



June 17, 2025

Kansas Corporation Commission
1500 SW Arrowhead Road
Topeka, Kansas 66604

RE: 22-EKME-254-TAR - In the Matter of the Application of Evergy Kansas Metro, Inc., Evergy Kansas South, Inc. and Evergy Kansas Central, Inc. for Approval of its Demand-Side Management Portfolio Pursuant to the Energy Efficiency Investment Act (KEEIA), K.S.A. 66-1283.

To Whom it May Concern:

On May 22, 2025, Evergy filed its KEEIA Cycle 1 Program Year 1 Evaluation, Measurement & Verification ("EM&V") Report. However, the report was inadvertently omitted from the original filing. Evergy respectfully requests that the Commission accept this submission of the KEEIA Cycle 1 Program Year 1 EM&V Report.

We apologize for any inconvenience this oversight may have caused.

Sincerely,

A handwritten signature in black ink that reads "Cathryn Dinges". The signature is written in a cursive, flowing style.

Cathryn J. Dinges

cc: All parties

KEEIA Cycle I PY1: Evaluation, Measurement, and Verification Report Kansas Metro and Kansas Central

Prepared for:
Evergy, Inc.

May 15, 2025

Prepared by:



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Table of Contents

1	Executive Summary	6
1.1	Descriptions of Programs.....	6
1.2	Program Start Dates	8
1.3	Summary of EM&V Methodology	8
1.4	Program Performance.....	14
1.5	Summary of Evaluation Results	15
1.6	Key Findings and Recommendations	21
2	Introduction	28
2.1	Reporting Period	28
2.2	Document Structure	28
2.3	Industry Standards for EM&V	29
2.4	Report Definitions	31
3	Portfolio Findings and Evaluation Results.....	34
3.1	Gross and Net Savings Results Summary: Combined Territories	34
3.2	Gross and Net Savings Results Summary: Kansas Central	37
3.3	Gross and Net Savings Results Summary: Kansas Metro.....	40
3.4	Cost-Effectiveness Summary.....	43
3.5	Process Evaluation Results Summary	45
4	Impact Evaluation Approach	61
5	Net Savings Approach	64
5.1	Net-to-Gross Ratio	64
5.2	Free Ridership	64
5.3	Participant and Nonparticipant Spillover	64
5.4	Establishing Free Ridership and Spillover Values	64
6	Process Evaluation Approach.....	66
6.1	Program Tracking Review.....	67
6.2	Program Staff and Implementer Interviews.....	67
6.3	Participant Surveys.....	67

6.4	Survey Bias & Methodology Overview	67
7	Cost-Effectiveness Approach.....	71
7.1	Calculation	71
7.2	Cost Tests Utilized	71
7.3	Source of Cost Effectiveness Input Data	73
7.4	Cost Categories	74
8	Gross and Net Savings	76
8.1	Whole Home Efficiency	76
8.2	Hard-to-Reach Homes	79
8.3	Home Energy Education	81
8.4	Whole Business Efficiency	82
8.5	Hard-to-Reach Businesses	84
8.6	Home Demand Response.....	86
8.7	Business Demand Response	89
Appendix A	Whole Home Efficiency Program-Specific Methodologies and Results ...	92
A.1	Program Overview	92
A.2	EM&V Methodology	93
A.3	Impact Evaluation Results	99
A.4	Supplementary Analysis Results	110
A.5	Net Savings Methodology	112
A.6	Net Savings Results.....	118
A.7	Process Evaluation Methodology.....	119
A.8	Process Evaluation Results	121
A.9	Conclusions and Recommendations	135
Appendix B	Hard-to-Reach Homes Program-Specific Methodologies and Results ..	139
B.1	Program Overview	139
B.2	EM&V Methodology	141
B.3	Impact Evaluation Methodology and Results	145
B.4	Net Savings Methodology and Results	161
B.5	Process Evaluation Methodology.....	161

B.6	Process Evaluation Results	163
B.7	Conclusions and Recommendations	176
Appendix C	Home Energy Education Program-Specific Methodologies and Results	180
C.1	Program Overview	180
C.2	EM&V Methodology	183
C.3	Impact Evaluation Methodologies	183
C.4	Impact Evaluation Results	192
C.5	Ongoing Activities to Mitigate Realization Rate Issues	198
C.6	Supplementary Analysis	198
C.7	Net Savings Methodology	205
C.8	Net Savings Results.....	206
C.9	Process Evaluation Methodology.....	206
C.10	Process Evaluation Results	207
C.11	Conclusions and Recommendations	225
Appendix D	Whole Business Efficiency Program-Specific Methodologies and Results	228
D.1	Program Overview	228
D.2	EM&V Methodology	230
D.3	Impact Evaluation Methodology.....	231
D.4	Impact Evaluation Results	231
D.5	Ongoing Activities to Mitigate Realization Rate Issues	243
D.6	Net Savings Methodology	243
D.7	Net Savings Results.....	247
D.8	Process Evaluation Methodology.....	248
D.9	Process Evaluation Results	250
D.10	Conclusions and Recommendations	264
Appendix E	Hard-to-Reach Businesses Program-Specific Methodologies and Results	268
E.1	Program Overview	268
E.2	EM&V Methodology	270
E.3	Impact Evaluation Methodology.....	271

E.4	Impact Evaluation Results	271
E.5	Ongoing Activities to Mitigate Realization Rate Issues	281
E.6	Net Savings Methodology	281
E.7	Net Savings Results.....	282
E.8	Process Evaluation Methodology.....	282
E.9	Process Evaluation Results	283
E.10	Conclusions and Recommendations	283
Appendix F	Home Demand Response Program-Specific Methodologies and Results	288
F.1	Program Overview	288
F.2	EM&V Methodology	289
F.3	Impact Evaluation Methodology and Results	291
F.4	Ongoing Activities to Mitigate Realization Rate Issues	317
F.5	Net Savings Methodology	317
F.6	Net Savings Results.....	321
F.7	Process Evaluation Methodology.....	321
F.8	Process Evaluation Results	323
F.9	Conclusions and Recommendations	332
Appendix G	Business Demand Response Program-Specific Methodologies and Results.....	334
G.1	Program Overview	334
G.2	EM&V Methodology	335
G.3	Impact Evaluation Methodology and Results	336
G.4	Ongoing Activities to Mitigate Realization Rate Issues	351
G.5	Net Savings Methodology	351
G.6	Net Savings Results.....	351
G.7	Process Evaluation Methodology.....	351
G.8	Process Evaluation Results	352
G.9	Conclusions and Recommendations	359

1 Executive Summary

In accordance with the Kansas Energy Efficiency Investment Act (KEEIA) statute and the Kansas Corporation Commission Order in Docket No. 22-EKME-254-TAR, including the Stipulation and Agreements, Evergy Services, Inc. (hereafter referred to as Evergy) on behalf of its affiliates, Evergy Kansas Metro and Evergy Kansas Central, has contracted with ADM Associates, Inc. (ADM) to perform evaluation, measurement and verification (EM&V) activities. These EM&V activities are intended to confirm the energy savings (kWh) and peak demand reductions (kW) realized through the programs that Evergy implemented as part of the KEEIA demand-side management (DSM) portfolio.

ADM is submitting this report to fulfill the requirements outlined by the Kansas Corporation Commission Order in Docket No. 22-EKME-254-TAR including the Stipulation and Agreements. This report also meets the primary objectives outlined in the State and Local Energy Efficiency Action Network (SEE) Action guide.

This section acts as an executive summary of the EM&V activities for Evergy's first program year (referred to as PY1), which began March 1, 2024, and continued through December 31, 2024. Additional details can be found in the body of the report and appendices.

It should be noted that PY1 is the startup phase of the KEEIA statute, with varied program start dates that affected overall performance of the programs. In addition to the varied program start dates, it should be noted that the reported savings were calculated using a different source than the verified savings. Program start dates are shown in Table 1-1. The reported savings calculations used the 2024 KEEIA Technical Reference Manual (Cycle I) that was originally filed on January 1, 2023. The verified savings calculations used the 2024 Evergy Technical Reference Manual that was filed on January 1, 2024. The source for the verified savings calculations was appropriate due to the date the original Technical Reference Manual was filed and the updates that had been made to savings calculations and deemed inputs in the 2024 Evergy Technical Reference Manual that was filed on January 1, 2024.

1.1 Descriptions of Programs

ADM prepared an evaluation report for which EM&V was required, which included three residential programs, two business programs, and two demand response programs for its PY1. Specific Evergy programs covered by this evaluation include:

Residential Programs:

- Whole Home Efficiency (WHE): Provides rebates for Heating, Ventilation, and Air Conditioning (HVAC) and building envelope measures in single and multi-family residences. In PY1, the WHE program included HVAC Rebates and Air Sealing and Insulation Rebates.
- Hard-to-Reach Homes (HTRH): Provides home upgrades for multi-family residences, weatherization home upgrades, foodbank giveaways, energy assessments, and energy savings kits for income eligible customers. In PY1, the HTRH program included four components: Community Energy Efficiency Kits, No Cost Energy Assessments and Free Energy Savings Kits, Income Eligible Multi-Family, and Weatherization Assistance.
- Home Energy Education (HEE): Aims to transform customers' behavior and encourages them to adopt energy-saving behaviors or install energy efficient equipment. There are three main program components to the HEE Program: marketing for residential education and program promotion and outreach (including community events, rural community engagement, and the Kansas Low Income Leadership in Essential Services (LILIES)), the Home Energy Analysis (HEA) online tool and survey, and the Home Energy Education Report (HEER).

Business Programs:

- Whole Business Efficiency (WBE): Encourages effective utilization of electric energy by offering rebates for energy efficiency improvements for facility modernization as well as industrial process improvement. Measures include, but are not limited to: lighting, lighting controls, motors, pumps, variable frequency drives, HVAC (custom only), and food service and refrigeration.
- Hard-to-Reach Businesses (HTRB): Provides enhanced incentive values and services to small business and nonprofit customers. Projects can include, but are not limited to: lighting, lighting controls, HVAC, motors, and refrigeration equipment.

Demand Response Programs:

- Home Demand Response (HDR): Uses automatic event call technology to curtail residential energy use during peak demand periods. Eligible customers are provided an incentive to participate in curtailment events.
- Business Demand Response (BDR): Uses automatic event call technology to curtail commercial energy use during peak demand periods. Eligible customers are provided an incentive to participate in curtailment events.

Evergy also offered the Business Energy Education and Pilots Incubator programs. ADM did not evaluate these programs in PY1, as Evergy did not report savings.

1.2 Program Start Dates

The approximate launch dates for each program and subprogram (if applicable) in PY1 are outlined in Table 1-1.

Table 1-1: PY1 Program Start Dates

Sector	Program	Component Name	Approximate Program Launch Date
Residential Programs	Whole Home Efficiency	-	June 2024
	Hard-to-Reach Homes	Community Energy Efficiency Kits	June 2024
		Energy Savings Kits	September 2024
		Income-Eligible Multi-Family	June 2024
		Weatherization Assistance	June 2024
	Home Energy Education	-	May 2024
Business Programs	Whole Business Efficiency	-	April 2024
	Hard-to-Reach Businesses	-	April 2024
Demand Response Programs	Home Demand Response	-	July 2024
	Business Demand Response	-	June 2024

1.3 Summary of EM&V Methodology

The following section provides a high-level summary of the evaluation methods used for the EM&V for PY1. Detailed methodologies are provided in the body and appendices of this report.

1.3.1 Impact Evaluation Methodology

1.3.1.1 Whole Home Efficiency

In the evaluation of the WHE Program, energy savings and peak demand reductions were estimated using regression analyses consisting of population-level normalized metered energy consumption (NMEC) in which energy savings were determined using an NMEC approach based on pre- and post-installation advanced metering infrastructure (AMI) data. For this approach, the work effort was divided into the following categories:

- Data preparation and cleaning
- Run regression model to calculate savings

1.3.1.2 Hard-to-Reach Homes

Community Energy Efficiency Kits, Energy Savings Kits, and Income Eligible Multi-Family:

ADM primarily relied on the Kansas Technical Reference Manual (TRM) for algorithms and deemed inputs to calculate measure savings, which includes industry standard algorithms for an engineering review of the program measures. Where possible, program tracking data was also used to supplement the algorithm inputs for efficiency measure values (i.e., SEER, EER, HSPF, R-value, etc.) and inputs based on home demographics (i.e., heating/cooling fuel type, water heating fuel type, square footage, etc.).

Weatherization Assistance:

In the evaluation of the Weatherization Assistance Program, energy savings and peak demand reductions were estimated using regression analyses consisting of population-level NMEC in which energy savings were determined using an NMEC approach based on pre- and post-installation AMI data. For this approach, the work effort was divided into the following categories:

- Data preparation and cleaning
- Run regression model to calculate savings

1.3.1.3 Home Energy Education

The participant and control group billing data in the pre-period (defined as the period *before* a household starts receiving HEERs) and in the post-period (defined as the period *after* a household starts receiving HEERs that also occurs during PY1) was used to estimate program impact for each cohort. The methods detailed in the Uniform Methods Project (UMP) behavioral chapter by the National Renewable Energy Laboratory¹ were followed for this evaluation. In addition, the cross-participant savings were estimated from other downstream energy efficiency programs offered to Evergy residential customers.

