

Louisville Gas and Electric Company and Kentucky Utilities

WeCare Program Impact and Process Evaluation





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We would like to acknowledge the many individuals who contributed to the Louisville Gas and Electric Company and Kentucky Utilities WeCare program evaluation. This evaluation effort would not have been possible without their help and support.

Louisville Gas and Electric Company and Kentucky Utilities WeCare program manager and energy efficiency evaluation manager provided substantial guidance and input throughout the evaluation and reporting processes. These individuals participated in ongoing evaluation deliverable reviews and discussions and graciously responded to follow-up questions and documentation requests. We would like to thank Brian Springfield and John Hayden specifically.

The Tetra Tech team comprised the following individuals: Sue Hanson, Carrie Koenig, and Kendra Mueller.

1.0 EXECUTIVE SUMMARY

Louisville Gas and Electric Company and Kentucky Utilities (LG&E and KU or Company) offer energy efficiency programs to their customers. These programs cover electric and natural gas energy efficiency measures, including the WeCare program, which provides education and weatherization services to income-qualified residential customers. This report details the activities and results of program year (PY) 2020 and 2021 evaluation for the WeCare program.

1.1 PROGRAM SUMMARY

The WeCare program offers LG&E and KU's income-eligible residential customers energy education and weatherization services, allowing them to better manage their utility bills. Customers who meet the Low-Income Heating Assistance Program's (LIHEAP)¹ federal poverty income guidelines are eligible for the program, and the program will take customers up to 200 percent of the federal poverty limit. Additionally, customers must have continuous service for nine months, and the home must not have received program services in the last three years. Customers who rent are eligible to participate, but a signed landlord consent form is required for measures installed beyond the base equipment.

The program has two phases—Phase 1 and Phase 2. In Phase 1, customers are provided an energy audit where a set of base measures such as light-emitting diodes (LEDs), low-flow faucet aerators, low-flow showerheads, and smart power strips are directly installed. If needed and customers are eligible, Phase 2 includes installing weatherization measures and other energy-efficient equipment, as relevant. The level of service provided is based on an average spend of \$1,500 for a single-family home and \$750 for a multifamily dwelling unit (MDU). The program does allow for exceptions with a maximum spend of \$3,500-\$4,500 per dwelling depending on the situation, prioritized for the most vulnerable, including the elderly, medically fragile, young children, and the disabled.

1.2 EVALUATION METHODOLOGY

Impact and process activities were included as part of the WeCare program evaluation. Tetra Tech conducted interviews with LG&E and KU program staff and implementation staff from Solutions for Energy Efficiency Logistics (SEEL) and Weatherization Plus to inform evaluation activities and key researchable questions.

For the impact evaluation, Tetra Tech used standard fixed-effects regression models to estimate electric and gas energy savings for PY2020 by Company and housing type. The annual consumption savings analysis resulted in evaluated savings that were compared against the respective estimated per-participant claimed deemed savings. Similar to the process completed for this program in the last evaluation cycle, the ratio of claimed deemed kW to claimed deemed kWh was applied to the evaluated annual kWh savings to estimate the annual demand reduction. Additionally, Tetra Tech conducted desk reviews of audit reports and work orders to understand what customers have been provided.

Tetra Tech focused on PY2021 for process evaluation activities. Tetra Tech reviewed program materials and survey data collected by Bellomy. Additionally, project documentation was compared to the tracking database to understand what information was being captured by the program. Tetra Tech

¹ The total household income for a LIHEAP applicant must be at or below 200 percent of the 2021 federal poverty guidelines. See: <https://www.benefits.gov/benefit/623>

also conducted benchmarking from peer-utilities to see what other offerings and components are utilized for the income-qualified sector.

1.3 SUMMARY OF KEY FINDINGS AND RECOMMENDATIONS

Overall, Tetra Tech believes the WeCare program operated effectively in PY2020 and PY2021, meeting its target of 4,000 program participants. According to interviews with program and implementation staff, the program has worked as intended, and communication among all parties was appropriate, with no major concerns. A review of the survey data collected by Bellomy showed that recent program participants were highly satisfied with the program.

Through the billing analysis, Tetra Tech found quantifiable electric and gas savings in PY2020 with more than 0.6 GWh and 73.2 Mcf in LG&E’s service territory and more than 0.7 GWh in KU’s service territory. Participants in sectors with statistically significant results reduced their annual electricity usage by 3.7 percent to 7.3 percent and annual gas usage from 4.8 percent to 9.2 percent. Tetra Tech’s per-participant savings results for gas were higher than LG&E’s estimated claimed deemed savings. For electric, Tetra Tech’s per-participant savings results were lower than both LG&E and KU’s claimed deemed savings. Tetra Tech notes that COVID-19 likely impacted usage during this review period (i.e., 2019-2021). Therefore, we recommend revisiting the savings estimates in the next couple of years.

Through our evaluation activities, Tetra Tech has identified the following additional findings and associated recommendations for consideration by LG&E and KU.

Finding #1: As a result of the billing analysis, Tetra Tech found substantial differences in savings values between housing sector types (attached compared to detached).

While historically, LG&E and KU have used a per-participant deemed savings value at the company level, the differences found by Tetra Tech suggest the need to incorporate the housing sector type. Given some of the substantial ranges in savings values from this evaluation, and due to the potential COVID-19 effect, Tetra Tech included previous evaluation savings numbers from both 2016 and 2017 (Tiers B and C) in determining recommended per-participant deemed savings values². Tetra Tech’s recommended per-participant deemed savings estimates are based on the averages evaluated across all three years.

Recommendation #1: Tetra Tech recommends using per-participant deemed savings values, broken out by Company and housing sector type, for planning purposes and claiming savings. The specific values recommended for LG&E and KU are shown in Table 1 and Table 2 below.

Table 1. Recommended Electric (kWh) Housing Sector-Level Annual Deemed Savings

Company	Housing Sector	Per-Participant Evaluated Deemed Savings (kWh)
LG&E	Attached housing	659.6
	Detached housing	742.4
KU	Attached housing	845.5
	Detached housing	923.7

² The recommended values in the Table 1 and Table 2 used the evaluated numbers from 2016 Tiers B and C, 2017 Tiers B and C, and this evaluation (see Appendix A).

Table 2. Recommended Gas (Ccf) Housing Sector-Level Annual Deemed Savings

Company	Housing Sector	Per-Participant Evaluated Deemed Savings (Ccf)
LG&E	Attached housing	45.7
	Detached housing	56.8

Finding #2: The Analysis Reports provided to customers do not provide details on potential energy or dollar savings per solution category.

The numbers provided in the WeCare Analysis Report are Savings to Investment Ratios (SIRs) and percent of estimated energy savings. The SIR, in particular, can be challenging for customers to understand. Other similar programs benchmarked showed that information like estimated energy and dollar savings are provided so the customer can understand the value of the audit and services to saving energy and money. Tetra Tech understands LG&E and KU intentionally excluded this information, so customers are not promised specific savings to manage satisfaction levels.

Recommendation #2: In the WeCare Analysis Report, re-consider including an estimated energy and dollar savings percent range or another relevant metric for each solution category.

Finding #3: Auditors manually select information to provide to each customer from printed Analysis Reports. This can result in some customers receiving blank sections and/or sections with general energy savings tips instead of solution category details. Tetra Tech also noticed inconsistent solution category titles.

During the desk reviews, Tetra Tech identified some inconsistent solution categories, blank sections, pages that were not applicable, and sections that included only general energy savings tips. In discussions with LG&E and KU and SEEL, Tetra Tech learned that once the Analysis Report pages are printed, auditors manually remove blank pages or those that are not applicable.

The Analysis Report could be condensed so that only valuable sections are provided to the customer by removing these blank or not applicable sections. Having an Analysis Report that reflects what was provided to the customer could also help should the Call Center field any customer questions—seeing exactly what the customer received as part of program participation would be useful. Additionally, using consistent categories will allow easier comparisons of items across the full population from the tracking data. Because the general energy savings tips are likely helpful for almost all customers, they could be included as a distinct section in each Analysis Report.

Recommendation #3a: Use consistent solution categories, remove blank sections, and include general energy savings tips as their own item within each Analysis Report. Use customer-friendly terminology to ensure findings and recommendations are easy to understand.

Recommendation #3b: Create an electronic version of the Analysis Report before printing the hard copy that includes only the appropriate pages and save it to each customer's file, and then print the document. This allows for a paper trail of the exact document the customer received.

Recommendation #3c: Continue to conduct monthly data checks of customer reports to ensure copies are final versions and reflect meaningful feedback to the customer.

Finding #4: Evaluated savings could be further refined if additional details were collected during the audit visit.

Some results indicated an increase in energy use after participation rather than a decrease. This increase suggests that some equipment might not have been functioning before repair or replacement, which is not uncommon for income-qualified participants. Knowing how customers used their prior equipment could help interpret savings results.

Recommendation #4: Ensure contractors note the condition of all equipment before repair or replacement.

Finding #5: Due to federal lighting equipment standard updates, most LEDs will not provide savings beyond 2023.

The U.S. Department of Energy (DOE) published two Final Rules related to General Service Lamps in accordance with its responsibilities under the 2007 Energy Independence and Security Act (EISA). One rule was an update to the definitions of General Service Lamp (GSL) and General Service Incandescent Lamp. The second rule updated the energy efficiency of GSLs to a 45 lumens per watt requirement. The Final Rules go into effect in 2022, with full compliance phased in over 2023.

Enforcement at the manufacturer and retail-level will be fully in effect during 2023. Financial enforcement for retailers of the EISA standard phases will be between March 1 and August 1, 2023. Tetra Tech has received feedback from our work in other jurisdictions that retailers will likely discount inefficient lighting to move their inventory as they work toward full compliance with EISA during 2023. As such, customers will soon no longer have the option to purchase less efficient bulbs.

Recommendation #5: Given the federal changes to standards and the transition away from LEDs, consider adding more equipment options to the WeCare program measure mix, such as pipe insulation, Wi-Fi thermostats, bathroom exhaust fans, and specialty bulbs.

2.0 INTRODUCTION

This report presents the detailed results for PY2020 and PY2021 impact and process evaluation of the WeCare program offering in LG&E and KU's service territory.

2.1 PROGRAM DESCRIPTION

The WeCare program offers LG&E and KU's income-eligible residential customers energy education and weatherization services, allowing them to manage their utility bills better. Customers who meet the LIHEAP federal poverty income guidelines are eligible for the program, and the program will take customers up to 200 percent of the federal poverty limit. Additionally, customers must have continuous service for nine months, and the home must not have received program services in the last three years. Customers who rent are eligible to participate but must have a landlord consent form signed for measures installed beyond the base equipment.

The program has been implemented by SEEL during this evaluation period, which subcontracts with Weatherization Plus. The two contractors conduct similar services—SEEL has concentrated on the initial audit and installing the base measures, and both SEEL and Weatherization Plus cover the installation of the follow-up weatherization measures. SEEL uses the software package, Snugg Pro, to capture the energy audit details and work orders, including recommended improvements and the measures installed.

The program had two phases—Phase 1 and Phase 2. In Phase 1, customers were provided an energy audit where a set of base measures such as LEDs, low-flow faucet aerators, low-flow showerheads, and smart power strips were directly installed. If needed and customers were eligible, Phase 2 included the installation of weatherization measures and other energy-efficient equipment, as relevant. The level of service provided was based on an average spend of \$1,500 for a single-family home and \$750 for an MDU. The program allowed for exceptions with a maximum spend of \$3,500-\$4,500 per dwelling depending on the situation, prioritized for the most vulnerable, including the elderly, medically fragile, young children, and the disabled.

