's review of tracking data verified that the majority of program savings are from lighting projects.
- CEEP program staff facilitated discussions suggested there may be an opportunity to increase focus on long-term planning and efforts lining up new projects, as there may be too strong a focus on short-term goals, which results in over-achieving on kWh savings goals each year, while leaving an empty pipeline to start the next year.

6.9.2 Recommendations

Based on the findings from the 2021 evaluation of CEEP, we have developed the following recommendations:

- **Ensure Program participants are aware of all available OG&E CEEP inducements**. OG&E and CLEAResult could consider developing targeted marketing campaigns for specific types of businesses or organizations, with case studies and examples of projects, available inducements, and energy savings achieved through the various Channels' past participants. Additionally, OG&E could focus on targeting newer customers that may not have had experience in the past with its energy efficiency programs.
- **Increase outreach to business customers to better inform them of available energy efficiency inducements.** Opportunities to increase awareness include bill inserts, email blasts, in-person community events, and a business-to-business referral program in which past participants could receive additional inducements or benefits by enrolling colleagues or others in the business community.
- **Focus on increasing commercial customer participation with custom and non-lighting measures.** ADM's discussions with staff indicated the SAGE and CIS Channels could expand participation with custom measures, while non-lighting measures such as VFDs, motors, and electric fryers were opportunities for Midstream. Similarly, the SBDI Channel has opportunities to increase savings attributed to direct install projects such as weatherstripping, refrigerator door gaskets, strip-curtains, and packaged terminal air conditioner units.

6.9.2.1 Impact-Evaluation-Specific Recommendations

- Use as much raw data as possible to create regressions or averages for *ex ante* savings calculations. When data is excluded, there should be a significant reason (e.g., abnormal shutdown caused by the COVID-19 pandemic), and it should be well documented including a statement from the facility. For example, project EA-0000486485 did not use all available data in its *ex ante* savings calculations.
- Do not include bias in savings from periods of higher or lower energy usage when using measured data to normalize savings to a full year. For example, if a facility has lower usage over the weekend, taking an average usage from 10 days of operation would include a disproportionate number of higher usage weekdays and lower usage weekends. This incorrect average would then be amplified when applied to a full year.

  Bias can also be caused by gaps in the raw data. For example, if the start date and end date are 28 days apart, giving four full weeks of data, but has a two-day gap in the data. The two-day gap in the data can cause usage bias.

  Project EA-0000644335, a custom engineering calculation project in the CEI channel, included these biases in its *ex ante* savings calculations.
- Some *ex ante* calculations for custom lighting projects do not account for increased hours of use (HOU) for security lighting or lights which do not turn off. ADM was able to verify more savings than was estimated from several projects because site contacts provided lighting schedules for security lighting and lighting fixtures/equipment that operate continuously. The implementation contractor should appropriately assign the HOU for lights used for security lighting and lights that operate 24/7.
- For the multi-year projects in the CIS program, continue to communicate projects' updates and changes throughout the current program year to the evaluation contractor. Provide advanced notice when a multi-year project is projected to close out in the given program year.
- Continue to update the Small Business Midstream Channel AOH per lamp type using three-year rolling average values based on actual Channel participants. Both *ex ante* and *ex post* savings should be calculated using the same average values. The proposed values for the 2022 Program year are provided in Section 6.6.2.
- The Small Business Midstream program should increase the level of detail required on invoices provided by distributors. The part number used to look up lamp specifications, along with the lamp or fixture manufacturer would aid in the verification process.

- The implementation contractor should create a robust timeline and standard process for CEI model releases. Releasing all the models at the same time and using the same standardization process will reduce the amount of redundant download and review work.
- The implementation contractor should expand the CEI cross-participation reporting to include demand reductions subtractions for cross-participating projects. Currently, cross-participation projects are reported in the energy models with a table containing project numbers, measure IDs, install dates, energy savings per year, and energy savings in the given reporting period. A similar table should be included in the demand savings models to report demand reductions from cross participating projects.

Appendix A. Portfolio Cost-effectiveness

A.1 Overview

We estimated the cost-effectiveness for the overall Demand Program portfolio and programs based on 2021 costs and savings estimates provided by OG&E and their third-party implementers. This appendix provides the cost-effectiveness results, as well as a brief overview of the approach taken.

The portfolio, and programs, pass all the cost-effectiveness tests except the RIM test. The table below presents the cost-effectiveness results for the PY2021 portfolio.

Table A-1: Cost-Effectiveness Results

Program	TRC	UCT	RIM	PCT	SCT
HEEP	3.04	3.93	0.74	5.55	5.27
WRAP	2.33	2.39	0.78	3.33	4.05
CEEP	1.61	3.82	0.68	2.71	2.42
Energy Education Res	0.00	0.00	0.00	0.00	0.00
Energy Education C&I	0.00	0.00	0.00	0.00	0.00
Planning	0.00	0.00	0.00	0.00	0.00
Regulatory	0.00	0.00	0.00	0.00	0.00
R&D	0.00	0.00	0.00	0.00	0.00
Total	**2.02**	**3.50**	**0.71**	**3.44**	**3.29**

A.2 Approach

The California Standard Practice Model and guidance from the AR TRM were used as guidelines for the calculations, along with guidance from the AR TRM. The cost-effectiveness analysis methods which were used in this analysis are among the set of standard methods used in this industry and include the Utility Cost Test (UCT), Total Resource Cost Test (TRC), Ratepayer Impact Measure Test (RIM), and Participant Cost Test (PCT). All tests weigh monetized benefits against costs. These monetized amounts are presented as Net Present Value (NPV) evaluated over the measures' lifespan. The benefits and costs differ for each test based on the perspective of the test. The definitions below are taken from the California Standard Practice Manual.

- **The Total Resource Cost Test (TRC)** measures a demand-side management program's net costs as a resource option based on the Program's total costs, including both the participant and the utility costs.
- **The Utility Cost Test (UCT)** measures the net costs of a demand-side management program as a resource option based on the utility costs (including inducement costs) and excluding any net costs incurred by the participant. The benefits are similar to the TRC benefits. Costs are defined more narrowly.

- **The Participants Cost Test (PCT)** measures the quantifiable benefits and costs to the customer due to participation in a program. Since many customers do not base their decision to participate in a program entirely on quantifiable variables, this test cannot be a complete measure of a program's benefits and costs to a customer.
- **The Ratepayer Impact Measure Test (RIM)** measures the change in customer bills or rates due to changes in utility revenues and operating costs caused by the Program. Rates will go down if the change in revenues from the Program is greater than the change in utility costs. Conversely, rates or bills will go up if revenues collected after Program implementation are less than the utility's total costs in implementing the Program. This test indicates the direction and magnitude of the expected change in customer bills or rate levels.

A common misperception is that there is a single best perspective for the evaluation of cost-effectiveness. Each test is useful and accurate, but each test is intended to answer a different set of questions. The questions to be addressed by each cost test are shown in the table below.

Table A-2: Questions Addressed by the Various Cost Tests

Cost Test	Questions Addressed
Participant Cost Test (PCT)	▪ Is it worth it to the customer to install energy efficiency?
	▪ Is it likely that the customer wants to participate in a utility program that promotes energy efficiency?
Ratepayer Impact Measure (RIM)	▪ What is the impact of the energy efficiency project on the utility's operating margin?
	▪ Would the project require an increase in rates to reach the same operating margin?
Utility Cost Test (UCT)	▪ Do total utility costs increase or decrease?
	▪ What is the change in total customer bills required to keep the utility whole?
Total Resource Cost Test (TRC)	▪ What is the regional benefit of the energy efficiency project (including the net costs and benefits to the utility and its customers)?
	▪ Are all of the benefits greater than all of the costs (regardless of who pays the costs and who receives the benefits)?
	▪ Is more or less money required by the region to pay for energy needs?
Societal Cost Test (SCT)	▪ What is the overall benefit to the community of including indirect benefits?
	▪ Are all of the benefits, including indirect benefits, greater than all of the costs (regardless of who pays the cost and who receives the benefits)?

Overall, the results of all five-cost-effectiveness tests provide a more comprehensive picture than the use of any lone test. The TRC and SCT cost address whether energy efficiency is cost-effective overall. The PCT, UCT, and RIM address whether the selection of measures and design of the Program is balanced from the perspectives of participants, utilities, and non-participants. The scope of the benefit and cost components included in each test are summarized in the table below**.**

Table A-3: Benefits and Costs Included in each Cost-Effectiveness Test

Test	Benefits	Costs
PCT (Benefits and costs from the perspective of the customer installing the measure)	▪ Inducement payments ▪ Bill Savings ▪ Applicable tax credits or inducements	▪ Incremental equipment costs ▪ Incremental installation costs
UCT (Perspective of utility, government agency, or third party implementing the Program	▪ Energy-related costs avoided by the utility ▪ Capacity-related costs avoided by the utility, including generation, transmission, and distribution	▪ Program overhead costs ▪ Utility inducement costs
TRC (Benefits and costs from the perspective of all utility customers in the utility service territory)	▪ Energy-related costs avoided by the utility ▪ Capacity-related costs avoided by the utility, including generation, transmission, and distribution ▪ Additional resource savings ▪ Monetized non-energy benefits.	▪ Program overhead costs ▪ Program installation costs ▪ Incremental measure costs
SCT (Benefits and cost to all in the utility service territory, state, or nation as a whole).	▪ Energy-related costs avoided by the utility ▪ Capacity-related costs avoided by the utility, including generation, transmission, and distribution ▪ Non-energy benefits.	▪ Program overhead costs ▪ Program installation costs ▪ Incremental measure costs
RIM (Impact of efficiency measure on non-participating ratepayers overall)	▪ Energy-related costs avoided by the utility ▪ Capacity-related costs avoided by the utility, including generation, transmission, and distribution	▪ Program overhead costs ▪ Lost revenue due to reduced energy bills ▪ Utility installation costs

A.3 Economic Inputs for Cost-Effectiveness Analysis

We used the avoided costs provided by OG&E for the cost-effectiveness analysis. We also used the discount rates provided by OG&E to perform the cost-effectiveness analysis, and these values align with the rates used in the Plan.

The evaluated net energy savings and demand reduction values utilized in the cost-effectiveness analysis include a line loss factor of 1.0783 for demand and 1.0693 for energy.

A.4 Results

The following tables outline each test's results for both the programs and the portfolio as a whole.

Table A-4: Cost-Effectiveness Results by Program

Program	TRC	UCT	RIM	PCT	SCT
HEEP	3.04	3.93	0.74	5.55	5.27
WRAP	2.33	2.39	0.78	3.33	4.05
CEEP	1.61	3.82	0.68	2.71	2.42
Energy Education Res	0.00	0.00	0.00	0.00	0.00
Energy Education C&I	0.00	0.00	0.00	0.00	0.00
Planning	0.00	0.00	0.00	0.00	0.00
Regulatory	0.00	0.00	0.00	0.00	0.00
R&D	0.00	0.00	0.00	0.00	0.00
Total	**2.02**	**3.50**	**0.71**	**3.44**	**3.29**

Table A-5: Cost-Effectiveness Benefits by Program

Program	TRC Benefits	UCT Benefits	RIM Benefits	PCT Benefits	SCT Benefits
HEEP	$47,379,660	$46,980,509	$45,408,871	$57,539,383	$82,142,299
WRAP	$14,162,375	$14,553,732	$14,162,375	$17,799,305	$24,618,744
CEEP	$59,221,422	$62,548,165	$59,221,422	$78,219,756	$89,434,111
Energy Education Res	$0	$0	$0	$0	$0
Energy Education C&I	$0	$0	$0	$0	$0
Planning	$0	$0	$0	$0	$0
Regulatory	$0	$0	$0	$0	$0
R&D	$0	$0	$0	$0	$0
Total	**$120,763,457**	**$124,082,406**	**$118,792,668**	**$153,558,444**	**$196,195,154**

Table A-6: Cost-Effectiveness Costs by Program

Program	TRC Costs	UCT Costs	RIM Costs	PCT Costs	SCT Costs
HEEP	$15,584,779	$11,958,035	$61,619,797	$10,374,358	$15,584,779
WRAP	$6,077,350	$6,077,350	$18,273,077	$5,350,041	$6,077,350
CEEP	$36,897,162	$16,359,105	$86,604,347	$28,876,057	$36,897,162
Energy Education Res	$427,906	$427,906	$427,906	$0	$427,906
Energy Education C&I	$522,996	$522,996	$522,996	$0	$522,996
Planning	$21,637	$21,637	$21,637	$0	$21,637
Regulatory	$0	$0	$0	$0	$0
R&D	$107,748	$107,748	$107,748	$0	$107,748
Total	**$59,639,579**	**$35,474,777**	**$167,577,509**	**$44,600,456**	**$59,639,579**

Table A-7: Cost-Effectiveness Net Benefits by Program

Program	TRC Net Benefits	UCT Net Benefits	RIM Net Benefits	PCT Net Benefits	SCT Net Benefits
HEEP	$31,794,881	$35,022,474	($16,210,927)	$47,165,025	$66,557,520
WRAP	$8,085,025	$8,476,382	($4,110,702)	$12,449,263	$18,541,394
CEEP	$22,324,260	$46,189,060	($27,382,925)	$49,343,699	$52,536,949
Energy Education Res	($427,906)	($427,906)	($427,906)	$0	($427,906)
Energy Education C&I	($522,996)	($522,996)	($522,996)	$0	($522,996)
Planning	($21,637)	($21,637)	($21,637)	$0	($21,637)
Regulatory	$0	$0	$0	$0	$0
R&D	($107,748)	($107,748)	($107,748)	$0	($107,748)
Total	**$61,123,878**	**$88,607,628**	**($48,784,842)**	**$108,957,988**	**$136,555,576**

7.2 Marketing Materials

OG&E

We Energize Life

Up to $2,500 in Energy Efficiency Improvements at **NO COST to You!**

<Mr. John Q. Sample>
<1234 Main St.>
<Cityname, ST 12345-6789>

Our crews are following increased safety measures, including protective masks, gloves and shoe covers.

Dear (firstname),

OG&E Can Help You Lower Your Costs!

It may sound too good to be true, but there's no catch — really. ***OG&E's Weatherization Program*** increases the comfort of your home and **makes your energy bill manageable**. We'll send a trained crew to complete these services, which have been performed for thousands of our customers. Weatherization services may include:



Adding insulation to the attic



Sealing around doors and windows



Caulking, air sealing and weather-stripping throughout your home



Installing energy-saving LED light bulbs

The services provided through this program have an estimated value of up to $2,500, but are available at **NO ADDITIONAL COST** to customers who meet the following criteria*:

- Have a household income of $60,000 or less a year
- Own or rent a single-family home, duplex or mobile home*
- Current OG&E residential customer

This is a limited time, money-saving offer to Oklahoma customers.

Call OG&E today at **800-272-9741** to speak with a customer service representative, or visit **oge.com/weatherization**. The sooner you call, the quicker you can have your home weatherized. You'll be more comfortable and reduce your energy bills, both at no additional cost to you!

Sincerely,
Your friends at OG&E

** Weatherization services are available to rental properties if an eligible customer lives in the home and has approval from the property owner.*

OG&E

Energía para la Vida

¡Hasta $2,500 en Mejoras de Eficiencia Energética SIN COSTO ALGUNO para Usted!

<Mr. John Q. Sample>
<1234 Main St.>
<Cityname, ST 12345-6789>

Nuestro personal está siguiendo aún mayores medidas de seguridad, incluyendo mascarillas protectoras, guantes y cubiertas para zapatos.

Estimado/a (firstname),

¡OG&E Puede Ayudarle A Reducir Sus Costos!

Podrá sonar demasiado bueno para ser verdad, pero le aseguramos que no es un engaño. El ***Programa de Climatización de OG&E*** aumenta la comodidad de su hogar y **hace que tenga un mayor manejo de su factura de energía**. Enviaremos a nuestro personal capacitado para completar estos servicios, que se han realizado ya para miles de nuestros clientes. Los servicios de climatización pueden incluir:



Añadir aislamiento al ático



Sellado alrededor de puertas y ventanas



Enmasillado, sellado de fugas de aire y colocación de burletes (cintas protectoras) a través de su hogar



Instalación de focos LED ahorradores de energía

Los servicios proporcionados a través de este programa tienen un valor estimado de hasta $2,500, pero están disponibles **SIN COSTO ADICIONAL** para los clientes que cumplan con los siguientes requisitos*:

- Tener un ingreso familiar de $60,000 o menos al año
- Ser propietario o rentar una casa unifamiliar, dúplex o casa móvil*
- Ser cliente residencial actual de OG&E

Esta es una oferta de ahorro de dinero por tiempo limitado para los clientes de Oklahoma.

Llame a OG&E hoy mismo al **800-272-9741** para hablar con un representante de atención al cliente o visite **oge.com/weatherization**. Cuanto antes llame, más rápido podrá climatizar su hogar. Tendrá mayor comodidad y reducirá sus facturas de energía, ¡sin costo adicional para usted!

Atentamente,
Sus amigos de OG&E

** Los servicios de climatización están disponibles para propiedades en renta si el cliente elegible vive en el hogar y cuenta con la aprobación del propietario.*

LOWER **YOUR COSTS**, INCREASE **YOUR COMFORT**

OG&E
We Energize Life



OKLAHOMA

Increase the comfort of your home and make your energy bill more manageable at no additional cost with the OG&E Weatherization Program.

Our trained crews have worked to improve the homes of more than 50,000 customers over the years and they're not stopping now! Valued at approximately $2,500, the OG&E Weatherization Program covers a wide range of improvements that may include but are not limited to:

- 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

This program is available to eligible OG&E Oklahoma residential customers who meet the following criteria:

- Household income of $60,000 or less a year
- Own or rent* a single-family home, duplex or mobile home

Spots are limited so if you or someone you know could benefit from home weatherization improvements at no additional cost, don't wait!

Visit **oge.com/weatherization** to see if you're eligible and to enroll in OG&E's Weatherization Program. You can also contact our call center at 800-272-9741 from 8 a.m. to 5 p.m., Monday through Friday.

*Landlord approval required

OGE.COM

OG&E WEATHERIZATION PROGRAM

*REDUZCA SUS **COSTOS**, AUMENTE SU **COMODIDAD***

OG&E®

Energía para la Vida



OKLAHOMA

Aumente la comodidad de su hogar y tenga un mayor manejo de su factura de energía sin ningún costo adicional con el Programa de Climatización de OG&E.

Nuestro personal capacitado ha trabajado para mejorar los hogares de más de 50,000 clientes a través de los años, ¡y no piensan detenerse ahora! Con un valor aproximado de $2,500, el Programa de Climatización de OG&E cubre una amplia variedad de mejoras, las cuales pueden incluir, pero no limitarse a:

- Añadir aislamiento al ático
- Sellado de ductos
- Sellado de ventanas para eliminar fugas y corrientes de aire
- Colocación de burletes (cintas protectoras) alrededor de las puertas
- Instalación de focos LED ahorradores de energía
- Sellado de fugas de aire a través del hogar
- Otras mejoras térmicas

Este programa está disponible para los clientes residenciales de OG&E en Oklahoma quienes cumplan con los siguientes requisitos*:

- Ingreso familiar de $60,000 o menos al año
- Ser propietario o rentar* una casa unifamiliar, dúplex o casa móvil

La disponibilidad es limitada, por lo que si usted o alguien que conoce puede beneficiarse de mejoras de climatización del hogar sin costo adicional, ¡no espere más!

Visite **oge.com/weatherization** para ver si usted es elegible y para inscribirse en el Programa de Climatización de OG&E. También puede contactar a nuestro Centro de Atención al Cliente llamando al 800-272-9741 de 8 a.m. a 5 p.m., de Lunes a Viernes.

* Se requiere la aprobación del propietario

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OG&E® PROGRAMA DE CLIMATIZACIÓN

Increased comfort, ***lower costs***



Experience savings all year with the **OG&E Weatherization Program**. This program increases the comfort of your home and makes your energy bill more manageable with up to $2,500 in home energy efficiency upgrades – at no additional cost to you!

We'll send a trained crew to complete these services, which have been performed for thousands of our customers. **Our crews are following increased safety measures, including protective masks, gloves and shoe covers to ensure that these services are completed safely.**

These weatherization services may include:

- Adding insulation to the attic
- Sealing around doors and windows
- Caulking, air sealing and weather-stripping throughout your home
- Installing energy-saving LED light bulbs

OG&E®

We Energize Life

OGE.COM



This program is available to OG&E Oklahoma residential customers who meet the following criteria:

- Household income of $60,000 or less a year
- Own or rent* a single-family home, duplex or mobile home

To find out if you qualify for the OG&E Weatherization Program or to sign up, contact OG&E at **800-272-9741** or **visit oge.com/weatherization**. Some restrictions and state-mandated guidelines may apply.

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We Energize Life

*Landlord approval required

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HOME **ENERGY EFFICIENCY PROGRAM**

Higher efficiency, **lower costs**

OG&E®

We Energize Life



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**.



OKLAHOMA

OGE_HEEP Flyer_v1.indd 1 7/27/21 10:23 AM

HOME **ENERGY EFFICIENCY PROGRAM**

PROGRAMA DE EFICIENCIA ENERGÉTICA **PARA EL HOGAR**

OG&E
We Energize Life



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 en línea "Localizador de Eficiencia Energética en el Hogar". Con sólo algunas preguntas, nuestro Localizador 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**.

We Energize Life

SO MANY WAYS TO SAVE AT OG&E

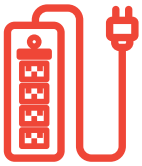
The Weatherization Program isn't the only way you can save energy and money at OG&E. In fact, you can take advantage of two of our most popular programs without paying any out-of-pocket costs.

1. Home assessments

Valued at **up to $250**, our expert home assessments include personalized recommendations to help you save energy and money. Schedule an In-Home or Virtual Home Energy Assessment now to receive:



Up to 15 LED bulbs



Advanced power strips (as needed)



A custom Home Energy Report outlining recommended improvements



Access to professional support, rebates and products

2. Advanced A/C Tune-up Program

Valued at **up to $200**, an Advanced A/C Tune-up can help improve your A/C system's efficiency by up to 30 percent. Sign up now to be at the front of the line when our contractors resume appointments next spring.

If needed, we also offer generous incentives for replacing older units with new high-efficiency models.

Advanced A/C Tune-up benefits include:

- Longer-lasting, better-working equipment
- Improved comfort and humidity control
- Greater energy efficiency

No matter how you choose to save, we take your safety seriously. Our energy advisors and contractors are trained to take extra precautions while inside your home and come equipped with personal protective equipment. For contact-free savings, our new Virtual Home Energy Assessment offers a safe and convenient way to get started.

Discover more at **oge.com/heep** or call **844-882-5746** to speak with a customer service representative.

Sincerely,
Your friends at OG&E

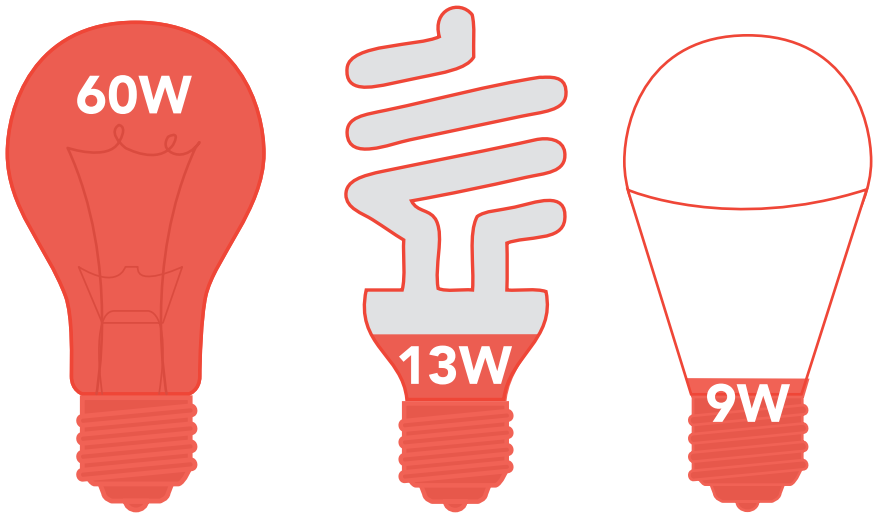
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SHINE ON THE SAVINGS.