1.3.1.4 Whole Business Efficiency

The method used to calculate and verify energy savings (kWh) consisted of:

- **Program tracking data census review.** The tracking data was reviewed for a census of projects and measures. The data was verified for duplicate participation within the program and to ensure there were no discrepancies within the tracking data.

¹ Li, M.; Haeri, H.; Reynolds, A. (2018). The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-70472. <http://www.nrel.gov/docs/fy18osti/70472.pdf>

- **Reported savings reviewed for sampled sites.** Reported savings calculations were reviewed for all measures to determine the cause of savings discrepancies.
- **Standard for verification of savings.** The calculation of gross energy savings and demand reduction impacts primarily relied on energy savings values and algorithms from the Evergy TRM and custom algorithms. Data from the program tracking data, customer interviews, and site-specific inputs, from direct measurements and/or visual inspections, were used as inputs to the savings algorithms as outlined in the Evergy TRM.

ADM utilized normalized energy savings curves to determine peak demand reduction savings for each participant. A normalized energy savings curve is comprised of 8,760 hourly fractions summing to exactly 1 (unity). For each sampled project and non-sampled measure types, ADM assigns a verified annual kWh savings, which is then multiplied by each of the 8,760 hourly fractions to disaggregate the annual kWh into 8,760 hourly kW bins. In PY2 ADM will continue conversations with interested parties from staff on specific KS curve development.

Normalized energy savings curves were developed for each sampled project by verifying energy use schedules. Non-sampled measures were assigned annual load shapes from the IL TRM.

The normalized energy savings curves were then used to determine the maximum value in July during hour 17, which is the middle of Evergy KS peak demand hours (July, hours 16-18).

1.3.1.5 Hard-to-Reach Businesses

The method used to calculate and verify energy savings (kWh), and demand reduction (kW) consisted of:

- **Program tracking data census review.** The tracking data was reviewed for a census of projects and measures. The data was verified for duplicate participation within the program and to ensure there were no discrepancies within the tracking data.
- **Reported savings reviewed for sampled sites.** Reported savings calculations were reviewed for all measures to determine the cause of savings discrepancies.

- **Standard for verification of savings.** The calculation of gross energy savings and demand reduction impacts primarily relied on energy savings values and algorithms from the Evergy TRM and custom algorithms. Data from the program tracking data, customer interviews, and site-specific inputs, from direct measurements and/or visual inspections, were used as inputs to the savings algorithms as outlined in the Evergy TRM.

ADM utilized normalized energy savings curves to determine peak demand reduction savings for each participant. A normalized energy savings curve is comprised of 8,760 hourly fractions summing to exactly 1 (unity). For each sampled project and non-sampled measure types, ADM assigns a verified annual kWh savings, which is then multiplied by each of the 8,760 hourly fractions to disaggregate the annual kWh into 8,760 hourly kW bins. In PY2 ADM will continue conversations with interested parties from staff on specific KS curve development.

Normalized energy savings curves were developed for each sampled project by verifying energy use schedules. Non-sampled measures were assigned annual load shapes from the IL TRM.

The normalized energy savings curves were then used to determine the maximum value in July during hour 17, which is the middle of Evergy KS peak demand hours (July, hours 16-18).

1.3.1.6 Home Demand Response

In the evaluation of demand response programs, energy savings are estimated by comparing a participant's load shape during a demand response event with a baseline load shape. This baseline load is assumed to be a good estimate of the counterfactual load—that is, the load that would have manifested had there not been an event called that day.

Demand savings for the demand response portion of the program were estimated using the following baseline models:

- Regression Model (Linear Fixed Effects)
- Prior-Day-Averaging Customer Baselines (CBLs)

ADM took the following impact evaluation steps to select a baseline model:

- Developed a regression baseline, an unadjusted CBL, a multiplicative adjusted CBL, and an additive adjusted CBL for each program participant. Baseline and actual consumption were calculated utilizing 1-hour AMI data.
- Determined days that will serve as proxy days for testing the suitability of the baseline approach. Proxy days represent days like demand response event days in terms of load shape and temperature profiles.

- Estimated bias (uncertainty) and error on proxy days for each model to assess baseline performance. Bias is assessed by examining the Mean Percent Error (MPE) of the baseline predictions relative to the actual usage on proxy days. In a similar manner, error is assessed through various metrics such as Root Mean Squared Error (RRMSE) using baseline predictions and actual usage on proxy days.²
- Selected the baseline model with the lowest absolute bias (MPE) and/or error (RRMSE).

The demand reduction the HDR Program is calculated as the maximum hourly load shed (in kW) on the event date that corresponds to Evergy's system peak day for the jurisdiction (out of all eligible DR event dates).

1.3.1.7 Business Demand Response

Based on Kansas regulations, ADM used method 1a³ and protocol 2a⁴ to evaluate the BDR Program. Evergy does not claim energy savings for demand response initiative (DRI); thus, the evaluation team did not calculate energy savings. ADM assumes energy loads to be mostly shifted to times outside of the event period.

1.3.2 Net Savings Methodology

ADM used self-reported participant survey data to assess free ridership and spillover. Program participants were identified from the tracking data and survey responses were collected through both phone and email surveys.

ADM estimated net savings, or the savings directly attributable to the programs, through the assessment of net-to-gross (NTG) values. ADM will apply NTG values to the program's verified gross savings to calculate the estimated net savings as follows:

$$\text{Net Savings} = \text{Verified Gross Savings} \times \text{NTG}$$

The NTG values used to adjust the verified gross energy savings estimates account for free ridership and spillover as follows:

$$\text{NTG} = 1 - \text{Free ridership} + \text{Spillover}$$

Table 1-2 below outlines the sources of free ridership and spillover values for each program in PY1.

² Bias and error are defined using ASHRAE Guideline 14-2014. Measurement of Energy, Demand, and Water Savings.

³ Comparisons of pre-adoption and post-adoption loads of program or demand-side rate participants, corrected for the effects of weather and other inter-temporal differences.

⁴ Monthly billing data, hourly load data, load research data, end-use load metered data, building and equipment simulation models, and survey responses.

Table 1-2: PY1 Free Ridership and Spillover Sources

Program	Source	Method	Year Determined
Free Ridership			
Whole Home Efficiency	Participant Survey	Calculated	PY1
Whole Business Efficiency	Participant Survey	Calculated	PY1
Hard-to-Reach Businesses	Participant Survey	Calculated	PY1
Spillover			
Whole Home Efficiency	Participant Survey	Calculated	PY1
Whole Business Efficiency	Participant Survey	Calculated	PY1
Hard-to-Reach Businesses	Participant Survey	Calculated	PY1
Other Programs			
Foodbank Giveaways	ADM assumed an NTG value of 1.0 for these programs/program channels, or the program was designed as a randomized control trial.		
Income-Eligible Multi-Family			
Kits & Assessments			
Weatherization			
Home Energy Education			
Home Demand Response			
Business Demand Response			

1.3.3 Process Evaluation Methodology

Table 1-3 outlines the process evaluation outreach activities performed in PY1.

Table 1-3: Process Evaluation Outreach Activities by Program

Program	Process Evaluation Activity	Group
Whole Home Efficiency	In-depth interviews	Evergy and implementation program staff
	Online survey	Program participants
	Mixed mode survey (online/phone)	Participating contractors
Hard-to-Reach Homes	In-depth interviews	Evergy and implementation program staff
	Phone survey	Income-Eligible Multi-Family Participating Property Manager
	Mixed mode survey (online/phone)	Weatherization participants
Home Energy Education	In-depth interviews	Evergy and implementation program staff
	Phone survey	Participants and nonparticipants
Whole Business Efficiency & Hard-to-Reach Businesses Programs	In-depth interviews	Evergy and implementation program staff
	Mixed mode survey (online/phone)	Program participants
	Mixed mode survey (online/phone)	Participating contractors
Business Demand Response	In-depth interviews	Evergy and implementation program staff
	Online survey	Program participants
Home Demand Response	In-depth interviews	Evergy and implementation program staff
	Online survey	Program participants

1.4 Program Performance

Estimated net energy savings and demand reduction per jurisdiction over the first program year of the cycle for all programs are shown in Table 1-4 and Table 1-5. The tables also include the percent to target net savings and demand reduction achieved by each program in PY1.

Table 1-4: Combined Territories Estimated Net Energy Savings Compared to Actual Net Savings Per Program

Sector	Program	Estimated Net Energy Savings (kWh)	Actual Net Energy Savings (kWh)	% Target Net Energy Savings (kWh)
Residential Programs	Whole Home Efficiency	13,980,000	2,457,425	18%
	Hard-to-Reach Homes	4,890,000	3,971,299	81%
	Home Energy Education	1,990,000	827,689	42%
	Residential Programs Subtotal	20,860,000	7,256,413	35%
Business Programs	Whole Business Efficiency	24,073,000	5,031,339	21%
	Hard-to-Reach Businesses	10,338,000	3,656,257	35%
	Business Programs Subtotal	34,411,000	8,687,596	25%
Demand Response Programs	Home Demand Response	1,048,956	646,020	62%
	Business Demand Response	0	0	-
	Demand Response Subtotal	1,048,956	646,020	62%
Portfolio Total		56,319,956	16,590,029	29%

Table 1-5: Combined Territories Estimated Net Demand Reduction Compared to Actual Net Savings Per Program

Sector	Program	Estimated Net Demand Reduction (kW)	Actual Net Demand Reduction (kW)	% Target Net Demand Reduction (kW)
Residential Programs	Whole Home Efficiency	5,000.00	1,607.43	32%
	Hard-to-Reach Homes	2,400.00	1,336.93	56%
	Home Energy Education	300.00	297.23	99%
	Residential Programs Subtotal	7,700.00	3,241.59	42%
Business Programs	Whole Business Efficiency	9,000.00	525.26	6%
	Hard-to-Reach Businesses	2,400.00	296.99	12%
	Business Programs Subtotal	11,400.00	822.25	7%
Demand Response Programs	Home Demand Response	10,620.00	18,907.98	178%
	Business Demand Response	10,600.00	14,423.79	136%
	Demand Response Subtotal	21,220.00	33,331.77	157%
Portfolio Total		40,320.00	37,395.61	93%

1.5 Summary of Evaluation Results

Gross savings are the savings verified through ADM's impact evaluation methods prior to net-to-gross adjustments, while the net savings are the savings verified through ADM's impact evaluation methods and inclusive of net-to-gross adjustments. Evergy's programs

reported gross annual energy savings (kWh) across both jurisdictions for the program year of 18,032,300 kWh. Total gross verified annual energy savings were 17,909,553 kWh, resulting in a portfolio-level realization rate for gross energy savings of 99 percent.

The net-to-gross ratio (NTGR) indicates the percentage of gross savings directly attributable to program influences. The program-level net annual energy savings were 16,590,029 kWh, with a portfolio-level kWh NTGR of 93 percent.

Table 1-6 summarizes the energy impacts of Evergy's residential, business, and demand response programs for the program year.

Table 1-6: Combined Territories Energy Savings at the Customer Meter – PY1

Sector	Program	Gross			Net	
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	Verified Savings (kWh)	NTGR (%)
Residential Programs	Whole Home Efficiency	6,246,474	3,346,139	54%	2,457,425	73%
	Hard-to-Reach Homes	2,477,770	3,971,299	160%	3,971,299	100%
	Home Energy Education	1,655,816	827,689	50%	827,689	100%
	Residential Programs Subtotal	10,380,059	8,145,127	78%	7,256,413	89%
Business Programs	Whole Business Efficiency	3,566,316	5,186,947	145%	5,031,339	97%
	Hard-to-Reach Businesses	3,568,721	3,931,459	110%	3,656,257	93%
	Business Programs Subtotal	7,135,037	9,118,406	128%	8,687,596	95%
Demand Response Programs	Home Demand Response	517,204	646,020	125%	646,020	100%
	Business Demand Response	0	0	-	0	-
	Demand Response Subtotal	517,204	646,020	125%	646,020	100%
Portfolio Total		18,032,300	17,909,553	99%	16,590,029	93%

Evergy's programs reported peak demand reduction (kW) across both jurisdictions for the program year of 59,075.57 kW. Total gross verified peak demand reduction was 38,022.26 kW, resulting in a portfolio-level realization rate for peak demand reduction of 64 percent.

The NTGR indicates the percentage of gross demand reduction directly attributable to program influences. The program-level net annual peak demand reduction was 37,395.61 kW, with a portfolio level kW NTGR of 98 percent.

Table 1-7 summarizes the peak demand impacts of Evergy’s residential, business, and demand response programs during the program year.