Table 3. WeCare Available Services and Equipment by Phase

Phase	Available Services and Equipment	
Phase 1	<ul style="list-style-type: none"> • Energy audit • LED bulbs • Low-flow showerheads 	<ul style="list-style-type: none"> • Low-flow faucet aerators • Smart power strips
Phase 2	<ul style="list-style-type: none"> • Air and duct sealing • Attic and wall insulation • Energy-efficient water devices • Heating and central air conditioning tune-ups • Programmable thermostats 	<ul style="list-style-type: none"> • Energy-efficient refrigerator (replacement) • Energy-efficient window air conditioners (replacements) • Combustion appliance gas leak safety check • Inspection for asbestos, pest infestation, mold • Education as to cost savings measures

LG&E and KU staff indicated that most customers hear about the program from word-of-mouth, as a referral from agencies, other community organizations, or are repeat customers. SEEL does employ an outreach coordinator who reaches out to organizations such as food banks, community action agencies, and other assistance programs to sign customers up for the program.

The table below summarizes actual program participation by Company for PY2020 and PY2021; LG&E and KU met their program targets in both years. Of note, the number of invoiced projects is the actual participation count, not the number of completes, due to how project status changes from one phase to the next during the invoicing process. Thus, the numbers reflected in the table were invoiced and paid by LG&E and KU.

Table 4. WeCare Program Participation by Company

Company	PY2020	PY2021
LG&E	2,633	2,619
KU	1,373	1,381
Total	4,006	4,000

Sources: 2020 n 2021 Invoice Rpt.xlsx; WeCare Measures Report 2020.xlsx; WeCare Measures for 2021.xlsx; Customer Completions for 2020.xlsx and Customer Completions for 2021.xlsx; unique enrollment IDs and number of units for multi-dwelling units (MDUs)

2.2 EVALUATION METHODS AND ACTIVITIES

2.2.1 Summary of Researchable Questions and Evaluation Activities

This section describes the methods and data collection activities implemented as part of the PY2020 and PY2021 evaluations. Tetra Tech designed a methodology to evaluate the program and address the researchable questions outlined in the program’s Detailed Evaluation Plan³.

Based on discussions with LG&E and KU program and implementation staff, several key researchable questions were identified to be addressed through the evaluation of the WeCare program. The table below documents these, along with activities that supported addressing the questions.

Table 5. WeCare Program Researchable Questions

Researchable Question	Activity to Support the Question
Program Design	
How is the program working? How could it be improved? What enhancements are needed in the design and delivery of the program, if any? How has the transition from tier-level to average spend per home gone?	<ul style="list-style-type: none"> Program and implementation staff interviews Bellomy data review, if applicable Benchmarking
How has COVID impacted the delivery of the program? Will COVID continue to impact the delivery of the program?	<ul style="list-style-type: none"> Program and implementation staff interviews
Are there additional measures or screening criteria the program should incorporate?	<ul style="list-style-type: none"> Benchmarking
Does the audit report present clear, actionable recommendations?	<ul style="list-style-type: none"> Desk review
What barriers exist to participate in the program from enrollment through to completion? Do these differ for landlords?	<ul style="list-style-type: none"> Program and implementation staff interviews Bellomy data review, if applicable

³ A Detailed Evaluation Plan was delivered to LG&E and KU for review and was approved on June 27, 2022.

Researchable Question	Activity to Support the Question
What issues may affect future program participation?	<ul style="list-style-type: none"> • Program and implementation staff interviews
Customer Awareness, Marketing, and Satisfaction	
How did participants most commonly hear about the program? What marketing and outreach efforts were most successful?	<ul style="list-style-type: none"> • Program and implementation staff interviews • Bellomy data review, if applicable • Website and document review
Are customers satisfied with the program?	<ul style="list-style-type: none"> • Bellomy data review
Program Performance and Savings	
What per-participant and program-level electric and gas savings were realized by 2020 program participants?	<ul style="list-style-type: none"> • Billing analysis
Does the audit report match what was recorded in the tracking data?	<ul style="list-style-type: none"> • Desk reviews
How are the savings determined?	<ul style="list-style-type: none"> • Snugg Pro demo

2.2.2 Detailed Evaluation Activities

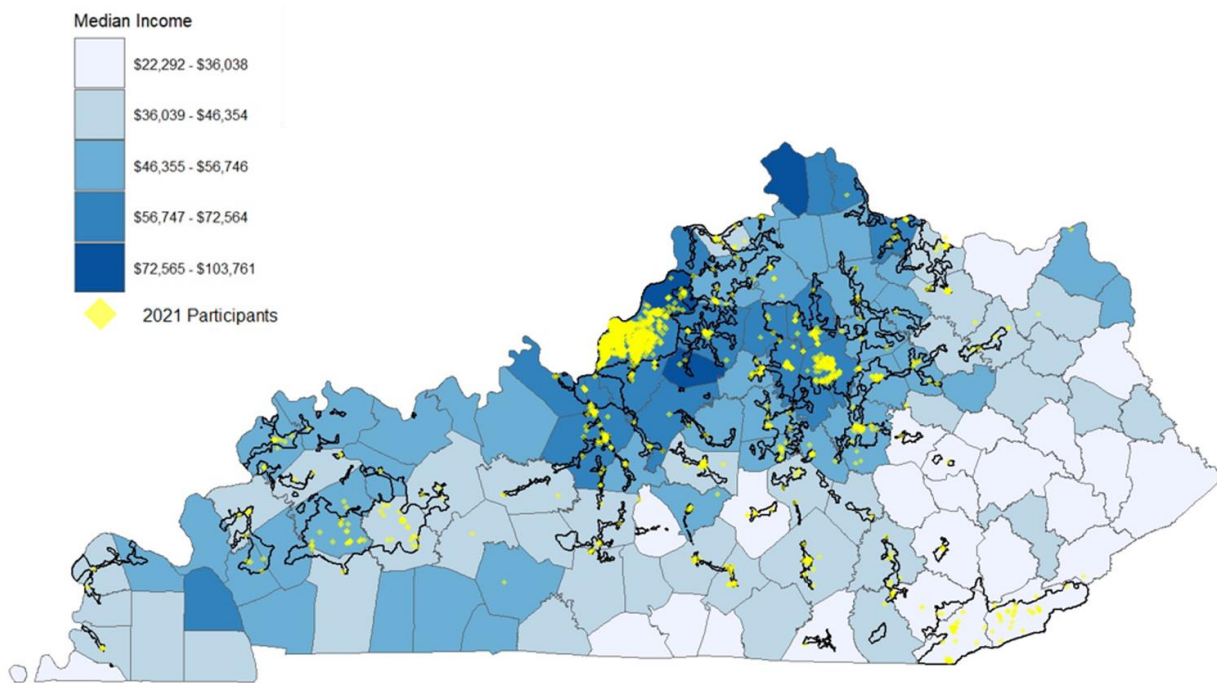
The table below summarizes the activities used to address the key research questions in the evaluation.

Table 6. Program Evaluation Activities Summary

Evaluation Type	Activities
Overarching Evaluation Activities	Program staff interviews. Tetra Tech conducted three in-depth interviews. One interview was conducted with LG&E and KU program staff, and two with the program implementation team—one with the SEEL and one with Weatherization Plus.
Impact Evaluation Activities	<p>Database and savings calculation review and billing analysis. For customers completing both Phase 1 and Phase 2, Tetra Tech calculated estimated program savings using LG&E and KU’s customer participation information in fixed-effects regression models to develop the evaluated savings results. Additionally, Tetra Tech compared the per-participant evaluated savings values to LG&E and KU’s per-participant claimed deemed savings.</p> <p>Desk reviews. Tetra Tech reviewed 15 WeCare Analysis Reports and work orders to follow the process and match the documentation to the tracking database.</p>
Process Evaluation Activities	<p>Bellomy survey data review. Tetra Tech received PY2020 and PY2021 survey data collected by Bellomy. This data served two purposes: 1) Tetra Tech completed a review of the survey questions and results, and 2) the data were matched to the billing data to see if any insights could be gathered when combined with the energy usage data.</p> <p>Benchmarking. Tetra Tech researched ten utilities that offered low-income programs using utility-only funds. This activity included an Internet search of publicly available reports. Two additional utilities were included to show how they leveraged non-utility funds to enhance their low-income program offering.</p>

The figure below shows the PY2021 program participants and the median income levels by county from the US Census Bureau⁴. Appendix B provides a table with the number of program participants by county. LG&E and KU's service territory is reflected within the black outlines.

Figure 1. PY2021 Program Participants



Below is more detail related to the methodologies used for the evaluation activities associated with LG&E and KU's WeCare program evaluation.



Interviewed program and implementation staff. The program manager interview was completed with Brian Springfield and John Hayden from LG&E and KU on March 8, 2022. Tetra Tech interviewed SEEL implementation staff on March 28, 2022, and Weatherization Plus implementation staff on April 12, 2022. These interviews were a key component of the evaluation effort and informed many aspects of the DEP. Tetra Tech used these interviews to better understand the program design and delivery, discuss program successes and challenges, and identify and prioritize researchable questions for the evaluation.



Completed tracking database review. Tetra Tech reviewed the program's tracking database for PY2021 to assess the level of tracked savings and documentation. LG&E and KU used deemed savings estimates for electric energy, demand savings, and gas values; we compared these deemed savings estimates to the billing analysis evaluated estimates.

⁴

https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_1YR_S1901&prodType=table



Reviewed Snugg Pro software tool. Tetra Tech received a demo of the Snugg Pro software as a high-level overview of how savings are estimated. The demo was held on April 18, 2022, and included staff from LG&E and KU, SEEL, and Tetra Tech. The demo helped the team understand the customer interactions and project tracking process.



Conducted billing analysis. Cleaned billing, weather, and customer tracking data were combined to establish the database used in the fixed-effects regression models. Tetra Tech implemented a series of participant-level fixed-effects models to estimate the energy savings from the measures installed as part of projects completing Phase 1 and Phase 2. These models regress weather-normalized daily consumption per-participant based on pre-installation and post-installation monthly billing data for all PY202 participants with sufficient billing data before and after their measures were installed.



Completed desk reviews. Tetra Tech completed 15 desk reviews with PY2021 program participants. This was a purposeful sample of customers who received a mix of measure types from a Phase 2 visit. The desk reviews verified audit recommendations and reviewed the installed equipment specifications. Tetra Tech reviewed audit reports for completeness and compared them against the tracking data.



Reviewed monthly satisfaction data. LG&E and KU contract with Bellomy to conduct monthly surveys of participating WeCare customers. The surveys collect various information, including customer satisfaction. Tetra Tech reviewed the monthly data and report to understand program satisfaction.



Examined other utility low-income programs. This activity was a benchmarking review focused on eligibility requirements, including if other similar programs offer a moderate-income solution. Tetra Tech also attempted to assess measures offered, savings assumptions, differences between single-family homes and multi-dwelling units, and other standalone offerings from peer utilities.

3.0 IMPACT EVALUATION FINDINGS

This section presents the LG&E and KU's WeCare impact evaluation results from the billing analysis conducted with PY2020 participants⁵ who completed Phase 1 and Phase 2 projects and the desk reviews. The impact evaluation was designed around the key researchable questions.

3.1 RECOMMENDED DEEMED SAVINGS

For filing and reporting purposes, LG&E and KU have historically used a per-participant deemed savings value. Table 1 and Table 8 present Tetra Tech's recommended sector-level per-participant deemed savings values by Company. Given some of the substantial ranges in savings values from this evaluation, and due to the potential COVID-19 effect, Tetra Tech also used previous evaluation savings numbers from both 2016 and 2017 (Tiers B and C) to determine recommended per-participant deemed savings values⁶. As a result, Tetra Tech's per-participant deemed savings estimates are based on the average evaluated across all three years. Because of the considerable differences in savings between attached and detached housing types, Tetra Tech recommends using different deemed savings estimates.