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.



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

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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

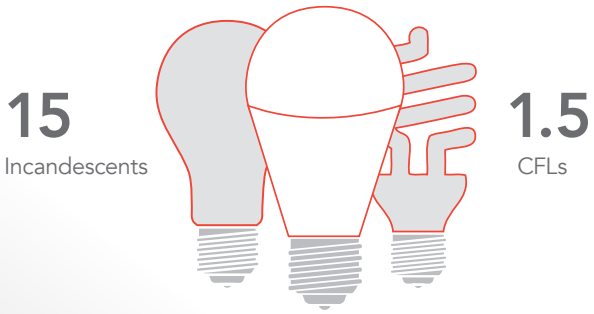
Good for:
Kitchens
Hobby rooms
Garages
Bathrooms
Basements

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.

OGE®

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SAVE MORE, LIVE BETTER.

An In-Home or Virtual Energy Assessment can help you save hundreds each year. Valued at over $250 and offered at no additional cost to you, both assessments include customized recommendations, energy-saving upgrades, access to great rebates and more.

OG&E®

We Energize Life

PO Box 321
Oklahoma City, OK 73101-0321

OK, LET'S SAVE.

Call **844-882-5746** to schedule your Virtual or In-Home Energy Assessment, which may include:

- Up to 15 LED bulbs
- Smart power strips (as needed)
- A custom Home Energy Report with recommended improvements and available rebates
- Enhanced safety measures taken during assessment

Find more ways to save energy and money at **oge.com/heep**.

Prior program participants not eligible.



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WELCOME HOME MORE SAVINGS.

Congrats on your new home! As you settle in, now's the perfect time to discover its energy-saving potential with an In-Home Energy Assessment **provided at no extra cost** to you.

Your assessment may include:

- Up to 15 LED bulbs
- Advanced power strips (as needed)
- A custom Home Energy Report with recommended improvements and available rebates
- Enhanced safety measures

Find more ways to save energy and money at **oge.com/heep**.

Prior program participants are not eligible.

OG/E®

We Energize Life

OG&E

PO Box 321
Oklahoma City, OK 73101-0321

EXTRA SAVINGS AT NO EXTRA COST

Book your assessment today and we'll help you identify exactly how your new home uses and loses energy—and provide products and recommendations to help you save more of it.

Not ready for the full assessment yet? Get started with a quick and easy Home Review at **oge.com/heep**.

SCHEDULE NOW

Call **844-882-5746** today to book your appointment.

YOUR HOMEBASE FOR EXTRA SAVINGS

OG&E
We Energize Life

With no out-of-pocket costs required, our In-Home Energy Assessment is a smart way to save for renters and homeowners alike.

Valued at over $250, your assessment includes:

- An expert walk-through analysis of your home's energy use
- Up to 15 LED bulbs
- Advanced power strips (as needed)
- A custom Home Energy Report with recommended improvements
- Extra safety precautions, including masks, gloves and shoe coverings



Visit **oge.com/heep** or call **844-882-5746** to schedule your In-Home Energy Assessment today.

SAFE SAVINGS ARE VIRTUALLY YOURS.

Prefer to have a **Virtual Home Energy Assessment** instead? We're happy to offer this option as a safe and easy way to save using your smartphone or tablet—no out-of-pocket costs necessary.

Valued at over **$250**, your assessment includes:

- A guided walk-through analysis of your home's energy use conducted through your smart device
- Up to 15 LED bulbs and advanced power strips (mailed to your home following the assessment)
- A custom Home Energy Report with recommended improvements

Call **844-882-5746** to schedule your Virtual Home Energy Assessment today.



Su caja de herramientas **energéticamente eficiente**

Complete su perfil en línea para el Localizador, y vea 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
- Extensiones 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 las Mejoras al Aire Acondicionado de OG&E.

Programe las suyas hoy mismo para aumentar la eficiencia de su unidad de Aire Acondicionado hasta un 30%. Con un valor de $200 dólares, las mejoras no requieren de ningún gasto adicional de 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 obtener hasta $500 dólares en mejoras para el aislamiento de su ático.

Ventanas

Ofrecemos un reembolso de $50 dólares por cada ventana con certificación ENERGY STAR® instalada por un profesional (límite de siete).

Puertas

Obtenga un reembolso de $100 dólares por cada puerta corrediza o francesa que reemplace por un modelo con certificación ENERGY STAR (límite de dos).

Bombas para Piscina

Las bombas para piscina con certificación ENERGY STAR de velocidad múltiple (≥ 1 hp) y de velocidad variable (≥ 0.5 hp), califican para un reembolso de $300 dólares.

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.

**Los fondos para incentivos son limitados. Llame al 844-882-5746 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.

OG&E
We Energize Life

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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.



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).

Pool Pumps

ENERGY STAR certified multi-speed (≥ 1 hp) and variable-speed (≥ 0.5 hp) pool pumps qualify for a $300 rebate.

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.

For more ways OG&E can help you manage your energy costs, visit oge.com/heep or contact us at 844-882-5746.

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We Energize Life

TUNE UP YOUR SUMMER



Save up to

$200

on an OG&E A/C Advanced Tune-up.

Enroll now at **oge.com/heep** or contact us to get started.

844-882-5746
ogehvac@clearesult.com

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? We'll cover the cost up to **$200**.*

BENEFITS:

- Tune-up cost covered up to $200 (additional charges may apply)
- Reduced cooling costs
- Improved comfort and humidity control
- Longer-lasting, better-working equipment

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 if needed.
- Test your A/C to measure its cooling output.
- Add up to one pound of compatible refrigerant as 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**.

Additional charges may apply. Your home A/C unit must be in working order to qualify.
***You may purchase more if needed. Older refrigerant types may not be compatible.*

OG&E

We Energize Life

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We Energize Life

GET COMFORTABLE WITH THESE REBATES



Save up to

$3,000

on heating and cooling systems.

Visit **oge.com/heep** or contact us to get started.

844-882-5746
ogehvac@clearesult.com

Time to replace your old HVAC system? Upgrading to a new energy-efficient model is a smart way to reduce your energy costs—and may qualify for a hefty OG&E rebate.

AVAILABLE REBATES INCLUDE:

- **$500/ton** for 18+ SEER central A/C systems
- **$500/ton** for 18+ SEER heat pump systems
- **$750/ton** for geothermal systems

Limit two rebates per installation address, up to **$3,000** per system.

ELIGIBILITY

- Rebates are available to Oklahoma OG&E residential customers who own or rent a single-family, permanent-foundation home.
- The qualifying system must be installed by a participating contractor.
- Rebates are offered as an instant discount on the participating contractor's invoice.
- Funds are limited and available on a first-come, first-served basis.

GET STARTED.

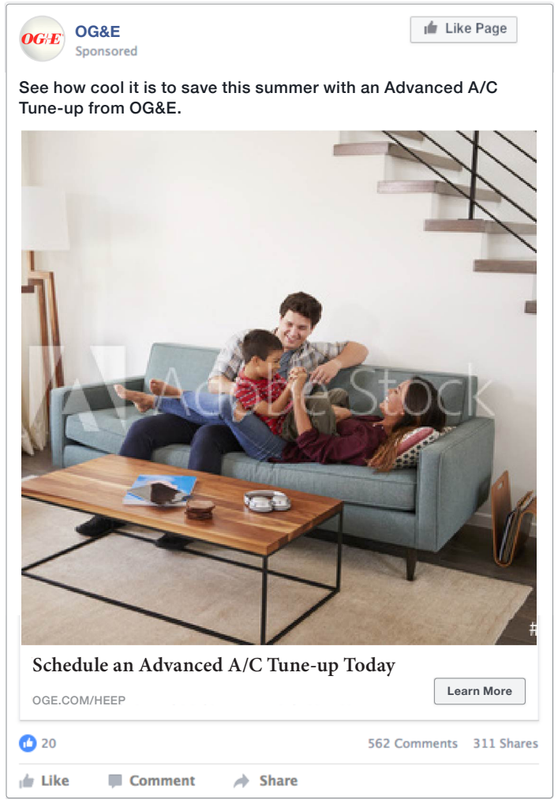
Find a participating contractor to find the right system for your home. For more information, visit oge.com/heep or reach out to us at **ogehvac@clearesult.com**.

OG&E

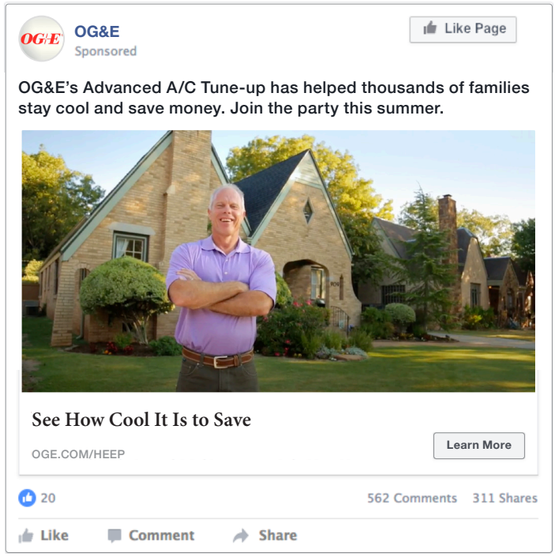
We Energize Life

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AD 1: SINGLE IMAGE



AD 2: VIDEO (EXISITING VERSION)

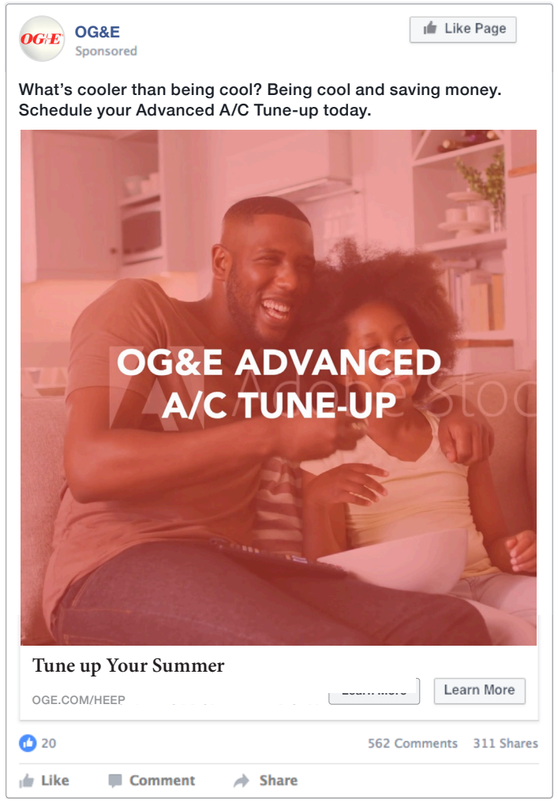


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AD 3: VIDEO (NEW VERSION)

OPTION A



STORIES VERSION



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CAROUSEL - STATIC IMAGES

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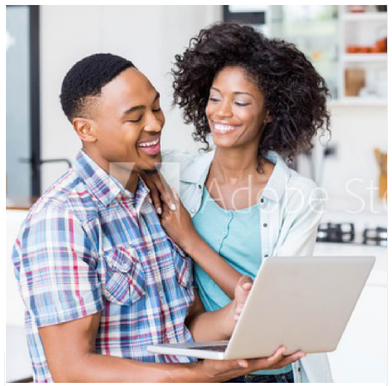
What makes our Advanced A/C Tune-up so advanced? Let us count the ways.



Lower Cooling Costs — Learn More



Improved Airflow and Humidity Control — Learn More



Extended Equipment Life — Learn More



Rebates for Qualifying Upgrades — Learn More



Costs Covered up to $200 — Learn More

20 10 Comments 250 Shares

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Can’t see the images? Click here to see what you’re missing.



BE COOL: WE’RE HERE TO HELP YOU SAVE.

As the temperature rises, so can your energy use. Luckily, OG&E has your back. Offered at no out-of-pocket cost to you, our safe and easy Home Energy Assessment provides energy-saving products and expert recommendations to help keep your costs low and comfort high all year.

Schedule yours between June 15 and August 1 and receive a **voice-activated smart plug** that lets you control your connected devices from anywhere.

Get started

Or call **844-882-5746**.

Whether you choose an in-person or virtual appointment, our Home Energy Assessment is **valued at $250** and includes:

- An expert walk-through analysis of your home’s energy efficiency
- Smart plug (when scheduled between June 15 and August 1)
- Up to 15 LED bulbs
- Up to two advanced power strips (if needed)
- A custom Home Energy Report with recommended improvements
- Access to professional support and generous rebates
- Enhanced safety measures, including protective masks, gloves and shoe covers (in-home appointments only)

Get started

You may also qualify for **up to $200** toward an Advanced A/C Tune-up. **Sign up today** or call us at **844-882-5746** to see how cool it is to save.

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www.oge.com

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We Energize Life



EFFICIENCY AND COMFORT, **TOGETHER AT LAST**

Our Home Energy Assessment is the first step to a more comfortable and energy-efficient home. Available as a virtual or in-person appointment at no out-of-pocket cost to you, the assessment provides up to $250 worth of energy-saving products, recommendations and resources.

Get started with our quick online Home Review or give us a call to schedule your assessment today.

Start Home Review

Or call **844-882-5746**.

Here's how it works:

1. Complete an online Home Review or call **844-882-5746** to get started.
2. Receive a comprehensive analysis of your home's energy use by a trained assessor.
3. Get up to 15 LED bulbs and advanced power strips (if needed).
4. Review your custom Home Energy Report outlining your recommended improvements.
5. Take advantage of generous rebates and track your progress through our HEETracker tool.

Get started

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www.oge.com

OG&E

We Energize Life

<Full name>
<Street address>
<City, state, ZIP>

Dear <First name>,

When your property is your business, a few smart improvements can do wonders for your bottom line. Even more so when there's no additional cost.

OG&E offers a variety of energy efficiency upgrades designed exclusively for multi-family properties like yours with no out of pocket cost. Together, the upgrades can dramatically lower energy costs, improve comfort and reduce resident turnover—all while adding long-term value to your property.

Available property improvements:



Direct install. Get energy-saving products like LEDs, advanced power strips and more professionally installed in every unit.



Duct sealing. Leaky ducts waste energy and cause extra wear and tear on your HVAC system. Let us seal them up at no additional cost to you.

Take a look at the enclosed flyer for more details. When you're ready to get started, give us a call at **844-882-5746**.

Sincerely,
<signature>

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SEAL UP YOUR BOTTOM LINE.

No out-of-pocket-cost duct sealing for multi-family properties.

In a multi-family building, leaky air ducts can lead to overworked HVAC systems and uncomfortable, unhappy residents. Give us a call today and we'll identify, seal and repair every leaky duct in your building at no additional cost to you.

SEAL THE DEAL.
Call **844-882-5746** to get started.

OG&E®
We Energize Life

OG&E®

We Energize Life

NO LEAKS.
NO ADDED COST.

Introducing OG&E's Multi-family Duct Sealing Program

Leaky ducts leak money. Sign up for OG&E's 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.

Who qualifies?

- Oklahoma OG&E residential Multi-Family apartment complexes
- Utility bill must be paid by tenant and account must be in tenant's name
- "All Bills Paid Complexes" do not qualify

How it works

1. A Participating Trade Ally 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 2,500 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.



Multi-family

Duct Sealing Program

SEAL THE DEAL.
To get started, contact our program representative at **ogehvac@clearesult.com**.

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SIN FUGAS.
SIN COSTO ADICIONAL.

Presentando el Programa OG&E Multifamiliar de Sellado de Ductos

Los conductos con fugas crean fugas con su dinero. Inscríbase en el programa OG&E multifamiliar de sellado de ductos, e identificaremos, sellaremos y repararemos cada ducto con fugas en su edificio. Todo sin costo para usted o sus inquilinos.

En un edificio multifamiliar típico, los ductos de calefacción y enfriamiento pierden más de 40 por ciento del aire que pasa a través de ellos. El sellado correcto de ductos puede no tan solo reducir dramáticamente los costos de calefacción y enfriamiento para sus inquilinos, sino que también puede aumentar la comodidad en general, reducir el desgaste de su sistema HVAC y disminuir sus costos de mantenimiento a largo plazo.

¿Quién califica?

- Complejos residenciales de apartamentos multifamiliares de Oklahoma OG&E
- La factura de energía debe ser pagada por el inquilino y la cuenta debe estar a nombre del inquilino
- Complejos donde todas las facturas son pagadas no son elegibles

Cómo funciona

1. Un contratista aliado participante (Trade Ally) prueba los ductos en cada apartamento para identificar y sellar fugas de aire.
2. Los ductos se vuelven a probar para verificar que todas las fugas han sido selladas correctamente.
3. A 45 minutos por apartamento, típicamente completamos de 10 a 15 apartamentos al día.

Con aproximadamente 2,500 apartamentos y contando, el equipo OG&E de expertos de sellado de ductos ya ha ayudado a miles de inquilinos a ahorrar energía y a vivir de manera más cómoda. Comuníquese con nosotros hoy y comience a ahorrar.

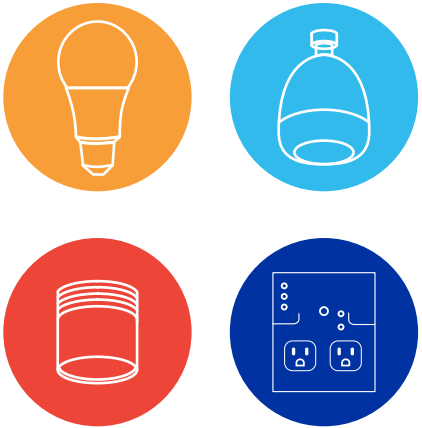


Programa Multifamiliar

de Sellado de Ductos

SELLE EL ACUERDO.
Para comenzar, contacte a nuestro representante del programa en **ogehvac@clearesult.com**.

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HAPPIER TENANTS AT NO ADDITIONAL COST.

No out-of-pocket costs on energy upgrades for multi-family properties.

A tenant who saves is a tenant who stays. Call today and we'll install the following energy-saving products in every unit of your building:

- ENERGY STAR® certified LEDs
- Advanced power strips
- High-efficiency showerheads
- Kitchen and bathroom faucet aerators

GET STARTED.
Call **844-882-5746** today.

OG&E®
We Energize Life

HEA + A/C TUNE-UP FACEBOOK ADS

AD 1 - VIDEO

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Saving energy is twice as cool when you get a Home Energy Assessment and Advanced A/C Tune-up.



Double up on summer savings.

OGE.COM/HEEP
Learn More

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AD 2 -IMAGE

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Our Home Energy Assessment and Advanced A/C Tune-up just might be this season's coolest energy-saving duo.



Double up on comfort and savings.

OGE.COM/HEEP
Learn More

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AD 3 - IMAGE

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Save all summer and beyond with a Home Energy Assessment. Book an in-home or virtual appointment for no out-of-pocket cost.



Lower your summer energy costs.

OGE.COM/HEEP
Learn More

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AD 4 - IMAGE

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Saving more costs nothing. Book an in-person or virtual Home Energy Assessment now for no out-of-pocket cost.



Energy saved is money earned.

OGE.COM/HEEP
Learn More

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CAROUSEL - STATIC IMAGES

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A cooler home costs nothing. Book a virtual Home Energy Assessment now for no out-of-pocket cost.



LEDs, advanced power strips and more — Learn More



Expert energy-saving recommendations — Learn More



Increased energy efficiency and comfort — Learn More



Virtual appointments available now — Learn More

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Build a more positive future.

Your perfect home shouldn't involve compromises. Choosing an OG&E 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.

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.

OGE.COM | 405.437.4295 | OR EMAIL
OGEPOSITIVEEERGYHOMES@CLEARESULT.COM

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THE POSITIVE ENERGY® HOME



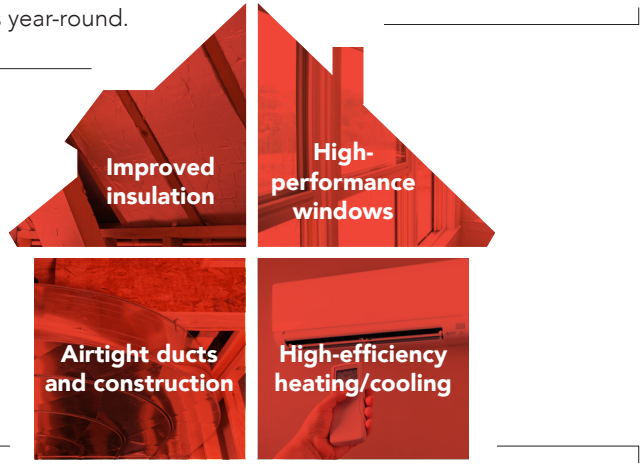
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We Energize Life

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:

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.

Improved insulation
Better insulation results in consistently comfortable temperatures and lower energy costs year-round.



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.

Make saving money as easy as coming 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 A/C 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 A/C.
3. **Geothermal system** — Reduce your carbon footprint by powering your home with an energy-efficient A/C 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.

IMPROVED INSULATION

OG&E POSITIVE ENERGY HOME

BEACON HOMES
live your style



Get a hold on your home's temperature.

Each OG&E Positive Energy® Home is built to exacting efficiency standards, which include high-quality insulation. Installing insulation in your walls and ceiling results in consistently comfortable temperatures and lower energy costs all year long.

POSITIVE ENERGY TOGETHER®

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File Name: 1016-OGEOK-RNC-572454-Positive Energy Homes Counter Signs (revised)-Beacon-R1			Additional Details:
Trim: 11x17	Finish Size: 11x17	Stock:	
Live: .5	Gutter: n/a	Finish:	
Bleed: .125	Color: 4C	AM/PM: Debbie O./Brandy L.	

HIGH-PERFORMANCE WINDOWS

POSITIVE ENERGY HOME

BEACON HOMES

live your style



Hi-tech savings with Low-E windows

The technologically advanced Low E windows block unwanted heat, by reflecting up to 80 percent of the sun's ultraviolet light. This provides some protection against fading furniture and carpet.

POSITIVE ENERGY TOGETHER®

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Bleed: .125	Color: 4C	AM/PM: Debbie O./Brandy L.	

AIRTIGHT DUCTS AND CONSTRUCTION

OG&E POSITIVE ENERGY HOME

BEACON HOMES
live your style



Seal in the savings.

Positive Energy Homes' tighter, leak-tested construction and mastic-sealed duct systems help save energy and keep you comfortable all year. Reduce drafts, dust, moisture, pests and allergens—and enjoy lower maintenance costs.