*Table 1-7: Combined Territories Peak Demand Reduction at the Customer Meter
– PY1*

Sector	Program	Gross			Net	
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	Verified Demand Reduction (kW)	NTGR (%)
Residential Programs	Whole Home Efficiency	4,536.98	2,195.49	48%	1,607.43	73%
	Hard-to-Reach Homes	1,303.69	1,336.93	103%	1,336.93	100%
	Home Energy Education	401.80	297.23	74%	297.23	100%
	Residential Programs Subtotal	6,242.46	3,829.64	61%	3,241.59	85%
Business Programs	Whole Business Efficiency	1,410.22	541.51	38%	525.26	97%
	Hard-to-Reach Businesses	1,392.44	319.34	23%	296.99	93%
	Business Programs Subtotal	2,802.66	860.85	31%	822.25	96%
Demand Response Programs	Home Demand Response	35,606.65	18,907.98	53%	18,907.98	100%
	Business Demand Response	14,423.79	14,423.79	100%	14,423.79	100%
	Demand Response Subtotal	50,030.44	33,331.77	67%	33,331.77	100%
Portfolio Total		59,075.57	38,022.26	64%	37,395.61	98%

Table 1-8 provides a summary of the number of households/businesses served by program for both jurisdictions combined. Program-specific project and measure counts are provided in Appendix A through Appendix G.

*Table 1-8: Combined Territories Number of Households/Businesses Served –
PY1*

Program Name	Number of Households/Businesses
Whole Home Efficiency	1,765
Hard-to-Reach Homes*	18,283
Home Energy Education	82,009
Whole Business Efficiency	94
Hard-to-Reach Businesses**	307
Home Demand Response	68,456
Business Demand Response	28

*HTRH represent the number of kits distributed in the Community Energy Efficiency Kits program component and the unique premises in all other program components.

**A unique customer company name can have multiple projects.

The benefit-cost ratios for the Total Resource Cost Test (TRC) as well as the Utility Cost Test (UCT), Rate Payer Impact test (RIM), Societal Cost Test (SCT), and the Participant Cost Test (PCT) are presented in Table 1-9.

*Table 1-9: Combined Territories Benefit-Cost Ratios by Program and Cost Test –
PY1*

Sector	Program	TRC	UCT	RIM	SCT	PCT
Residential Programs	Whole Home Efficiency	2.22	2.29	0.81	3.11	2.42
	Hard-to-Reach Homes	1.21	1.10	0.43	1.46	4.11
	Home Energy Education	5.30	0.04	0.04	5.30	-
Residential Programs Overall		1.74	1.22	0.55	2.32	3.61
Business Programs	Whole Business Efficiency	1.02	1.15	0.68	1.25	2.05
	Hard-to-Reach Businesses	1.02	1.21	0.83	1.31	1.19
Business Programs Overall		1.02	1.18	0.74	1.28	1.54
Demand Response Programs	Home Demand Response	1.35	0.98	0.80	1.48	2.76
	Business Demand Response	1.02	0.58	0.58	1.02	-
Demand Response Programs Overall		1.22	0.81	0.71	1.30	3.98
Portfolio Overall		1.31	1.08	0.64	1.62	2.72

Table 1-10 provides a summary of the final free-ridership, spillover, NTG ratios, and precision by program for both jurisdictions combined. Program-specific NTG methodologies and results are provided in Appendix A through Appendix G.

Table 1-10: Combined Territories NTG Components by Program – PY1

Program Name	Free Ridership	Participant Spillover	NTGR	Precision at 90% Level of Confidence
Whole Home Efficiency	0.27	0.003	0.74	0.035
Hard-to-Reach Homes	ADM assumed an NTGR of 1.0 for all subprograms in the Hard-to-Reach Homes Program.			
Home Energy Education	ADM assumed an NTGR of 1.0 for the Home Energy Education Program.			
Whole Business Efficiency	0.03	-	0.97	0.03
Hard-to-Reach Businesses	0.07	-	0.93	0.06
Home Demand Response	ADM assumed an NTGR of 1.0 for the Demand Response programs.			
Business Demand Response	ADM assumed an NTGR of 1.0 for the Demand Response programs.			

Whole Business and Hard-to-Reach Business Programs: These programs had similar design and implementation, with the Hard-to-Reach Business program offering enhanced incentives for qualified small business and nonprofit customers. These programs succeeded in building awareness with customers and contractors in their first program year; the groundwork laid in PY1 should enable the program to meet goals in future program years.

Most participant survey feedback suggests strong program communication, though a portion of responses indicate there are some opportunities for improvement. Evaluation findings suggest opportunities to ease the application process and/or improve understanding of the program requirements.

Whole Home Efficiency Program: Most participant survey respondents reported high overall satisfaction with the program and the contractor they worked with. Awareness of the program is being driven by contractors. They perceive awareness to be low but growing. Most contractors indicated they were satisfied with the program overall and with the various rated aspects of the program. Some contractor feedback suggests that there are opportunities to improve the paperwork requirements and participation process.

Hard-to-Reach Homes Program: This program consists of four offerings (Weatherization, Kits & Assessment, Income Eligible Multifamily, and Foodbank Giveaways/ Community Energy Efficiency Kits).

- The Weatherization Program did not meet its PY1 savings goals, though Evergy staff foresees it meeting its PY2 goals. The program launched in June 2024 and began receiving documentation from completed homes in August 2024. Weatherization participants generally indicated that signing up for the program was easy, though a portion experienced long wait times to receive improvements. Participant survey findings also suggest there are opportunities to improve the contractors' professionalism, work quality, and/or cleanliness.
- Foodbank kits were distributed during one community event and in two wide-spread distributions to foodbank, pantry, and nonprofit locations in PY1. All kits contained four A19 LED lightbulbs and one LED nightlight.
- The Income Eligible Multi-Family Program focused on recruitment for direct install measures in PY1 and will seek to engage customers with its custom and deeper retrofit components in future program years.
- The Kits & Assessments program had limited participation in PY1. Marketing for this program targets income-eligible customers; its focus was outreach and promotion in the Wichita area in 2024.

Home Energy Education Program: The Home Energy Education Report aspect of this program is focused on engaging customers with no email address or digital engagement with Evergy. Evergy staff estimated that the HEERs had a 5 percent conversion rate from print-only to digital customers in the first eight months. The program has experienced modest attrition but maintains strong participation levels. Evergy staff indicated they started with 82,000 participants and are now at around 78,000. They noted attrition was primarily due to customers moving rather than opt-outs, with opt-out rates being "way less than 1 percent."

Survey findings suggest that most participants generally find the information on their home's energy use to be accurate and are satisfied overall with their report experience. The survey results showed that a similar portion of participants and nonparticipants noticed advertisements for Evergy energy efficiency programs in the past 12 months. ADM's participant survey findings suggest there may be a ceiling to the portion of HEER participants that are willing to sign up for Evergy online accounts due to a lack of comfort with or aversion to using technology or the internet and/or preference for other methods of bill payment.

Home Demand Response Program: The program had multiple first-year implementation challenges including Google devices (67 percent of program devices) missing curtailment signals and EcoBee devices showing high non-contributing rates. Additionally, communication gaps may have left many participants unaware of Energy Savings Events and database coordination issues delayed enrollment for approximately 1,250 customers. However, the program achieved high customer satisfaction with

100 percent of survey respondents planning to continue to participate. And the program successfully drove smart thermostat adoption among customers who would not have purchased one otherwise. The identification of implementation issues in PY1 has positioned the program strongly for the second year.

Business Demand Response Program: The program did not meet first-year enrollment goals; however, implementation staff have proactively added lead tracking and probability updates to increase confidence in customer sign-ups moving forward into PY2. Participants were overwhelmingly satisfied with the program, particularly with support from program staff and the program-provided energy usage insights. The program has successfully implemented customization options, with about half of respondents working with Evergy to develop tailored curtailment plans for their organizations. Implementation staff identified requiring Tier 1 customer communications to go through CSMs as a barrier to recruitment.

1.6 Key Findings and Recommendations

ADM offers the following key findings and recommendations for each program, truncated for brevity, in Table 1-11. Full findings and recommendations can be found in the body of the report and in the appendices.

Table 1-11: PY1 Key Findings and Recommendations by Program

Program	Recommendation	Specific Finding(s) That Informed the Recommendation	Priority	Applicability
Whole Home Efficiency	Utilize the per home and per ton savings determined from the usage analysis for reported savings.	ADM found that real world savings do not align with TRM deemed values for all measures in the program.	1	Mitigate realization rate risk
	Investigate how early replacement designations for HVAC units are being determined.	The usage analysis did not find a significant difference between units classified as time of sale and early replacement.		
	Thoroughly QC tracking data for errors in quantities, reported savings, and measure designation.	There were numerous errors in the tracking data, including line-items with no reported savings and deemed savings being multiplied by the wrong value.		
	Record the temperature setpoint for backup heating before and after heat pump units are installed for homes with primary gas heating.	ADM found an increase in consumption in the heating season post-installation for heat pumps in homes with primary gas heating.		
	Consider updates to the application requirements to further ease the contractor participation process.	Feedback from contractors included challenges with “AHRI matchups” or finding qualifying equipment information on the AHRI website, frustration with redundancy of application requirements, and calls to include allowing changes to existing applications, and only requiring a single application for projects with multiple furnaces at a single property.	2	Improve satisfaction and promote continued contractor participation
	Continue to work to ensure timely rebate check disbursement and communicate expected fulfillment times to customers and contractors.	The most frequently cited source of dissatisfaction in the participant survey was the wait time to receive the rebate check. A portion of contractor survey respondents also noted the issue as a potential area for improvement.	2	Improve customer and contractor satisfaction
	Evaluate implementing an income-qualified component, tiered rebate structure, or on-bill financing to improve program accessibility.	Program participation has skewed toward higher-income customers; cost is a significant barrier to high efficiency equipment adoption and qualifying improvements, particularly for lower-income customers.	2	Reduce barriers to participation

Program	Recommendation	Specific Finding(s) That Informed the Recommendation	Priority	Applicability
Hard-to-Reach Homes	Update the Kansas Everygy TRM to remove errors and account for differences in fuel types.	Kansas Everygy TRM deemed values are either outdated or were calculated incorrectly, including not accounting for differences in fuel types.	1	Mitigate realization rate risk
	Thoroughly QC Weatherization tracking data for errors in quantities, reported savings, and measure names.	ADM found errors in the tracking data including no reported savings and deemed savings being multiplied by the wrong column.	1	
	Provide detailed measure level information for the Weatherization Assistance component of the program.	Measure level information was not provided in the tracking data for Weatherization Assistance Program. Providing this information in the tracking data would allow for a more refined regression analysis and comparison of results with TRM savings estimates.	2	
	Increase quality control and feedback mechanisms available to the Weatherization program.	The addition of measure detail and CAA information to Weatherization program tracking data could enable ADM to administer its customer satisfaction / verification survey more regularly.	2	Improve evaluability & mitigate realization risk
	Ensure participating Income-Eligible Multifamily property managers receive oral or written communication summarizing improvements made to properties.	The income-eligible Multifamily participating property manager was unable to confirm the installation of hot water pipe insulation. Following the survey implementation staff confirmed installation of this measure.	3	Improve participant experience and satisfaction
	Continue to investigate Weatherization participant wait times, quality of service, and communication from staff at participating community action agencies.	Survey findings suggest there are opportunities to improve the Home Weatherization contractors' professionalism, work quality, and/or cleanliness.	3	

Program	Recommendation	Specific Finding(s) That Informed the Recommendation	Priority	Applicability
Home Energy Education	Balance participant groups by pre-period energy consumption.	The two cohorts had statistically different pre-period daily usage. These differences are more prominent in the spring and fall seasons.	1	Mitigate realization rate risk
	Consider investigating the savings of low-income and rural customers.	From the exploratory analysis, Kansas City and rural areas had smaller savings. The difference in savings could be explained by demographic factors.	1	
	Continue to highlight Evergy's energy efficiency program offerings through bill inserts, mailers, and HEERs to participants.	Non-digitally engaged customers targeted by the program may be more prone to learn about program offerings through forms of traditional outreach more than online advertisement.	2	Increase customer engagement with programs
	Provide customers with the opportunity to update contact information to facilitate future research.	One-fifth of participant and nonparticipant records contained invalid phone contact information or customers unaware of participation.	2	Improve evaluability of program
Whole Business Efficiency	Evergy CSMs should continue to work with implementation contractor staff to engage with Tier 1 customers and promote energy efficiency.	Participant survey findings suggest program awareness is being driven by contractor outreach.	3	Increase program participation and reach.
Hard-to-Reach Business	Investigate opportunities to ease the experience for Hard-to-Reach Businesses program participants.	Compared to the Whole Business Efficiency Program, a larger portion of Hard-to-Reach Businesses program participants found the program challenging to navigate or made comments about its requirements.	3	Improve participant satisfaction.
	Ensure program participants have access to adequate application support and consider additional supports for those with less time or tech savviness.	A larger portion of Hard-to-Reach Businesses program participants voiced interest in clearer or easier application requirements. One noted a preference for phone rather than email communication and another said they had experienced challenges providing the required Excel documentation for their project.	2	Ease participation process & improve satisfaction.