Table 7. Recommended Electric (kWh) Housing Sector-Level Annual Deemed Savings

Company	Housing Sector	Per-Participant Evaluated Deemed Savings (kWh)
LG&E	Attached housing	659.6
	Detached housing	742.4
KU	Attached housing	845.5
	Detached housing	923.7

Table 8. Recommended Gas (Ccf) Housing Sector-Level Annual Deemed Savings

Company	Housing Sector	Per-Participant Evaluated Deemed Savings (Ccf)
LG&E	Attached housing	45.7
	Detached housing	56.8

Tetra Tech notes that it is not uncommon for some low-income program participants to see no savings or even increased usage after measures are installed. A key reason why this might happen is that participants adjust the furnace, air conditioner, and/or water heater temperatures to increase comfort once they have properly working equipment. For the low-income sector, it is often the case that they cannot afford to make the equipment improvements on their own. As a result, low-income programs tend to see more of the so-called "snapback" or "rebound" effect, which offsets the efficiency gains, as replacing previously inoperable equipment leads to increased energy use. Tetra Tech also notes that the COVID-19 pandemic likely impacted usage during this time. Therefore, Tetra Tech recommends revisiting the savings estimates in the next couple of years.

⁵ The billing analysis used PY2020 program participants in order to have 12 months of pre- and post-data.

⁶ The recommended values in the Table 7 and Table 8 used the evaluated numbers from 2016 Tiers B and C, 2017 Tiers B and C, and this evaluation (see Appendix A).

3.2 BILLING ANALYSIS SAVINGS RESULTS

The following sections present estimated evaluated savings from the billing analysis at the housing sector, energy usage, demand, and gas levels.

3.2.1 Housing Sector-Level Savings

The tables below show the housing sector-level electric and gas savings, respectively. Blue cells indicate statistically significant savings and claimed deemed savings within confidence limits. The term “evaluated savings” refers to the estimates from Tetra Tech’s PY2020 billing analysis, while “claimed deemed savings” refers to LG&E and KU’s estimated savings.

Table 9. Electric Housing Sector-Level Annual Savings Results

Company	Housing Sector	Participant Count	Per-Participant Evaluated Savings (kWh)	Per-Participant Claimed Deemed Savings (kWh)
LG&E	Attached housing	272	131.8	705
	Detached housing	1,069	546.1	1,410
KU	Attached housing	181	873.5	705
	Detached housing	455	1,264.7	1,410

Table 10. Gas (Mcf) Housing Sector-Level Annual Savings Results

Company	Housing Sector	Participant Count	Per-Participant Evaluated Savings (Ccf)	Per-Participant Claimed Deemed Savings (Ccf)
LG&E	Attached housing	198	21.9	16
	Detached housing	951	72.4	32

3.2.2 Per-Participant Estimated Savings—Electric Consumption

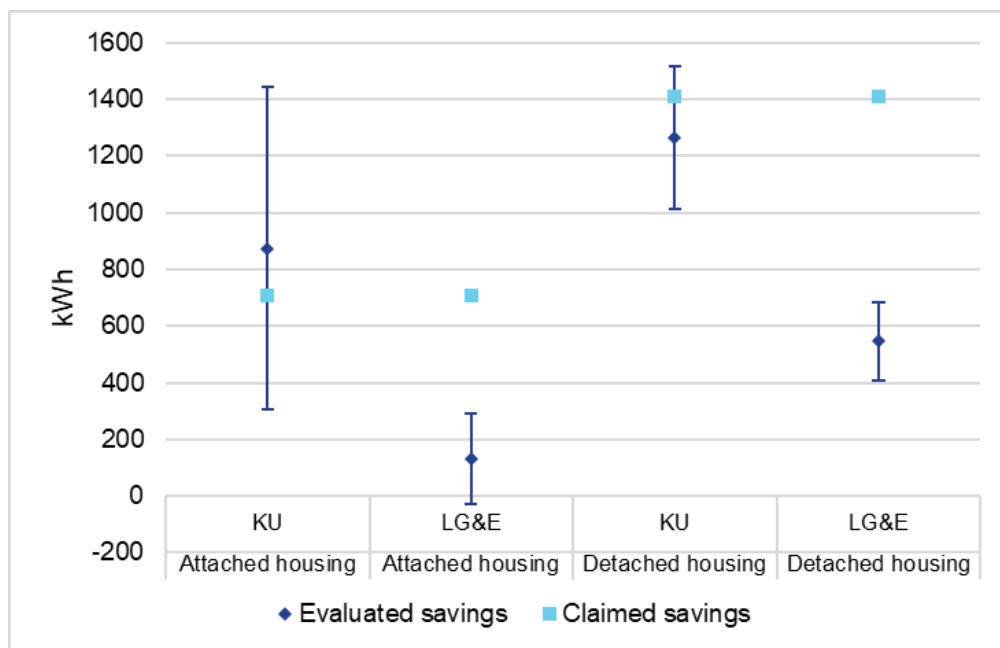
Overall, Tetra Tech found statistically significant evidence of electricity savings in all groups except LG&E Attached housing, as shown in the table below. This table also shows the annual savings estimates by Company and housing sector and compares the evaluated annual savings results to the claimed deemed savings; statistically significant estimates are denoted with blue cells. The claimed deemed savings are within the evaluated savings confidence interval for KU Attached and Detached housing, but neither is within the evaluated savings confidence intervals for LG&E.

Table 11. Electric Consumption (kWh) Per-Participant Annual Savings Results

Company	Housing Sector	Evaluated Savings Estimate (kWh)	Percent Savings	Confidence Interval (kWh)	Claimed Deemed Savings (kWh)	Claimed within Confidence Interval?
LG&E	Attached housing	131.8	1.7%	+/- 159.6	705	No
	Detached housing	546.1	4.4%	+/- 137.0	1,410	No
KU	Attached housing	873.5	3.7%	+/- 568.6	705	Yes
	Detached housing	1,264.7	7.3%	+/- 252.8	1,410	Yes

Figure 2 compares the evaluated annual per-participant savings results to the per-participant claimed deemed savings graphically. The results show that the claimed deemed savings values lie outside the confidence intervals of the evaluated savings for LG&E and the claimed deemed savings values were higher than their evaluated counterparts. For KU, the claimed deemed savings falls within the confidence intervals of the evaluated savings.

Figure 2. Electric Consumption (kWh) Per-Participant Annual Savings Results



3.2.3 Per-Participant Estimated Savings—Electric Demand

This section presents the electric demand savings results. The demand values were calculated using the ratio of the claimed deemed kW to the claimed deemed kWh as follows:

$$\text{Evaluated kW Savings} = \text{Evaluated kWh Savings} * \frac{\text{Claimed Deemed kW Savings}}{\text{Claimed Deemed kWh Savings}}$$

The table below shows the evaluated demand values by Company and housing sector. Like the per-participant electric consumption savings, KU demand savings were closer to the claimed demand savings than LG&E values. All statistically significant estimates are denoted with blue cells.

Table 12. Electric Demand (kW) Per-Participant Annual Savings Results

Company	Housing Sector	Evaluated Savings Estimate (kW)	Evaluated Savings Estimate (kWh)	Claimed Deemed Savings (kW)	Claimed Deemed Savings (kWh)
LG&E	Attached housing	0.011	131.8	0.06	705
	Detached housing	0.046	546.1	0.12	1,410
KU	Attached housing	0.074	873.5	0.06	705
	Detached housing	0.108	1,264.7	0.12	1,410

3.2.4 Per-Participant Estimated Savings—Gas Consumption

Because the WeCare program was designed to create savings for the whole residence, Tetra Tech defined inclusion in the gas analysis as any customer who installed measures and received LG&E gas utility services. Meaning that if a customer receives both gas and electric utility services from LG&E, they were included in both analyses.

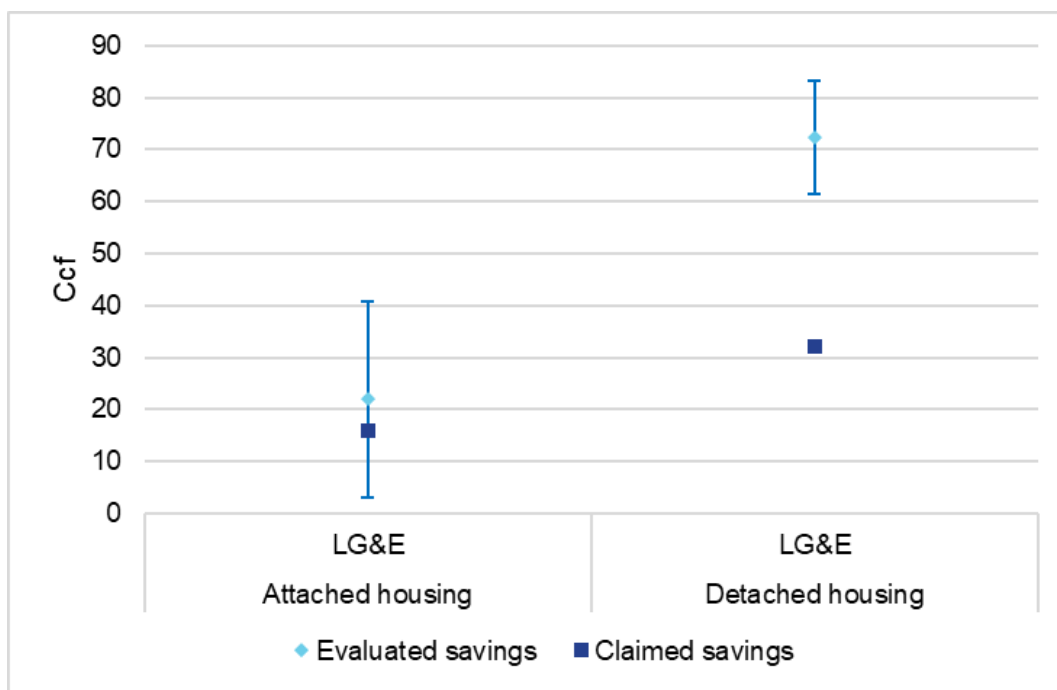
Tetra Tech found statistically significant evidence of gas savings, as shown in the table below. This table also shows the annual savings estimates by Company and housing sector and compares the evaluated annual savings results to the claimed deemed savings. All statistically significant estimates are denoted with blue cells.

Table 13. Gas (Ccf) Per-Participant Annual Savings Results

Company	Housing Sector	Evaluated Savings Estimate (Ccf)	Percent Savings	Confidence Interval (Ccf)	Claimed Deemed Savings (Ccf)	Claimed within Confidence Interval?
LG&E	Attached housing	21.9	4.8%	+/- 18.9	16	Yes
	Detached housing	72.4	9.2%	+/- 10.9	32	No

Figure 3 compares the evaluated annual per-participant savings results to the claimed deemed savings graphically. The results show that all claimed deemed savings values were lower than their evaluated counterparts, and one lies within the confidence interval.

Figure 3. Gas Consumption (Ccf) Per-Participant Annual Savings Results



3.2.5 Billing Analysis Details

Tetra Tech obtained weather data for the weather stations in the LG&E and KU service areas from the National Climatic Data Center—Louisville International Airport and the Lexington Blue Grass Airport locations, respectively. Cleaned billing, weather, and customer tracking data were combined to establish the database used in the fixed-effects regression models. Tetra Tech implemented a series of participant-level fixed-effects models to estimate the energy savings from the measures installed as part of projects completing Phase 1 and Phase 2. These models regress weather-normalized daily consumption per-participant based on pre-installation and post-installation monthly billing data for all relevant PY2020 participants with sufficient billing data before and after their measures were installed. Annual per-participant energy savings were calculated using the coefficients from the models, and the resulting “evaluated” savings were compared against the respective claimed deemed savings. Participants were then assessed in different groupings, such as historic consumption level, dwelling type, and fuel type. These group assessments resulted in evaluated savings mean, evaluated savings confidence intervals, and a p-value indicating the statistical significance of the evaluated savings.