POSITIVE ENERGY TOGETHER®

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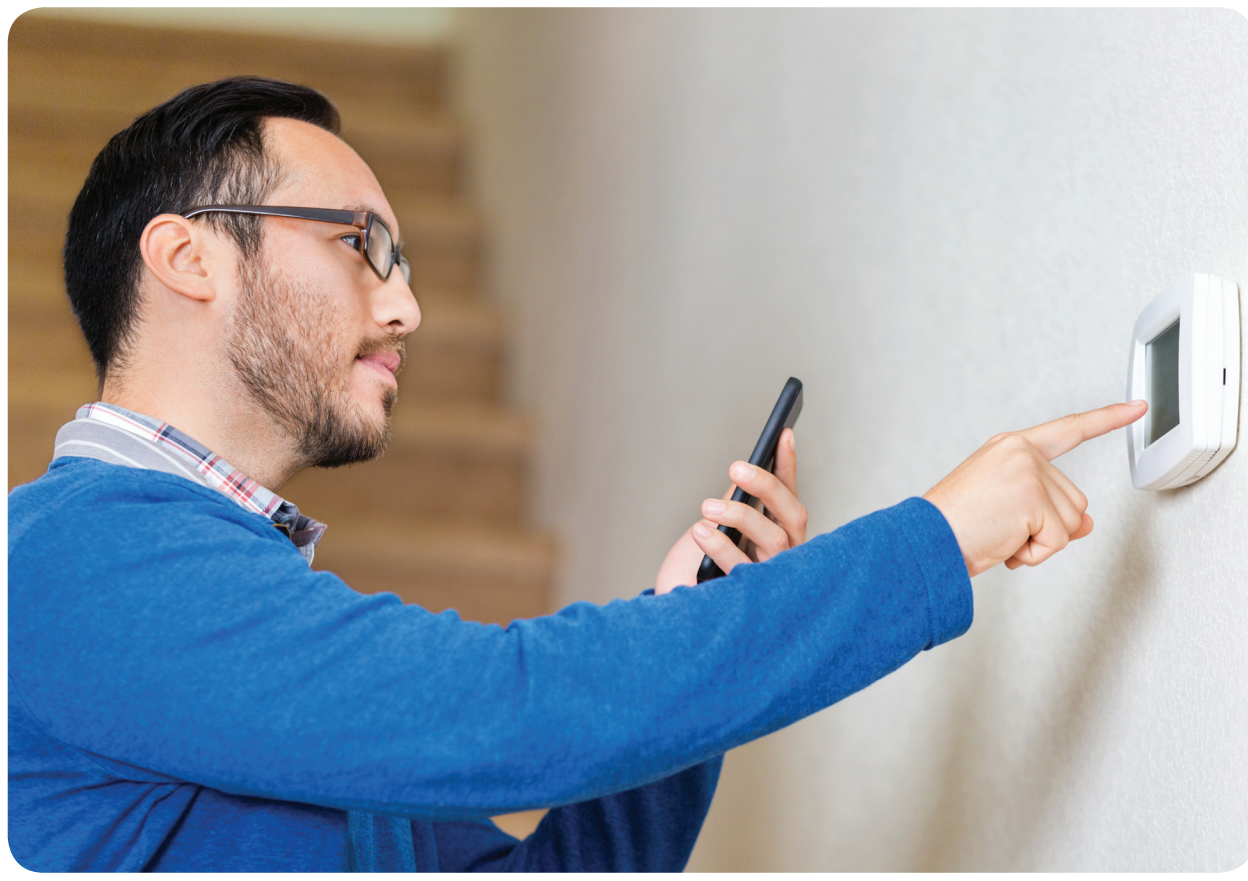
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Live: .5	Gutter: n/a	Finish:	
Bleed: .125	Color: 4C	AM/PM: Debbie O./Brandy L.	

HIGH-EFFICIENCY HEATING AND COOLING EQUIPMENT

OG&E POSITIVE ENERGY HOME

BEACON HOMES
live your style



Get comfortable with saving energy.

The way you choose to heat and cool your home can have a dramatic impact on your energy costs. That's why each Positive Energy Home comes equipped with expertly installed, high-efficiency heating and cooling systems designed to save you up to 50 percent on your monthly bill.

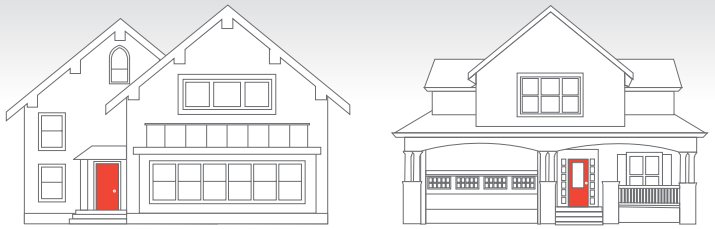
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Bleed: .125	Color: 4C	AM/PM: Debbie O./Brandy L.	

BUILT FOR EFFICIENCY. DESIGNED FOR LIFE.



The way your home is built can make a huge difference to your monthly energy bill. That's why OG&E's Positive Energy® Homes are built from the ground up to meet our high standards for quality, comfort and energy efficiency. See the difference for yourself during this spring's Parade of Homes.

To learn more or to find a Positive Energy Home builder in your area, please call **Kenyatta Releford** at **405-437-4295**

2021 COHBA PARADE OF HOMES SPRING FESTIVAL

APRIL 23–25 AND APRIL 30–MAY 2

NORTHWEST

South Fork at Surrey Hills
From NW Expressway, go south on Surrey Hills Blvd, then turn left onto Mustang Road. Community will be on the west side after Hefner Road.

Authentic Custom Homes
(405) 285-7464
10412 Glover River Drive

Emerald Pointe
From Sarah Road/164th, north 1/4 mile to Emerald Pointe, entrance on east side

Boevers Homes
(405) 413-7793
3739 Eastridge Circle NE

Crestone Ridge
Take the Kilpatrick Turnpike to the W. Wilshire exit. Turn east on Wilshire, go 1/4 mile to Cloverdale Way, turn north, go approx 150 yards to the stop sign. House is on the west side of the street.

Joe Roberts Construction Company
(405) 820-6851
8009 Cloverdale Way

SOUTHWEST

Rio Del Sol
Rio Del Sol is located at S. Rockwell and SW 119th. You will turn onto La Paz Blvd, and the home is located on the left side.

1st Oklahoma Homes
(405) 701-5557
7125 SW 120th

The Ridge
North of Highway 9, east on Highway 62

1st Oklahoma Homes
(405) 701-5557
3700 Dragon Fire Court

WEST

Mustang Park
Turn west on SW 44th Street from Mustang Road. Mustang Park is on the south side of SW 44th Street, approximately 1/4 mile west of Mustang Road.

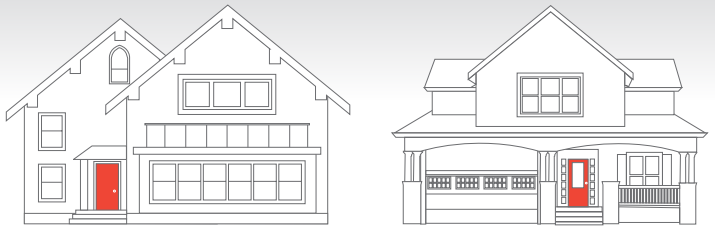
Urban Nest Homes
(405) 761-9670
4600 Mustang Park Blvd.

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2021 COHBA PARADE OF HOMES FALL CLASSIC
OCTOBER 15, 16 & 17 AND OCTOBER 22, 23 & 24

EDMOND

Fox Lair Estates
From Waterloo and Penn, go north on Penn. Turn west/left into Fox Lair Estates, then right on Fox Lair Lane.

Beacon Homes
(405) 259-5399
14584 Fox Lair Lane

NORMAN

Summit Lakes

1st Oklahoma Homes
(405) 701-5557
2501 Summit Crossing Parkway

NORTHWEST

Calm Springs
Located on the south side of Britton Road between Morgan Road and County Line Road, just east of the Kilpatrick Turnpike.

Authentic Custom Homes
(405) 285-7464
9312 Yassir Boulevard

The Grand
Enter through the south gates of The Grand on County Line, just south of Memorial Rd. Follow the road to the end of the cul du sac.

Bear Creek Homes
(405) 593-9938
13324 Mackinac Island Drive

WEST

Mustang Park
Turn west on SW 44th Street from Mustang Road. Mustang Park is on the south side of SW 44th Street, approximately 1/4 mile west of Mustang Road.

Urban Nest Homes
(405) 761-9670
4600 Mustang Park Boulevard

OG&E POSITIVE ENERGY HOME

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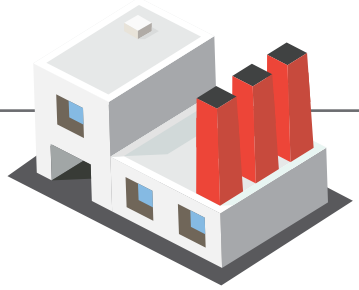
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ENERGY SAVINGS THAT WORK HARD FOR YOU

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 low or no-cost solutions.

To make reducing your energy costs even easier, we also offer significant incentives for each energy-efficiency upgrade installed. Incentives are available for the following measures:

- HVAC – DX Retrofit
- HVAC – DX New Construction
- Chiller Retrofit
- Chiller New Construction
- LED Lighting Retrofit
- Lighting New Construction
- Vending Misers
- Door Heater Controls
- ECM Evaporator Fan
- Electronic Defrost Controls
- Solid Door Reach-Ins
- Strip Curtains
- Night Covers
- Cooler Door Gaskets
- Lighting Controls
- Lodging Occupancy Controls
- Compressed Air
- Combined Custom Measures
- Retrocommissioning
- Variable Frequency Drives



MORE WAYS TO SAVE

A POSITIVE ENERGY FUTURE
BUSINESS SUCCESS
OG&E EFFICIENCY PARTNER

CONTACT US FOR MORE INFORMATION:

405-507-3013
ceepleads@oge.com

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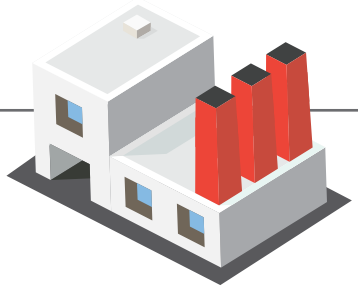
We Energize Life

AHORROS DE ENERGÍA QUE TRABAJAN PARA USTED

El Programa de Eficiencia Energética Comercial de OG&E ofrece incentivos económicos al implementar medidas de eficiencia energética en grandes establecimientos comerciales como el suyo. Le proporcionaremos una evaluación energética fácil y gratuita para ayudarle a identificar y calificar financieramente para obtener proyectos potenciales de ahorro de energía que incluso podrían incluir soluciones de bajo costo o sin costo alguno.

Para lograr que la reducción de sus costos de energía sea aún más fácil, también ofrecemos grandes incentivos por cada mejora de eficiencia energética instalada. Contamos con incentivos disponibles para las siguientes medidas:

- Actualización al HVAC – DX
- Nueva Construcción del HVAC – DXChiller Retrofit
- Actualización al Sistema de Enfriamiento (Chiller)
- Nueva Construcción del Sistema de Enfriamiento (Chiller)
- Actualización a la Iluminación LED
- Nueva Construcción de Iluminación
- Vending Misers
- Controles de Calefacción de Puertas
- Ventilador para Evaporador ECM
- Controles Electrónicos para Descongelamiento
- Cortinas de Tiras Flexibles
- Cubiertas Nocturnas
- Juntas Aislantes para Puertas de Congelador
- Controles de Iluminación
- Controles con Sensor de Movimiento
- Aire Comprimido
- Medidas Personalizadas Combinadas
- Retrocomisión
- Accionamientos de Frecuencia Variable



MÁS FORMAS DE AHORRAR

UN FUTURO DE ENERGÍA POSITIVA
NEGOCIO EXITOSO
COLABORADOR DE EFICIENCIA OG&E

CONTÁCTENOS PARA MÁS INFORMACIÓN:

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ceepleads@oge.com

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We Energize Life

COMMERCIAL ENERGY EFFICIENCY PROGRAM

ALL THE EFFICIENCY THAT'S FIT TO PRINT

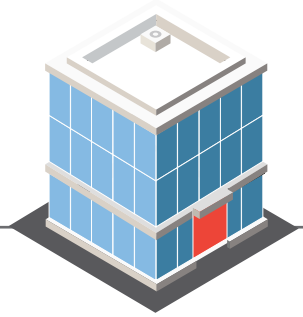
Globe Marketing Services (GMS), a manufacturing subsidiary of the insurance provider Globe Life, provides state-of-the-art, in-house printing services for a variety of marketing and administrative functions. Each year, their 136,000 square-foot printing facility in Oklahoma City produces over 550 million envelopes—using enough paper to circle the Earth 28 times. To keep up with the high demand, the facility operates around the clock.

Around the clock savings

The 24/7 operation put a toll on the facility's energy and maintenance budget, with around 60 fluorescent and HID lighting fixtures needing replacement every day. GMS partnered with the OG&E Commercial and Industrial Solutions Program to explore solutions for reducing their operations costs. Following OG&E's recommendations, GMS replaced more than 950 of the outdated lighting fixtures with nearly 850 energy-efficient LED fixtures. In some cases, 2x4 fixtures were replaced with 2x2 LED fixtures that maintained or even improved the lumen output.

A day and night difference

OG&E provided $44,211 in incentives to help cover the cost of the upgrades. The new lighting uses a fraction of the energy as the older fixtures, saving GMS around $40,000 a year in energy costs alone. LEDs also last far longer, drastically reducing the facility's replacement and maintenance costs. What's more, the improved lighting quality has led to a safer, more comfortable and productive workplace.



SAVINGS AT A GLANCE

495,682 kWh

ESTIMATED ANNUAL ENERGY SAVINGS

$40,000

ESTIMATED ANNUAL COST SAVINGS

$44,211

INCENTIVES PROVIDED BY OG&E

A POSITIVE ENERGY FUTURE

BUSINESS SUCCESS

OG&E EFFICIENCY PARTNER

CONTACT US FOR MORE INFORMATION

ceepleads@oge.com

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We Energize Life

SAVING ENERGY HAS NEVER BEEN COOLER.

Want to know something cool? A state-of-the-art OG&E A/C Advanced 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, see chart below. (Additional charges may apply).

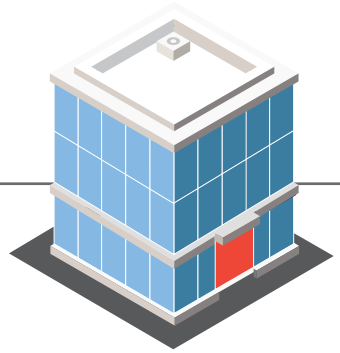
During your tune-up, a participating contractor will:

- 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 schedule your OG&E A/C Advanced Tune-up today. To learn more, visit **oge.com/business**.

Incentives Available

Commercial Customers	
1–5 Tons	$175/unit
6–25 Tons	$250/unit
26–80 Tons	$400/unit



Save up to

$400

on an OG&E A/C Advanced Tune-up.

A POSITIVE ENERGY FUTURE
BUSINESS SUCCESS
OG&E EFFICIENCY PARTNER

CONTACT US FOR MORE INFORMATION:

844-882-5746
ogehvac@clearesult.com

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TEACH YOUR OLDER BUILDING NEW TRICKS.

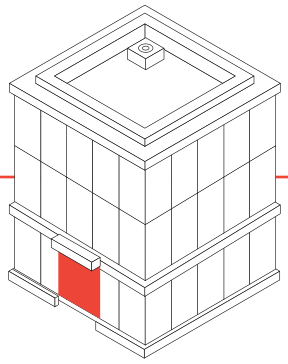
Just like a car, the typical small-to-midsize building requires regular maintenance to avoid costly repairs and ensure it's operating as efficiently as possible. This service is a Building Tune-up, also known as Retrocommissioning Lite (RCx Lite). OG&E's new Building Tune-up service determines the most effective energy-saving improvements to your facility—and covers up to 70 percent of the recommended project costs.

How it works

1. A participating contractor works with you to determine if your building could benefit from a tune-up.
2. At no out-of-pocket cost, the contractor performs an on-site survey of your facility (a $2,500–$5,000 value) to identify potential energy-efficient improvements.
3. You can then work with your contractor to complete those improvements, which will determine your bill savings and incentives.
4. OG&E incentives ($0.11 per kWh saved) cover up to 70 percent of your project cost.

What is a Building Tune-up?

Our **Building Tune-up** service looks at your building as a whole system to optimize its energy use. Typical projects include heating and cooling, ventilation, economizers, actuators and thermostat scheduling setbacks.



READY
FOR YOUR TUNE-UP?

Call **405-507-3013**
to learn more, or visit
oge.com/ceep
for details.

A POSITIVE ENERGY FUTURE
BUSINESS SUCCESS
OG&E EFFICIENCY PARTNER

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OG&E
We Energize Life

SCHOOLS AND GOVERNMENT EFFICIENCY PROGRAM

WELCOME TO EFFICIENCY TOWN.

Durant, Oklahoma was determined to improve the energy efficiency and sustainability of its buildings. City officials sought the assistance of OG&E's Schools and Government Efficiency Program, where they were able to take advantage of thousands of dollars in incentives for a citywide high-efficiency lighting upgrade project.

Seeing energy efficiency in a new light

From police departments to fire stations, airports to animal shelters, and everything in between, Durant upgraded the lighting fixtures and bulbs on a wide variety of its city-owned buildings. Facilities received high-efficiency LEDs that use up to 70 percent less energy than less efficient alternatives, offering a major positive impact on the city's annual energy costs. Additionally, Durant has become a more environmentally friendly, comfortable and safe city for residents and workers alike.

Brighter days ahead

The lighting upgrades received cut Durant's annual energy use by an estimated 555,927 kWh, saving the city over $58,963 in energy costs every year. Thanks to $77,829.78 in incentives from OG&E, the entire project is estimated to pay for itself in 4.4 years with a projected 10-year savings of over $680,000.

These improvements are a wonderful use of city funding, and we look forward to enjoying a more efficient, sustainable community in Durant and beyond.



SAVINGS AT A GLANCE

555,927 kWh
ESTIMATED ANNUAL ENERGY SAVINGS

$58,963
ESTIMATED ANNUAL COST SAVINGS

$77,829.78
INCENTIVES PROVIDED BY OG&E

$680,214
PROJECTED 10-YEAR SAVINGS

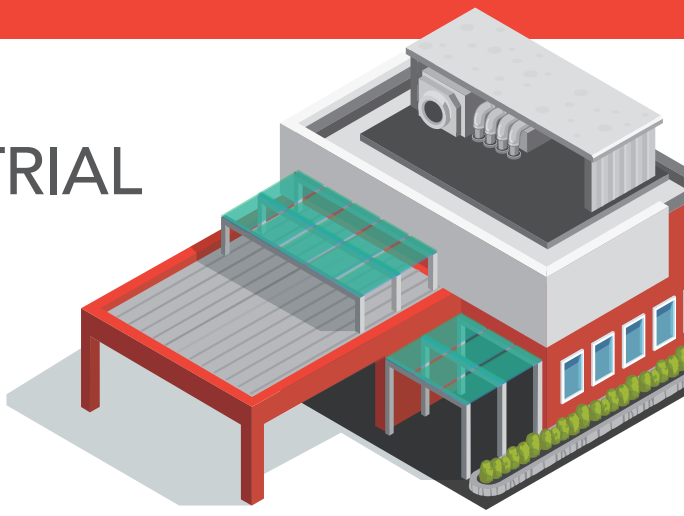
A POSITIVE ENERGY FUTURE
BUSINESS SUCCESS
OG&E EFFICIENCY PARTNER

CONTACT US FOR MORE INFORMATION

JO SHERRILL
405-437-4289
sage@clearesult.com

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COMMERCIAL AND INDUSTRIAL EFFICIENCY PROGRAM



ENERGY-SAVING SOLUTIONS TO HELP **YOU AND YOUR COMMUNITY THRIVE.**

Communities that save together tend to grow together.
That's why our Commercial and Industrial Energy Efficiency Program offers an array of energy-saving solutions to the businesses, schools and other organizations that form the backbone of the communities we serve.

From direct installations to financial incentives for large custom projects, we'll help you save money, time and headaches every step of the way.

Energy-saving opportunities include:

Expert recommendations

Our friendly energy experts will help you identify the best path forward with custom recommendations and estimates for energy savings, project costs and payback periods.

Lighting

Whether you run a small business or a high-end resort, upgrading to LEDs is always a smart move. Let us help you make the switch.

Heating and cooling

Take advantage of OG&E incentives to improve comfort and lower operating costs with a high-efficiency upgrade or tune-up.

Schools and government

We offer a variety of services, rebates and educational opportunities specifically tailored to publicly funded school and government facilities—often at no additional cost.

WHAT CAN WE DO FOR YOU?

Discover more ways to save at **oge.com/ceep**, or reach out to our team at **sage@clearesult.com** to get started today.

We Energize Life

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SAVINGS FOR ALL OUR OKLAHOMA NEIGHBORS

At OG&E, our goal is to help the communities we serve save energy wherever and however we can. From small business rebates to large-scale retrofits, we work closely with our tribal community partners to find energy-saving opportunities for all our neighbors across Oklahoma.

TRIBAL COMMUNITY PROJECTS INCLUDE:

- A parking lot LED retrofit that improved lighting coverage and safety while reducing energy and maintenance costs by over $40,000 a year
- LED upgrades that lowered energy and maintenance costs in several tribal facilities
- High-efficiency HVAC equipment that lowered heating and cooling costs and improved year-round comfort
- Improving access to energy-saving opportunities, rebates and experts for tribal communities throughout Oklahoma

LET'S PARTNER UP.

Contact our team at **sage@clearesult.com** to get started.
For more ways to save, visit **oge.com/ceep**.

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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:

- $0.15/peak kWh reduced on all eligible measures but door gaskets
- $0.12/peak kWh reduced on refrigerator door gaskets

Eligible projects

Incentives are available for a wide variety of energy efficiency projects, including:

- LED lighting upgrades* (tube lights, bulbs, fixtures)
- Occupancy sensor installations
- LED exit sign retrofits
- Refrigerator door gaskets
- Refrigerator anti-sweat heater controls
- And more!

**LED retrofits must be either DesignLights Consortium™ approved or ENERGY STAR® certified to receive incentives.*

OG&E®

We Energize Life

Take control of your energy use—and your bottom line.

A POSITIVE ENERGY FUTURE
BUSINESS SUCCESS
OG&E EFFICIENCY PARTNER

To get started, contact a program representative by email at

oge.ok.sbdi@clearesult.com

OR CALL

405-437-4350

Products and services are provided solely by approved participating Service Providers. OG&E does not sell goods or services in its energy efficiency programs.

Big savings for your small business

OG&E offers energy-efficient solutions for small business customers.



SMALL BUSINESS EFFICIENCY PROGRAM

OKLAHOMA

OG&E®

We Energize Life

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 150 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.

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Example project by the numbers

20,671 kWh
total energy savings

2.96 kW
total peak demand savings

$3,101
estimated incentives

$1,611
net cost to customer

$4,712
estimated project cost

9.35 months
project payback

$2,067
estimated annual savings



Incentivos disponibles

¿Está planeando un proyecto de eficiencia energética? Inscríbase en el programa. Nuestro Programa de Eficiencia para Pequeños Negocios ofrece incentivos que pueden cubrir hasta el 90% del costo de un proyecto.

Tarifas de los incentivos:

- $0.15/kWh-pico reducidos en todas las medidas elegibles excepto en las juntas aislantes para puertas
- $0.12/kWh-pico reducidos en las juntas aislantes para puertas de refrigerador

Proyectos elegibles

Los incentivos están disponibles para una amplia variedad de proyectos de eficiencia energética, incluyendo:

- Mejoras en la iluminación LED* (tubos de luz, focos, instalaciones)
- Instalaciones de sensores de ocupación
- Modificaciones a las señales de salida LED
- Juntas aislantes para puertas de refrigerador
- Controles del calentador anti-condensación del refrigerador
- ¡Y mucho más!

**Para recibir los incentivos, las modificaciones LED deberán ser aprobadas por DesignLights Consortium™ o tener la certificación ENERGY STAR®.*

OG&E

Energía para la Vida

Controle su consumo de energía y sus finanzas.