Program	Recommendation	Specific Finding(s) That Informed the Recommendation	Priority	Applicability
Whole Business Efficiency and Hard-to-Reach Business	Continue to build program awareness through support for contractor engagement and direct outreach to customers.	The program did not meet its PY1 goals because of a shorter program year, TRM alignment efforts, and Evergy CSM-implementor coordinator challenges.	2	Increase program participation and reach.
	Consider updates to the application tool and participation requirements.	Participating contractor suggestions included adding information on Kansas incentive projects in the Trade Ally Portal, improving online application dropdown menu choices, adding step-by-step instructions for/to tool, standardizing requirements with other utility incentive programs, and reducing requirements for multiple documents with customer signatures.	2	Ease participation process & improve satisfaction.
	Continue to provide program support and consider providing additional information to Evergy's website to explain requirements.	Participants noted having challenges completing the application because of a lack of equipment knowledge, lack of technical proficiency in Excel, and the onerousness of inputting information about baseline equipment and dividing inputs across their account meters. Contractor survey responses also indicated a need for readily available, clear explanations of program requirements.	1	
	Generate monthly program tracking data reports.	ADM relied on the implementation contractor pipeline data to proxy tracking data reports. It was found that many values were reported differently in Evergy's track data and the implementation contractor pipeline data.	1	Improve evaluability.
	Validate tracking data contact information.	A total of 409 unique account numbers were included in the final tracking data. Twenty-two percent of accounts either did not have contact information or were determined to have contractor contact information included in the place of customer contact information.	1	
	Provide specific installation locations for installed measures.	By specifying exact locations where measures are installed, it becomes easier to track and monitor their performance. This helps in identifying any issues or inefficiencies quickly.	1	
	Make sure that measures reported in a project's application match the project's measures in the tracking data.	Ensuring that the project application and tracking data are aligned helps maintain consistency in reporting and evaluation.	1	
	Include specific information about baseline equipment.	To enhance the evaluability and accuracy of project tracking by including detailed information about baseline equipment.	1	
	Provide incremental costs for all measures and projects in the tracking data.	To enhance the evaluability and financial transparency of projects by including detailed incremental cost data for all measures and projects in the tracking system.	1	

Program	Recommendation	Specific Finding(s) That Informed the Recommendation	Priority	Applicability
Home Demand Response	The Program implementer should investigate whether curtailment signals are reaching all customers.	Google devices, which accounted for 67 percent of program devices, were not sent a curtailment signal on the event date.	1	Improve program operations.
	Explore methods to engage renters and those living in multi-family housing to expand the program's reach.	The majority of respondents were homeowners living in older, small-to-moderate sized single-family homes with gas heating. Renters are eligible to participate in the program, though there is a requirement for landlord consent.	3	Increase program participation and reach.
	Investigate ways to improve the notification system for energy savings events to increase participation.	A lack of awareness of event notifications and low reported engagement in the one PY1 event suggest opportunities to provide participants with more information either when they sign up for the program or through the program's notification system prior to events.	1	Improve program operations.
	Implement automated verification systems to identify enrollment issues earlier.	Database coordination challenges resulted in approximately 1,250 customers remaining in pending enrollment status for longer than expected.	1	
	Enhance post-purchase support and follow-up processes.	Most survey respondents did not receive or were not aware if they received notifications for the Energy Savings Events.	1	

Program	Recommendation	Specific Finding(s) That Informed the Recommendation	Priority	Applicability
Business Demand Response	The program implementer should work to utilize DERMS CBL models that ADM provides to Evergy for estimating reported demand reductions.	Utilizing only one CBL model is not recommended for determining demand reductions due to the heterogeneity of participant loads for a Large C&I DR program.	1	Improve program operations
	Continued email outreach with tailored messaging to highlight important program benefits may be an effective and low cost method to increase enrollment.	Survey findings suggest participants are enrolling after learning about the program from marketing emails; sending additional emails that highlight the program payment, potential for customization, and support from program staff may be an effective method to draw in additional participants.	1	Increase awareness and enrollment.
	Continue to work with participants to create individualized curtailment plans with catered reminders.	Participants are satisfied with the Business Demand Response Program overall. All respondents indicated that the number of curtailment events was about right and most said they were the right amount of time.	2	Maintain high participant satisfaction.
	The program implementer should attempt to complete program enrollment before the start of the demand response season.	Enrolling additional sites after DR events have been called limits the number of DR events that can be used for estimating verified kW reductions (or will require utilizing multiple events to estimate program impacts).	2	Improve program operations.
	ADM recommends calling between 4 to 6 events to avoid customer fatigue. Back-to-back Monday events should be avoided and the schedule of and sequencing of events should be considered to avoid participant dissatisfaction.	Program underperformance indicates the number of events may be too many for some participants, CSMS, implementation teams, and/or other support staff.	2	

2 Introduction

This report presents an evaluation of the performance of energy efficiency, energy education, and demand response programs offered by Evergy for the first program year (PY1) of the 4-year program cycle. A breakdown of the chapters in this report are shown in Section 2.2.

2.1 Reporting Period

The KEEIA Cycle I refers to programs implemented in the timeframe of program years 2024 – 2027 (PY1 – PY4). PY1 refers to the 2024 program year, beginning March 1, 2024, through December 31, 2024.

2.2 Document Structure

This report is comprised of the following chapters:

- Chapter 1: Executive Summary
- Chapter 2: Introduction
- Chapter 3: Portfolio Findings and Evaluation Results
- Chapters 4–7: Evaluation Approaches
- Chapter 8: Gross and Net Savings
- Appendix A – Appendix G: Program-Specific Methodologies and Results

A breakdown of each report section is outlined below:

- **Executive Summary:** Briefly summarizes the overall EM&V activities for PY1, including the methodologies, results, findings, and recommendations.
- **Introduction:** Provides a general overview of the report, including report definitions.
- **Portfolio Findings and Evaluation Results:** Provides findings and recommendations at the portfolio and sector level for gross and net savings, cost effectiveness, and overarching process findings.
- **Impact Evaluation Approach:** Provides a summary of the evaluation approaches for the impact evaluation and overviews of the approach for net-to-gross.
- **Net Savings Approach:** Provides a summary of the evaluation approaches for the impact evaluation and overviews of the approach for net-to-gross.
- **Process Evaluation Approach:** Provides a summary of the evaluation approaches for the process evaluation and data collection activities.

- **Cost Effectiveness Approach:** Provides a summary of the evaluation approaches for the cost effectiveness calculations, including methodology, inputs, and sources.
- **Gross and Net Savings:** Provides a breakdown of the gross and net energy savings and peak demand reductions by program.
- **Evaluation Methodology by Program:** Provides a condensed summary of program level evaluation activities. Full program level reports can be found in the appendices outlined below.

The following appendix will accompany this report:

- **Survey Instruments:** Provides detailed survey guides for participants and trade allies by program.
- **Energy Savings Curves:** Provides 8760-hour savings curves per measure, as well as documentation of curve development and future plans.

2.3 Industry Standards for EM&V

The EM&V methodology for Evergy's KEEIA DSM Portfolio utilizes the NMEC evaluation framework. However, the NMEC evaluation framework is not a standalone guide, but rather was built upon and refers to EM&V protocols and guidelines that are listed in Section 2.3.1. Therefore, it is important to take into consideration the listed industry standards, specifications, and ongoing research that continue to guide modern EM&V activities.

2.3.1 EM&V Protocols and Guidelines

- EM&V protocols for DSM measures, published through the Uniform Methods Project (UMP) sponsored by the U.S. Department of Energy (DOE);⁵
- International Performance Measurement and Verification Protocol (IPMVP). Core Concepts. Efficiency Valuation Organization. March 2022;⁶

⁵ See www.energy.gov/eere/about-us/ump-protocols.

⁶ IPMVP Core Concepts may be downloaded at www.evo-world.org by establishing a free account (similar 2012 IPMVP version: www.eepperformance.org/uploads/8/6/5/0/8650231/ipmvp_volume_i__2012.pdf).

- M&V Guidelines: Measurement and Verification for Performance-Based Contracts Version 4.0, DOE Federal Energy Management Program (FEMP), November 2015; and Supplement to M&V Guidelines: Measurement and Verification for Performance-Based Contracts Version 4.0, FEMP, September 2023;⁷
- American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). Guideline 14-2014: Measurement of Energy, Demand and Water Savings;⁸
- National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources, National Efficiency Screening Project, May 2017;⁹
- Energy Efficiency Program Impact Evaluation Guide, State and Local Energy Efficiency Action Network, December 2012;¹⁰ and
- SEE Action Guide for States: Evaluation, Measurement, and Verification Frameworks—Guidance for Energy Efficiency Portfolios Funded by Utility Customers, State and Local Energy Efficiency Action Network, January 2018.¹¹

2.3.2 M&V 2.0

M&V 2.0, also called Advanced M&V, refers to the use of advanced data analytics and automated methods to measure and verify savings from energy efficiency projects. M&V 2.0 can achieve very accurate and near-real-time M&V results more efficiently than traditional M&V. Berkeley Lab is a leader in Advanced M&V research.¹² The EM&V methodology for Evergy's KEEIA DSM Portfolio utilizes M&V 2.0 concepts and tools within the NMEC evaluation framework.

⁷ See www.energy.gov/sites/prod/files/2016/01/f28/mv_guide_4_0.pdf and https://www.energy.gov/sites/default/files/2023-09/supplement-to-mv-guidelines_version-4.pdf.

⁸ See https://www.techstreet.com/ashrae/standards/guideline-14-2014-measurement-of-energy-demand-and-water-savings?gateway_code=ashrae&product_id=1888937.

⁹ See www.nationalefficiencyscreening.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf.

¹⁰ See www4.eere.energy.gov/seeaction/system/files/documents/emv_ee_program_impact_guide_0.pdf.

¹¹ See www7.eere.energy.gov/seeaction/system/files/documents/EMV-Framework_Jan2018.pdf; this EM&V guidance document succeeds and contains references to the California Public Utilities Commission's June 2004 California Evaluation Framework.

¹² RM&V 2.0 (see <https://buildings.lbl.gov/tools-guides#whole>) is an R application developed by Berkeley Lab to enable M&V practitioners to perform M&V 2.0 for commercial building projects. An alternative URL for RM&V 2.0 information and downloads is found here: <https://lbl-eta.github.io/RMV2.0/>.

2.4 Report Definitions

2.4.1 General

Kansas Energy Efficiency Investment Act (KEEIA)

Four-year savings target approved by the Kansas Corporation Commission for a given program cycle.

Impact Evaluation

The evaluation of a program's energy savings. This evaluation type compares energy savings as estimated by a utility through their implementer with ADM's estimates. This evaluation could involve data collection efforts from surveys to on-site monitoring. This evaluation could utilize analytical methods ranging from billing regressions to prescriptive calculations.

Process Evaluation

Assessment of an efficiency program's delivery mechanisms, focused on the activities and procedures used during implementation. This evaluation could involve data collection efforts from surveys or qualitative interviews.

Cost Effectiveness Analysis

An analysis, via several different tests, of whether an efficiency program's benefits exceed its costs.

Realization Rate (RR)

The ratio of ex post and ex ante. This value describes the relationship between values as we calculate them to be versus what they were originally forecasted to be. A realization rate might be applied to a stratum or to a whole program.

Deemed Savings / Deemed Values

An estimate of energy or demand savings for a single unit of an installed energy efficiency measure that (a) has been developed from data sources and analytical methods that are widely considered acceptable for the measure and purpose, and (b) is applicable to the situation being evaluated. Individual parameters or calculation methods can also be deemed.

Bias

The extent to which a measurement or a sampling or analytic method systematically underestimates or overestimates a value.

Confidence Level

The probability that the quoted range contains the true value.

Sample

The subset of a population that may be used to represent a larger population. A sample of sites is analyzed, and their results are extrapolated onto a population.

Site

A physical location that took part in an energy efficiency program. A site could be described in several ways depending on program design. However, this phrase often corresponds to a single business that took part in one or more installation events of energy efficient measures.

Strata / Stratum

Strata is the plural of stratum. A stratum is the subset of a larger population. This term relates to sampling.

Uncertainty

In statistics, this describes the margin of error associated with your results that stem from precision-related issues. For example, uncertainty in measurement could stem from systematic operator error to precision of the instrument. The uncertainty describes the potential deviation from the "true value."

2.4.2 Savings Types**Gross Realization Rates**

The ratio of gross verified savings to gross reported savings.

Gross Reported Savings

Savings reported in Evergy's annual reports prior to any EM&V reported gross adjustments and net-to-gross adjustments.