Before running the billing analysis, Tetra Tech cleaned and prepared the PY2020 program data. Tetra Tech received and reviewed the WeCare program population data queried from LG&E and KU’s program data tracking system. The data received contained a dwelling type field used to populate the housing sector field shown below. The housing sector “Attached” comprises dwelling types House/Home and Modular/Mobile Home, while the housing sector “Detached” comprises Apartment/Condo, Duplex/Triplex, and Multi-Family LI (low-income). The table below shows the distribution of participants by housing sector and utility company.

Table 14. PY2020 WeCare Program Participation by Housing Sector and Utility

Housing Sector	LG&E	KU	Total
Detached	1,784	735	2,519
Attached	849	638	1,487
Total	2,633	1,373	4,006

Sources: WeCare Measures for 2020.xlsx; Customer Completions for 2020.xlsx; unique enrollment IDs and number of units for MDUs

Some MDUs are master metered, so they have one Enrollment ID per multiple units. The table below shows the distribution of participants by housing sector and utility company at the enrollment ID level.

Table 15. PY2020 Unique Enrollment IDs by Housing Sector and Utility

Housing Sector	LG&E	KU	Total
Detached	1,784	735	2,519
Attached	762	321	1,083
Total	2,546	1,056	3,602

Tetra Tech’s next step was aggregating these records to the customer account level (using the variable Contract Account). There were 39 accounts with two different Enrollment IDs in PY2020. In these situations, Tetra Tech kept the information associated with the Enrollment ID with the latest Complete Date (04/01/2020 over 01/01/2020) while aggregating to sum the Quantity, Cost, Ccf Usage, kWh Usage, Electric Savings, Gas Savings, and Total Savings across both Enrollment IDs. The later date was chosen due to the higher savings potential of Phase 2 services. This process resulted in 3,524 unique customer accounts. The table below shows the unique participant accounts by housing sector and utility company.

Table 16. PY2020 Unique Accounts by Housing Sector and Utility

Housing Sector	LG&E	KU	Total
Detached	1,740	715	2,455
Attached	753	316	1,069
Total	2,493	1,031	3,524

Tetra Tech next flagged participants as having received only Phase 1 services or Phase 1 and Phase 2 services based on the housing sector and utility company delineation. The table below shows the distribution of participants by phase and utility company.

Table 17. PY2020 WeCare Program Participation by Phase and Utility

Phase	LG&E	KU	Total
Measures unknown	6	0	6
Phase 1 only	643	144	787
Phases 1 and 2	1,844	887	2,731
Total	2,493	1,031	3,524

Because the billing analysis focused on savings from Phase 2 services, those 2,731 customer accounts were merged with the gas and electric monthly reading data from 01/01/2019 to 12/31/2021. First, all negative gas readings and zero or negative electric readings were deleted, which resulted in losing three LG&E gas readings, 21 KU electric readings, and 89 LG&E electric readings. Next, Tetra Tech checked the range of monthly data available for each account. Accounts were discarded if they lacked 12 months of continuous data before and after the implementation date⁷. The billing analysis was performed separately for gas and electric data, so they are separated in the tables.

Table 18. Billing Analysis Accounts by Utility—Electric

Company Stratification	Unique Accounts	Accounts Dropped	Sample Frame
LG&E	1,833	492	1,341
KU	887	251	636
Total	2,720	739	1,977

Table 19. Billing Analysis Accounts by Utility—Gas

Company Stratification	Unique Accounts	Accounts dropped	Sample Frame
LG&E	1,591	441	1,150
Total	1,591	441	1,150

For these selected accounts, Tetra Tech examined the distribution of readings for outliers in both reading value and length of the billing period. Readings were flagged as value outliers if they were outside the range for that account defined as (25th percentile-1.5*interquartile range) to (75th percentile+1.5*interquartile range).

For readings flagged as value outliers, they were then flagged as overall outliers if the billing period was outside the normal length (<=10 days or >45 days). This review resulted in four groups of possible

⁷ Tetra Tech used "Complete Date." If there were multiple per contract account, the later date was used.

issues: gas short and long lag outliers, and electric short and long lag outliers. On examination, the small number of long lag outliers (two gas, five electric) appear reasonable given their context. An example is highlighted in gray in the table below.

Table 20. Example of Long Lag Outlier—Electric

Company	Read Date	kWh	Read Days	kWh/Day	Median kWh/Day	Low Outlier < kWh/Day	High Outlier > kWh/Day
LG&E	6/24/2021	909	13	70	39	25	52
LG&E	7/14/2021	945	20	47	39	25	52
LG&E	9/13/2021	1,007	61	17	39	25	52
LG&E	10/11/2021	827	28	30	39	25	52
LG&E	11/9/2021	790	29	27	39	25	52

Within the short lag outliers, two groups were identified. The first group was comprised of very high values over a short period which is higher than the previous reading. Tetra Tech combined the two time periods with the higher reading value for these readings. The table below provides an example of how the original data looked (as shown in the “before” rows) and how it was combined for analysis purposes (as shown in the “after” rows), with the specific changes highlighted in gray.

Table 21. Example of Short Lag Outlier Combined with Previous—Gas

Cleaning Phase	Company	Read Date	Ccf	Read Days	Ccf/Day	Median Ccf/Day	Low Outlier < Ccf/Day	High Outlier > Ccf/Day
Before	LG&E	6/9/2021	20	30	0.67	1.42	0	8.66
	LG&E	7/7/2021	12	28	0.43	1.42	0	8.66
	LG&E	7/8/2021	16	1	16	1.42	0	8.66
	LG&E	9/9/2021	21	63	0.33	1.42	0	8.66
	LG&E	10/7/2021	37	28	1.32	1.42	0	8.66
After	LG&E	6/9/2021	20	30	0.67	1.41	0	8.04
	LG&E	7/8/2021	16	29	0.55	1.41	0	8.04
	LG&E	9/9/2021	21	63	0.33	1.41	0	8.04
	LG&E	10/7/2021	37	28	1.32	1.41	0	8.04

The other group also contained very high values over a short period but were not higher than the previous reading. For this group, Tetra Tech removed the readings as an assumed erroneous record; an example is highlighted in gray in the table below. These rules removed 29 of 39,464 gas records, leaving 39,435 records for 1,150 accounts. For electric, 184 of 69,906 records were removed, leaving 69,722 records for 1,977 accounts. The table below provides an example of how the original data looked (as shown in the “before” rows) and how it was combined for analysis purposes (as shown in the “after” rows), with an example highlighted in gray.

Table 22. Example of Deleted Short Lag Outlier—Electric

Cleaning Phase	Company	Read Date	kWh	Read Days	kWh/Day	Median kWh/day	Low outlier <kWh/day	High outlier >kWh/day
Before	KU	8/27/2020	610	28	22	25	0	103
	KU	9/28/2020	609	32	19	25	0	103
	KU	10/2/2020	529	4	132	25	0	103
	KU	11/30/2020	1,218	59	21	25	0	103
	KU	12/30/2020	1,951	30	65	25	0	103
After	KU	8/27/2020	610	28	22	23	0	83
	KU	9/28/2020	609	32	19	23	0	83
	KU	11/30/2020	1,218	63	19	23	0	83
	KU	12/30/2020	1,951	30	65	23	0	83

3.3 DESK REVIEWS

A sample of 15 desk reviews from PY2021 program participants was selected to determine whether the Analysis Reports provided clear, actionable recommendations and whether the Analysis Reports matched the data recorded in the tracking system. Overall, Tetra Tech found the measures implemented in the work orders sufficient for a program of this type. The program appears to function similarly to other audit programs that Tetra Tech has evaluated. However, Tetra Tech recommends improving the consistency and clarity of the Analysis Reports.

All projects that received a desk review had a work order and an Analysis Report. The Analysis Reports and work orders consistently matched the tracking data for each project in the sample. Tetra Tech found some Analysis Reports were more detailed than others, and during discussions with LG&E and KU, it was determined that the reporting changed starting in April 2021. Before April 2021, Analysis Reports were not provided to customers; but only verbally discussed. Starting in April 2021, the Analysis Reports were printed off and handed to the customers while the auditor was onsite. The process evolved over a few months to where the auditor would print the Analysis Reports and then pull out any blank pages or pages that did not apply. Tetra Tech found that this date corresponded well with the change in details in the Analysis Reports.

A typical Analysis Report for this project contained at least three pages. The first page included customer information, a program description, and a table of contents that summarized the rest of the document. The second page included any concerns the participants wanted to be addressed during the visit. The third page of the Analysis Report provided the solutions implemented for the home along with the SIR for each measure. This page also included additional information about the savings, such as energy reduction percentage and CO₂ savings. In some Analysis Reports, subsequent pages with further details for individual measures were included.

3.3.1 Sample Breakdown

Projects sampled for desk reviews were chosen from the 3,252 participants who received Phase 1 and Phase 2 services in PY2021. Tetra Tech considered the count of measure types implemented and the distribution of measure types across the desk review sample frame in selecting the desk review sample. The table below shows the bins of counts of measure types implemented.

Table 23. Desk Review Sampling by Count of Measure Types

Stratification	Unique Phase 2 Accounts	Sampled Records
Less than 6 measure types	1,175	5
6-7 measure types	1,262	5
More than 7 measure types	815	5
Total	3,252	15

3.3.2 Analysis

Tetra Tech requested and received an Analysis Report and a work order for each project in the sample. The work order detailed the project site’s measures and associated costs. The work order is shared between the implementer and LG&E and KU and is not shown to the customer. The Analysis Report lists a summary of measures enacted at the site and presents the SIR by solution category.

The table below shows the WeCare desk review population characteristics by solution category. Upgrade lighting was the most common solution for 14 of the 15 projects. Air and duct sealing and lower hot water temp were also present in more than half of the projects. Lower hot water temp (25.3) and programmable thermostat (13.0) had the highest average SIRs.

Table 24. WeCare Desk Review Population by Solution Category

Solution Category	Projects	Measures	Average SIR
Upgrade lighting	14	19	1.6
Air and duct sealing	12	39	1.8
Lower hot water temp	10	20	25.3
Insulate attic and walls	6	7	3.1
Upgrade doors and windows	5	7	1.3
Energy efficient refrigerator	4	4	3.1
Programmable thermostat	4	4	13.0
Upgrade windows	1	1	1.0
Total	15	101	6.9

Detailed findings from Tetra Tech’s review of the individual Analysis Reports can be found in Appendix C, including specific Enrollment IDs.

4.0 PROCESS EVALUATION FINDINGS

This section presents the LG&E and KU's WeCare process evaluation results. The process evaluation was designed around the key researchable questions and consisted of program staff interviews, a review of the Snugg Pro tool, assessing Bellomy's summary of the survey data they collect, and a benchmarking review of peer programs.

4.1 STAFF INTERVIEWS

In discussions with program and implementation staff, Tetra Tech learned about transitioning from tier levels to an average cost-per-home approach. In PY2021, customers meeting program criteria could receive services up to \$1,500 for single-family homes and \$750 for multi-dwelling units. With the transition to an average spend per home, customers with low usage could receive more services than what had been offered through the tiered approach. Customers with shut-off systems or rooms have been able to take advantage of the program.

Ideally, the program would have equal participation in both utility territories, but there are typically more LG&E participants. The LG&E territory is denser, which lends itself to more participants. As a result, additional outreach is conducted in the KU territory. The program continues to meet annual goals but may not always meet monthly goals. Getting the initial appointment and landlord consent are some of the most significant barriers.