UN FUTURO DE ENERGÍA POSITIVA
NEGOCIO EXITOSO
COLABORADOR DE EFICIENCIA OG&E

Para comenzar, comuníquese con un representante del programa por correo electrónico a

oge.ok.sbdi@clearesult.com

O LLAME AL

405-437-4350

Los productos y servicios son proporcionados únicamente por los Proveedores de Servicios participantes aprobados. OG&E no vende bienes ni servicios en sus programas de eficiencia energética.

Grandes ahorros para su pequeño negocio

OG&E ofrece soluciones de eficiencia energética para clientes de pequeños negocios.



PROGRAMA DE EFICIENCIA PARA PEQUEÑOS NEGOCIOS

OG&E
Energía para la Vida

Beneficios del programa

Le proporcionaremos todo lo que necesita para ayudar a su negocio a lograr ahorros energéticos a largo plazo, incluyendo:

- Una evaluación de la iluminación sin costo alguno y sin compromiso para identificar las oportunidades de ahorro energético
- Recomendaciones y estimaciones para ahorros energéticos, costos del proyecto y periodos de reembolso
- Instalación de equipos de ahorro energético aprobados por un contratista local precalificado
- Incentivos pagados directamente al contratista por el programa para reducir su costo inicial

Gracias a programas como éste, OG&E puede mantener sus tarifas entre las más bajas del país.

Elegibilidad

El programa está abierto a cualquier pequeño cliente comercial que cuente con un medidor de cuenta de OG&E válido y con una demanda máxima de no más de 150 kW en cualquiera de sus instalaciones.

Comience hoy mismo

1. Visite oge.com/business para seleccionar un contratista participante.
2. Comuníquese con el contratista que haya seleccionado y proporcione su número de cuenta de cliente para verificar su elegibilidad.
3. El contratista participante le proporcionará una evaluación sin costo de sus instalaciones.
4. Revise su propuesta de ahorro energético y firme la propuesta del cliente para aprobar las medidas recomendadas.
5. El contratista participante instalará las medidas aprobadas en un plazo de 60 días a partir de la recepción del acuerdo firmado.

Escenario típico de un proyecto

Para darle una idea de los ahorros potenciales disponibles a través del programa, a continuación se muestra un ejemplo de algunas de las modificaciones comúnmente propuestas. Los ahorros y costos previstos para estas modificaciones se encuentran a la derecha.



ILUMINACIÓN INTERIOR EXISTENTE:

32 instalaciones de 4 lámparas fluorescentes de 4 pies
16 focos incandescentes de 60W
2 señales de salida

MODIFICACIONES A LA ILUMINACIÓN INTERIOR:

32 instalaciones LED de 4 pies y 36W
16 LEDs de 10W
2 señales de salida LED

Los incentivos, los ahorros y los periodos de reembolso varían dependiendo del equipo instalado, las características del edificio, los patrones de uso de energía, la antigüedad del equipo existente, la ubicación y otros parámetros específicos del proyecto.

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Energía para la Vida

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Ejemplo de proyecto en números

20,671 kWh
ahorros totales de energía

2.96 kW
ahorros totales de la demanda máxima/pico

$3,101
incentivos estimados

$1,611
costo neto para el cliente

$4,712
costo estimado del proyecto

9.35 meses
reembolso del proyecto

$2,067
ahorros anuales estimados

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 inch T5 HO Fluorescent lamps)*	$5

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: 405-507-3013

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BUSINESS SUCCESS
OG&E EFFICIENCY PARTNER

*Funds are limited and available on a first-come, first-served basis.
**Specific Lamps, Fixtures, or Sensors must be validated by the PPC website.
(All products aside from sensors must also be either DLC or Energy Star approved)

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SAVING ENERGY PAYS OFF.

Save on energy costs and reap the rewards. Find rebates, resources and energy-saving opportunities for your business at **oge.com/business**.

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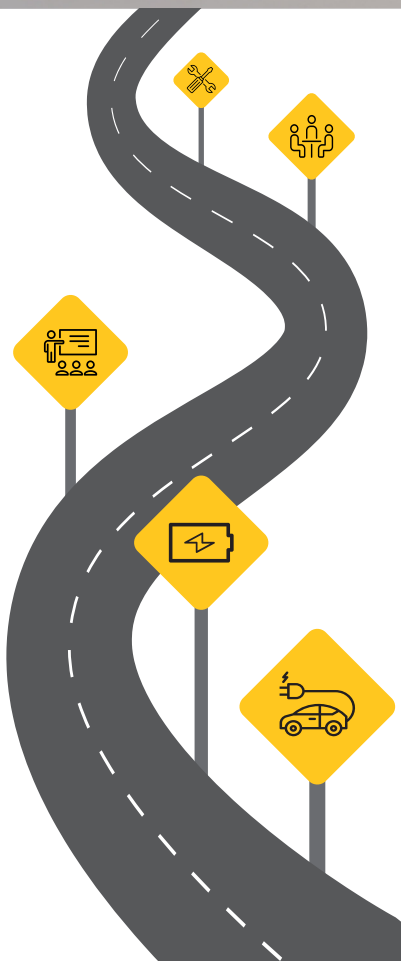
FLEET ELECTRIFICATON PROGRAM

THE ROAD TO THE FUTURE **STARTS HERE.**

OG&E

We Energize Life





CONNECT TO A BRIGHTER, MORE ENERGY-EFFICIENT FUTURE.

For fleet managers, electric vehicles will be a key component of the future. OG&E's Fleet Electrification Program can make the journey easier with one-on-one mentoring, training workshops and expert guidance to help you explore EV options.

Lowering your fuel spend and carbon emissions is now easier than ever with battery electric vehicles (BEV) and plug-in hybrid electric vehicles (PHEV). As fuel costs continue to rise—and EV prices continue to fall—now is a great time to get started on the path toward a more reliable, cleaner fleet.

Our program will:

- Help identify the best EVs for your operations.
- Provide tools and guidance that will help you develop a Fleet Electrification Roadmap.
- Identify funding opportunities and more!

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YOUR FLEET ELECTRIFICATION TOOLBOX

Are you interested in converting some of your fleet vehicles to electric powered but don't know where to start? Our training includes all the following with no out-of-pocket costs required:

- An expert onsite analysis of your facility to determine the best charging infrastructure options
- Technical presentations by vehicle OEMs
- Analysis of current data collection and cost structure
- Total cost of ownership analysis with recommended EV phase-in plan
- Access to additional services, such as grant application assistance and information sessions with drivers



FLEET ELECTRIFICATION MANAGEMENT OVERVIEW

WORKSHOPS

- Cohorts with multiple participants
- Six interactive sessions
- Critical content and information from expert speakers
- Shared experience

TOOLS

- Total cost of ownership and emission calculators
- Charging infrastructure assessments
- Planning templates
- Investment analysis

SUPPORT

- Experienced facilitators with fleet electrification expertise
- One-on-one coaching between workshops
- Access to expert analysis and engineers

Get started.

Reach out to your OG&E representative to start the enrollment process. For more details, contact the program support team at **ev.fleet@clearesult.com**.



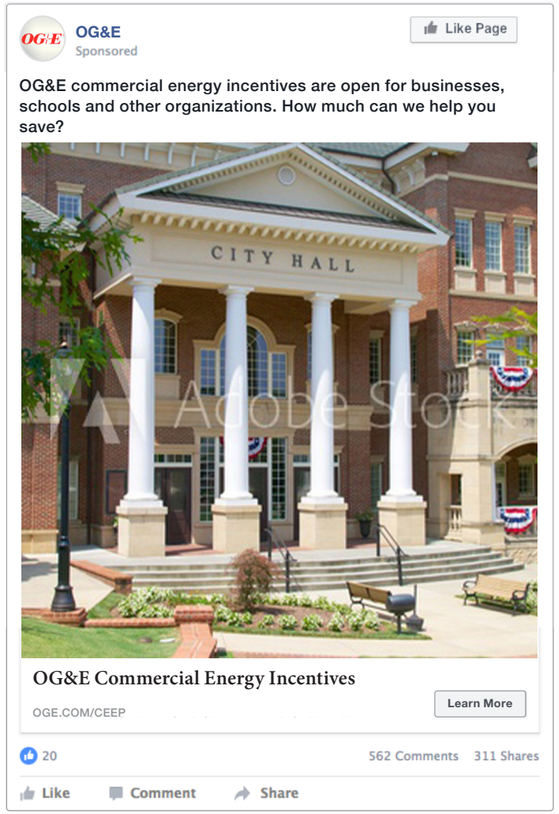
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GENERAL ADS - OPTION 1

IMAGE OPTION 1



LINKEDIN IMAGES



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GENERAL ADS - OPTION 2

IMAGE OPTION 1



LINKEDIN IMAGES



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GENERAL ADS - OPTION 3

IMAGE OPTION 1



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GENERAL ADS - OPTION 4

IMAGE OPTION 1



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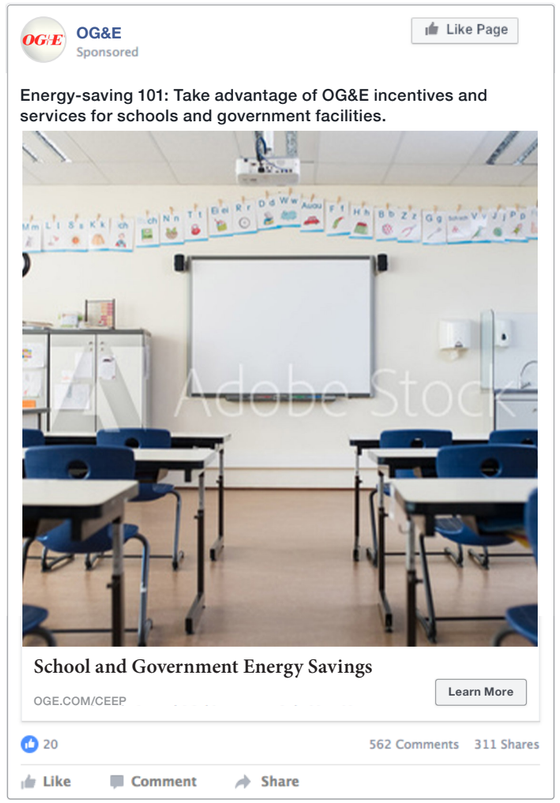


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SCHOOLS AND GOVERNMENT

IMAGE OPTION 1



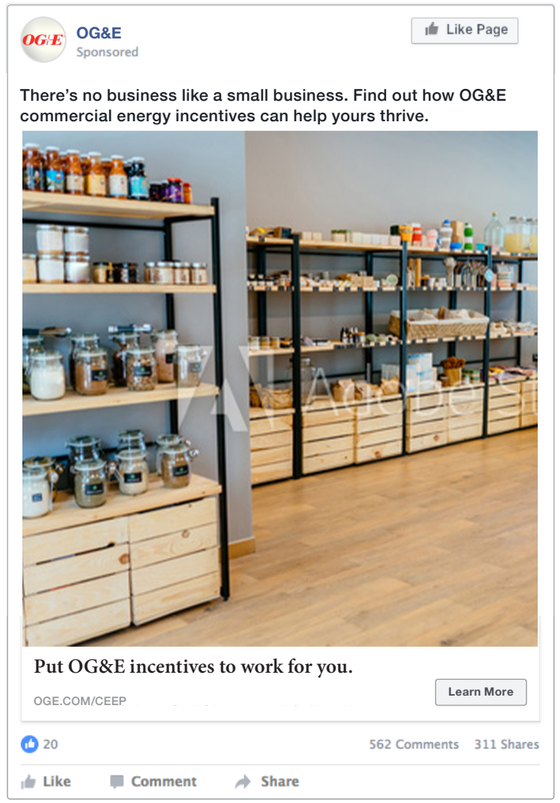
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SMALL BUSINESS

IMAGE OPTION 1



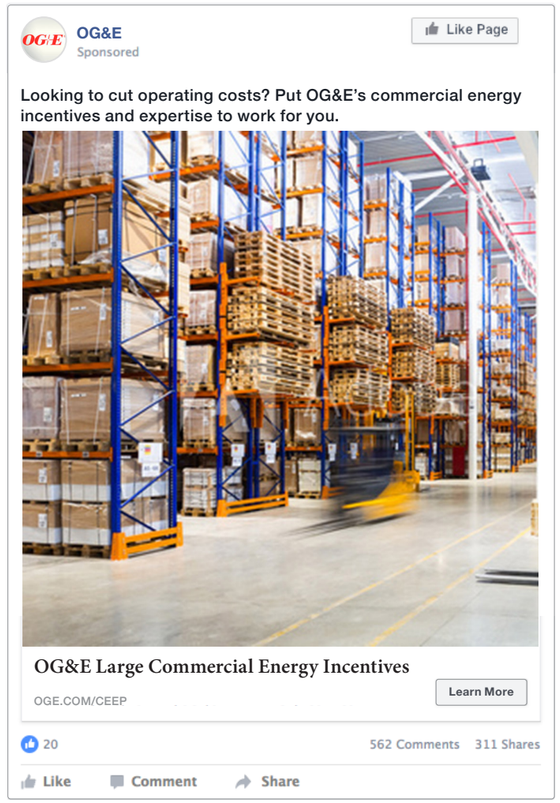
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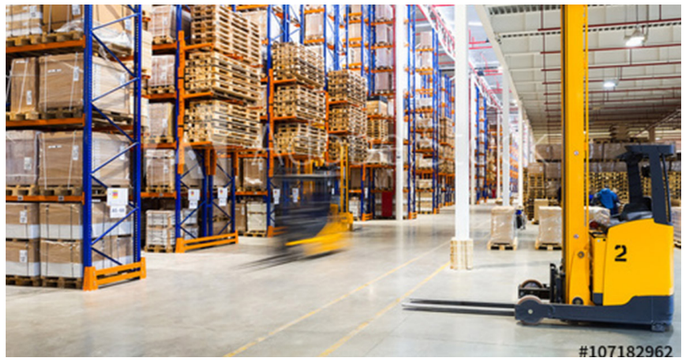
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LARGE COMMERCIAL

IMAGE OPTION 1



LINKEDIN IMAGES



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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*
- *Flow Rate Test Bag*
- *Parent/Guardian Program Evaluation*
- *Quick Start Guide*
- *Installation Instruction Booklet*
- *Spanish-Translated Materials*



*Actual kit items may vary.

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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, 2022

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)

Soonest Available Sept Oct Nov # 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, 2022.

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, 2022.

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

OGE®

We Energize Life

2693 103-0009-03-00

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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, 2022

- 80% of Student Survey forms
- This Survey form
- Student thank-you notes
- A letter from you



By submitting this survey I hereby waive any fee or other compensation from AM Conservation Group for the use of said quotation in any republication, reprint, transcription, electronic medium, or recording of the article containing said quotations.
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OG&E

We Energize Life

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.

2693 103-0009-03-00

DON'T LET TIME RUN OUT





Simply return 80% of your completed surveys by February 1, 2022, 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, 2022. 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.

2693 103-0009-03-00

PADRES

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¡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

2693 103-0009-03-00

¿QUESTIONS? • 1-888-GET-WISE • www.getwise.org

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!



ESTUDIANTES

FORMULARIO DE COMPROMISO

Nombre:	Fecha:
Escuela:	Docente:

Comprometerse 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 atraviesa 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.

ASUMIR EL COMPROMISO

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.

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.
2. _____
3. _____

FIRMAR EL COMPROMISO

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.

_____ _____

Firma del Estudiante *Firma del Padre*

Estos kits son posibles gracias a: OG&E We Energize Life

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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.
2. _____
3. _____

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: OG&E We Energize Life

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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

2693 103-0009-03-00

OKLAHOMA ACADEMIC STANDARDS*
GRADE 5

LANGUAGE ARTS	
1: SPEAKING AND LISTENING - STUDENTS WILL SPEAK AND LISTEN IN A VARIETY OF SITUATIONS INCLUDING READING/WRITING.	
Reading-Students will develop and apply effective communication skills through speaking and active listening.	
5.1.R.2	Students will ask and answer questions to seek help, get information, or clarify about information presented orally through text or other media to confirm understanding.
5.1.R.3	Students will engage in collaborative discussions about appropriate topics and texts, expressing their own ideas clearly while building on the ideas of others in pairs, diverse groups, and whole class settings.
2: READING AND WRITING PROCESS - STUDENTS WILL USE A VARIETY OF RECURSIVE READING AND WRITING PROCESSES.	
Reading-Students will read and comprehend increasingly complex literary and informational texts.	
5.2.R.2	Students will compare and contrast details in literary and nonfiction/informational texts to distinguish genres.
5.2.R.3	Students will begin to paraphrase main ideas with supporting details in a text.
3: CRITICAL READING AND WRITING - STUDENTS WILL APPLY CRITICAL THINKING SKILLS TO READING AND WRITING.	
Reading-Students will comprehend, interpret, evaluate, and respond to a variety of complex texts of all literary and informational genres from a variety of historical, cultural, ethnic, and global perspectives.	
5.3.R.1	Students will determine an author's stated or implied purpose and draw conclusions to evaluate how well the author's purpose was achieved.
5.3.R.2	Students will determine the point of view and describe how it affects grade-level literary and/or informational text.
5.3.R.5	Students will distinguish fact from opinion in non-fiction text and investigate facts.
5.3.R.6	Students will distinguish the structures of texts and content by making inferences about texts and use textual evidence to support understanding.
5.3.R.7	Students will compare and contrast texts and ideas within and between texts.
Writing-Students will write for varied purposes and audiences in all modes.	
5.3.W.3	Students will clearly state an opinion supported with facts and details.

**State Academic Standards derived from multiple, independent sources exhibit the most current information available to date.*

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OKLAHOMA ACADEMIC STANDARDS*
GRADE 5

LANGUAGE ARTS	
4: VOCABULARY - STUDENTS WILL EXPAND THEIR WORKING VOCABULARIES TO EFFECTIVELY COMMUNICATE AND UNDERSTAND TEXTS.	
Reading-Students will expand academic, grade-level vocabularies through reading, word study, and discussion.	
5.4.R.1	Students will increase knowledge of academic, domain-appropriate, grade-level vocabulary to infer meaning of grade-level text.
5.4.R.2	Students will use word parts (e.g., affixes, Greek and Latin roots, stems) to define new words and determine the meaning of new words.
5.4.R.3	Students will use context clues to determine or clarify the meaning of words or distinguish among multiple-meaning words.
5.4.R.5	Students will use a dictionary, glossary, or a thesaurus to determine or clarify the meanings, syllabication, pronunciation, synonyms, and parts of speech of words.
Writing-Students will apply knowledge of vocabularies to communicate by using descriptive, academic, and domain-appropriate abstract and concrete words in their writing.	
5.4.W.1	Students will use domain-appropriate vocabulary to communicate ideas in writing.
5.4.W.2	Students will select appropriate language to create a specific effect according to purpose in writing.
6: RESEARCH-STUDENTS WILL ENGAGE IN INQUIRY TO ACQUIRE, REFINE, AND SHARE KNOWLEDGE.	
Reading-Students will comprehend, evaluate, and synthesize resources to acquire and refine knowledge.	
5.6.R.1	Students will use their own research questions to find information about a specific topic.
5.6.R.3	Students will determine the relevance and reliability of the information gathered.
Writing-Students will summarize and paraphrase, integrate evidence, and cite sources to create reports, projects, papers, texts, and presentations for multiple purposes.	
5.6.W.4	Students will summarize and present information in a report.

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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.

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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.
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.
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.*

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NEED
Putting Energy into Education

OG&E

2021 Oklahoma NEED Virtual Energy Conference

October 23, November 6 & 13, 2021
8:00 a.m. – 12:00 p.m.

Let us help you bring energy efficiency to 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 virtual conference for STEM educators interested in expanding their energy efficiency curriculum. Don't miss out. Space is limited! Must apply by October 13. Accepted applicants will be notified by October 15.

Reasons to tune in:

- Free to STEM 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
- Prize drawings
- Continuing education credits available
- One university graduate credit available for $55 from the University of Wyoming

**Must attend all three classes to be eligible for NEED classroom kits.*

To register contact:

Patrick Curry at **patrickcurry@clearesult.com** or by phone **405-410-1336**
Madison Toles at **madisontoles@clearesult.com** or by phone **512-327-2083**

AGENDA

DAY 1

October 23, 2021

7:50 a.m.	Log In, Check Technology and Supplies
8:00 a.m.	Welcome and Virtual Conference Orientation Learn more about OG&E, the NEED Project, and the plan for the conference. Meet your NEED facilitators this week. The conference sessions are designed to improve your energy knowledge as a consumer, to provide lessons and activities to return to the classroom with, and to allow you to explore ways to integrate more energy efficiency into your classroom programs. Zoom Orientation, Norms and Expectations, Facilitator Introductions, What's in your energy supplies box?
8:15 a.m.	Introduction to the Science of Energy
8:30 a.m.	Science of Energy Breakout Sessions Small groups will work together to explore stations of the NEED Science of Energy Kit.
9:00 a.m.	Teaching Energy Today Hints, tips and tools for teaching in today's classroom
9:30 a.m.	Quick Break
9:40 a.m.	Sidekick Circuits Participate in this challenge to Light It Up!
10:10 a.m.	Exploring Energy Breakout Sessions New and Returning Participants Group One: Solar Energy Solar Energy 101: Nature Print Paper UV Beads, Building a Solar Oven Group Two: Wind Energy Wind Energy 101: Building an Anemometer and Wind Can Do Work Group Three: Solar Energy Photovoltaics Group Four: Wind Energy Wind Siting and GIS Mapping
11:10 a.m.	Understanding Energy Resources – Candy Collector
11:45 a.m.	Wrap-Up and Afternoon Activity – Energy Expos Before tomorrow's session, using the Secondary Energy Info book, prep a quick poster, PowerPoint, song, or poem to share at least five facts about your assigned energy topic.
12:00 p.m.	Q&A and Adjourn

To register contact:

Patrick Curry at **patrickcurry@clearesult.com** or by phone **405-410-1336**
Madison Toles at **madisontoles@clearesult.com** or by phone **512-327-2083**

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AGENDA

DAY 2

November 6, 2021

7:50 a.m.	Log In, Supplies Check, Technology Check
8:00 a.m.	Welcome
8:05 a.m.	Oklahoma Electric Connections – Understanding the Energy Mix of Oklahoma
8:35 a.m.	Sharing Your Expo Breakout Sessions
9:05 a.m.	Exploring Energy Breakout Sessions New and Returning Participants Group One: Solar Energy Solar Energy 101: Nature Print Paper UV Beads, Building a Solar Oven Group Two: Wind Energy Wind Energy 101: Building an Anemometer and Wind Can Do Work Group Three: Solar Energy Photovoltaics Group Four: Wind Energy Wind Siting and GIS Mapping
10:05 a.m.	Quick Break
10:20 a.m.	Intro to Energy Efficiency and Conservation
10:30 a.m.	The Energy House Challenge Learn about efficiency, conservation and economic returns by building an energy-efficient model home.
10:30 a.m.	Energy Houses & Heat Islands Refresh your skills on efficiency, conservation and economic returns by building an energy-efficient model home before exploring how building contribute to heat islands.
11:45 a.m.	Q&A and Independent Learning Assignment (Home Energy Audit)
12:00 p.m.	Adjourn

To register contact:

Patrick Curry at **patrickcurry@clearesult.com** or by phone **405-410-1336**
Madison Toles at **madisontoles@clearesult.com** or by phone **512-327-2083**

NEED Putting Energy into Education | OG&E

AGENDA

DAY 3

November 13, 2021

7:50 a.m.	Log In, Supplies Check, Technology Check
8:00 a.m.	Welcome
8:05 a.m.	Exploring Home Energy Efficiency Share what you observed. Learn about how this translates to the classroom and students.
9:10 a.m.	EdTech for Teaching Energy Discover some great EdTech opportunities to use and share—Flipped Classrooms, Flipgrid, EdPuzzle, Zoom, Google Classroom Tools and more.
9:30 a.m.	Grade Level Breakout Sessions Fun explorations, games and activities for students by grade level. This session will include an opportunity to share best practices by grade level.
10:15 a.m.	Announce Winners and Quick Break
10:30 a.m.	Energy Efficiency Breakout Sessions New and Returning Participants Group One: This Week in Energy Conservation Energy Stories and More Group Two: Energy Night Live These activities allow for interdisciplinary integration of language arts skills. Groups make quick presentations about energy conservation at home and on the road. Baseload Balance & Energy Efficiency Web Game Learn about how our energy use affects the grid and how elements of the electric grid are connected.
11:15 a.m.	Synthesizing the Conference Breakout Sessions
11:30 a.m.	What's Next? Q&A, Post-Assessment, Evaluation and Order Sponsored Kits and Supplies

To register contact:

Patrick Curry at **patrickcurry@clearesult.com** or by phone **405-410-1336**
Madison Toles at **madisontoles@clearesult.com** or by phone **512-327-2083**

NEED Putting Energy into Education | OG&E

Introducing OG&E's new Electrical Safety and Energy Efficiency Education Program

Posted in Member News on September 24th 2021 by ☐ CORPORATE COMMUNICATIONS



We're excited to announce that OG&E has expanded and revamped our Electrical Safety and Energy Efficiency Education Program!