Gross Verified Savings

Savings verified through ADM's impact evaluation methods prior to net-to-gross adjustments.

Net Verified Savings

Savings verified through ADM's impact evaluation methods and inclusive of net-to-gross adjustments.

Percentage of KEEIA Target Achieved

The ratio of net verified savings to the KEEIA target for the program cycle; reflects Kansas Metro and Kansas Central's overall achievement toward the KEEIA target for the program cycle.

2.4.3 Net-to-Gross Components

Free Ridership (FR)

The program savings attributable to free riders (i.e., program participants who would have implemented a program measure or practice in the absence of the program).

Participant Spillover (PSO)

The additional energy savings achieved, because of the program's influence, when a program participant installs energy efficiency measures or practices beyond the efficiency program after having participated.

Nonparticipant Spillover (NPSO)

The additional energy savings achieved when a nonparticipant implements energy efficiency measures or practices because of the program's influence (e.g., through exposure to the program). NPSO was not investigated in PY1 for the KEEIA programs; this aspect of NTG may be investigated in future program years.

Net-to-Gross (NTG)

The percent of savings generated by the program would have occurred in the absence of the program. This is typically calculated as $NTG = 1 - \text{free-ridership} + \text{participant spillover}$.

Net Sales Analysis Approach to Net-to-Gross

Approaches to estimating NTG that rely on the effect of program activity on total sales, yielding a market-level estimate of NTG that take FR, PSO, and NPSO into account.

Billing Analysis Approach to Net-to-Gross

Approaches to estimating NTG that rely on the use of control groups, either through randomized control trials (RCT) or quasi-experimental designs (e.g., the use of matching techniques to develop relevant nonparticipant comparison groups) and billing analysis to model participant net savings.

3 Portfolio Findings and Evaluation Results

In PY1, Evergy offered customers three residential programs and two business programs. Evergy also offered customers two demand response programs, one residential and one commercial/industrial.

3.1 Gross and Net Savings Results Summary: Combined Territories

This section summarizes the gross and net savings achievements for both the Kansas Central and Kansas Metro jurisdictions combined and presents the portfolio-level realization rates for PY1.¹³ Gross savings are the savings verified through ADM's impact evaluation methods¹⁴ prior to net-to-gross adjustments, while the net savings are the savings verified through ADM's impact evaluation methods and inclusive of net-to-gross adjustments.¹⁵

3.1.1 Summary of Annual Energy Savings: Combined Territories

Evergy's programs reported gross annual energy savings (kWh) across both jurisdictions for the program year of 18,032,300 kWh. Total gross verified annual energy savings were 17,909,553 kWh, resulting in a portfolio-level realization rate for gross energy savings of 99 percent.

The net-to-gross ratio (NTGR) indicates the percentage of gross savings directly attributable to program influences. The program-level net annual energy savings were 16,590,029 kWh, with a portfolio-level kWh NTGR of 93 percent.

Table 3-1 summarizes the energy impacts of Evergy's residential, business, and demand response programs for the program year.

¹³ As per the Kansas Corporation Commission Order in Docket No. 22-EKME-254-TAR including the Stipulation and Agreements.

¹⁴ See Section 4.

¹⁵ See Section 5.

Table 3-1: Combined Territories Energy Savings at the Customer Meter – PY1

Sector	Program	Gross			Net	
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	Verified Savings (kWh)	NTGR (%)
Residential Programs	Whole Home Efficiency	6,246,474	3,346,139	54%	2,457,425	73%
	Hard-to-Reach Homes	2,477,770	3,971,299	160%	3,971,299	100%
	Home Energy Education	1,655,816	827,689	50%	827,689	100%
	Residential Programs Subtotal	10,380,059	8,145,127	78%	7,256,413	89%
Business Programs	Whole Business Efficiency	3,566,316	5,186,947	145%	5,031,339	97%
	Hard-to-Reach Businesses	3,568,721	3,931,459	110%	3,656,257	93%
	Business Programs Subtotal	7,135,037	9,118,406	128%	8,687,596	95%
Demand Response Programs	Home Demand Response	517,204	646,020	125%	646,020	100%
	Business Demand Response	0	0	-	0	-
	Demand Response Subtotal	517,204	646,020	125%	646,020	100%
Portfolio Total		18,032,300	17,909,553	99%	16,590,029	93%

3.1.2 Summary of Peak Demand Impacts: Combined Territories

Evergy's programs reported peak demand reduction (kW) across both jurisdictions for the program year of 59,075.57 kW. Total gross verified peak demand reduction was 38,022.26 kW, resulting in a portfolio-level realization rate for peak demand reduction of 64 percent.

The NTGR indicates the percentage of gross demand reduction directly attributable to program influences. The program-level net annual peak demand reduction was 37,395.61 kW, with a portfolio level kW NTGR of 98 percent.

Table 3-2 summarizes the peak demand impacts of Evergy's residential, business, and demand response programs during the program year.

*Table 3-2: Combined Territories Peak Demand Reduction at the Customer Meter
– PY1*

Sector	Program	Gross			Net	
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	Verified Demand Reduction (kW)	NTGR (%)
Residential Programs	Whole Home Efficiency	4,536.98	2,195.49	48%	1,607.43	73%
	Hard-to-Reach Homes	1,303.69	1,336.93	103%	1,336.93	100%
	Home Energy Education	401.80	297.23	74%	297.23	100%
	Residential Programs Subtotal	6,242.46	3,829.64	61%	3,241.59	85%
Business Programs	Whole Business Efficiency	1,410.22	541.51	38%	525.26	97%
	Hard-to-Reach Businesses	1,392.44	319.34	23%	296.99	93%
	Business Programs Subtotal	2,802.66	860.85	31%	822.25	96%
Demand Response Programs	Home Demand Response	35,606.65	18,907.98	53%	18,907.98	100%
	Business Demand Response	14,423.79	14,423.79	100%	14,423.79	100%
	Demand Response Subtotal	50,030.44	33,331.77	67%	33,331.77	100%
Portfolio Total		59,075.57	38,022.26	64%	37,395.61	98%

Table 3-3 provides a summary of the number of households/businesses served by program for both jurisdictions combined. Program-specific project and measure counts are provided in Appendix A through Appendix G.

Table 3-3: Combined Territories Number of Households/Businesses Served – PY1

Program Name	Number of Households/Businesses
Whole Home Efficiency	1,765
Hard-to-Reach Homes*	18,283
Home Energy Education	82,009
Whole Business Efficiency	94
Hard-to-Reach Businesses**	307
Home Demand Response	68,456
Business Demand Response	28

*HTRH represent the number of kits distributed in the Community Energy Efficiency Kits program component and the unique premises in all other program components.

**A unique customer company name can have multiple projects.

Table 3-4 provides a summary of the final free-ridership, spillover, NTG ratios, and precision by program for both jurisdictions combined. Program-specific NTG methodologies and results are provided in Appendix A through Appendix G.

Table 3-4: Combined Territories NTG Components by Program – PY1

Program Name	Free Ridership	Participant Spillover	NTGR	Precision at 90% Level of Confidence
Whole Home Efficiency	0.27	0.003	0.74	0.035
Hard-to-Reach Homes	ADM assumed an NTGR of 1.0 for all subprograms in the Hard-to-Reach Homes Program.			
Home Energy Education	ADM assumed an NTGR of 1.0 for the Home Energy Education Program.			
Whole Business Efficiency	0.03	-	0.97	0.03
Hard-to-Reach Businesses	0.07	-	0.93	0.06
Home Demand Response	ADM assumed an NTGR of 1.0 for the Demand Response programs.			
Business Demand Response	ADM assumed an NTGR of 1.0 for the Demand Response programs.			

3.2 Gross and Net Savings Results Summary: Kansas Central

3.2.1 Summary of Annual Energy Savings: Kansas Central

Evergy's programs reported annual energy savings (kWh) for the Kansas Central jurisdiction for the program year of 10,754,711 kWh. Total gross verified annual energy savings were 11,604,612 kWh, resulting in a realization rate for gross energy savings of 108 percent.

The NTGR indicates the percentage of gross savings directly attributable to program influences. The program-level net annual energy savings were 10,902,246 kWh, with a portfolio-level kWh net-to-gross ratio of 94 percent.

Table 3-5 summarizes the energy impacts of Evergy's residential, business, and demand response programs in the Kansas Central jurisdiction during the program year.

Table 3-5: Kansas Central Energy Savings at the Customer Meter – PY1

Sector	Program	Gross			Net	
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	Verified Savings (kWh)	NTGR (%)
Residential Programs	Whole Home Efficiency	2,434,922	1,532,893	63%	1,126,992	74%
	Hard-to-Reach Homes	2,143,662	3,491,415	163%	3,491,415	100%
	Home Energy Education	964,244	589,077	61%	589,077	100%
	Residential Programs Subtotal	5,542,828	5,613,385	101%	5,207,484	93%
Business Programs	Whole Business Efficiency	1,804,073	2,209,915	122%	2,143,617	97%
	Hard-to-Reach Businesses	3,012,719	3,288,102	109%	3,057,935	93%
	Business Programs Subtotal	4,816,792	5,498,017	114%	5,201,552	95%
Demand Response Programs	Home Demand Response	395,091	493,210	125%	493,210	100%
	Business Demand Response	0	0	-	0	-
	Demand Response Subtotal	395,091	493,210	125%	493,210	100%
Portfolio Total		10,754,711	11,604,612	108%	10,902,246	94%

3.2.2 Summary of Peak Demand Impacts: Kansas Central

Evergy's programs reported peak demand reduction (kW) across the Kansas Central jurisdiction for the program year of 42,299.29 kW. Total gross verified peak demand reduction was 31,705.22 kW, resulting in a realization rate for peak demand reduction of 75 percent.

The NTG ratio indicates the percentage of gross savings directly attributable to program influences. The program-level net annual peak demand reduction was 31,412.64 kW, with a portfolio-level kW net-to-gross ratio of 99 percent.

Table 3-6 summarizes the peak demand impacts of Evergy's residential, business, and demand in the Kansas Central jurisdiction during the program year.

*Table 3-6: Kansas Central Peak Demand Reduction at the Customer Meter –
PY1*

Sector	Program	Gross			Net	
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	Verified Demand Reduction (kW)	NTGR (%)
Residential Programs	Whole Home Efficiency	1,712.50	994.19	58%	727.76	73%
	Hard-to-Reach Homes	1,225.37	1,269.33	104%	1,269.33	100%
	Home Energy Education	178.65	211.54	118%	211.54	100%
	Residential Programs Subtotal	3,116.51	2,475.06	79%	2,208.63	89%
Business Programs	Whole Business Efficiency	691.03	256.52	37%	248.82	97%
	Hard-to-Reach Businesses	1,109.27	263.66	24%	245.20	93%
	Business Programs Subtotal	1,800.30	520.18	29%	494.03	95%
Demand Response Programs	Home Demand Response	26,359.91	17,821.83	68%	17,821.83	100%
	Business Demand Response	11,022.57	10,888.15	99%	10,888.15	100%
	Demand Response Subtotal	37,382.48	28,709.98	77%	28,709.98	100%
Portfolio Total		42,299.29	31,705.22	75%	31,412.64	99%

Table 3-7 provides a summary of the number of households/businesses served in the Kansas Central jurisdiction by program. Program-specific project and measure counts are provided in Appendix A through Appendix G.

Table 3-7: Kansas Central Number of Households/Businesses Served – PY1

Program Name	Number of Households/Businesses
Whole Home Efficiency	803
Hard-to-Reach Homes*	15,893
Home Energy Education	57,004
Whole Business Efficiency	37
Hard-to-Reach Businesses**	256
Home Demand Response	51,571
Business Demand Response	19

*HTRH represent the number of kits distributed in the Community Energy Efficiency Kits program component and the unique premises in all other program components.

**A unique customer company name can have multiple projects.

3.3 Gross and Net Savings Results Summary: Kansas Metro

3.3.1 Summary of Annual Energy Savings: Kansas Metro

Evergy's programs reported annual energy savings (kWh) across the Kansas Metro jurisdiction for the program year of 7,27,590 kWh. Total gross verified annual energy savings were 6,304,941 kWh, resulting in a realization rate for gross energy savings of 87 percent.

The NTGR indicates the percentage of gross savings directly attributable to program influences. The program-level net annual peak demand reduction was 5,687,782 kWh, with a portfolio-level kWh NTGR of 90 percent.

Table 3-8 summarizes the energy impacts of Evergy's residential, business, and demand response programs in the Kansas Metro jurisdiction for the program year.