Similar to most programs across the country, WeCare shut down for three months in 2020 as a result of the COVID-19 pandemic. Since then, the program has adopted new protocols to ensure the safety of customers and contractors. In early 2021, the program was still seeing higher cancellation rates than what was seen before COVID-19. This has likely been due to customers being more aware of illnesses and remaining home when not feeling well, impacting the ability of contractors to do work in the home. Given the program works with a vulnerable population, including low-income, the elderly, and those with health issues, the program will continue to be sensitive to ongoing COVID-19 concerns and other illnesses. Additionally, and similar to other programs across the country, supply chain issues have hampered installing measures such as windows, doors, and refrigerators.

4.2 SNUGG PRO DEMO

Snugg Pro is an energy modeling and productivity tool for residential energy efficiency programs and home performance professionals. For the WeCare program, SEEL uses the Snugg Pro tool is used to:

- Capture energy efficiency upgrade opportunities identified during the audit process;
- Record additional equipment the contractor recommends for the Phase 2 visit; and
- Track equipment that was directly installed via drop-down menus, including the type of equipment it replaced.

As part of the audit process, a blower door test is completed. The initial blower door information is recorded in the tool, though the post-blower door test data is not. Once all upgraded equipment is installed and entered into the system, the tool calculates savings based on the equipment installed and what it replaced in the form of the SIR. Direct install measures do not have savings in the tool and are currently part of the custom recommendations. Two reports are generated from the tool: a work order and an Analysis Report. The work order is shared between the implementer and LG&E and KU and is

not shown to the customer. The Analysis Report is shared with the customer and includes a summary of equipment installed in the home.

4.3 BELLOMY DATA REVIEW

LG&E and KU contract with Bellomy to conduct a monthly survey of WeCare program participants. Bellomy's goal is to receive 50 completed surveys per month or 600 surveys annually. The PY2021 customer satisfaction study results were provided to Tetra Tech in a PowerPoint presentation and an Excel file, stripped of any identifying information. The survey asked participants about their satisfaction with the program and the different components of participation. Tetra Tech believes the survey collected comprehensive satisfaction information from participants. The report provided quantitative and qualitative results on satisfaction and the drivers of satisfaction or dissatisfaction. The results show high mean scores in all program aspects across a mix of customer demographics and trends from prior years, along with any statistically significant differences. Lastly, the report included recommendations on how to improve customer satisfaction.

4.4 BENCHMARKING

Tetra Tech reviewed peer utility programs that offered utility-sponsored programs to low- and moderate-income customers. This research provides insight to LG&E and KU into different offerings utilized by peer utilities and how they could expand customer benefits. The research focused on residential income-qualified programs and gathered information about:

- Program design and strategy, such as visit type, eligibility requirements, and incentive structure;
- Program implementation, including program implementers and outreach strategies; and
- Savings and cost details.

Benchmarking information was collected by reviewing publicly available documentation found on utility websites and through public filings of program implementation or evaluation activities. Program information was collected for the following program administrators:

- | | |
|-------------------------------|--|
| • AES Indiana ⁸ | • Idaho Power Company (Idaho Power) |
| • Ameren Illinois (Ameren IL) | • Northern Indiana Public Service Company (NIPSCO) |
| • Commonwealth Edison (ComEd) | • New York State Energy Research and Development Authority (NYSERDA) |
| • Consumers Energy | • Public Service Enterprise Group (PSEG) |
| • Duke Energy Carolinas | • Vectren |

These programs were picked due to their relative location to LG&E and KU and offerings that were similar or of interest to LG&E and KU's program. In particular, programs were selected that did not leverage non-utility funding. The table below summarizes the programs for each utility benchmarked.

⁸ AES Indiana was formerly known as Indianapolis Power & Light Company (also known as IPL or IPALCO).

Table 25. Utility Program Descriptions—Non-Leveraged Programs

Program Administrator	Program Name	Region	Program Description
LG&E and KU	WeCare	Midwest	<i>WeCare is a voluntary program designed to create savings through weatherization and energy education to help income-eligible customers in need. The WeCare program helps provide a more efficient, safe, and comfortable home. The program also teaches customers how to be more efficient – whether it is through the customer’s own energy conservation efforts or through the installation of energy-saving devices.</i>
AES Indiana	Income-Qualified Weatherization Program	Midwest	AES Indiana offers opportunities for customers to save energy through direct install measures, energy-saving kits (home energy assessments), and add-on measures.
Ameren IL	Home Efficiency Income Qualified	Midwest	The Single Family and Community Action Agency (CAA) channels provide no-cost Building Performance Institute (BPI) energy audits that identify building shell and HVAC retrofit opportunities. During the audit, implementation staff also install energy-efficient “direct install” (DI) measures such as LEDs, showerheads, faucet aerators, advanced power strips, pipe insulation, and programmable/advanced thermostats at no cost. Following the audit, customers may receive additional retrofits, such as air sealing and insulation improvements, central air conditioner replacements, and heat pump replacements.
ComEd	Income-Eligible Single-Family Retrofits	Midwest	The Income-Eligible Single-Family Retrofits (SFR) Program provides retrofits to single-family households in ComEd service areas with incomes at or below 80 percent of the Area Median Income. The program offers assessments, direct installation of energy efficiency measures, replacement of inefficient equipment, technical assistance, and educational information further to save money on energy bills through two program components.
Consumers Energy	Income-Qualified Energy Assistance (Helping Neighbors Program)	Midwest	This program targets single-family, multifamily, and manufactured housing. The program aims to assist limited-income customers with home weatherization interventions delivered at no cost. It provides and installs energy waste reduction (EWR) measures and offers sustainable energy education to help customers reduce their energy use and better manage their energy bills over the long term.
Duke Energy Carolinas	Neighborhood Energy Saver Program	Southeast & Midwest	This program uses a community approach to reduce energy bills for a large number of participants swiftly. By targeting low-income neighborhoods, working with local leaders to build neighborhood engagement and buy-in, and conducting energy assessments, energy-saving improvements, and participant education at no cost, the program can upgrade hundreds of homes in a cost- and time-efficient manner while reducing carbon pollution.

Program Administrator	Program Name	Region	Program Description
Idaho Power	Weatherization Solutions for Eligible Customers	Northwest	Weatherization Solutions for Eligible Customers is an energy efficiency program designed to serve Idaho Power residential customers in Idaho whose income falls between 175 percent and 250 percent of the current federal poverty level. The program was initiated in 2008 and is designed to mirror the Weatherization Assistance for Qualified Customers (WAQC) program. These customers often do not have disposable income to invest in energy efficiency upgrades and typically live in housing similar to WAQC customers. The Weatherization Solutions program also benefits specific customers on the WAQC waiting list. When customer income overlaps both programs, this program may offer an earlier weatherization date than WAQC, resulting in less wait time for the customer and quicker energy savings.
NIPSCO	Income-Qualified Weatherization Program	Midwest	Through the Income-Qualified Weatherization (IQW) program, NIPSCO provides walk-through energy assessments and direct installations of energy efficiency measures to income-qualified single-family homeowners or renters (with landlord approval). The program is open to income-qualified residential natural gas and/or electric customers living in homes that have not been weatherized in the past ten years or participated in Home Energy Assessment (HEA) in the past three years.
NYSERDA	Assisted Home Performance with ENERGY STAR®	Northeast	The Assisted Home Performance with ENERGY STAR provides those who qualify with a discount covering 50 percent of the cost of eligible energy efficiency improvements up to \$5,000 per project for single-family homes. Two- to four-unit residential homes with income-eligible residents may qualify for a discount of up to \$10,000. The program is available for both renters and owners.
NYSERDA	EmPower New York	Northeast	Single and Multifamily Assessments and Retrofits EmPower NY offers no-cost energy efficiency services to income-eligible homeowners and renters (with landlord permission)
PSEG	Residential Energy Affordability Partnership	Northeast	The Residential Energy Affordability Partnership (REAP) program includes a free home energy audit and free installation of energy-saving measures.
Vectren	Income-Qualified Weatherization Program (Neighborhood Weatherization Program)	Midwest	The program offers a walk-through audit and direct installation of energy efficiency measures for income-qualified homes at no cost to the customer.

4.4.1 Program Components

All the non-leveraged⁹, low-income retrofit programs that Tetra Tech reviewed featured a home assessment and follow-up measures. However, home audits are completed in several ways: online, virtual, or in-person. The distinction between online and virtual home assessments is that online audits involve participants entering information about their homes on a website. In contrast, a virtual home assessment requires the participant to connect with an energy advisor through a video call.

AES Indiana’s Income Qualified Weatherization program is the only low-income retrofit program reviewed that involves an energy-saving kit. Once a participant completes an online or virtual home assessment, they can receive either a Home Efficiency Starter kit, a Bathroom Refresher kit, a Tech-Savvy kit, or a Custom kit. The Home Efficiency Starter kits, Bathroom Refresher kits, and Tech-Savvy kits all include LED bulbs, LED night-lights, bathroom sink aerators, furnace whistles, and \$10 Lowe’s gift certificates¹⁰. Bathroom Refresher kits include showerheads and kitchen faucet aerators, and the Tech-Savvy kits include an advanced power strip. Custom kits include a mix of these measures, determined by the home energy advisor.

Compared to the other benchmarked programs, NYSERDA’s Assisted Home Performance with ENERGY STAR® program is unique because it involves a copayment and does not include a direct install feature. Through this program, participants apply for discounts on energy efficiency projects and schedule free home energy assessments with an NYSERDA contractor. They then initiate projects based on the recommendations of their contractor.

While most low-income retrofit programs focus on prescriptive measures and savings, Vectren’s Neighborhood Weatherization program offers whole-home weatherization to “customers up to 200 percent of the federal poverty level if they received air or duct sealing, but the energy advisor was unable to record pre- and post-upgrade measurements.”¹¹ Of note, ComEd’s Income-Eligible Single-Family Retrofits program is the only benchmarked program to offer custom measures to participants.

Table 26. Utility Program Components

Program Administrator/ Program	Audit Options	Follow-up Visit	Direct Install	Kits	Measures	Copayment
LG&E and KU	In-person	Y	Y		Prescriptive	
AES Indiana	Online, Virtual, and In-Person	Y	Y	Y	Prescriptive	
Ameren IL	Virtual and In-Person	Y	Y		Prescriptive	
ComEd	In-Person	Y	Y		Prescriptive and custom	
Consumers Energy	In-Person	Y	Y		Prescriptive	

⁹ ComEd, Consumers Energy, DTE, Idaho Power, and Xcel Energy offer low-income retrofit initiatives and programs that leverage state and local government funding. These are highlighted later in this section of the report.

¹⁰ There does not appear to be restrictions on what the participant can buy with the Lowes gift certificate.

¹¹ [2020 Vectren Demand Side Evaluation](#)

Program Administrator/ Program	Audit Options	Follow-up Visit	Direct Install	Kits	Measures	Copayment
Duke Energy Carolinas	In-Person	Y	Y		Unclear	
Idaho Power	In-Person	Y			Prescriptive	
NIPSCO	Virtual and In-Person	Y	Y		Prescriptive	
NYSERDA (Assisted Home Performance with ENERGY STAR)	In-Person	Y			Unknown	Y
NYSERDA (EmPower New York)	In-Person	Y	Y		Prescriptive	
PSEG Long Island	Virtual and In-Person	Y	Y		Prescriptive	
Vectren	In-Person	Y	Y		Prescriptive	

4.4.2 Program Measures

LEDs and water-saving devices (such as low-flow faucet aerators and showerheads) were offered by all the benchmarked non-leveraged, low-income retrofit programs. These measures were almost always included as a part of the direct install feature of the low-income retrofit programs. Other frequently provided measures include HVAC equipment (such as boilers and furnaces), insulation, thermostats, air sealing, and power strips. NYSERDA’s Assisted Home Performance with ENERGY STAR® program offers the most expansive range of measures, as seen below. Idaho Power’s program generally provides more costly measures and is the only non-leveraged program to offer doors, kitchen fans, bathroom fans, and windows.