The new program is open to all K – 6 teachers across our service area, offering complimentary classroom resources making it easy to teach electrical safety, energy science and energy efficiency. All the materials available were developed by educators and industry specialists – so teachers can be confident they address core subject matter that supports their teaching objectives.

The free resources available include:

- Educational booklets
- Downloadable teacher's guides and pre/post tests
- Games, videos and experiments
- Fascinating stories, fun facts and family-friendly activities

The e-SMARTkids website has all of the tools teachers need to help their students take positive action when it comes to electrical safety and energy efficiency. In addition to these resources, we have OG&E

Energy for Today and Tomorrow

ACTIVITY BOOK

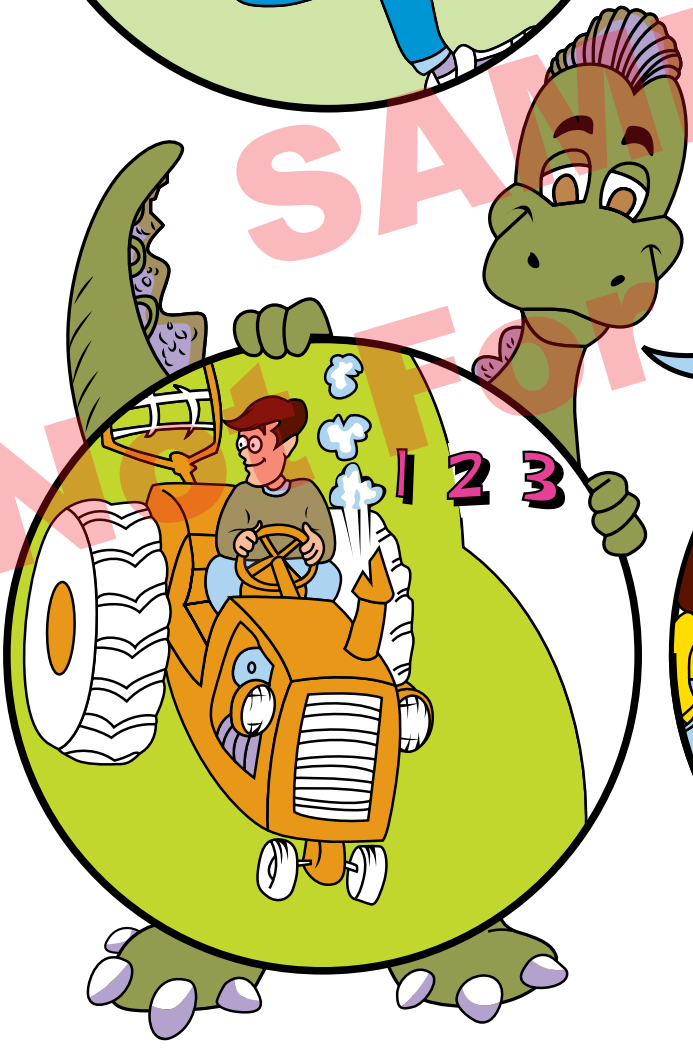


Not for Reprint

Energy helps us to do many things.





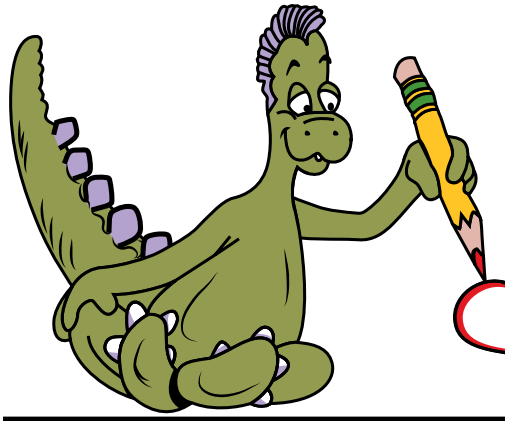




SAMPLE
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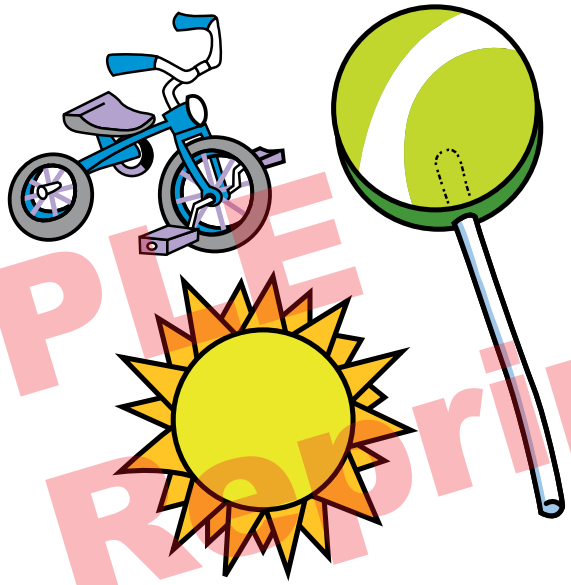
USER NOTES: The definition of energy is: the ability to do work. These pictures show different ways energy is used.



Matching . . .

CIRCLE THE OBJECT THAT MATCHES THE PICTURE ON THE TEE SHIRT.









SAMPLE
Not For Reprint

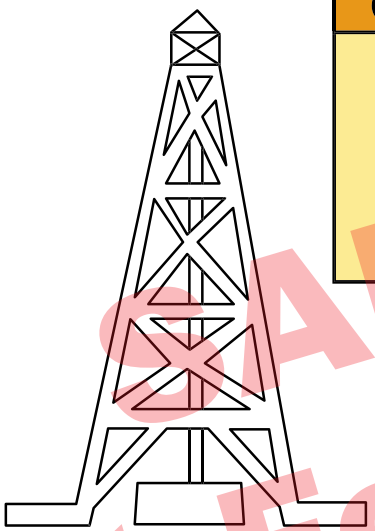
USER NOTES: There are many different kinds of energy like: heat, sun, wind, light, electrical, mechanical (falling water) and chemical (gasoline in engines).



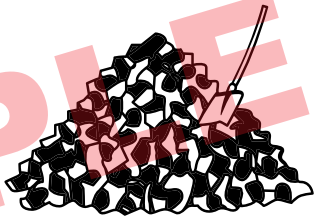
TRACE AND COLOR!

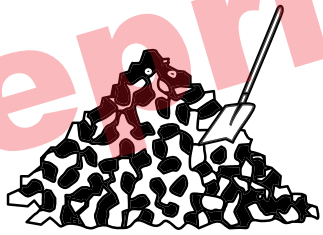
COUNT THE NUMBER OF THINGS IN EACH BOX. TRACE THE NUMBER AND COLOR THE PICTURES.

OIL

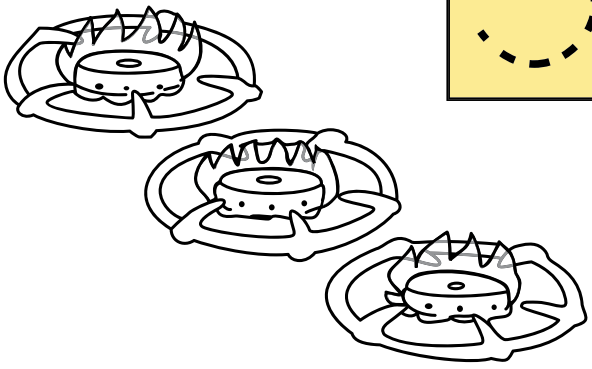


COAL

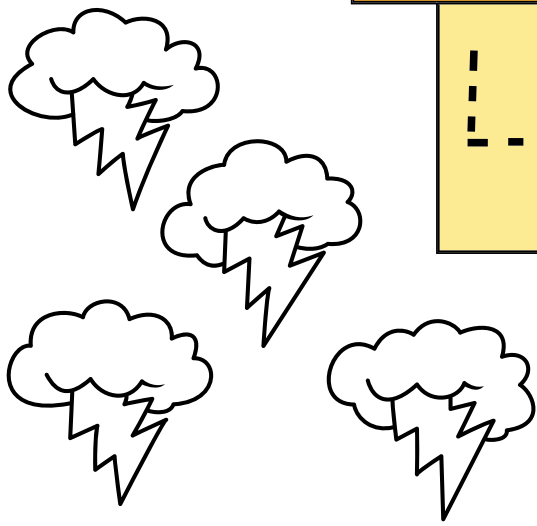




NATURAL GAS



LIGHTNING

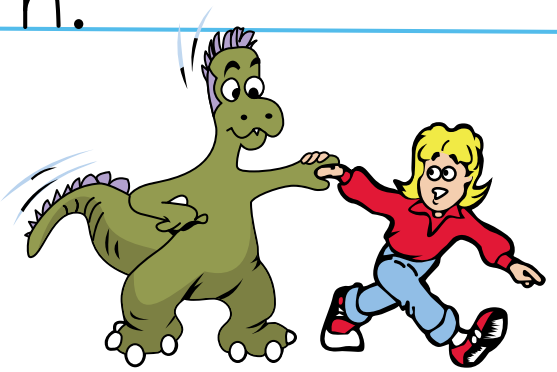


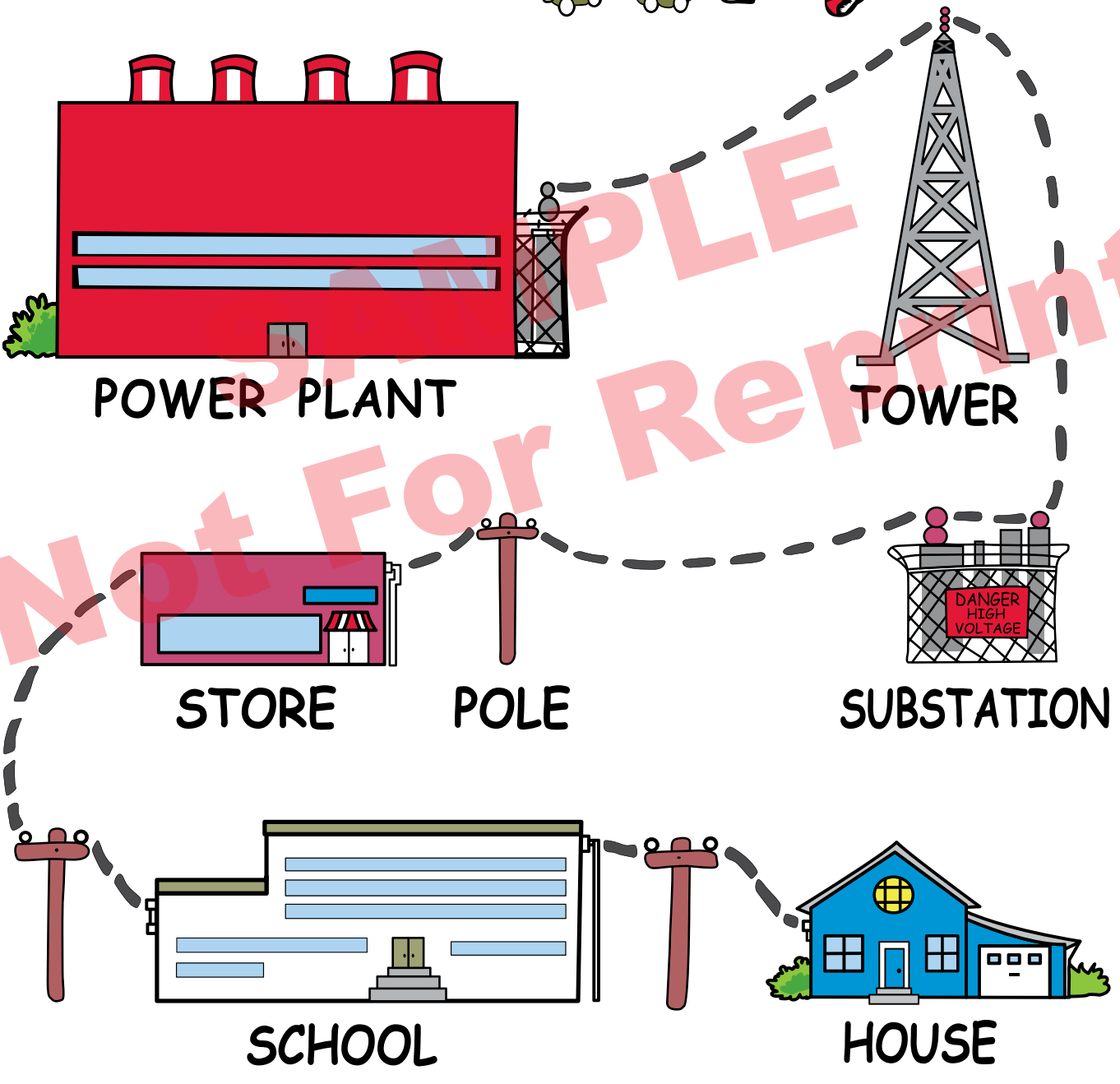
SAMPLE Not For Reprint

USER NOTES: The major sources of electricity are oil, coal and natural gas. Lightning is a form of electricity found in nature.

Follow the path.

TRACE OVER THE DOTTED LINES.





SAMPLE
Not For Reprint

USER NOTES: The energy produced in power plants is sent out over wires through substations to our schools and homes.

Circles . . .

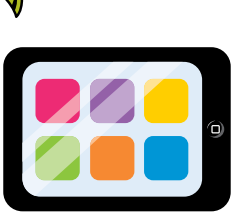
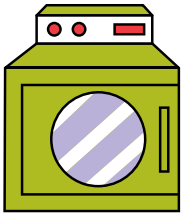
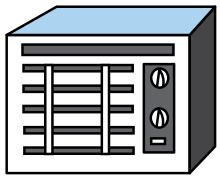
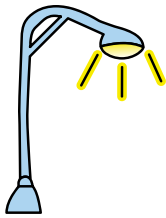
COLOR ALL THE CIRCLES WITH A CRAYON.

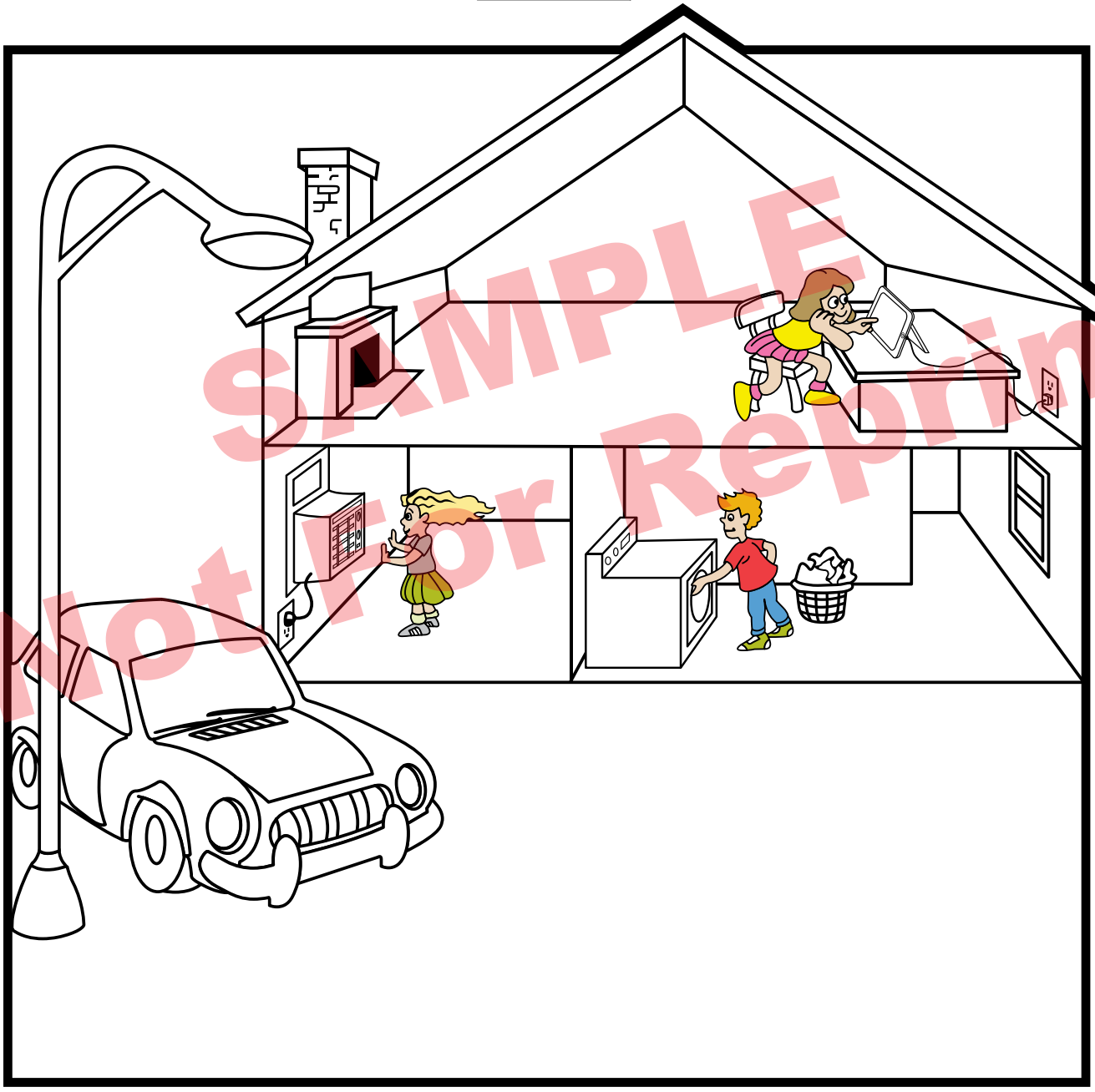


SAMPLE
Not for Reprint

USER NOTES: We get energy from the sun in the form of light and heat. Energy from the sun helps us grow food.

Find these pictures and color them.

SAMPLE
Not For Reprint

USER NOTES: We need energy for cooling and heating, cleaning clothes, cooking, transportation, lighting and communicating.

MATCHING

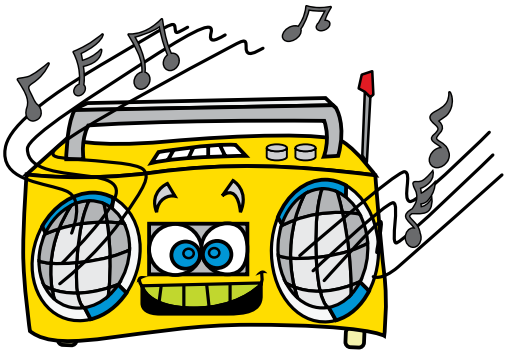
DRAW A LINE TO THE PICTURES THAT GO TOGETHER.













SAMPLE
Not For Reprint

USER NOTES: Telephones, televisions and radios need electrical energy in order to work.

Color the coins.

COLOR ONLY THE MONEY IN THIS PICTURE.

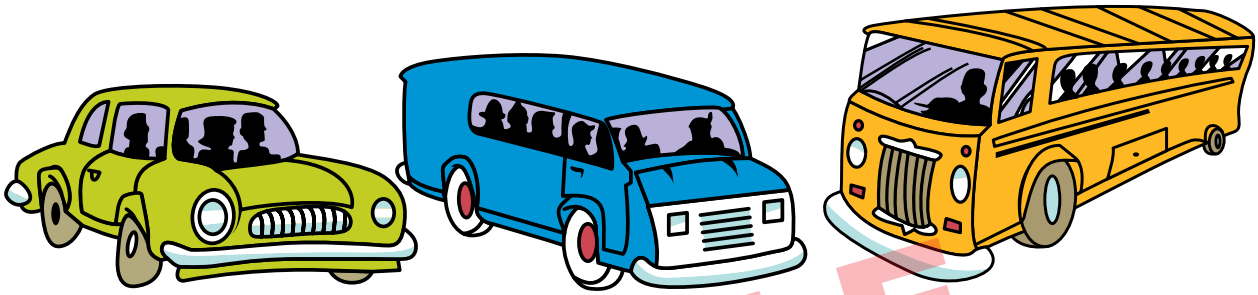


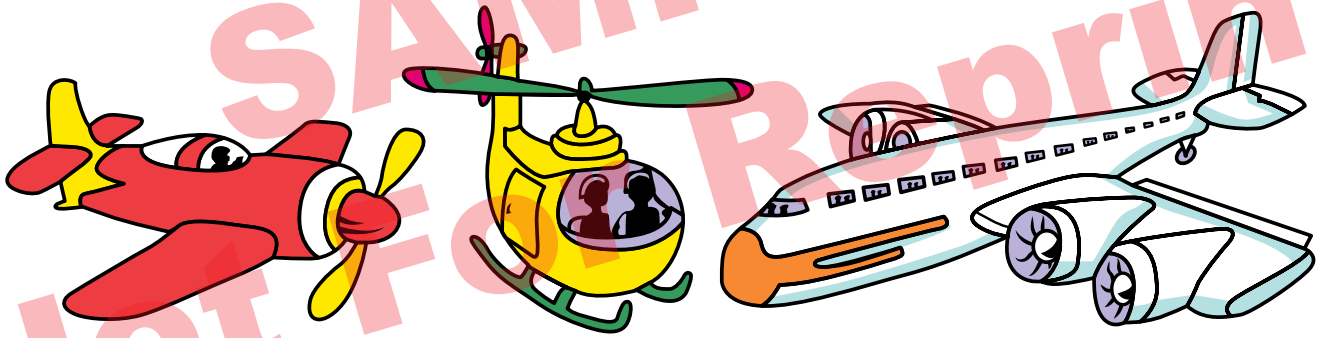
SAMPLE
Not For Reprint

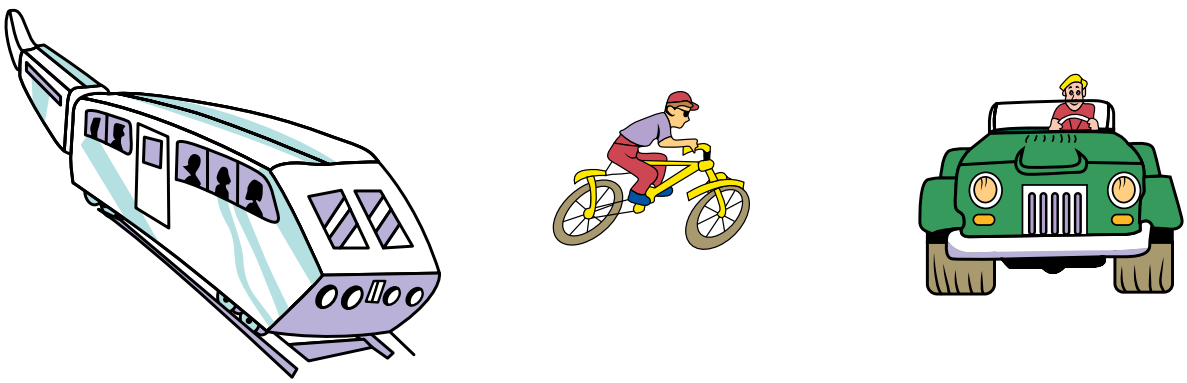
USER NOTES: By conserving and not wasting energy we save money.