Table 3-8: Kansas Metro Energy Savings at the Customer Meter – PY1

Sector	Program	Gross			Net	
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	Verified Savings (kWh)	NTGR (%)
Residential Programs	Whole Home Efficiency	3,811,552	1,813,246	48%	1,330,433	73%
	Hard-to-Reach Homes	334,107	479,883	144%	479,883	100%
	Home Energy Education	691,572	238,612	35%	238,612	100%
	Residential Programs Subtotal	4,837,231	2,531,742	52%	2,048,929	81%
Business Programs	Whole Business Efficiency	1,762,243	2,977,033	169%	2,887,722	97%
	Hard-to-Reach Businesses	556,002	643,357	116%	598,322	93%
	Business Programs Subtotal	2,318,245	3,620,390	156%	3,486,044	96%
Demand Response Programs	Home Demand Response	122,114	152,810	125%	152,810	100%
	Business Demand Response	0	0	-	0	-
	Demand Response Subtotal	122,114	152,810	125%	152,810	100%
Portfolio Total		7,277,590	6,304,941	87%	5,687,782	91%

3.3.2 Summary of Peak Demand Impacts: Kansas Metro

Evergy's programs reported peak demand reduction (kW) across the Kansas Central jurisdiction for the program year of 16,776.28 kW. Total gross verified peak demand reduction was 6,317.05 kW, resulting in a realization rate for peak demand reduction of 38 percent.

The NTGR indicates the percentage of gross savings directly attributable to program influences. The program-level net annual peak demand reduction was 5,982.98 kW, with a portfolio-level kW net-to-gross ratio of 95 percent.

Table 3-9 summarizes the peak demand impacts of Evergy's residential, business, and demand response programs in the Kansas Metro jurisdiction during the program year.

Table 3-9: Kansas Metro Peak Demand Reduction at the Customer Meter – PY1

Sector	Program	Gross			Net	
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	Verified Demand Reduction (kW)	NTGR (%)
Residential Programs	Whole Home Efficiency	2,824.48	1,201.29	43%	879.67	73%
	Hard-to-Reach Homes	78.32	67.60	86%	67.60	100%
	Home Energy Education	223.16	85.69	38%	85.69	100%
	Residential Programs Subtotal	3,125.95	1,354.58	43%	1,032.96	76%
Business Programs	Whole Business Efficiency	719.19	284.99	40%	276.44	97%
	Hard-to-Reach Businesses	283.18	55.68	20%	51.79	93%
	Business Programs Subtotal	1,002.36	340.67	34%	328.22	96%
Demand Response Programs	Home Demand Response	9,246.74	1,086.16	12%	1,086.16	100%
	Business Demand Response	3,401.22	3,535.64	104%	3,535.64	100%
	Demand Response Subtotal	12,647.96	4,621.80	37%	4,621.80	100%
Portfolio Total		16,776.28	6,317.05	38%	5,982.98	95%

Table 3-10 provides a summary of the number of households/businesses served in the Kansas Metro jurisdiction by program. Program-specific project and measure counts are provided in Appendix A through Appendix G.

Table 3-10: Kansas Metro Number of Households/Businesses Served – PY1

Program Name	Number of Households/Businesses
Whole Home Efficiency	962
Hard-to-Reach Homes*	2,390
Home Energy Education	25,005
Whole Business Efficiency	57
Hard-to-Reach Businesses**	51
Home Demand Response	16,885
Business Demand Response	9

*HTRH represent the number of kits distributed in the Community Energy Efficiency Kits program component and the unique premises in all other program components.

**A unique customer company name can have multiple projects.

3.4 Cost-Effectiveness Summary

ADM calculated the annual cost-effectiveness of Evergy's programs based on reported total spending, verified net energy savings, and verified net demand reduction for each of the energy efficiency and demand response programs. Additional inputs to the cost effectiveness tests included estimates of line-loss adjustments, measure lives, discount rates, participant costs, and avoided costs. All program spending inputs were provided by Evergy and the tracking data as shown in Cost Effectiveness Excel Data Workbook (as outlined in Section 2.2). The total DSM program spending was \$11,874,260, excluding programs that were not evaluated, including the Business Energy Education and Pilot Programs. The methods used to calculate cost-effectiveness were informed by the California Standard Practice Manual.¹⁶

The specific tests used to evaluate cost-effectiveness for the Kansas Public Service Commission is the TRC Test. The benefit-cost ratios for those tests as well as the UCT, RIM, SCT, and the PCT are presented Table 3-11 through Table 3-13. In addition, total portfolio costs and benefits for the programs evaluated are shown in Table 3-14. Detailed cost-effectiveness assumptions and findings are presented in Appendix A through Appendix G.

¹⁶ California Standard Practice Manual: Economic Analysis of Demand Side Management Programs, October 2001. Available at: <https://www.raponline.org/wp-content/uploads/2016/05/cpuc-standardpractice-manual-2001-10.pdf>

*Table 3-11: Combined Territories Benefit-Cost Ratios by Program and Cost Test
– PY1*

Sector	Program	TRC	UCT	RIM	SCT	PCT
Residential Programs	Whole Home Efficiency	2.22	2.29	0.81	3.11	2.42
	Hard-to-Reach Homes	1.21	1.10	0.43	1.46	4.11
	Home Energy Education	5.30	0.04	0.04	5.30	-
Residential Programs Overall		1.74	1.22	0.55	2.32	3.61
Business Programs	Whole Business Efficiency	1.02	1.15	0.68	1.25	2.05
	Hard-to-Reach Businesses	1.02	1.21	0.83	1.31	1.19
Business Programs Overall		1.02	1.18	0.74	1.28	1.54
Demand Response Programs	Home Demand Response	1.35	0.98	0.80	1.48	2.76
	Business Demand Response	1.02	0.58	0.58	1.02	-
Demand Response Programs Overall		1.22	0.81	0.71	1.30	3.98
Portfolio Overall		1.31	1.08	0.64	1.62	2.72

*Table 3-12: Kansas Central Benefit-Cost Ratios by Program and Cost Test –
PY1*

Sector	Program	TRC	UCT	RIM	SCT	PCT
Residential Programs	Whole Home Efficiency	1.99	1.99	0.85	2.78	2.29
	Hard-to-Reach Homes	1.26	1.15	0.45	1.51	3.94
	Home Energy Education	5.06	0.04	0.04	5.06	-
Residential Programs Overall		1.56	1.05	0.51	2.02	3.86
Business Programs	Whole Business Efficiency	0.80	0.80	0.67	0.99	1.54
	Hard-to-Reach Businesses	1.05	1.33	0.99	1.34	0.99
Business Programs Overall		0.93	1.06	0.83	1.18	1.13
Demand Response Programs	Home Demand Response	1.68	1.35	1.07	1.81	2.33
	Business Demand Response	1.10	0.66	0.66	1.10	-
Demand Response Programs Overall		1.45	1.03	0.91	1.54	3.32
Portfolio Overall		1.27	1.05	0.68	1.54	2.53

Table 3-13: Kansas Metro Benefit-Cost Ratios by Program and Cost Test – PY1

Sector	Program	TRC	UCT	RIM	SCT	PCT
Residential Programs	Whole Home Efficiency	2.47	2.62	0.79	3.46	2.53
	Hard-to-Reach Homes	0.96	0.88	0.34	1.16	5.49
	Home Energy Education	6.01	0.05	0.04	6.01	-
Residential Programs Overall		2.13	1.64	0.62	2.94	3.21
Business Programs	Whole Business Efficiency	1.35	1.84	0.68	1.64	2.41
	Hard-to-Reach Businesses	0.89	0.82	0.47	1.14	2.22
Business Programs Overall		1.22	1.46	0.62	1.50	2.36
Demand Response Programs	Home Demand Response	0.59	0.36	0.30	0.70	4.14
	Business Demand Response	0.83	0.42	0.42	0.83	-
Demand Response Programs Overall		0.68	0.38	0.35	0.75	6.11
Portfolio Overall		1.40	1.14	0.57	1.80	3.07

Table 3-14: Combined Territories Program Costs and Benefits – PY1

Jurisdiction	Incentives	All Other Costs	Total TRC Costs	Total TRC Benefits	TRC Score
KS Central	\$4,674,032	\$3,495,897	\$6,706,186	\$8,504,711	1.27
KS Metro	\$2,284,769	\$1,419,562	\$3,016,285	\$4,217,456	1.40
Total¹⁷	\$6,958,801	\$4,915,459	\$9,722,472	\$12,722,167	1.31

3.5 Process Evaluation Results Summary

This section provides an overview of the process evaluation findings in PY1, including implementation plan intervention strategies, program recommendations, and program satisfaction. For specific program findings, please refer to Appendix A through Appendix G.

3.5.1 Implementation Plan Intervention Strategies

Kansas Metro and Kansas Central's implementation of its energy efficiency offerings are divided into two main program types: Residential, Business, and Demand Response. Under each of these program types there are multiple programs and program components.

¹⁷ Total includes programs that were evaluated in PY1, not the total amounts spent by Evergy. Business Energy Education is not included in the total as the program was not evaluated this year and therefore no cost effectiveness was conducted.

3.5.1.1 Residential Programs

For the first program year, Evergy's Residential programs for Kansas consisted of several subprograms, including the Whole Home Efficiency (WHE), Hard-to-Reach Homes (HTRH), and Home Energy Education programs.

Whole Home Efficiency:

The WHE program provides rebates and services to eligible residential customers for qualifying energy efficient measures in already existing homes, including single-family residences, multi-family dwellings, and townhouses. The program provides two tiers of service, including rebates for efficient HVAC systems and rebates for insulation and air sealing services, duct sealing, and rim/joist cavity insulation.

The program's aim is to increase residential customer demand for energy efficient offerings and to support a network of knowledgeable industry professionals who understand the benefits of energy efficient products. To this end, Evergy has increased consumer demand through education on the savings benefits, including financial incentives to help offset first costs. Parallel to this, Evergy has provided information, training, and marketing support to providers of approved equipment, encouraging them to leverage said resources in their sales efforts.

Critical milestones to achieve savings goals include:

- Transition available Missouri Trade Allies to Kansas Trade Allies
- Update to January 2024 KEEIA TRM
- Outreach Efforts to build Kansas Central Trade Ally base
- Marketing campaign must launch before the cooling season to prime the pump for rebates

Hard-to-Reach Homes:

The HTRH program delivers long-term energy savings and bill reductions to qualified hard-to-reach ESI customers through three program components: the Income-Eligible Multi-Family (IEMF) program, the Energy Savings Kit (ESK) program, and the community efficient kit program. The IEMF program provides rebates to cover substantial cost of direct installation measures for individual dwellings and building common areas. Monetary incentives may also be provided for other custom and prescriptive projects for buildings/units. The ESK component provides single family properties with direct installation kits, assistance with energy assessments, program applications, technical support, and upgrade incentives. The community kits (distributed through foodbanks and other partner locations) for PY1 include four A-Line LEDs and an LED nightlight.

The goal of the HTRH program is to deliver long-term energy savings by targeting the affordable housing sector. Critical milestones to achieve savings goals include:

- Update Custom rebate values
- Update Prescriptive rebates
- Complete outreach to target properties
- Spend 85 percent of budget by October 1, 2024

3.5.1.2 Business Programs

For the first program year, Evergy's Business portfolio of programs consisted of two programs, including the Whole Business Efficiency and Hard-to-Reach Businesses (HTRB) programs. In future program years, Evergy may implement a Retro-Commissioning (RCx) program.

Whole Business Efficiency:

The Whole Business Efficiency Program has 3 paths a customer can take, 1) Standard, 2) Custom Lite and 3) Custom. The Standard program provides fixed incentives for one-to-one equipment upgrades with predetermined savings calculations. Participants may apply for an expedited "Fast Track" process, dependent on project measures and size. Applicants for Fast Track projects must have the equipment installed within 90 days prior to submitting a project application. Projects with all Standard Fast-Track measures do not require pre-approval unless the incentive is estimated to be equal to or greater than \$15,000. If a measure meets the Standard program measure eligibility requirements, then an applicant must apply through the Standard program.

The Standard program's aim is to provide awareness of energy efficiency opportunities to C&I customers, incentivize savings, and offer an expedited solution for customers interested in purchasing energy efficient equipment.

The Custom Lite Program provides the opportunity to implement cost-effective energy efficiency improvements that are not eligible under the Standard program—i.e., Lighting and HVAC measures. Custom Lite projects with lighting measures will not require pre-approval unless the incentive exceeds \$15,000 but will require calculations estimated within the application. Per-unit incentives are available for Lighting projects. Custom Lite projects with HVAC measures will require pre-approval but will not need calculations. HVAC calculations are optional as energy savings are determined by an algorithm in the application. The incentive for HVAC projects is determined based on estimated energy savings (kWh).

The Custom Lite program's goal is to provide awareness of energy efficiency opportunities to C&I customers, incentivize savings, and offer an expedited solution for customers interested in purchasing energy efficient equipment.