Table 27. Program Measures

Program Administrator	Program Name	Measures Covered
LG&E and KU	WeCare	Direct Install: LEDs, Low Flow Showerheads, Low Flow Faucet Aerators, and Smart Power Strips Follow-Up: Air and Duct Sealing, Attic and Wall Insulation, Energy-Efficient Water Devices, Heating and Central Air Conditioning Tune-Ups, Programmable Thermostats, LED Bulbs, Energy-Efficient Refrigerator (Replacement), Energy-Efficient Window Air Conditioners (Replacements)
AES Indiana	Income-Qualified Weatherization Program	Direct Install: LEDs, Bathroom and Kitchen Faucet Aerators, Low-Flow Showerheads, Pipe Wrap Insulation, Smart Power Strips, Programmable Thermostats, and Smart Thermostats Follow-Up: Attic Insulation, Radiant Barrier, Wall Insulation, Air Sealing, Duct Sealing, and Refrigerators

Program Administrator	Program Name	Measures Covered
Ameren IL	Home Efficiency Income-Qualified	Direct Install: LEDs, Showerheads, Faucet Aerators, Advanced Power Strips, Pipe Insulation, and Programmable/Advanced Thermostats Follow-Up: Air Sealing and Insulation Improvements, Central Air Conditioners, and Heat Pumps
ComEd	Income-Eligible Single-Family Retrofits	LED Lighting, Smart and Programmable Thermostats, HVAC Equipment (such as Boilers, Furnaces, Central and Room Air Conditioners), Ductless Heat Pumps, Water Heaters, Low-Flow Faucet Aerators and Showerheads, Attic and Wall Insulation, and Air Sealing
Consumers Energy	Income-Qualified Energy Assistance (Helping Neighbors Program)	Direct Install: LEDs, Water-Saving Devices, Programmable and Wi-Fi Enabled Thermostats, and Carbon Monoxide Detectors Follow-Up: Air Conditioning, Furnaces, Boilers, Refrigerators, Insulation, and Air and Duct Sealing
Duke Energy Carolinas	Neighborhood Energy Saver Program	Insulation, Faucet Aerators, Low-Flow Showerheads, Refrigerators, Thermometers, Wall Plate Thermometers, Filters, Door Sweeps, Weather Stripping, Duct Sealing, and LEDs
Idaho Power	Weatherization Solutions for Eligible Customers	Follow-Up: Windows, Doors, Insulation, Weather Stripping, Bathroom and Kitchen Fans, Electric Furnaces, Heat Pumps, Water Heaters, and LEDs
NIPSCO	Income-Qualified Weatherization Program	LEDs, Bathroom Aerators, Kitchen Aerators, Showerheads, Shower Starts, Pipe Wraps, Water Heater Wraps, Programmable Thermostats, Filter Whistles, Air Sealing, Duct Sealing, Attic Insulation, and Refrigerators
NYSERDA	Assisted Home Performance with ENERGY STAR®	Follow-Up: Furnaces, Boilers, Air Source Heat Pumps, Stoves, Duct Sealing, Duct Insulation, Pipe Insulation, Air Conditioners, Programmable Thermostats, Building Shell Insulation, Water Heaters, Faucet Aerators, Low Flow Showerheads, Refrigerators, Freezers, Dishwashers, Clothes washers, Dehumidifiers, CFLs, and LEDs
NYSERDA	EmPower New York	LEDs, Refrigerators, Water Saving Devices, Freezers, Air Sealing, Insulation, Heating Equipment, and Clothes Dryers
PSEG Long Island	Residential Energy Affordability Partnership	Direct Install: LEDs, Pipe Insulation, Showerheads, Faucet Aerators, Thermostatic Shower Valves, and Smart Strips Follow-Up: Air Conditioners, Dehumidifiers, and Refrigerators
Vectren	Income-Qualified Weatherization Program (Neighborhood Weatherization Program)	Direct Install: LEDs, Showerheads, Aerators, and Smart Thermostats Follow-Up: Air and Duct Sealing, Insulation, Refrigerator, and Air Conditioners

4.4.3 Eligibility Requirements

Eligibility for single-family home assessment and retrofit low-income programs varied among utilities benchmarked. Most utility programs based their program eligibility on federal guidelines that require participants to be at or below 175 percent to 300 percent of the federal poverty level. Duke Energy’s program is unique because entire neighborhoods qualify for the Neighborhood Energy Saver program. To be eligible, participants must be residents of “selected neighborhoods where (at least) 50 percent of the homeowners have income equal to or less than 200 percent of the Federal Poverty Guidelines”¹².

Five programs require participant households to be at or below 80 percent of the area median income level— Ameren IL’s Home Efficiency Income Qualified program, ComEd’s Income-Eligible Single-Family Retrofits program, Consumers Energy’s Helping Neighbors program, NYSERDA’s Assisted Home Performance with ENERGY STAR® program, and PSEG’s Residential Energy Affordability Partnership program. NYSERDA’s EmPower New York program is more restrictive, offering services to households at or below 60 percent of the area median income.

While most utilities benchmarked required low-income participants to be customers, that was not always the case. NYSERDA’s Empower New York program has served customers and individuals who “heat their homes with unregulated fuels (e.g., fuel oil, propane, and/or kerosene).”

Tetra Tech’s benchmarking also revealed that most utilities offer low-income programs to participants who use electricity or gas to heat their homes. Of the utilities examined, only Idaho Power and Duke Energy specified that participants must be electrical customers to qualify for their low-income programs.

In addition to LG&E and KU, only a few utilities explicitly limit how frequently a participant can use the program’s services. NIPSCO’s Income-Qualified Weatherization program states that customers who have had their homes weatherized in the past ten years or received a Home Energy Assessment in the past three years are not eligible for the program. PSEG Long Island’s Residential Energy Affordability Partnership program specifies that customers cannot receive program services if they have participated in the program in the last ten years¹³.

Table 28. Eligibility Requirements

Program Administrator	Program	Requirements
LG&E and KU	WeCare	Must be a customer at or below 200 percent of the federal poverty guidelines (2022) Must have had continuous service for nine months Cannot have received service in the last three years
AES Indiana	Income Qualified Weatherization Program	Must be a customer at or below 200 percent of the federal poverty guidelines (2021)
Ameren IL	Home Efficiency Income Qualified	Must be at or below 80 percent of the area median income (2022)
ComEd	Income-Eligible Single-Family Retrofits	Must be at or below 80 percent of the area median income (2021)

¹² [Duke Energy Carolinas, LLC – Executive Summary \(2020\)](#)

¹³ It was unclear if this restriction is based on the customer or the premise. According to PSEG Long Island’s website “(y)ou are eligible for REAP if you have a current PSEG Long Island customer account, live within our service territory, not had a REAP visit within the last 10 years...”.

Program Administrator	Program	Requirements
Consumers Energy	Income-Qualified Energy Assistance (Helping Neighbors Program)	Must be a customer with a household income equal to or less than 200 percent of the current poverty level or up to 80 percent of the area median income (2020)
Duke Energy Carolinas	Neighborhood Energy Saver Program	Must be an electrical customer in neighborhoods in which at least 50 percent of the residents live below 200 percent of the federal poverty guidelines (2020)
Idaho Power	Weatherization Solutions for Eligible Customers	Must be an electrical customer between 175% and 250% of the current federal poverty guidelines (2022)
NIPSCO	Income-Qualified Weatherization Program	Must be a customer at or below 200 percent of current federal poverty guidelines (2021) Must receive Low-income Home Energy Assistance, Temporary Assistance for Needy Families, or Supplemental Security Income. An account holder may also be eligible if they receive Social Security Disability Insurance and meet total household income guidelines The premise cannot have received a Home Energy Assessment in the past three years
NYSERDA	Assisted Home Performance with ENERGY STAR®	Must be at or below 80 percent of the area median income (2022)
NYSERDA	EmPower New York	Must have a household income below 60 percent of the state median income or participate in a utility payment assistance program (2020)
PSEG Long Island	Residential Energy Affordability Partnership	Must be a customer at or below 80 percent of the area media (2020) Cannot have received services in the past 10 years ¹⁴
Vectren	Income-Qualified Weatherization Program	Must have a total household income up to 300 percent of the federal poverty level (2021)

4.4.4 Incentive Structure

Almost all home energy assessment and retrofit low-income programs reviewed were offered at no cost to participants. As mentioned previously, the one exception was NYSERDA’s Assisted Home Performance with ENERGY STAR® program, which covers 50 percent of the cost of energy efficiency improvements for single-family households. NYSERDA provides discounts of up to \$5,000 per single-family project through this program. Of note, NYSERDA also offers free home assessments and retrofits to low-income residents with a household income at or below 60 percent of the state median income through their EmPower New York program¹⁵.

¹⁴ Unclear if this restriction is based on the customer or the premise. According to PSEG Long Island’s website “(y)ou are eligible for REAP if you have a current PSEG Long Island customer account, live within our service territory, not had a REAP visit within the last 10 years...”.

¹⁵ Residents can also qualify for the EmPower New York program if they participate in a utility payment program.

4.4.5 Program Implementers

Most low-income programs use a third party to implement home assessment and retrofit programs. Only Duke Energy’s Neighborhood Energy Saver program appears to be implemented in-house. CLEARresult implemented low-income retrofit programs for AES Indiana, Consumers Energy, and Vectren, while Resource Innovations implemented Ameren IL’s and ComEd’s¹⁶ leveraged initiatives. Other third-party implementers used by researched utilities included the TRC Company, Franklin Energy Services, Walker-Miller Energy Services, and Lockheed Martin. In addition to LG&E and KU, SEEL implements DTE’s leveraged, low-income retrofit initiative, the Energy Efficiency Assistance program.

Table 29. Program Implementers

Program Administrator	Third-Party Implementers
<i>LG&E and KU</i>	<i>SEEL</i>
AES Indiana	CLEARresult
Ameren IL	Walker-Miller Energy Services, Resource Innovations
ComEd	Franklin Energy Services, Resource Innovations, CLEARresult
Consumers Energy	CLEARresult
Duke Energy Carolinas	In-House
Idaho Power	Unknown
NIPSCO	TRC Company
NYSERDA	Unknown
PSEG Long Island	Lockheed Martin
Vectren	CLEARresult

At least seven of the 11 benchmarked single-family, low-income retrofit programs were offered in partnership with another organization. These organizations included community action agencies, local and state governments, food banks, public housing authorities, universities, and other utilities.

4.4.6 Outreach Strategy

All 11 of the benchmarked low-income retrofit programs utilize an informative program website with complete information on their program offerings. Four programs contacted potential participants through direct mailings, three sent email blasts, three used bill inserts, and three hosted community events. Other methods of outreach used by the benchmarked utilities include door-to-door canvassing, press releases, and brochures.

Two programs work with other organizations (implementers and community action agencies) to increase awareness of their low-income programs. These third parties help utilities identify and contact potential participants or host events to raise awareness for low-income program offerings.

¹⁶ Resource Innovations implemented channels of Ameren Illinois and ComEd’s low-income retrofit programs that received state funding from the Illinois Home Weatherization Assistance program.