Which is the largest ?

CIRCLE THE PICTURE IN EACH ROW THAT CARRIES THE MOST PEOPLE.





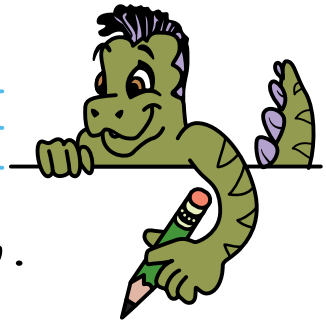


SAMPLE Not For Reprint

USER NOTES: A lot of energy is used for transportation. We can save money by carpooling and using mass transportation.

Where are they going?

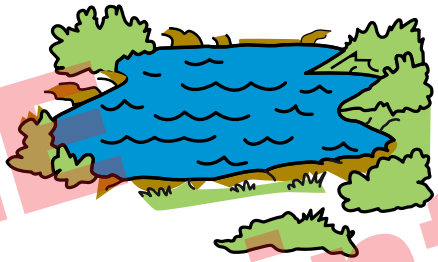
CIRCLE THE PLACE EACH CHILD IS GOING.







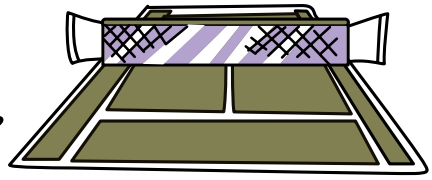




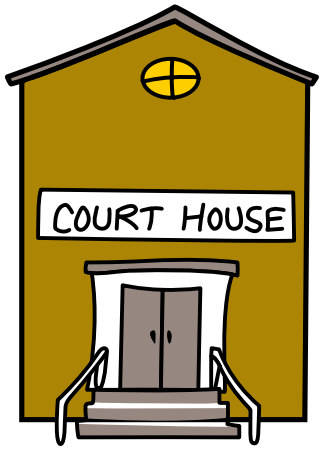




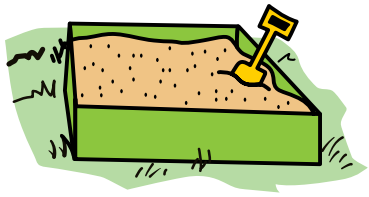












SAMPLE
Not For Reprint

USER NOTES: You can save energy by not using a car to do things locally.

Connect the dots.

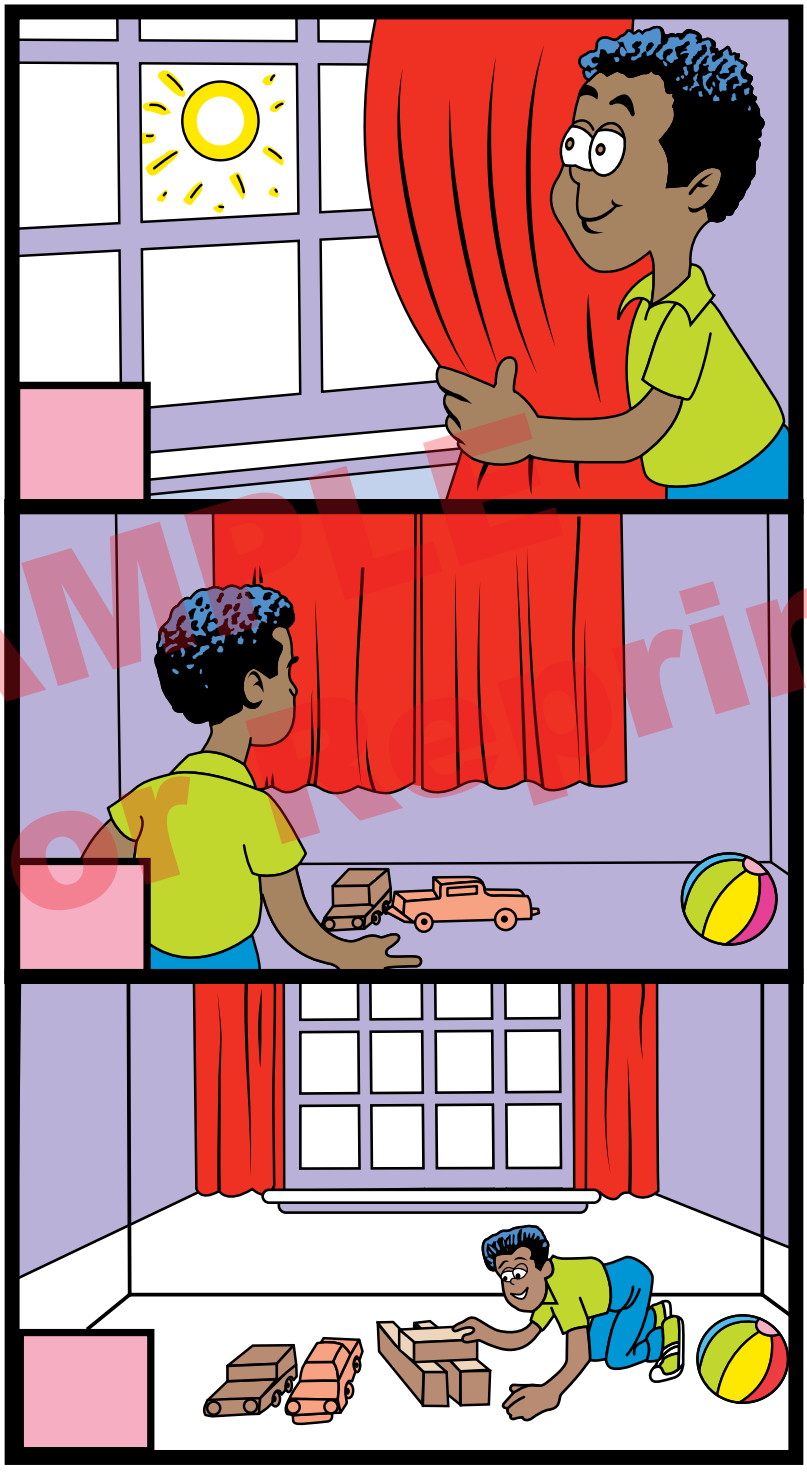


SAMPLE
Not For Reprint

USER NOTES: Turn off the lights when you leave a room.

Put pictures in order to tell a story.

NUMBER THE PICTURES 1, 2 AND 3 IN THE PINK BOX IN EACH PICTURE.

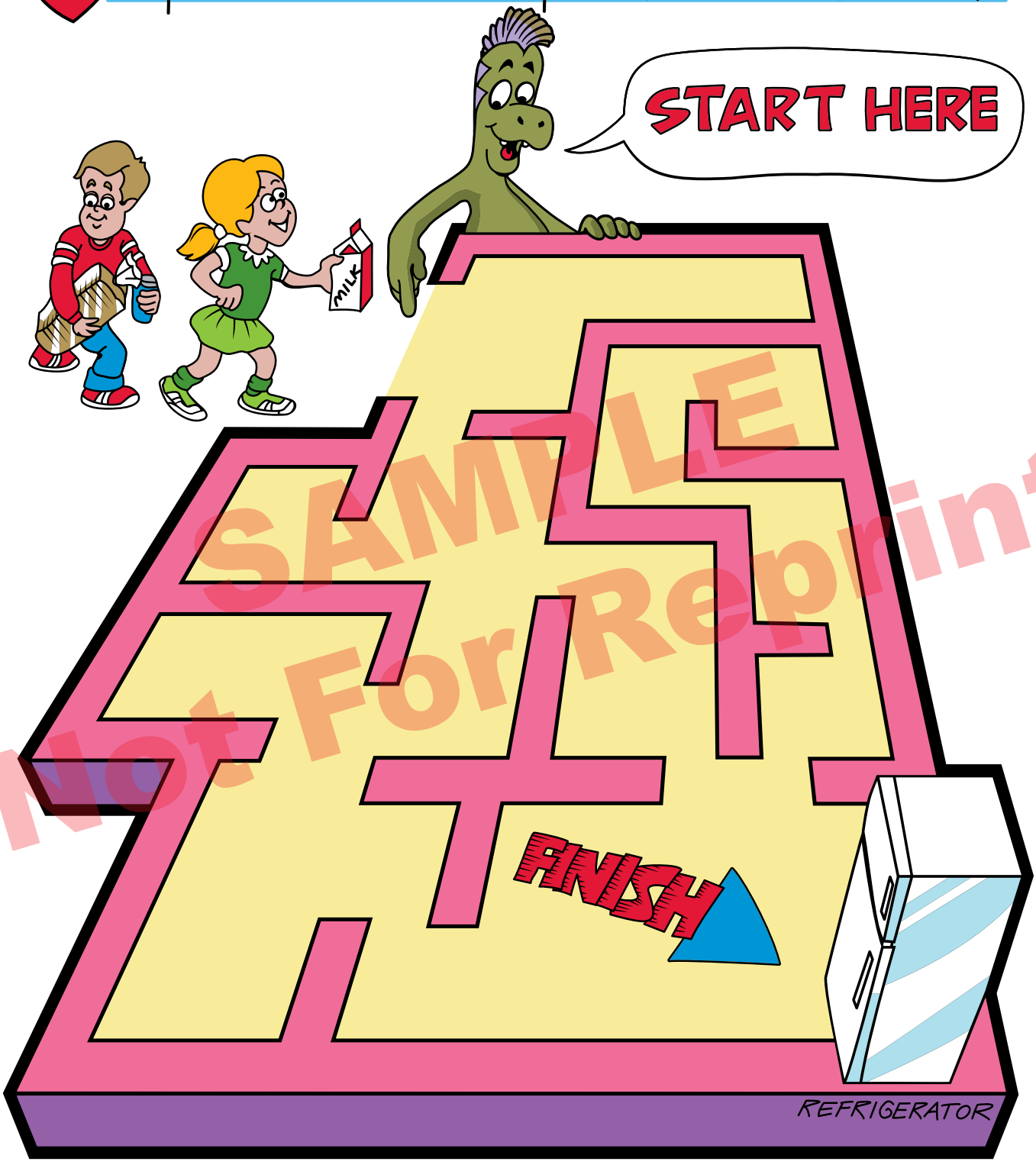




SAMPLE
Not For Reprint

USER NOTES: Use natural light rather than electricity in order to save energy.

Help the children put the food back.

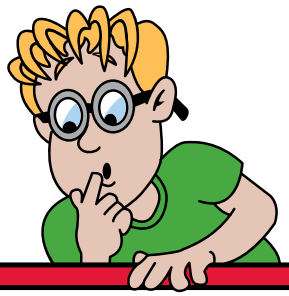


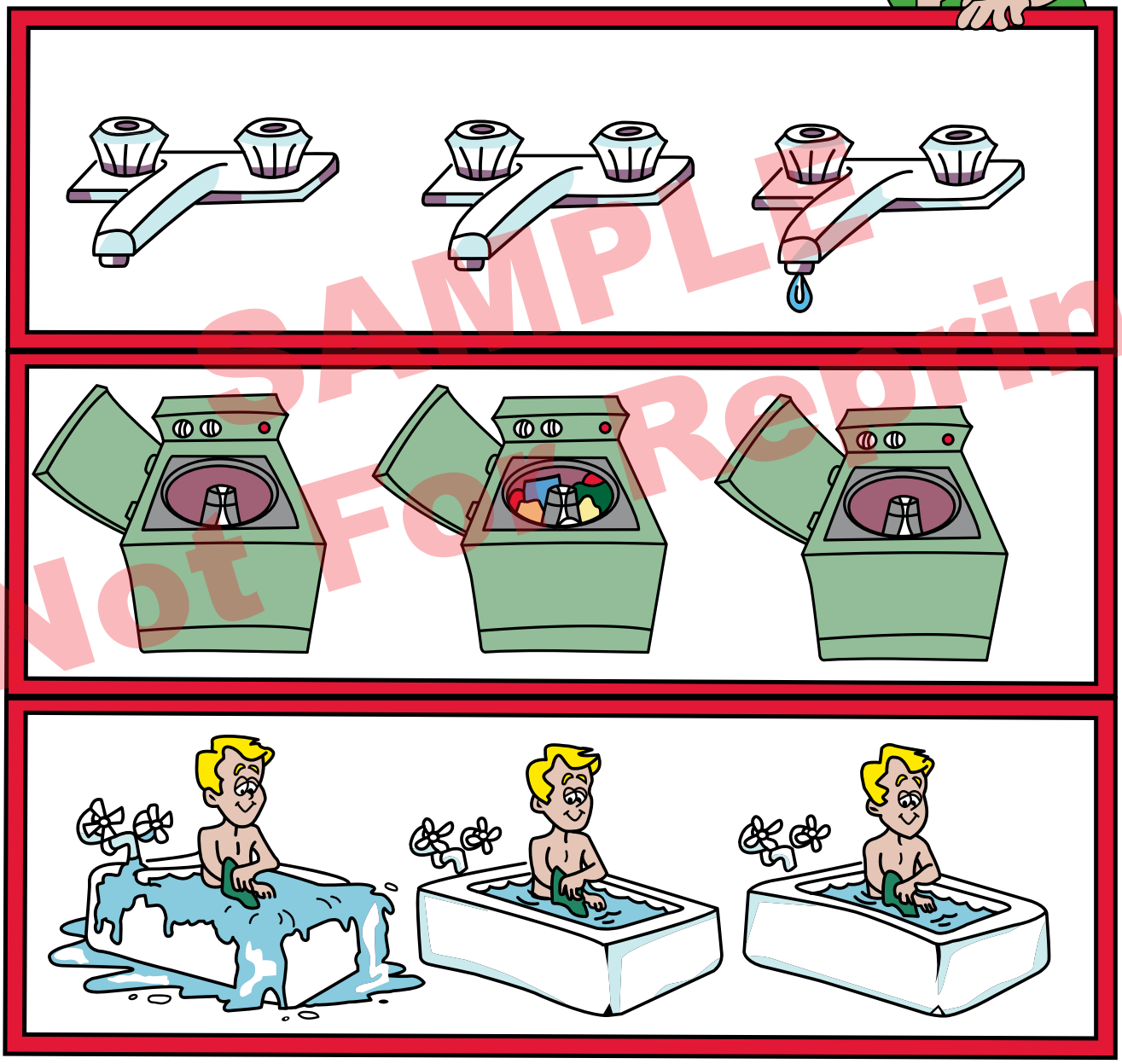
SAMPLE
Not For Reprint

USER NOTES: Refrigerators work harder and use more power if they are opened frequently. Put everything back at the same time and do not keep the door open too long.

WHICH IS DIFFERENT?

LOOK AT THE PICTURES IN EACH ROW.
CIRCLE THE ONE THAT IS DIFFERENT.





SAMPLE
Not For Reprint

USER NOTES: Save energy by not wasting water. Don't leave faucets on, use full loads in washing machines and take showers instead of baths.

ENERGY

For Today and Tomorrow

CLUB



I, _____, KNOW

THAT ENERGY IS IMPORTANT AND I WILL DO MY BEST NOT TO WASTE IT.

SAMPLE
Not For Reprint

OG&E wants to bring some ENERGY EFFICIENCY to your CLASSROOM!

Register your classroom project with DonorsChoose.org.

OG&E is donating **$30,000** to fund qualifying projects that promote or teach energy efficiency and/or projects requesting energy efficient* products. Energy efficiency funds are available for qualifying projects in all public schools located within the company's Oklahoma service area. OG&E will fund up to $600 towards a qualifying project.

Active projects will be reviewed weekly until funds expire.
** EPA, EPEAT, LED, TCO, Energy Star certified, and energy saving products*



DonorsChoose.org

For more information, go to ***donorschoose.org/about***.

For directions on setting up an account, visit ***donorschoose.org/teachers***.

OG&E®

We Energize Life

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7.3 AM Conservation™ LivingWise™ Report

OG&E Oklahoma LivingWise®

PROGRAM SUMMARY REPORT

2021 Calendar Year

SUBMITTED BY:

AM CONSERVATION™

OG&E Oklahoma LivingWise®

PROGRAM SUMMARY REPORT

2021 Calendar Year

MADE POSSIBLE BY:

OG&E®

We Energize Life

SUBMITTED BY:

AM CONSERVATION™

May 2022

Executive Summary

"Students liked that the program is free. They likes the night light with Rumble on it. Many enjoyed the easy experiments at home. Several students liked the new showerhead."

Luann Gilbert, Teacher
Earlywine Elementary School

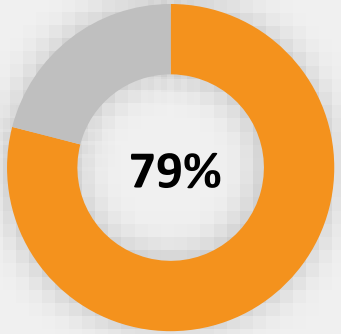
Executive Summary

AM Conservation is pleased to present this Program Summary Report to OG&E, which summarizes the 2021 Calendar Year OG&E LivingWise® Program. The program was implemented in the OG&E service area in the state of Oklahoma by 12,071 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

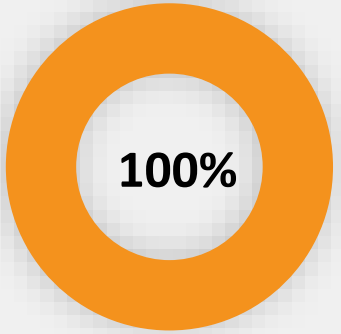
A successful program excites and engages participants. Students, parents, and teachers are asked to evaluate the program and provide personal comments. A sample of the feedback is given in the margin.



Teachers who indicated parents supported the program.

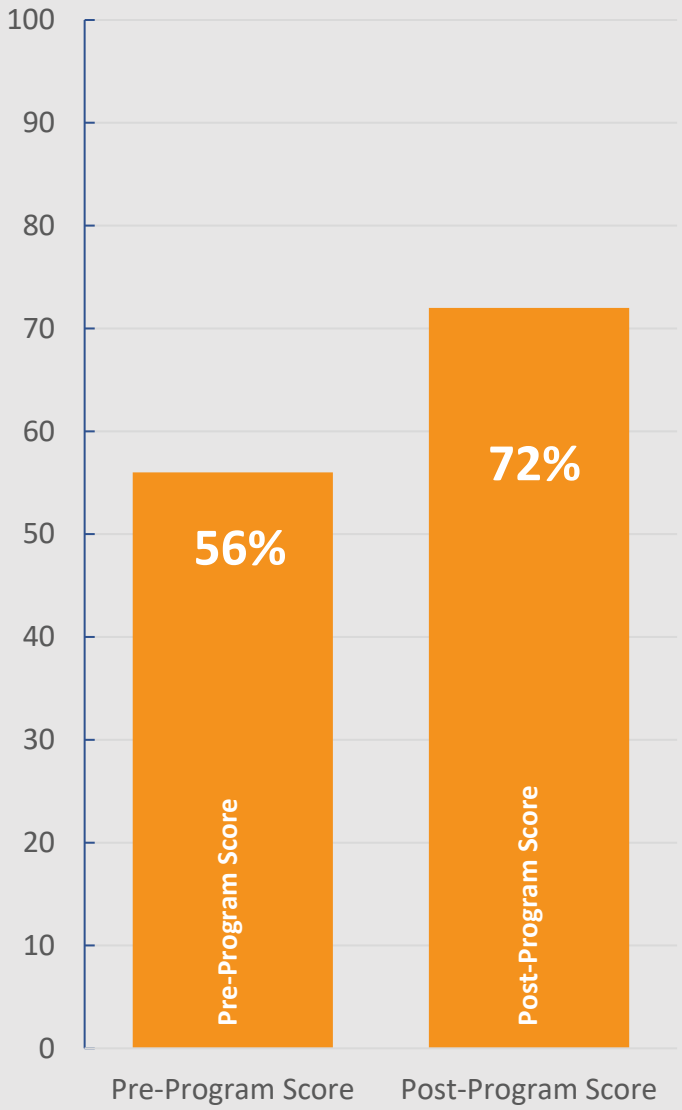


Teachers who indicated they would recommend this program to other colleagues.



Teachers who indicated they would conduct this program again.

Executive Summary

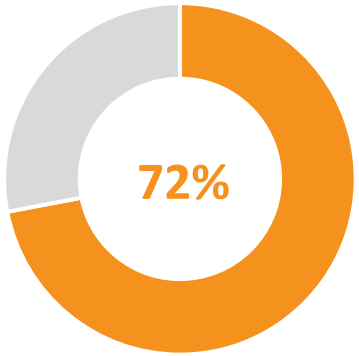


Knowledge Gained

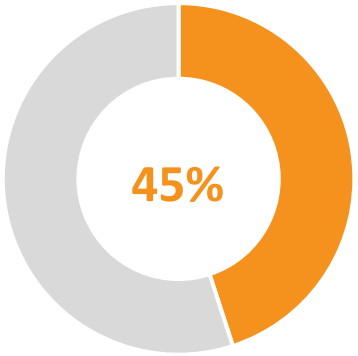
Identical tests were administered to the students prior to the program and again upon program completion to measure knowledge gained. Scores and subject knowledge improved from 56% to 72%.

Data Obtained

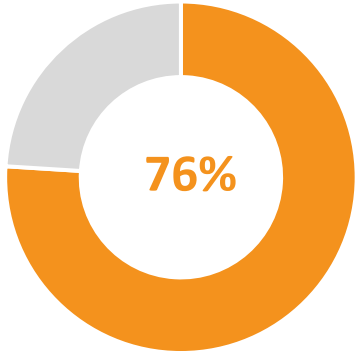
Home surveys were taken by students and their families, which collected household demographic and consumption data along with program participation information.



Student who reported that their family homes were owned.



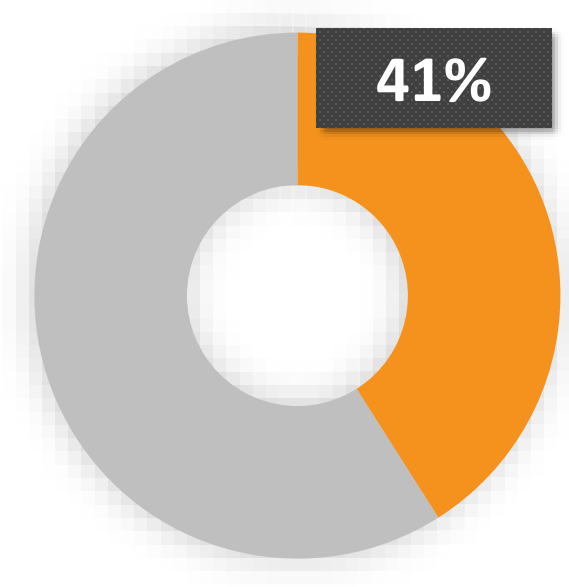
Student who reported that their water was heated by electricity.