The Custom program provides the opportunity to implement cost-effective energy efficiency improvements that are not eligible under the Standard program or are projected to receive a Standard program incentive more than \$15,000. These projects require unique calculations of estimated energy savings. Projects must submit the application with preliminary project information prior to purchasing or installing the equipment. The measures must demonstrate reliable and cost-effective potential energy savings and pass a benefit cost test within the application. Additionally, the pre-incentive simple payback of installed measures must be greater than 12 months. Examples of Custom projects include replacement of equipment with new, higher-efficiency equipment; process improvements; and installation of system controls. Incentive categories include building shell, compressed air, cooling, electric heating, HVAC controls optimization with peak demand reduction, HVAC controls optimization without peak demand reduction, exterior lighting with peak demand reduction, exterior lighting without peak demand reduction, food services, interior lighting, interior lighting controls, motors and drives, process optimization, refrigeration, and water heating.

The Custom program's aim is to provide awareness of cost-effective energy efficiency opportunities outside the other energy efficiency programs and incentivize energy savings.

Hard-to-Reach Businesses:

The HTRB program, marketed as "Small Business & Non-Profit Incentives" to the public, provides increased incentives for non-profits that serve low-income populations and small businesses. The equipment and incentive structure will mirror the Whole Business Efficiency program, depending on the measures and total project incentive.

The HTRB program's objective is to encourage small businesses and non-profits serving low-income populations to install more energy efficient equipment.

Business Demand Response:

The BDR Program offers a performance-based cash incentive for energy use reduction among businesses during peak demand periods. Everygy prompts businesses to reduce energy during peak demand events and rewards them for succeeding; the businesses are not penalized for non-participation.

The goal of the program is to promote grid reliability during times of extreme demand. The target audience of this program includes Tier 1 customers (large industrial, manufacturing, and institutional customers who have load flexibility), Tier 2 customers (any business with a peak demand of at least 750 kW and load flexibility), Legacy Trade Allies who service large applicable customers, new market partners who sell and service generators and/or provide building controls and demand response aggregation, and industry organizations in which targeted businesses or partners participate, such as certain IT and data center organizations.

Critical milestones to achieve savings goals include:

- Enroll businesses in late 2024 and early 2025 before the 2025 summer season
- Leverage direct outreach, web presence, digital engagement, and Evergy trade allies' involvement in recruiting efforts
- Retain customer participation and engagement through performance reporting, incentives, and cross-promotions
- Offer digital training for continued education of enrolled customers and prospective customers
- Continue recruitment and reinforce long-term engagement through utilization of case studies and marketing

3.5.2 Program Recommendations

As a result of ADM's evaluation in PY1, the recommendations shown below by program are offered for continued improvement of Evergy's KEEIA DSM portfolio programs. The foundation for each recommendation can be found in the relevant program-specific appendix. Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

3.5.2.1 Whole Home Efficiency

Utilize the per home and per ton savings determined from the usage analysis for reported savings. ADM found that real world savings do not align with TRM deemed values for all measures in the program. Updating the KS Evergy TRM to utilize per home and per ton savings determined from this evaluation would better represent actual savings of participants in the program.

Investigate how early replacement designations for HVAC units are being determined. The usage analysis did not find a significant difference between units classified as time of sale and early replacement. On average, early replacement units using TRM algorithms claim nearly 4 times the savings of time of sale units. This could indicate either incorrect designation of early replacement units or that TRM algorithms for these units do not align with real world savings.

Thoroughly QC tracking data for errors in quantities, reported savings and measure designation. There were numerous errors in the tracking data, including line-items with no reported savings and deemed savings being multiplied by the wrong value. A thorough QC of the tracking data would catch these errors before submission of the data for evaluation.

Record the temperature setpoint for backup heating before and after heat pump units are installed for homes with gas heating. ADM found an increase in consumption in the heating season post-installation for heat pumps in homes with existing dual fuel heat pumps gas heating. This could be due to a change in the temperature setpoint for backup heating during installation of the heat pump.

Consider updates to the application requirements to further ease the contractor participation process. Reviewing application requirements to reduce redundant input requirements and minimize opportunities for contractor input errors may ease the participation process and increase contractor satisfaction and engagement. Providing an in-application dropdown or other method to input equipment Air-Conditioning, Heating, and Refrigeration Institute (AHRI) numbers could alleviate some of the administrative burden for contractors.

Continue to work to ensure timely rebate check disbursement and communicate expected fulfillment times to customers and contractors. The most frequently cited source of dissatisfaction in the participant survey was the wait time to receive the rebate check. A portion of contractor survey respondents also noted the issue as a potential area for improvement (3 of 21 contractor survey respondents expressed dissatisfaction with this aspect of their experience). This may suggest that there is an opportunity to explore ways to improve the rebate processing timeline.

Evaluate implementing an income-qualified component, tiered rebate structure, or on-bill financing to improve program accessibility. The program could consider offering enhanced rebates for income-qualified customers to address the upfront cost barrier while maintaining standard rebate levels for other participants. This could include an integration with the Hard-to-Reach homes program and exploring the potential for on-bill financing for qualified customers. ADM acknowledges the Hard-to-Reach Homes Program is designed to target these customers; however, the range of measures provided through that program does not currently include heating and cooling equipment. The Weatherization subprogram does however offer heating and cooling equipment rebates. The utility is working on financing opportunities for moderate income households.

3.5.2.2 Hard-to-Reach Homes

Update the Kansas Evergy TRM to remove errors and account for differences in fuel types. Kansas Evergy TRM deemed values are either outdated or were calculated incorrectly, including not accounting for differences in fuel types. ADM was unable to determine the cause of many errors in the TRM due to lack of provided inputs in the calculations. This TRM update process will be completed by the evaluation team during the second quarter of PY2.

Thoroughly QC tracking data for error in quantities and reported savings. ADM found errors in the tracking data including no reported savings and deemed savings being multiplied by the wrong column. Additionally, numerous line-items had the measure in the wrong column causing confusion during the evaluation process. A thorough QC of the tracking data would help to catch these errors and allow for consistency in reporting prior to submission of data for evaluation.

Provide detailed measure level information for the Weatherization Assistance component of the program. Measure level information was not provided in the tracking data for Weatherization Assistance Program. Providing this information in the tracking data would allow for a more refined regression analysis and comparison of results with TRM savings estimates. Without this information, ADM is unable to determine the cause of differences between reported and verified gross savings.

Increase quality control and feedback mechanisms available to the program. Third-party verification or internal quality control procedures may benefit from a supplemental feedback mechanism. The addition of measure detail and community action agency information to Weatherization program tracking data could enable ADM to administer its customer satisfaction/verification survey more regularly. ADM could follow each round of survey administration with communication to Evergy and/or Kansas Housing Resource Corporation (KHRC) containing a summary of satisfaction and a list of potentially actionable feedback.

Continue to investigate Weatherization participant wait times, quality of service, and communication from staff at participating community action agencies. Evergy could investigate customers' experiences at the three participating community action agencies and verify customers are receiving adequate communication about wait times, high quality improvements, and professional service. Evergy may also seek to understand demand at each agency and to provide support to KHRC as needed.

Add measure details and community action agency information to Weatherization program tracking data. Evergy staff provided program invoices to enable ADM to conduct its participant survey; invoices did not contain community action agency classification for all participants. Invoices included information on Evergy funded improvements. Participating homes often receive non-Evergy funded improvements in addition to Evergy funded improvements. Inclusion of information on all measures received at each participating home would assist ADM in its efforts to verify the details of customers' participation experience.

3.5.2.3 Home Energy Education

Balance participant groups by pre-period energy consumption. To better compare differences in usage between treatment and control groups, future waves should consider pre-period usage by season when constructed.

Consider investigating the savings of low-income and rural customers. From the exploratory analysis, Kansas City and rural areas had smaller savings. The difference in savings could be explained by demographic factors.

Continue to highlight Evergy's energy efficiency program offerings through bill inserts, mailers, and Home Energy Education Reports (HEERs) to participants. The non-digitally engaged customers targeted by the program may be more prone to learn about program offerings through forms of traditional outreach more than online advertisement such as paid search, videos, or website banners.

Provide customers with the opportunity to update contact information to facilitate future research. Evergy or implementation staff could include a postage paid return letter with HEERs that allows customers to update their account contact name, address, and phone number. Alternatively, a postage paid return letter could be provided to both participant and nonparticipant group customers as a bill insert.

Consider a more limited approach to promoting digital engagement in print HEERs—for instance, including digital sign-up messaging in every other report rather than all reports. In print HEERs, customers always receive the 'Save with email Home Energy Reports' module until they sign up with an email. While promoting digital engagement can successfully encourage some participation, repeatedly pushing online account sign-ups in print HEERs may alienate a portion of customers or use valuable print report space inefficiently. A more limited approach to online account and digital HEER engagement would give reports more opportunities to highlight Evergy's energy efficiency program offerings, ways to save energy, or more information on the normative comparison of customers energy use.

3.5.2.4 Whole Business Efficiency

Many of the recommendations overlap with those for the Hard-to-Reach Businesses Program, though some are specific to the Whole Business Efficiency Program. As such, some duplication may exist between the recommendations for each program.

Generate monthly program tracking data reports. Evergy staff should generate monthly tracking data reports instead of one report generated at the end of the program year. Stakeholders could then track program growth throughout the year. ADM relied on the implementation contractor pipeline data to proxy tracking data reports. It was found that many values were reported differently in Evergy's track data and the implementation contractor pipeline data. This recommendation is already in progress for PY2.

Provide specific installation locations for installed measures. By specifying exact locations where measures are installed, it becomes easier to track and monitor their performance. This helps in identifying any issues or inefficiencies quickly. Accurate location data ensures that the evaluation is based on precise and reliable information, leading to more accurate results. Specific locations allow evaluators to verify that the measures have been installed correctly and are functioning as intended.

Make sure that measures reported in a project's application match the project's measures in the tracking data. Ensuring that the project application and tracking data are aligned helps maintain consistency in reporting and evaluation. Accurate tracking data that matches the project application ensures that the evaluation is based on reliable information.

Include specific information about baseline equipment. To enhance the evaluability and accuracy of project tracking by including detailed information about baseline equipment. Document specific details from the equipment that serves as the baseline. Specific details could include photos, model numbers, baseline wattage. This should include make, model, age, condition, location, and any relevant performance metrics.

Provide incremental costs for all measures and projects in the tracking data. To enhance the evaluability and financial transparency of projects by including detailed incremental cost data for all measures and projects in the tracking system.

Everygy CSMs should continue to work with implementation contractor staff to engage with Tier 1 customers and promote energy efficiency. Program design and operations were established in PY1; marketing and outreach efforts have engaged both Tier 1 and Tier 2 customers. There may be possibilities to engage with more Tier 1 customers while ensuring implementation contractor staff adhere to established communication requirements and expectations.

Continue to build program awareness through support for contractor engagement and direct outreach to customers. Though the program has built a significant amount of awareness in PY1, there remains a need to increase customer awareness, as most surveyed contractors perceived customer awareness of the program to be low.

Consider updates to the application tool and participation requirements. Six of the contractors offered specific suggestions or feedback about their program participation experience. Four were suggestions for the application and included: add information on Kansas incentive projects in the Trade Ally Portal, improve online application dropdown menu choices, add step-by-step instructions for/to tool, standardize requirements with other utility incentive programs, and reduce requirements for multiple documents with customer signatures.

Continue to provide program support and consider providing additional information to Evergy's website to explain requirements. Participants noted having challenges completing the application because of a lack of equipment knowledge, lack of technical proficiency in Excel, and the onerousness of inputting information about baseline equipment and dividing inputs across their account meters. Comments also included calls for more information on the Evergy website about the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate a "best guess on costs" for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application. Two contractor survey responses also indicated a continuing need for readily available, clear explanations of the program requirements (e.g., understanding qualifications and requirements for prescriptive, custom, or enhanced incentives and need for pre-approval or fast track application review).

Ensure customers are receiving timely follow-up communication and can reach program representatives using a preferred mode of communication. Participant survey respondents indicated desires for more timely communication and the option to communicate with program staff via telephone rather than email.

Validate tracking data contact information. Implementation staff should work to ensure customer contact information is accurate and aligned in Captures and in final tracking data. Further, the evaluability of the programs would be improved if data validation measures included:

- Prohibit certain domains from being included in Premise Email addresses (e.g., "@rebateprocessing.com").
- Require that the Service Provider Phone Number and Email fields do not match the Premise Phone Number and Email fields.
- Consider labeling projects with customers that prefer not to be contacted (e.g., populate the Premise Email Address field with text such as "Do not contact customer").
- Ensure all participant records have service provider and end use customer name, email address, and phone number information.

3.5.2.5 Hard-to-Reach Businesses

Many of the conclusions and recommendations overlap with those for the Whole Business Efficiency Program, though some are specific to the Hard-to-Reach Businesses Program. As such, some duplication may exist between the recommendations for each program.

Generate monthly program tracking data reports. Evergy staff should generate monthly tracking data reports instead of one report generated at the end of the program year. Stakeholders could then track program growth throughout the year. ADM relied on the implementation contractor pipeline data to proxy tracking data reports. It was found that many values were reported differently in Evergy's track data and the implementation contractor pipeline data. This recommendation is already in progress for PY2.