Table 30. Outreach Media & Strategies

Program Administrator	Program	Outreach Media
LG&E and KU	WeCare	Word of mouth, program website, and implementer co-marketing
AES Indiana	Income-Qualified Weatherization Program	Program website, otherwise unknown
Ameren IL	Home Efficiency Income Qualified	Program website, otherwise unknown
ComEd	Income-Eligible Single-Family Retrofits	Program website, otherwise unknown
Consumers Energy	Income-Qualified Energy Assistance (Helping Neighbors Program)	Program website, brochures, email, bill inserts, posters, yard signs, press releases, newsletters, and thank-you postcards
Duke Energy Carolinas	Neighborhood Energy Saver Program	Program website, events, direct mail, implementer co-marketing
Idaho Power	Weatherization Solutions for Eligible Customers	Program website, bill inserts, and email campaigns
NIPSCO	Income-Qualified Weatherization Program	Program website, otherwise unknown
NYSERDA	Assisted Home Performance with ENERGY STAR®	Program website, otherwise unknown
NYSERDA	EmPower New York	Program website, otherwise unknown
PSEG Long Island	Residential Energy Affordability Partnership	Program website, bill inserts, direct mail, outbound calling, door-to-door canvassing, emails, and events
Vectren	Income-Qualified Weatherization Program (Neighborhood Weatherization Program)	Program website, direct mail, bill inserts, email, events, and door-to-door canvassing

4.4.7 Energy Savings and Costs

Most benchmarked utilities used evaluation-verified savings in evaluating their low-income programs, determined at the measure level. Only Consumers Energy used deemed savings in its evaluation. Additionally, savings metrics were not uniform across the benchmarked utilities. Most reported annual kWh savings. When possible, the table below attempts to calculate savings at a per-home/project level. Several reviewed evaluations, such as those for Idaho Power, NIPSCO, and Vectren, stated that the COVID-19 pandemic prevented the utility from meeting its annual savings goals.

Program costs were also hard to determine, especially at the per-home/project level. Manually computed per-home costs ranged from \$760 per home (Vectren) to \$8,236 per home (Idaho Power). Both AES Indiana and Vectren spent more per household than was intended through their budgets. Vectren spent \$30 more per household than their intended target (\$685,062 for 938 homes), while AES Indiana outspent their per-home target, spending \$2,021 per household instead of their goal of \$900 per household (\$2,770,789 budgeted for 3,058 homes). Compared to these programs, LG&E and KU's program spends closer to AES Indiana and Vectren per household than Idaho Power. Idaho Power's

spending per household appears to be an outlier, likely because the program provides more costly measures (windows, doors, ventilation fans, etc.) than AES Indiana, Vectren, or LG&E and KU.

Table 31. Program Savings and Costs

Program Administrator	Program	Savings Methodology	Program Savings	Costs
LG&E and KU	WeCare	Evaluation verified by household		Average spend of \$1,500 for a single-family home
AES Indiana	Income-Qualified Weatherization Program	Evaluation verified by measure	2020 Verified Savings: 1,281,907 kWh	2020: \$1,764,452 (\$2,021 per home; 873 homes)
Ameren IL	Home Efficiency Income Qualified	Evaluation verified by measure	2021 Verified Net Savings: 1,748 MWh	
ComEd	Income-Eligible Single-Family Retrofits	Evaluation verified by measure	CY2021 Incremental Verified Net Savings: 11,797,710 kWh (8,148 projects) (1,447 kWh per project)	
Consumers Energy	Income-Qualified Energy Assistance (Helping Neighbors Program)	Deemed by measure		
Idaho Power	Weatherization Solutions for Eligible Customers	Evaluation verified by measure	2021 Verified Savings: 12,591 kWh (1,798 kWh per home)	2021: \$57,656 for seven homes (\$8,236 per home)
NIPSCO	Income-Qualified Weatherization Program	Evaluation verified by measure	2020 Verified Electric Savings: 75,407 kWh 2020 Verified Natural Gas Savings: 26,273 therms	2020: \$350,798.95
NYSERDA	EmPower New York	Evaluation verified by measure	2016 Evaluation Verified Electric Savings: 3,898 MWh 2016 Evaluation Verified Natural Gas Savings: 82,466 MMBtu	
PSEG Long Island	Residential Energy Affordability Partnership	Evaluation verified by measure	2019 Verified Average Annualized Savings Per Home: 563 kWh	
Vectren	Income-Qualified Weatherization Program (Neighborhood Weatherization Program)	Evaluation verified by measure	2020 Verified Savings: 450,124 kWh	2020: \$612,735 (\$760 per home; 807 homes)

4.4.8 Impact of COVID-19

As mentioned above, several benchmarked utilities were forced to adjust their program plans due to the COVID-19 pandemic. Evaluation reports for AES Indiana, Ameren IL, Idaho Power, NIPSCO, PSEG Long Island, and Vectren mentioned suspending in-home assessments and retrofits due to the pandemic. Vectren paused specific participant recruitment methods, such as door-to-door canvassing. AES Indiana, Ameren IL, NIPSCO, and PSEG Long Island began offering virtual home assessments to low-income retrofit program participants to overcome these obstacles. AES Indiana and NIPSCO also mailed participants energy-saving kits to avoid in-person contact. Ameren IL's SAVE Kits program (discussed below) was initiated in June 2020 as a direct response to the COVID-19 pandemic.

4.4.9 Other Low-Income Initiatives

In addition to non-leveraged, single-family home assessment and retrofit programs, the program administrators in our benchmarking activity offered additional low-income initiatives.

- Four utilities (Ameren IL, ComEd, Vectren, and Xcel Energy) offered energy-saving kit programs. All the researched kits included LEDs, while most also included water-saving devices (low-flow aerators and showerheads) and advanced power strips. Delivery methods varied between programs; Vectren distributes kits through food banks, while Ameren IL and Xcel Energy mailed kits directly to participants. ComEd delivered energy efficiency kits through food banks and direct mail through two separate programs. All benchmarked energy kit programs were provided at no cost to income-eligible participants.
- Other programs offered by the benchmarked utilities included multifamily retrofit, payment assistance, smart thermostat, new construction, and measure discount programs. ComEd and Ameren IL provided incentives and rebates to income-qualified customers on energy efficiency products such as HVAC equipment, LEDs, dehumidifiers, air purifiers, and advanced power strips.
- Ameren IL, ComEd, Consumers Energy, NYSERDA, and Xcel Energy offered multifamily retrofit programs to low-income customers. These programs provided an energy efficiency audit before upgrades were made to the properties. Retrofits may be applied to common areas in addition to tenant areas.
- ComEd's Affordable Housing New Construction program (which is offered jointly by ComEd, Nicor Gas, Peoples Gas, and North Shore Gas) provided incentives and technical assistance for energy-efficient construction and major renovation of affordable multifamily housing. The program had two participation levels, major renovation, and new multifamily, that targeted affordable housing developers and owners constructing housing for residents with incomes at or below 80 percent of the area median income.
- ComEd also maintained a product discounts program. This program provided incentives to retail stores likely to serve a high percentage of ComEd residential customers with incomes at or below 60 percent of the area median income. These retail stores offer instant discounts to customers to increase the market share of ENERGY STAR® certified LED bulbs and fixtures and efficient products such as air purifiers, dehumidifiers, room air conditioners, and Tier 1 advanced power strips.
- ComEd's Public Housing Retrofits program provided standard and custom incentives for federally assisted low-income and public housing. These incentives were used to upgrade residential and common areas.

- Ameren IL’s Smart Saver program, which is completely free to participants, mailed either a Ecobee3 Lite or Google Nest E advanced thermostat to qualified customers and provided them with a \$25 incentive if the participant could install it by themselves and provide proof of installation and activation.
- Incentives and copayments for multifamily, new construction, product discounts, public housing retrofit, and moderate-income programs varied depending on several factors. Incentives for Ameren IL’s Moderate Income Copayment program differed by measure, and participants might have paid as much as \$4,000 for energy efficiency upgrades. In the first half of 2021, the average copayment for the program was around \$2,800. In the third and fourth quarters of 2021, Ameren IL removed all copayments from projects due to funds from partnering programs. Ameren IL planned to provide no copayments for a limited number of moderate-income participants in 2022. Incentives for ComEd’s Affordable Housing New Construction program depended on the number of low-income units on the property.

Table 32. Additional Utility Program Offerings

Program Administrator	Program Name	Eligibility	Measures
Ameren IL	Moderate Income Copayments	Unclear	Building Shell and HVAC Measures
Ameren IL	Income-Qualified Multifamily Program	Owners of multifamily properties with Ameren customers 50 percent or more of property tenants must be considered low-income (2018)	LEDs, Water Saving Devices, Power Strips, Insulation, Air Sealing, Air Conditioners, Heat Pumps, and Security Lighting
Ameren IL	SAVE Kits Program	Must be at or below 80 percent of the area median income (2022)	LEDs, Low Flow Showerheads, Advanced Power Strips, and Door Sweeps
Ameren IL	Smart Saver Program	Must be a customer in an income-qualified zip code (2020)	Ecobee3 Lite or Google Nest E advanced thermostat
ComEd	Affordable Housing New Construction Program	Must be at or below 80 percent of the area median income (2021)	Lighting, HVAC, Building Shell, and Hot Water Measures
ComEd	Food Bank Distribution Program	Food bank must be located in a ComEd service territory (2021)	LEDs, Advanced Power Strips, and Weatherstripping
ComEd	Income Eligible Energy Savings Kit Program	Must be a customer at or below 80 percent area median income or below 250 percent of the federal poverty line, depending on the household size (2022)	7-Plug Advanced Power Strips, 9W LED Bulb, 15W LED Bulb, 5W LED 60W Replacement Candelabra, 6W LED 60W Replacement Globe, BR30 8W LED Bulb, LED Night Light, Low Flow Faucet Aerators, and Low Flow Showerheads

Program Administrator	Program Name	Eligibility	Measures
ComEd	Income Eligible Multi-Family Energy Efficiency Program	The building owner must be in an income-qualified zip code or served by IHWAP (2022)	LED And Energy Efficient Lighting Retrofits, Programmable Thermostats, Advanced Power Strips, Water Efficiency Devices, Weatherization Measures, Pipe Insulation, Refrigerators, Heating and Cooling Equipment and Custom Energy Saving Measures.
ComEd	Income Eligible Product Discounts Program	Retailers who serve customers at or below 60 percent of the area median income (2022)	LED Bulbs and Fixtures, Air Purifiers, Dehumidifiers, Air Conditioners, and Tier 1 Advanced Power Strips
ComEd	Public Housing Retrofits Program	Renters must be at or below 30 to 80 percent of the area median income poverty levels (2022)	Unclear
Consumers Energy	Income-Qualified Energy Assistance (Multi-Family Component)	Must be a customer with a household income equal to or less than 200 percent of the current poverty level or up to 80 percent of the area median income (2020)	Direct Install: LEDs, Water-Saving Devices, Programmable and Wi-Fi Enabled Thermostats, and Carbon Monoxide Detectors Follow-Up: Air Conditioning, Furnaces, Boilers, Refrigerators, Insulation, and Air and Duct Sealing
NYSERDA	EmPower New York (Multi-Family Component)	Must have a household income below 60 percent of the state median income or participate in a utility payment assistance program (2020)	LEDs, Refrigerators, Water Saving Devices, Freezers, Air Sealing, Insulation, Heating Equipment, and Clothes Dryers
Vectren	Food Bank Initiative	Unclear	4-pack of general-purpose, 9-watt LED bulbs
Xcel Energy Colorado	Energy Savings Kit Program	Must live in an Xcel Energy service area and receive energy funding assistance (2021)	LED Bulbs, 1.5 GPM High-Efficiency Showerheads, 1.5 GPM Kitchen Faucet Aerators, and Bathroom Faucet Aerators
Xcel Energy Colorado	Multifamily Weatherization Program	Building owners must be a customer Housing complexes must have at least 66 percent of the rental units occupied by income-qualified customers whose income is below 80 percent of the local area median (2021)	LEDs, T8 Lamps and Ballasts to replace T12s, ENERGY STAR® Appliances, ENERGY STAR Low Flow Fixtures, Energy-Efficient Windows, Energy-Efficient Doors, High-Efficiency Boilers and Furnaces, Attic, Crawlspace, Pipe Insulation, Reverse Indirect and Domestic Hot Water Heaters, and Variable Speed Motors

4.4.10 Leveraged Low-Income Single Family Retrofit Initiatives

In addition to the programs that only utilize utility funds, some utilities offer initiatives that leverage funds from other sources. The table below shows all the administrators in the benchmarking where non-utility funds were also used. Two additional utilities, DTE and Xcel Energy, are included in this section for their single-family programs, which leveraged funds from other sources.