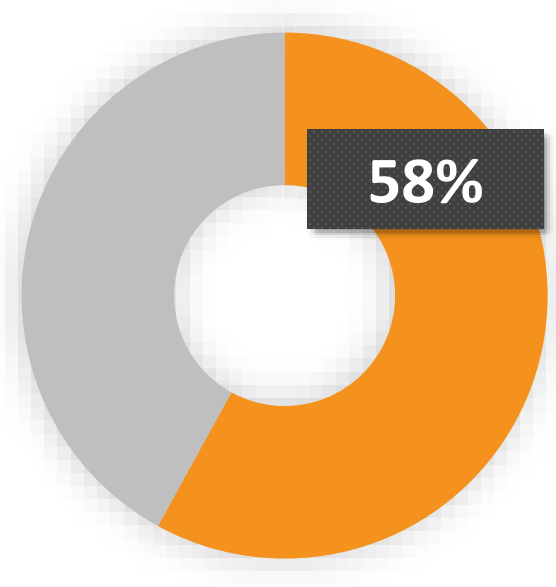
Student who reported that their home has a dishwasher.

Measures Installed

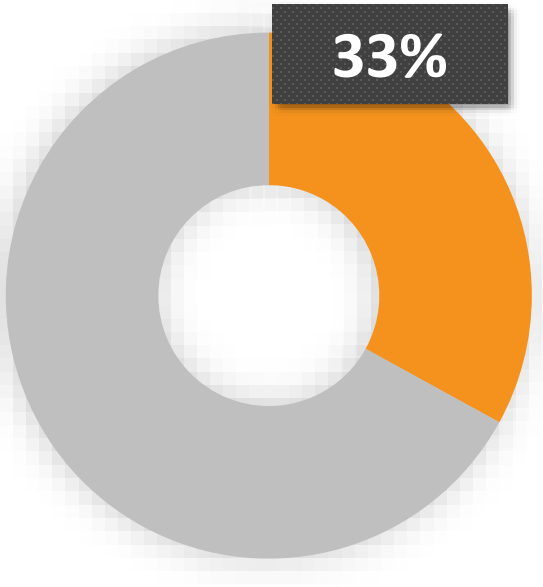
Students completed take-home activities as part of the program and reported on the kit measures they installed in their homes.



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	
18,844,328	gallons of water saved
1,239,782	kWh of electricity saved
141.82	kW peak demand reduction

PROJECTED ANNUAL SAVINGS PER HOME	
1,561	gallons of water saved
102.71	kWh of electricity saved
0.11748	kW peak demand reduction

PROJECTED LIFETIME SAVINGS	
188,443,280	gallons of water saved
15,948,674	kWh of electricity saved

PROJECTED LIFETIME SAVINGS PER HOME	
15,611	gallons of water saved
1,321	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 2021 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 27 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."

Program Overview

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
- LED Rumble Night Light
- 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

** Materials / Installation Instructions provided in English and Spanish*

Program Overview

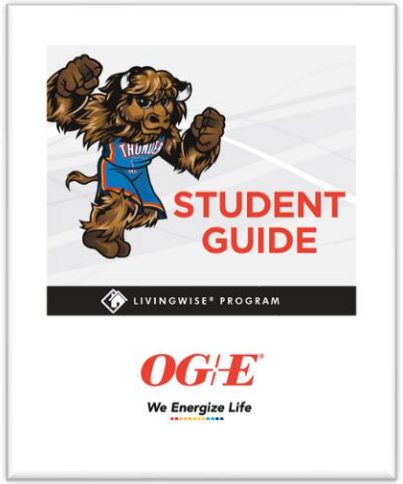


Custom Branding

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.



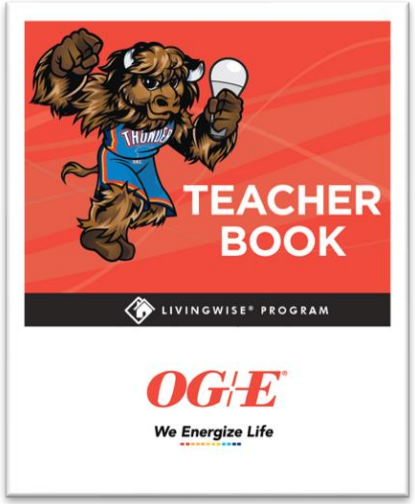
Program Materials



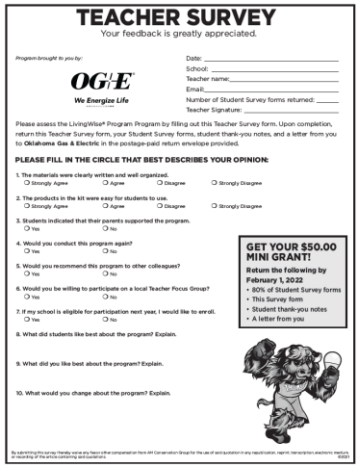
Student Guide



Student Take-Home Workbook



Teacher Book



Teacher Survey Form



Parent Letter/Pledge Form



Certificate of Achievement

Program Implementation

The 2021 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 2021 Calendar Year school year.

Parent Feedback

“Students liked the kits and being able to explain to their parents why they need to install the items in the kit.”

Kathy Ferguson, Teacher
Pleasant Grove 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.

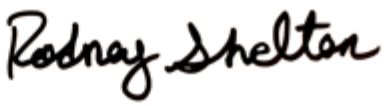
We designed the OG&E Oklahoma LivingWise® Program in our program center from the ground up. Working in conjunction with OG&E, we identified goals, desired outcomes of the program, and specific materials' customization. The result is a stimulating program that delivers significant and measurable resource 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

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.

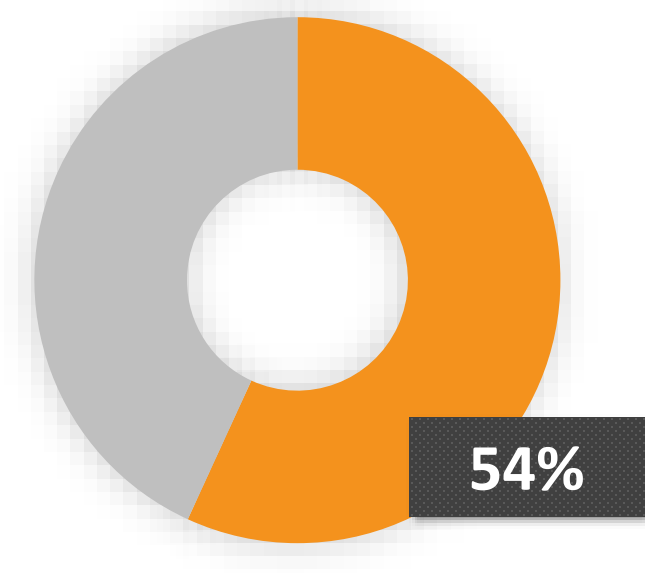
The OG&E Oklahoma LivingWise® Program has had a significant impact within the community. As illustrated on the next pages, the program successfully educated participants about energy and water efficiency while generating resource savings through the installation of efficiency measures in homes. Home 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.

Did you work with your family on this program?

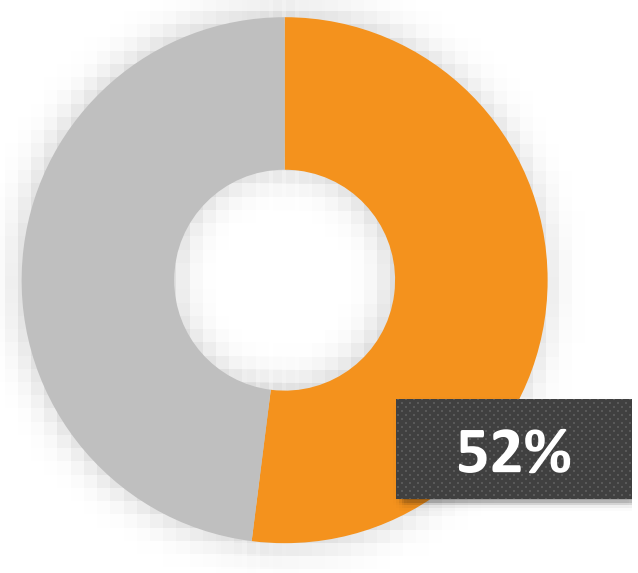
Yes 54%, No 46%



Students who indicated they worked with their family on the program.

Did your family change the way they use energy?

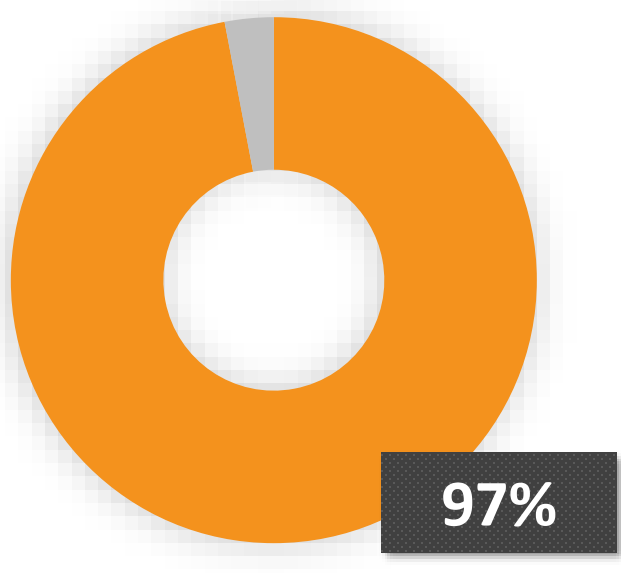
Yes 52%, No 48%



Students who indicated their family changed the way they use energy.

Students who rated the program Okay, pretty good and great.

Okay to Great 97%, Not good 3%



Students who rated the program Okay, pretty good and great.

Teacher Feedback

“As a teacher, I liked everything. It is easy to use, and the workbooks are student friendly. It lines up with our curriculum.”

Melissa Smith, Teacher
Union Elementary School

Program Impact

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, 12,071 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:	12,071		
	Annual	**Lifetime**	
Projected reduction from Showerhead retrofit:	683,279	6,832,794	kWh
Product Life: 10 years	15,091,466	150,914,660	gallons
Projected reduction from Bathroom Aerator retrofit:	100,270	1,002,698	kWh
Product Life: 10 years	2,323,369	23,233,690	gallons
Projected reduction from Kitchen Aerator retrofit:	61,693	616,927	kWh
Product Life: 10 years	1,429,493	14,294,930	gallons
Projected reduction from first LED Lightbulb retrofit:	197,270	3,748,128	kWh
Product Life: 19 years			
Projected reduction from second LED Lightbulb retrofit:	197,270	3,748,128	kWh
Product Life: 19 years			
TOTAL PROGRAM SAVINGS:	**1,239,782**	**15,948,674**	**kWh**
	18,844,328	**188,443,280**	**gallons**
TOTAL PROGRAM SAVINGS PER HOUSEHOLD:	**102.71**	**1,321.24**	**kWh**
	1,561.12	**15,611.24**	**gallons**
TOTAL PROGRAM kW DEMAND REDUCTION:			
Showerhead:	71.06		
Bathroom Faucet Aerator:	10.43		
Kitchen Faucet Aerator:	6.42		
First LED Light Bulb:	26.96		
Second LED Light Bulb:	26.96		
Total:	**141.817**		
PROGRAM DEMAND REDUCTION PER HOUSEHOLD:	**0.011748588**		

Program Impact

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

100% of responding teachers indicated they would conduct the program again given the opportunity.
100% of responding teachers indicated they would recommend the program to their colleagues.

What did you like best about the program?

"The program provided good coverage of many of our science objectives." **Amy Flanagan, Oak Hall Episcopal School**

"I appreciated the ease of using the premade curriculum. The curriculum saved me time." **Robin Jones, Little Axe Elementary School**

"I liked how there was a "teacher guide" that helped with the implementation of the program." **Melissa Cosper, Wayland Bonds Elementary School**

"Being able to relate the program to real world experiences and how it affects them personally." **Susan Hall, Durant Intermediate School**

What would you change about the program?

"I have nothing I would change about this program. It is very well organized an relays the message in a way students understand." **Amanda Stearns, Wilson Elementary School**

"I would adjust the program to allow participants more time to return the surveys." **Sandra Snively, Little Axe Elementary School**

"Adjust to accommodate teachers who teach an entire grade level." **Justina Bates, Little Axe Elementary School**

"I would change the amount of time allowed to return materials." **Brooks Bell, Little Axe 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.

Teacher 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?

"My son was very excited to see the improvements that were made by simple replacements."

Tari Scott, Little Axe Elementary School

"Hands on activities I can do with my child." **Laura Cole, Rock Creek Elementary School**

Are there any comments you would like to express to your child's program sponsor?

" I would like to thank you for all items to help teach my child how to conserve energy." **Johnny E. Bond, Little Axe Elementary School**

"She's really excited to use these items and she helped install them all." Brianna Heath**, Durant Intermediate School**

Projected Savings

Projected Savings from Showerhead Retrofit

Showerhead retrofit inputs and assumptions:		
Number of Participants:	12,071	[1]
Deemed kWh Savings per Participant:	56.61	kWh[2]
Deemed kW Savings per Participant:	0.0059	kW[2]
Deemed Water Gallon Savings per Participant:	1,250.23	gallons[2]
Estimated Useful Life	10.00	years[2]
Projected Energy Savings:		
Showerhead retrofit projects an annual reduction of:	683,279.44	kWh[3]
Showerhead retrofit projects a lifetime reduction of:	6,832,794	kWh[4]
Projected Demand Reduction Savings:		
Showerhead retrofit projects an annual reduction of:	71.061	kW[5]
Projected Water Savings:		
Showerhead retrofit projects an annual reduction of:	15,091,466	gallons[6]
Showerhead retrofit projects a lifetime reduction of:	150,914,660	gallons[7]

[1] Reported by Participants
[2] 2021 ADM 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 Kitchen Faucet Aerator Retrofit

Kitchen Faucet Aerator retrofit inputs and assumptions:		
Number of Participants:	12,071	[1]
Deemed kWh Savings per Participant:	5.11	kWh[2]
Deemed kW Savings per Participant:	0.0005	kW[2]
Deemed Water Gallon Savings per Participant:	118.42	gallons[2]
Estimated Useful Life	10.00	years[2]
Projected Energy Savings:		
Kitchen Faucet Aerator retrofit projects an annual reduction of:	61,692.70	kWh[3]
Kitchen Faucet Aerator retrofit projects a lifetime reduction of:	616,927	kWh[4]
Projected Demand Reduction Savings:		
Kitchen Faucet Aerator retrofit projects an annual reduction of:	6.416	kW[5]
Projected Water Savings:		
Kitchen Faucet Aerator retrofit projects an annual reduction of:	1,429,493	gallons[6]
Kitchen Faucet Aerator retrofit projects a lifetime reduction of:	14,294,930	gallons[7]

[1] Reported by Participants
[2] 2021 ADM 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 Bathroom Faucet Aerator Retrofits

Bathroom Faucet Aerator retrofit inputs and assumptions:		
Number of Participants:	12,071	[1]
Deemed kWh Savings per Participant:	8.31	kWh[2]
Deemed kW Savings per Participant:	0.0009	kW[2]
Deemed Water Gallon Savings per Participant:	192.48	gallons[2]
Estimated Useful Life	10.00	years[2]
Projected Energy Savings:		
Bathroom Faucet Aerator retrofit projects an annual reduction of:	100,270	kWh[3]
Bathroom Faucet Aerator retrofit projects a lifetime reduction of:	1,002,698	kWh[4]
Projected Demand Reduction Savings:		
Bathroom Faucet Aerator retrofit projects an annual reduction of:	10.428	kW[5]
Projected Water Savings:		
Bathroom Faucet Aerator retrofit projects an annual reduction of:	2,323,369	gallons[6]
Bathroom Faucet Aerator retrofit projects a lifetime reduction of:	23,233,690	gallons[7]

[1] Reported by Participants
[2] 2021 ADM 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 first LED Light Bulb Retrofit

First LED Light Bulb retrofit inputs and assumptions:		
Number of Participants:	12,071	[1]
Deemed kWh Savings per Participant:	16.34	kWh[2]
Deemed kW Savings per Participant:	0.00220	kW[2]
Estimated Useful Life	19.00	years[2]
Projected Energy Savings:		
LED Light Bulb retrofit projects an annual reduction of:	197,269.87	kWh[3]
LED Light Bulb retrofit projects a lifetime reduction of:	3,748,128	kWh[4]
Projected Demand Reduction Savings:		
LED Light Bulb retrofit projects an annual reduction of:	26.956	kW[5]

[1] Reported by Participants
[2] 2021 ADM EMV Report
[3] Deemed kWh X Participants
[4] Deemed kWh X Participants X EUL
[5] Deemed kW X Participants

Projected Savings

Projected Savings from the second LED Light Bulb

Second LED Light Bulb retrofit inputs and assumptions:		
Number of Participants:	12,071	[1]
Deemed kWh Savings per Participant:	16.34	kWh[2]
Deemed kW Savings per Participant:	0.00220	kW[2]
Estimated Useful Life	19.00	years[2]
Projected Energy Savings:		
LED Light Bulb retrofit projects an annual reduction of:	197,269.87	kWh[3]
LED Light Bulb retrofit projects a lifetime reduction of:	3,748,128	kWh[4]
Projected Demand Reduction Savings:		
LED Light Bulb retrofit projects an annual reduction of:	26.956	kW[5]

[1] Reported by Participants

[2] 2021 ADM EMV Report

[3] Deemed kWh X Participants

[4] Deemed kWh X Participants X EUL

[5] Deemed kW X Participants

Home Check-Up

1 How many people live in your home (including you)?

1	0%
2	3%
3	13%
4	31%
5	25%
6	14%
7+	14%

2 How is your water heated?

Natural Gas	39%
Electricty	45%
Propane	16%

3 Does your home have a dishwasher?

Yes	76%
No	24%

4 How many half bathrooms are in your home?

0	68%
1	23%
2	6%
3	1%
4+	1%

5 How many full bathrooms are in your home?

1	29%
2	56%
3	11%
4	3%
5+	1%

6 Which fuel is used as the main source of energy to heat your home?

Natural Gas	26%
Electricity	59%
Heating Oil	2%
Wood	2%
Propane	8%
Other	3%

7 What type of air conditioning unit do you have?

Central Air Conditioner	73%
Evaporative Cooler	6%
Room Unit	16%
Don't Have One	5%

8 What type of home do you live in?

Single Family home	86%
Multi-Family Home/Apartment Building	14%

9 Was your home built before 1992?

Yes	45%
No	55%

10 Is your home owned or rented?

Owned	72%
Rented	28%

Home Activities

1 Did your family install the new High-Efficiency Showerhead?	
Yes	41%
No	59%
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	33%
No	67%
4 Did your family install the first 9-watt LED Light Bulb?	
Yes	58%
No	42%
5 Did your family install the second 9-watt LED Light Bulb?	
Yes	51%
No	49%
6 Did your family install the LED Night Light?	
Yes	70%
No	30%
7 Did your family raise the temperature on your refrigerator?	
Yes	25%
No	75%
8 How much did your family turn down the thermostat in winter for heating?	
1 - 2 Degrees	13%
3 - 4 Degrees	18%
5+ Degrees	13%
Didn't Adjust Thermostat	56%
9 How much did your family turn up the thermostat in summer for cooling?	
1 - 2 Degrees	15%
3 - 4 Degrees	19%
5+ Degrees	14%
Didn't Adjust Thermostat	52%
10 Did your family lower your water heater settings?	
Yes	22%
No	78%
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	52%
No	48%
13 How would you rate the LivingWise Program?	
Great	37%
Pretty Good	36%
Okay	24%
Not so Good	4%

Teacher Program Evaluation Data

1 Did you install any of the products from your kit?	
Yes	100%
No	0%
2 The products in the kit were easy for students to use.	
Strongly Agree	63%
Agree	37%
Disagree	0%
Strongly Disagree	0%
3 Did you use the curriculum materials to teach in class?	
Yes	89%
No	11%
4 Students indicated that their parents supported the program.	
Yes	79%
No	21%
5 Would you conduct this program again?	
Yes	100%
No	0%
6 Would you recommend this program to other colleagues?	
Yes	100%
No	0%
7 Did you distribute the student surveys to your students?	
Yes	100%
No	0%

Parent Program Evaluation Data

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	Teachers	Students
Achille Elementary School	Toby Isenberg	1	22
Alva Middle School	Paul Hamilton	1	54
Alva Middle School	Danielle Barnett	1	45
Antioch Christian Academy	Christopher Roberts	1	7
Apollo Elementary School	Caitlyn Havlik	1	75
Barnes Elementary School	Cynthia Prescott	1	60
Belle Isle Middle School	Elizabeth Maples	1	103
Bishop John Carroll School	Jennifer Herndon	1	24
Bishop John Carroll School	Jennifer Herndon	1	24
Bokoshe Elementary School	Sara Lovell	1	15
Bokoshe Elementary School	Kelly Parker	1	25
Bradley Elementary School	Brandy Baugh	1	15
Bradley Elementary School	Sydni Benge	1	15
Briarwood Elementary School	Daniel Fritz	1	68
Bryant Elementary School	Tricia Worth	1	100
Byng Elementary School	Becky Henderson	1	23
Byng Elementary School	Tracy Allison	1	25
Byng Elementary School	Amanda Williams	1	25
Calera Elementary School	Lisa Bishop	1	65
Canton Elementary School	Kim Nault	1	29
Canyon Ridge Intermediate	Cheryl Snowden	1	120
Canyon Ridge Intermediate	Robert (Wade) Walling II	1	125
Canyon Ridge Intermediate	Katie Johnson	1	190
Capitol Hill Middle School	Jalesa Gaines	1	74
Capitol Hill Middle School	Christa Crawford	1	73
Capitol Hill Middle School	Jalesa Gaines	1	81
Capitol Hill Middle School	Christa Crawford	1	70
Cashion Elementary School	Jenny Hoesli	1	25
Cashion Elementary School	Ctaci Slovacek	1	24
Central Elementary School	Jazzlyn Brewer	1	47
Central Elementary School	Rhonda Thorson	1	23
Charles Evans Elementary School	Missy Ross	1	60
Checotah Intermediate School	Tina Womack	1	103

School Name	Teacher	Teachers	Students
Chisholm Elementary School	Rebecca Powell	1	38
Chisholm Elementary School	Lisa Earl	1	40
Choctaw Elementary School	Lindsay Hartman	1	5
Collins Elementary School	Shandee Allen	1	135
Coolidge Elementary School	Dana Everett	1	25
Coolidge Elementary School	Victoria Davalos	1	22
Coronado Heights Elementary School	Alice Downing	1	25
Coronado Heights Elementary School	Pearl Powell	1	25
Coronado Heights Elementary School	Raylynna Soto	1	25
Coronado Heights Elementary School	Destyni Williams-Newm	1	25
Coyle Elementary School	Lindsay Gibbs	1	10
Coyle Elementary School	Heidi Mallow	1	20
Coyle Elementary School	Lindsay Gibbs	1	14
Creek Elementary School	Margaret Ragsdale	1	25
Creek Elementary School	Donna Zarnke	1	25
Cross Timbers Elementary School	Kristen Qualls	1	21
Cross Timbers Elementary School	Ashlee Hunter	1	21
Cross Timbers Elementary School	Lisa Jones	1	21
Cross Timbers Elementary School	Ashley Renken	1	22
Cross Timbers Elementary School	Jennifer Davis	1	21
Cross Timbers Elementary School	Kurt Smith	1	21
Cross Timbers Elementary School	Cody Swinson	1	21
Crossings Christian School	LaDonna Strong	1	80
Darlington Elementary School	Pam Garner	1	22
Davis Middle School	Daleen Jones	1	16
Davis Middle School	Dustin Hammons	1	17
Davis Middle School	Jeff Mapes	1	17
Davis Middle School	Sarah Waters	1	17
Del City Elementary School	Maryam White	1	25
Del City Elementary School	Loni Briggs	1	50
Dickson Upper Elementary School	Emile Winchester	1	90
Dove Science Academy Elementary School	Amy Lewellen	1	60
Dove Science Academy South Elementary	Yasmin Hinojosa	1	80
Drummond Elementary School	Karie Moorehead	1	21