Table 33. Utility Program Descriptions–Leveraged Programs

Program Administrator	Program Name	Region	Program Description
ComEd	Income-Eligible Single-Family Retrofits	Midwest	The Income-Eligible Single-Family Retrofits (SFR) Program provides retrofits to single-family households in ComEd service areas with incomes at or below 80 percent of the Area Median Income. The program offers assessments, direct installation of energy efficiency measures, replacement of inefficient equipment, technical assistance, and educational information further to save money on energy bills through two program components.
Consumers Energy	Income-Qualified Energy Assistance (Helping Neighbors Program)	Midwest	Targeting single-family, multifamily, and manufactured housing, the program aims to assist limited-income customers with home weatherization interventions delivered at no cost. It provides and installs EWR measures and offers sustainable energy education to help customers reduce their energy use and better manage their energy bills over the long term.
DTE	Energy Efficiency Assistance Program	Midwest	This low-income program includes the Energy Efficiency Assistance (EEA) program (home assessment and retrofit), the Payment Troubled Customers Initiative (PTCI), and the Income-Qualified Heat Pumps Initiative as well as the low-income components of the Multifamily and HEC programs.
Idaho Power	Weatherization Assistance for Qualified Customers	Northwest	The WAQC program provides financial assistance to regional CAP agencies in Idaho Power's service area. This assistance helps fund the weatherization costs of electrically heated homes occupied by qualified customers with limited incomes. Weatherization improvements enable residents to maintain a more comfortable, safe, and energy-efficient home while reducing their monthly electricity consumption and are available at no cost to qualified customers who own or rent their homes. These customers also receive educational materials and ideas on using energy wisely in their homes. Local CAP agencies determine participant eligibility according to federal and state guidelines. The WAQC program also provides limited funds to weatherize buildings occupied by non-profit organizations that serve primarily special-needs populations, regardless of heating source, with priority given to electrically heated buildings.
Xcel Energy	Single-Family Weatherization	Northwest	The Single-Family Weatherization program targets income-qualified customers receiving assistance on their energy bills. The product works with weatherization agencies and contractors around the state to provide this at-risk customer segment with free or low-cost home audits and electric and/or natural gas efficiency measures. Public Service offers significant rebates toward the incremental cost of these upgrades

Several utilities in this section use government and community funding sources for their low-income retrofit programs. Two programs discussed previously—ComEd’s Income-Eligible Single-Family Retrofits program and Consumers Energy’s Income-Qualified Energy Assistance program—have leveraged and non-leveraged components as part of their programs. For ComEd, the leveraged component of their Income-Eligible Single-Family Retrofits program uses funds from the Illinois Home Weatherization Assistance program and is offered jointly with Peoples Gas, North Shore Gas, and Nicor Gas. For Consumers Energy, their Partner Weatherization initiative works with nonprofit organizations to provide rebates to install energy-efficient measures. These organizations include Habitat for Humanity, housing developments, and community development groups throughout Michigan.

DTE, Idaho Power, and Xcel Energy Colorado maintain low-income home assessment and retrofit programs using leveraged funds to serve their customers. DTE’s Energy Efficiency Assistance program leverages services provided by member agencies of the Michigan Community Action Agency Association, municipalities, counties, public housing commissions, faith-based institutions, community development corporations, and nonprofit organizations to identify low-income customers, conduct home energy assessments, and install energy-efficient products at no cost to the program participant.

Idaho Power’s Weatherization Assistance for Qualified Customers program, which mirrors its non-leverage initiative (mentioned above), provides funds directly to CAP agencies for weatherization services. CAP agencies in Idaho and Oregon then combine Idaho Power’s funds with funding from their respective state’s weatherization assistance programs to conduct audits of low-income households and install energy efficiency measures.

Xcel Energy Colorado’s Single Family Weatherization program partners with weatherization agencies and contractors to provide free or low-cost home audits and retrofits to income-qualified customers. To pay for these projects, third-party implementers secure public grants and private funds to match Xcel Energy’s contributions.

Table 34. Leveraged Low-Income Retrofit Programs

Program Administrator	Program Name	Eligibility	Measures
ComEd	Income-Eligible Single-Family Retrofits (Illinois Home Weatherization Assistance Program Component)	Must be a customer at or below 80 percent of the area median income (2021)	LEDs, Air Conditioning, Air and Duct Sealing, Furnaces, Air Sealing, Insulation, Advanced and Programmable Thermostats, Bathroom Exhaust Fans, Low Flow Showerheads, Refrigerators, Freezers, Low Flow Aerators, Boilers, and Water Heaters
Consumers Energy	Income-Qualified Energy Assistance (Partner Weatherization Initiative Initiative)	Must be a customer with a household income equal to or less than 200 percent of the current poverty level or up to 80 percent of the area median income (2020)	Follow-up Measures: Furnaces, Water Heaters, Air Conditioning, Boilers, and Refrigerators

Program Administrator	Program Name	Eligibility	Measures
DTE	Energy Efficiency Assistance Program	Must be a customer at or below 200 percent of the federal poverty guidelines (2022)	LEDs, Pipe Wrap, Energy Efficient Showerheads, Faucet Aerators, Window Air Conditioning Units, Heat Pump Water Heaters, Tankless Water Heaters, Wi-Fi Thermostats, and Advanced Power Strips
Idaho Power	Weatherization Assistance for Qualified Customers	Must be an income-qualified electrical customer (depends on income level, number of residents, and location) (2021)	Follow-up Measures: Windows, Doors, Insulation, Weather Stripping, Bathroom and Kitchen Fans, Electric Furnaces, Heat Pumps, Water Heaters, and Light Bulbs
Xcel Energy Colorado	Single-Family Weatherization	Must be a customer below 80 percent of the area median income (2021)	Furnaces, Wall Insulation, Attic Insulation, Crawl Space Insulation, Water Heaters, Storm Windows, Showerheads, Aerators, Air Sealing, Thermostats, Refrigerators, LEDs, and Heat Pumps

APPENDIX A: PRIOR IMPACT EVALAUTION RESULTS

The table below shows the evaluated savings from 2016 Tiers B and C and 2017 Tiers B and C. The evaluation team focused on Tiers B and C from the prior evaluations because they were most comparable to projects installed in PY2020.

Table 35. 2016 and 2017 Evaluated Electric Savings

Company	Program Year	Tier	Per-Participant Savings (kWh)
LG&E	2016	A	43
		B	584
		C	1,515
		Total	
	2017	A	-129
		B	350
		C	717
		Total	
KU	2016	A	-77
		B	458
		C	1,881
		Total	
	2017	A	155
		B	337
		C	678
		Total	

Table 36. 2016 and 2017 Evaluated Gas Savings

Company	Program Year	Tier	Per-Participant Savings (Ccf)
LG&E	2016	A	30.4
		B	66.8
		C	76.0
		Total	
	2017	A	-1.2
		B	17.6
		C	51.2
		Total	

APPENDIX B: PROGRAM PARTICIPANT COUNT BY COUNTY

The table below shows the number of customers who participated in the WeCare program in PY2021 by county.

Table 37. Participant Count by County

County	Count	County	Count
Adair	6	Greenup	1
Anderson	14	Hardin	53
Ballard	2	Harlan	31
Barren	4	Harrison	3
Bath	1	Hart	5
Bell	126	Henderson	1
Bourbon	3	Henry	13
Boyle	8	Hickman	3
Bracken	41	Hopkins	25
Brown	1	Jefferson	2,302
Bullitt	15	Jessamine	1
Butler	1	Kent	1
Caldwell	1	Kenton	1
Campbell	2	Knox	5
Carroll	11	Larue	4
Carter	1	Laurel	5
Casey	6	Lee	1
Christian	1	Letcher	1
Clark	19	Lincoln	5
Clay	3	Livingston	1
Crittenden	5	Lyon	3
Estill	1	Madison	41
Fayette	114	Marion	48
Fleming	25	Mason	12
Floyd	1	McCreary	1
Franklin	4	McLean	2
Gallatin	2	Meade	7
Garrard	10	Mercer	8
Grant	1	Montgomery	7
Grayson	3	Muhlenberg	23

County	Count	County	Count
Nelson	5	Scott	69
Nicholas	1	Shelby	18
Ohio	3	Spencer	2
Oldham	25	Taylor	4
Owen	7	Union	15
Powell	1	Warren	1
Pulaski	26	Washington	2
Rockcastle	1	Webster	4
Rowan	4	Whitley	6
Russell	25	Woodford	25

APPENDIX C: DESK REVIEWS—INDIVIDUAL REPORT FINDINGS

The following list provides detailed findings from the reports with the enrollment ID(s) noted in parentheses of potential data consistency issues.

- **Identical SIR values in analysis report (1615709).** For one project, the analysis report's SIR values for lower hot water temperature and programmable thermostat are identical (32.3). It is unlikely that both of these values were 32.3, and 32.3 for the programmable thermostat would easily be the highest in the desk review population.
- **Concerns stated by the participant were not sufficiently addressed for some projects (1631156, 1621296).** Customers from two projects provided their concerns about their homes, but the solutions did not wholly address their concerns. One customer (1631156) asked for assistance with attic insulation, window kits, and air sealing but only received work for smart plug strips, upgraded lighting, and lowering of the hot water temperature. Another customer (1621296) also asked for an upgraded thermostat, but the solutions did not appear to address this concern.
- **SIR values of 0 were included in the analysis report for measures expected to have savings.** For four projects, solution categories were presented with a SIR of 0 in the analysis report when the measure is expected to have positive savings. These affected solutions included upgrade lighting (1628948), upgrade doors and windows (1621296, 1611288), and lower hot water temperature (1617364).
- **SIR value of 96.2 was reported for lower hot water temperature solutions on one project (1628948).** The SIR value for lower hot water temperature at this project was the highest in the desk review population. Without further details, Tetra Tech could not determine if the value was accurate, but we suggest the implementer review this project and measure.
- **One project contained solutions for “upgrade doors and windows” and “upgrade windows” separately (1611288).** This project included two solution categories in the analysis report that appear to overlap. Also, this project was the only one in the desk review sample that included “upgrade windows;” all other projects included all measures under “upgrade doors and windows.” During review discussions with LG&E and KU, staff indicated there could be a difference in the specific types of equipment installed that led to different categories. Still, that detailed information was not in the work order.

As noted earlier, through review calls with LG&E and KU, Tetra Tech learned that the customer reports were not shared during the audit before April 2021. From a review of the audit dates on these projects, all of the findings below have at least one audit occurrence conducted in April 2021 or later.

- **Detailed measure pages were blank except for a header.** For four projects, detailed measure pages were included in the analysis report, but they were empty except for the header. These headers included filters (1629185) and smart plug strips (1629185, 1631156, 1608657, 1617929).
- **Reports included energy savings tips instead of individual measure details.** A list of general energy savings tips was included instead of measure details for multiple projects. These tips appeared under the headings of “truck” (1629185, 1623918, 1608657) and “serv. visit/kitchen faucet/C&T” (1628948).
- **The reports were inconsistent about some solution categories.** Several projects included solutions categories with different titles. These titles included “serv. visit/kitchen/faucet/C&T”

(1628948), "service" (1611288), "service visit/truck fee" (1615709), "truck" (1629185), "truck fee" (1608657), "truck fee/service visit" (1623918), and "truck, gen labor, furnace filters" (1614364).

- **One project contained a solution labeled "misc." (1617506).** The analysis report for this project included a solution with a header titled "misc." with no additional information.