Participant List

School Name	Teacher	Teachers	Students
Durant Intermediate School	Alecia Jarvis	1	150
Durant Intermediate School	Susan Hall	1	150
Durant Intermediate School	Alecia Jarvis	1	125
Durant Intermediate School	Susan Hall	1	125
Earlywine Elementary School	Luann Gilbert	1	42
Eisenhower Elementary School	Cristil Carillo	1	20
Epic Charter Schools	Julie Tucker	1	2
Epic Charter Schools	Robbyn Benn	1	37
Epic Charter Schools	Mindy Direen	1	35
Epperly Heights Elementary School	Veronica Gray	1	22
Epperly Heights Elementary School	Valerie Minor	1	22
Epperly Heights Elementary School	Judy Musselman	1	20
F.D. Moon Middle School	Winston Prescott	1	62
F.D. Moon Middle School	Nichell Garcia	1	61
F.D. Moon Middle School	Luke Gronemeyer	1	61
F.D. Moon Middle School	Coleman Sanders	1	61
Fairview Elementary School	Alexandra North	1	88
Fisher Elementary School	Tami King	1	17
Fisher Elementary School	Heather Kovach	1	17
Fisher Elementary School	Taylor Brown	1	17
Fisher Elementary School	Tami King	1	26
Fisher Elementary School	Heather Kovach	1	52
Fort Gibson Intermediate Elementary School	Jimmie Hammontree	1	40
Fort Gibson Intermediate Elementary School	Karlee Ritchie	1	40
Fort Gibson Intermediate Elementary School	Heather Wheeler	1	40
Garfield Elementary School	Valerie Francisco	1	18
Garfield Elementary School	Kaitlin Streber	1	20
Garfield Elementary School	Jennie Scott	1	20
Garfield Elementary School	Abbey Frank	1	25
Garfield Elementary School	Mike Danski	1	21
Greenville Elementary School	Tambre Sanders	1	10
Grove Elementary School	Heather Harper	1	48
Guthrie Upper Elementary School	Stacey Johnston	1	105
Guthrie Upper Elementary School	Angela Bandy	1	110

School Name	Teacher	Teachers	Students
Healdton Elementary School	Tara Watkins	1	22
Healdton Elementary School	Natasha Bartlett	1	22
Heavener Elementary School	Lacey Dyer	1	50
Heritage Hall School	Holly Carlin	1	64
Heritage Trails Elementary School	Sally Russell	1	84
Highland Park Elementary School	Stephanie Mouse	1	25
Highland Park Elementary School	Tamara Woodring	1	25
Holmes Park Elementary School	Bertha Shatswell	1	100
Homer Elementary School	Calli Presley	1	80
Independence Middle School	Heather Cromwell	1	25
Independence Middle School	Hanna Hensley	1	25
Independence Middle School	Lyndsey Kean	1	30
Independence Middle School	Amber McKeever	1	25
Independence Middle School	Kimberly Cox	1	25
Independence Middle School	Amy Rice	1	25
Independence Middle School	Tina Myers	1	30
Independence Middle School	Sandy Winn	1	25
James Griffith Intermediate School	Cortney Cunningham	1	22
James L. Dennis Elementary School	Allison Becker	1	24
James L. Dennis Elementary School	Marissa Allen	1	20
James L. Dennis Elementary School	Cecelia McTighe	1	21
Jefferson Elementary School	Lesli Arnold	1	56
Jefferson Elementary School	Robert Lowe	1	50
Jefferson Middle School	LaShawna Collins	1	100
JF Kennedy Elementary School	Harley Purvis	1	18
Jones Elementary School	Tara Freeman	1	20
Jones Elementary School	Jordan Aman	1	19
Jones Elementary School	Cortney Cunningham	1	19
Jones Elementary School	Noah Wallace	1	20
Justice Elementary School	Kelly Martin	1	15
Kelley Elementary School	Michelle Hughes	1	7
Kiefer Middle School	Taylor Johnson	1	60
Kingsgate Elementary School	Arica Dick	1	4
Kingsgate Elementary School	Arica Dick	1	70

Participant List

School Name	Teacher	Teachers	Students
Konawa Elementary School	Diana Wallis	1	50
Lake Park Elementary School	Bryan Taylor	1	44
Lakeview Elementary School	Rebecca Johnson	1	13
Lee Elementary School	Kristine Porter	1	90
Liberty Academy	Alexis Corona	1	11
Liberty Elementary School	Jamie Winters	1	44
Liberty Mounds Elementary School	Burt McLain	1	36
Lincoln Elementary School	Emily Stein	1	20
Lincoln Elementary School	Tonya Ford	1	20
Lincoln Elementary School	Kenny Tudor	1	60
Little Axe Elementary School	Robin Jones	1	25
Little Axe Elementary School	Sandra Snively	1	21
Little Axe Elementary School	Brooks Bell	1	21
Little Axe Elementary School	Justina Bates	1	21
Lomega Elementary School	Sandy Kramer	1	14
Madill Elementary School	Darschell Barker	1	20
Madill Elementary School	Terri McDaniel	1	20
Madill Elementary School	Jane Castleberry	1	20
Madill Elementary School	Patty Dodd	1	20
Madill Elementary School	Mary Langley	1	20
Madill Elementary School	Kesley Lawrence	1	19
Mannford Upper Elementary School	Amanda Kyser	1	100
Maple Elementary School	Shana Thiel	1	21
Mary Golda Ross Middle School	Letia Crawford	1	200
Mary White Elementary School	Jennifer Taylor	1	13
Mary White Elementary School	Lena Davis	1	15
Mary White Elementary School	Jan Haley	1	14
Maysville Elementary School	Christie Puckett	1	23
McKinley Elementary School	Pamela Tucker	1	22
McKinley Elementary School	Shannon Lowe	1	22
McKinley Elementary School	Tyler Hensley	1	9
McKinley Elementary School	Kaily Tubbs	1	28
McKinley Elementary School	Jess Lawson	1	27
Meeker Elementary School	Angela Tyler	1	64

School Name	Teacher	Teachers	Students
Millwood Elementary School	Kimberley Drea	1	18
Millwood Elementary School	Kimberley Drea	1	77
Morrison Elementary School	Danielle Gerbrecht	1	4
Moss Elementary School	Tara Crenshaw	1	22
Moss Elementary School	Ashley Cates	1	20
Mounds Middle School	Kim Cummings	1	46
Muldrow Middle School	Jamie Patterson	1	32
Muldrow Middle School	Jana Foyd	1	32
Muldrow Middle School	Mandy Ramey	1	31
Nicoma Park Intermediate School	Terri Patten	1	46
Nicoma Park Intermediate School	Tara Hill	1	12
Nicoma Park Intermediate School	Lacey Blain	1	70
Northmoor Elementary School	Melissa Craig	1	28
Northmoor Elementary School	Keri Snyder	1	28
Northridge Elementary School	Noel Wisniewski	1	26
Northridge Elementary School	Laura Hardee	1	26
Northridge Elementary School	Laura Brothers	1	26
Northridge Elementary School	Andrew Wiggins	1	26
Northridge Elementary School	Stevie Westmoreland	1	26
Northwood Elementary School	Donna Summy	1	25
Northwood Elementary School	Jordan Dobson	1	25
Northwood Elementary School	Kristi Creel	1	25
Northwood Elementary School	Kathleen White	1	25
Oak Hall Episcopal School	Amy Flanagan	1	7
Okay Elementary School	Andrea Collins	1	25
Oklahoma School for the Deaf	Stacy Edgar	1	25
Oktaha Elementary School	Susan Ledford	1	42
Overholser Elementary School	Cortlyn Emerich	1	22
Overholser Elementary School	Natilee Benefield	1	20
Overholser Elementary School	Maria Castro	1	20
Pansy Kidd Middle School	Kenneth Braden	1	66
Pansy Kidd Middle School	Donna Huggins	1	26
Pansy Kidd Middle School	Misty Collins	1	66
Pansy Kidd Middle School	Kenneth Braden	1	91
Pansy Kidd Middle School	Mandy VanVekoven	1	50

Participant List

School Name	Teacher	Teachers	Students
Parkview Elementary School	Carrie Rowe	1	100
Pershing Elementary School	Heather Morrison	1	50
Pershing Elementary School	Annetta Custer	1	75
Plainview Intermediate School	Kelley Simmons	1	125
Pleasant Grove Elementary School	Kathy Ferguson	1	18
Ralph Downs Elementary School	Diann McKasson	1	27
Ralph Downs Elementary School	Mary Thele	1	25
Red Oak Elementary School	Consuelo Hall	1	58
Redstone Intermediate School	Misti Zerger	1	52
Redstone Intermediate School	Nathella Taylor	1	4
Redstone Intermediate School	Alana VanDeventer	1	57
Ridgecrest Elementary School	Melinda Hall	1	16
Ringling Elementary School	Halie Griffin	1	32
Ringwood Elementary School	Matt Foster	1	31
Riverside Elementary School	Nancy Bross	1	33
Robin Hill Public School	Aryan Azizian	1	20
Robin Hill Public School	Missy McIntosh	1	20
Rock Creek Elementary School	Deborah Robnett	1	25
Rock Creek Elementary School	Kassie Wingfield	1	25
Rogers Elementary School	Shawntae Ballard	1	125
Roland Upper Elementary School	Melinda McKinney	1	57
Rollingwood Elementary School	Maggie Oaks	1	17
Sadler Arts Academy	J. (Smith) Scott	1	21
Sadler Arts Academy	Narciasa Sanders	1	27
Sasakwa Elementary School	Donna Radford	1	13
Schwartz Elementary School	Julia Narramore	1	22
Schwartz Elementary School	Christy Combs	1	45
Sharon-Mutual Elementary School	Belinda Beers	1	11
Silo Elementary School	Ryan Cordell	1	80
Sky Ranch Elementary School	Madison Thomas	1	28
Sky Ranch Elementary School	Kathryn Allen	1	26
Sky Ranch Elementary School	Kimberly Cudd	1	26

School Name	Teacher	Teachers	Students
Soldier Creek Elementary School	Nancy Bradley	1	24
Soldier Creek Elementary School	Barbara Kuykendall	1	25
Soldier Creek Elementary School	Tessa Crawford	1	24
Soldier Creek Elementary School	Shelby Pearson	1	27
Soldier Creek Elementary School	Tessa Crawford	1	27
Soldier Creek Elementary School	D Dobbs	1	26
Soldier Creek Elementary School	Mayme Mockabee	1	27
Sooner Elementary School	Crystal Wilson	1	22
Sooner Elementary School	Ms Harrison	1	23
Southgate/Rippetoe Elementary School	Michele Green	1	65
Springer Elementary School	Tammy Byars	1	20
St. Charles Borromeo Catholic School	Kathy Rooker	1	16
St. John Nepomuk Catholic School	Darcy Wilson	1	17
St. Paul's Lutheran School	Wendi Collums	1	10
Strother Elementary School	Jenna Pollock	1	17
Strother Elementary School	Charity Dillon	1	16
Sulphur Intermediate Elementary School	Kim Dixon	1	40
Sulphur Intermediate Elementary School	Lacey Doty	1	36
Sulphur Intermediate Elementary School	Kelsey McDonald	1	37
Taft 5th Grade Center	Amanda Girdler	1	51
Taft 5th Grade Center	Sandra Niedermeier	1	47
Taft 5th Grade Center	Shaun Floyd	1	47
Taft 5th Grade Center	Sue Tashman	1	52
Taft 5th Grade Center	Naomi Epler	1	45
Taft 5th Grade Center	Jeff Kennamer	1	68
Taft Elementary School	Jennifer White	1	23
Taft Elementary School	Caroline Dettle	1	23
Tinker Elementary School	Craig Elrod	1	2
Tinker Elementary School	Kayla Wilbanks	1	6
Tinker Elementary School	Kayla Wilbanks	1	27
Tinker Elementary School	Patricia Hurt	1	26
Tishomingo Middle School	Trey Drinkard	1	60
Tonkawa Elementary School	Fawne Pierce	1	65
Trinity School	Norma Morton	1	25

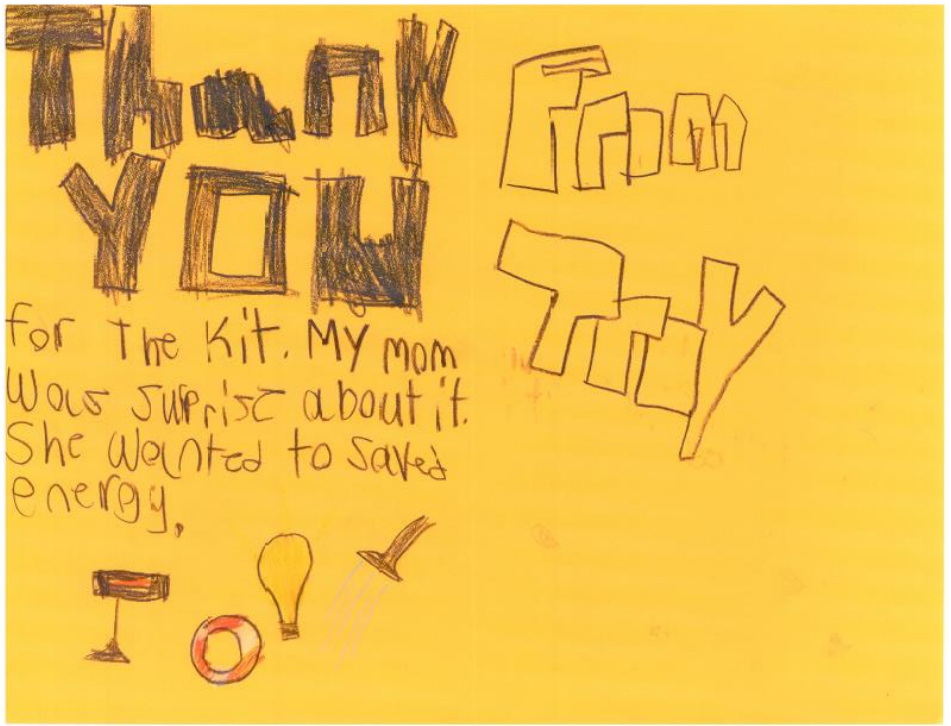
Participant List

School Name	Teacher	Teachers	Students
Tulakes Elementary School	Melissa Meek	1	25
Tulakes Elementary School	Samantha Farmer	1	25
Tulakes Elementary School	Courtney Garrett	1	25
Tulakes Elementary School	Gracie Kitzel	1	25
Union Elementary School	Melissa Smith	1	16
Vanoss Elementary School	Sarah Francois	1	42
Victory Life Academy	Melissa Holder	1	12
Wanette Elementary School	Bobbi Howse	1	20
Ward Elementary School East	Elise Horn	1	15
Ward Elementary School East	Kerrey Matlock	1	16
Ward Elementary School East	Amber Boney	1	15
Washington Irving Elementary School	Shawna Shorb	1	55
Wayland Bonds Elementary School	Stephanie Schoenecke	1	22
Wayland Bonds Elementary School	Janice Walker	1	24
Wayland Bonds Elementary School	Melissa Cosper	1	23
Wayland Bonds Elementary School	Chance Mueller	1	23
Webster Middle School	Deborah Reese	1	56
Webster Middle School	Kristina Clements	1	28
Webster Middle School	Edwin Rodriguez	1	29
Webster Middle School	Deborah Reese	1	30
Webster Middle School	Christina Beverage	1	30
Webster Middle School	Lauren Anderson	1	29
Webster Middle School	Toby Goforth	1	30
Webster Middle School	Sherry Gonzalez	1	28
Webster Middle School	Joy Fowler	1	7
Webster Middle School	Bianca Smith	1	19
Webster Middle School	Franchine Sanderson	1	24
Webster Middle School	Fabiola Gonzalez	1	28
Westfall Elementary School	Chrystal Reis	1	22
Westfall Elementary School	Miranda Pherigo	1	22
Westfall Elementary School	Destiny Corbin	1	23
White Rock Elementary School	Alex Newport	1	12
Wiley Post Elementary School	Colleen Roesslein	1	23
Wiley Post Elementary School	Erica Muncy	1	22
Wiley Post Elementary School	Greg Razook	1	22
Wiley Post Elementary School	Katy Holloway	1	23
Will Rogers Elementary School	Michelle Bryson	1	20
Willard Grade Center	Kylar Merrell	1	75
Willard Grade Center	Jennifer Williams	1	75
Wilson Elementary School	Amanda Stearns	1	16
Wilson Elementary School	Ray Withers	1	17
Winding Creek Elementary School	Kristel Dillon	1	102
Young Achievers Christian Academy	Shona Smith	1	11

Totals	313	11758
Total Participants	12071	

Thank You from Teachers and Students





Thank You from Teachers and Students

OG & E,

I would like to thank you for allowing me to be a part of the LivingWise Program again this year. I hope to be able to continue teaching the curriculum to my 5th grade for years to come. The students love to get their kits each year. The boxes arrive and they can't wait until lesson 4 is complete in order to get the kit. They find it hard to believe that it belongs to them and they owe nothing. It's the little things in life that make my students happy!!

I appreciate that the curriculum is easy to follow and understand. The students love the activities built into learning. I can easily incorporate the LivingWise Program into my 5th grade academic standards, which is a great plus for me. The program is great at activating prior knowledge. It gives them information that they already know about and builds upon it. I feel it gives them an idea where the energy (power) comes from and that using an excess can cause the power grid to get out of balance.

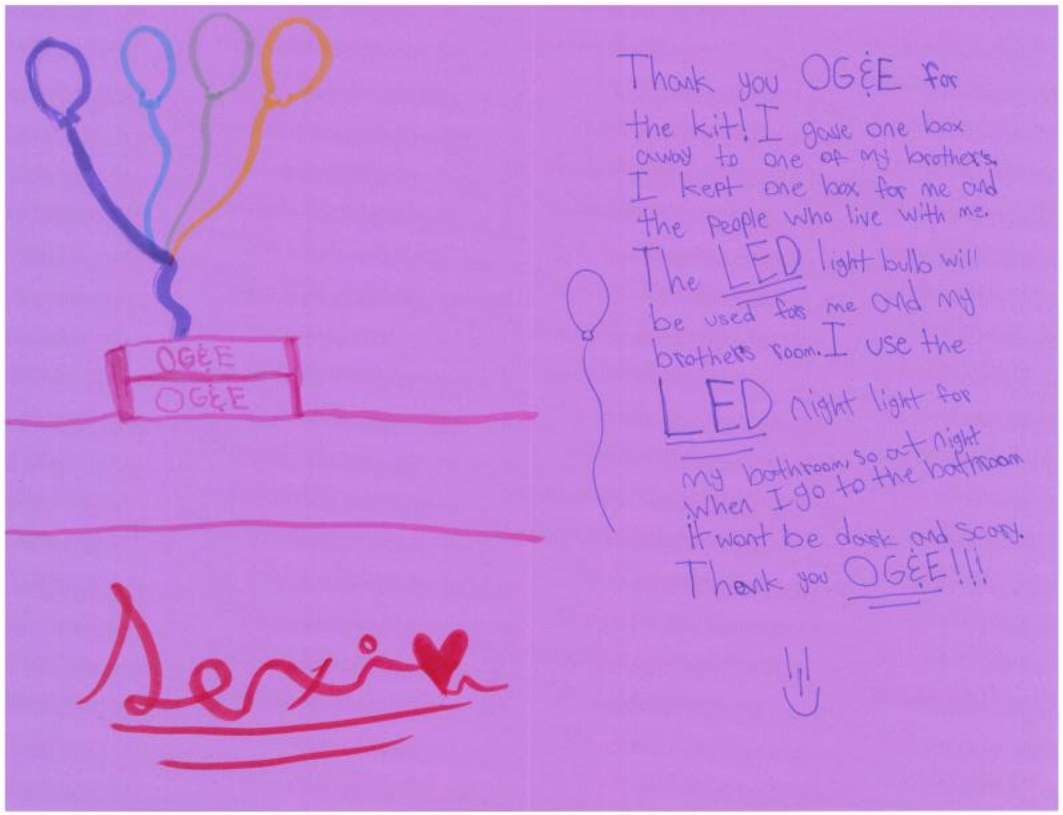
Thank You

Amanda M Stearns

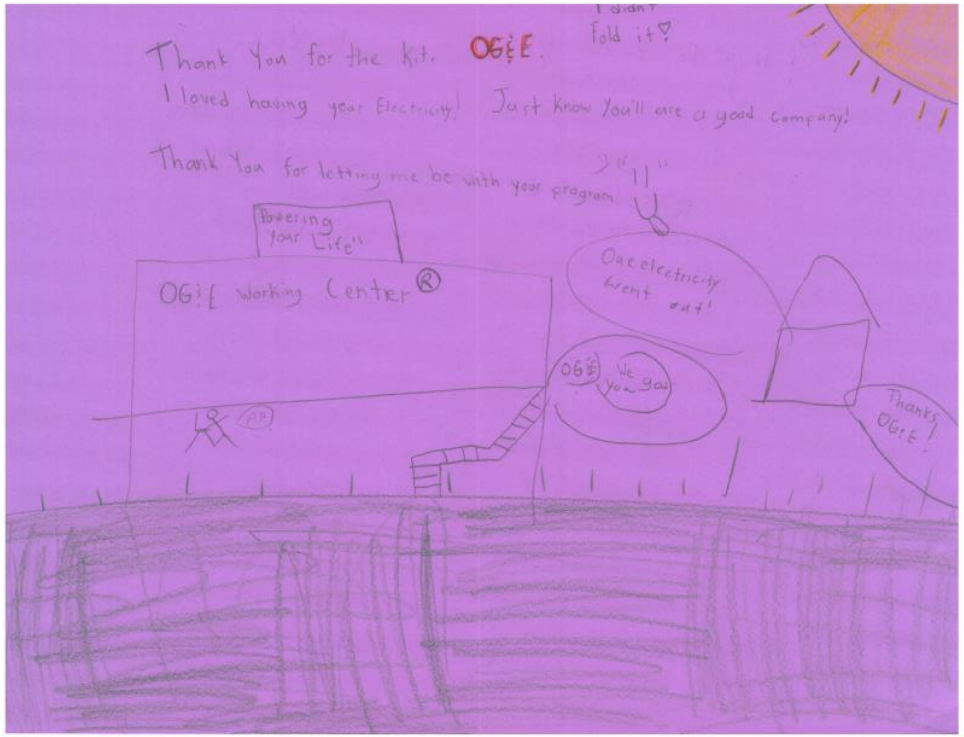
Amanda Stearns

5th grade

Wilson Elementary



Thank You from Teachers and Students



Dear OG & E,

January 20, 2022

I would like to personally thank you and your company for the opportunity to use the Livingwise program for my 5th-grade science class. I think the program was engaging and fun, and it was exciting to see my students learning about how to save energy in their own homes. It is always rewarding to see my students get excited about learning, and the fact that they were able to bring materials home to implement what they learned was a huge bonus and incentive. I look forward to using this program in future years in my science classes!

Keep up the good work!!

Sincerely,

Heidi Mallow

Heidi Mallow
Middle school teacher
Coyle Public Schools

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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 (SO_2) & carbon dioxide-equivalents (CO_2e).

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 CO_2e 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, SO_2, and CO_2e 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.