Provide specific installation locations for installed measures. By specifying exact locations where measures are installed, it becomes easier to track and monitor their performance. This helps in identifying any issues or inefficiencies quickly. Accurate location data ensures that the evaluation is based on precise and reliable information, leading to more accurate results. Specific locations allow evaluators to verify that the measures have been installed correctly and are functioning as intended.

Make sure that measures reported in a project's application match the project's measures in the tracking data. Ensuring that the project application and tracking data are aligned helps maintain consistency in reporting and evaluation. Accurate tracking data that matches the project application ensures that the evaluation is based on reliable information.

Include specific information about baseline equipment. To enhance the evaluability and accuracy of project tracking by including detailed information about baseline equipment. Document specific details from the equipment that serves as the baseline. Specific details could include photos, model numbers, baseline wattage. This should include make, model, age, condition, location, and any relevant performance metrics.

Provide incremental costs for all measures and projects in the tracking data. To enhance the evaluability and financial transparency of projects by including detailed incremental cost data for all measures and projects in the tracking system.

Evergy CSMs should continue to work with implementation contractor staff to engage with Tier 1 customers and promote energy efficiency. Program design and operations were established in PY1; marketing and outreach efforts have engaged both Tier 1 and Tier 2 customers. There may be possibilities to engage with more Tier 1 customers while ensuring implementation contractor staff adhere to established communication requirements and expectations.

Continue to build program awareness through support for contractor engagement and direct outreach to customers. Though the program has built a significant amount of awareness in PY1, there remains a need to increase customer awareness, as most surveyed contractors perceived customer awareness of the program to be low.

Investigate opportunities to ease the experience for Hard-to-Reach Businesses program participants. Compared to the Whole Business Efficiency Program, a larger portion of Hard-to-Reach Businesses program participants found the program challenging to navigate or made comments about its requirements. Though the difference was not statistically significant, this suggests an opportunity to continue to investigate and improve different customers' experiences and meet their unique needs.

Consider updates to the application tool and participation requirements. Six of the contractors offered specific suggestions or feedback about their program participation experience. Four were suggestions for the application and included: add information on Kansas incentive projects in the Trade Ally Portal, improve online application dropdown menu choices, add step-by-step instructions for/to tool, standardize requirements with other utility incentive programs, and reduce requirements for multiple documents with customer signatures.

Ensure Hard-to-Reach Businesses program participants have access to adequate application support and consider additional supports for those with less time or tech savviness. A larger portion of Hard-to-Reach Businesses program participants voiced interest in clearer or easier application requirements. One noted a preference for phone rather than email communication and another said they had experienced challenges providing the required Excel documentation for their project.

Continue to provide program support and consider providing additional information to Evergy's website to explain requirements. Participants noted having challenges completing the application because of a lack of equipment knowledge, lack of technical proficiency in Excel, and the onerousness of inputting information about baseline equipment and dividing inputs across their account meters. Comments also included calls for more information on the Evergy website about the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate a "best guess on costs" for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application. Two contractor survey responses also indicated a continuing need for readily available, clear explanations of the program requirements (e.g., understanding qualifications and requirements for prescriptive, custom, or enhanced incentives and need for pre-approval or fast track application review).

Ensure customers are receiving timely follow-up communication and can reach program representatives using a preferred mode of communication. Participant survey respondents indicated desires for more timely communication and the option to communicate with program staff via telephone rather than email.

Validate tracking data contact information. Implementation staff should work to ensure customer contact information is accurate and aligned in Captures and in final tracking data. Further, the evaluability of the programs would be improved if data validation measures included:

- Prohibit certain domains from being included in Premise Email addresses (e.g., “@rebateprocessing.com”).
- Require that the Service Provider Phone Number and Email fields do not match the Premise Phone Number and Email fields.
- Consider labeling projects with customers that prefer not to be contacted (e.g., populate the Premise Email Address field with text such as "Do not contact customer").
- Ensure all participant records have service provider and end use customer name, email address, and phone number information.

3.5.2.6 Home Demand Response

The Program implementer should investigate whether curtailment signals are reaching all customers. Participation summary data should be utilized to investigate rates for opt-outs, non-responding devices, and offline devices on event dates.

Explore methods to engage renters and those living in multi-family housing to expand the program's reach. Renters are eligible to participate in the program, though there is a requirement for landlord consent.

Investigate ways to improve the notification system for energy savings events to increase participation. A lack of awareness of event notifications and low reported engagement in the one PY1 event suggest opportunities to provide participants with more information either when they sign up for the program or through the program’s notification system prior to events. The sign-up process should ensure participants receive explanation of how notifications will be sent and what they will need to do to participate in events. The notification system may need to be reviewed to ensure that the notifications are understandable and being transmitted to all participants.

Implement automated verification systems to identify enrollment issues earlier. Develop a process to regularly audit the enrollment status of customers and flag those who have been in pending status for an extended period. Consider implementing an automated notification system to alert staff when customers remain in pending status beyond a certain threshold (e.g., 30 days or longer).

Enhance post-purchase support and follow-up processes. Program staff may consider implementing automated emails to guide customers through the activation process and/or expanding the phone call campaign that showed success in July and August 2024.

Identify participants that have not activated their smart thermostat devices in the program tracking data. Devices that have not been activated are not eligible for kW savings and should be identified for exclusion from peak demand reduction estimates. Including these devices in the peak demand reduction estimates will artificially inflate the non-curtailed device rate and will make it more difficult to assess poor event performance and dispatch issues.

3.5.2.7 Business Demand Response

The program implementer should work to utilize DERMS CBL models that ADM provides to Evergy for estimating reported demand reductions. Utilizing only one CBL model is not recommended for determining demand reductions due to the heterogeneity of participant loads for a Large C&I DR program.

Continued email outreach with tailored messaging to highlight important program benefits may be an effective and low-cost method to increase enrollment. Survey findings suggest participants are enrolling after learning about the program from marketing emails; sending additional emails that highlight the program payment, potential for customization, and support from program staff may be an effective method to draw in additional participants.

Continue to work with participants to create individualized curtailment plans with catered reminders. Working to align customer availability with enrollment plans may help ensure greater participation when events are called. Additional more catered reminders may help organizations with unique needs or schedules to remember to curtail when events are called.

The program implementer should attempt to complete program enrollment before the start of the demand response season. Enrolling additional sites after DR events have been called limits the number of DR events that can be used for estimating verified kW reductions (or will require utilizing multiple events to estimate program impacts). Ideally, the program's verified demand reduction can be calculated for the entire jurisdiction on the same event day, and preferably, multiple eligible event dates can be selected from when determining the system peak loads for each jurisdiction.

ADM recommends calling between 4 to 6 events to avoid customer fatigue. Back-to-back Monday events should be avoided and the schedule of and sequencing of events should be considered to avoid participant dissatisfaction. Program underperformance indicates the number of events may be too many for some participants, CSMs, implementation teams, and/or other support staff. Everygy does include customer fatigue as a factor in the event commencement process and tried to avoid back-to-back events and Monday events whenever possible. However, in some cases of extreme weather or SPP need are more heavily weighted in the decision process.

Program staff should continue to work with participants to understand and consider responding to participating organizations' needs. Three respondents that indicated having tailored plans offered suggestions or noted opportunities to improve their experience. Two of these participants indicated they would continue participating in the program; the other indicated the program payment was not sufficient and would be disenrolling. Of the two respondents that indicated they plan to continue to participate, one respondent suggested that the results from the curtailment event be sent to companies sooner while another suggested providing more options for curtailment time windows. One also voiced interest in an award ceremony in the Wichita area as Kansas City was too far for them to attend.

3.5.3 Program Satisfaction

Table 3-15 and Table 3-16 below summarize participant and trade ally program satisfaction analyzed over the KEEIA PY1 programs. Customers and trade allies were surveyed and asked to rate their satisfaction with the respective programs in which they participated. Additional detail on satisfaction can be found in individual program chapters (see Appendix A through Appendix G). Whole Business Efficiency and Hard-to-Reach Businesses participant and trade ally satisfaction are presented separately in Table 3-15; combined results for these programs are presented in the Whole Business Efficiency program chapter (Appendix A) with notable differences highlighted.

Table 3-15: Participant Overall Program Satisfaction Reported by Program¹⁸

Program Name	Subprogram Name	Overall Program Satisfaction
Whole Home Efficiency	-	87%
Hard-to-Reach Homes	Income Eligible Multi-Family	100%
	Weatherization Assistance	80%
Home Energy Education	Home Energy Education Reports	81%
Whole Business Efficiency	-	88%
Hard-to-Reach Businesses		94%
Home Demand Response	-	93%
Business Demand Response	-	83%

Table 3-16: Trade Ally Overall Program Satisfaction Reported by Program¹⁹

Program Name	Overall Program Satisfaction
Whole Home Efficiency	86%
Whole Business Efficiency	93%
Hard-to-Reach Businesses	92%

¹⁸ Satisfaction is defined as the portion of survey respondents that rated their overall experience with a program a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied). Income Eligible Multi-Family satisfaction is based on one response from a participating property manager. See individual chapter sections for additional detail.

¹⁹ See Footnote 18.

4 Impact Evaluation Approach

This report section describes the impact evaluation activities that ADM performed for Evergy's KEEIA Cycle I Residential, Business, and Demand Response Programs.

In accordance with the KEEIA statute, the Kansas Corporation Commission Order in Docket No. 22-EKME-254-TAR including the Stipulation and Agreements, Evergy on behalf of its affiliates Evergy Kansas Metro and Evergy Kansas Central, has contracted with ADM Associates, Inc. (ADM) to perform evaluation, measurement and verification (EM&V) activities to confirm the energy savings (kWh) and peak demand reductions (kW) being realized through the energy efficiency and demand response that Evergy is implementing as part of the KEEIA Cycle I portfolio. KEEIA Cycle I refers to programs implemented in the timeframe of PY1 through PY4.

ADM prepared an evaluation report for which EM&V was required, which included three residential programs, two business programs, and two demand response programs for PY 2024 (also referred to as PY1), which began March 1, 2024, and continued through December 31, 2024. Specific Evergy programs covered by this evaluation include:

Residential Programs:

- Whole Home Efficiency
- Hard-to-Reach Homes
- Home Energy Education

Business Programs:

- Whole Business Efficiency
- Hard-to-Reach Businesses

Demand Response Programs:

- Home Demand Response
- Business Demand Response

Evergy also offered the Business Energy Education and Pilots Incubator programs. These programs were not evaluated by ADM in PY1, as there were no savings reported.

This EM&V evaluation report presents and explains transparent, robust, and modern EM&V that utilizes rigorous measurement techniques and meter-based data. Based on the PY1 verified savings, meter-based methodology was used to determine 62.8 percent of verified energy impacts, as shown in Table 4-1. EM&V site-level monitoring for Commercial Programs represents 68 percent of verified savings program level savings.

Table 4-1: Percent of NMEC Verified Savings Compared to Planned

Programs	Planned % of NMEC Analyses and/or Utilizing AMI Data	NMEC Verified Savings	Total Verified Savings*
Business Demand Response	100.0%	100.0%	-
Whole Business Efficiency	95.9%	79.0%	5,186,947
Business Energy Education	100.0%	100.0%	-
Hard-to-Reach Businesses	92.6%	53.0%	3,931,458
Business Subtotal	95.2%	67.8%	9,118,405
Hard-to-Reach Homes	81.0%	6.0%	3,861,999
Home Demand Response	100.0%	100.0%	515,780
Whole Home Efficiency	92.7%	100.0%	3,346,139
Home Energy Education	100.0%	100.0%	827,689
Residential Subtotal	92.6%	57.5%	8,551,607
Total	94.4%	62.8%	17,670,012

*Total savings may differ due to rounding.

The evaluation approaches are explained in detail in Appendix A through Appendix G. A breakout of verified savings by approach is shown in Table 4-2. This table shows measure categories for which the TRM was selected as the method of calculating saving and rational including specific reasons that measured savings were not practical for the given measures during the first program year.

Table 4-2: Verified Savings Approaches

Program	Measure	Rational
Whole Business Efficiency & Hard-to-Reach Businesses	Exterior lighting projects.	Monitoring for exterior lighting will be conducted in PY2. Evaluation timeline for some projects did not allow for inclusion in PY1 activities. Low variation in monitored hours to dawn/dusk schedules was assumed in PY1.
Hard-to-Reach Business	Two ECM motor projects in refrigeration units.	Monitoring for refrigeration ECM motors requires opening refrigeration units. PY2 evaluation will explore options for monitoring this equipment type with reduced customer burden.
Hard-to-Reach Homes	Kits (IEMF, Community, Assessment)	Low measure-level consumption. May be able to see savings for IEMF kits with increased participation in PY2. Will explore.

5 Net Savings Approach

5.1 Net-to-Gross Ratio

ADM used self-reported participant survey data to assess free ridership and spillover. Program participants were identified from the tracking data and survey responses were collected through both phone and email surveys. Additional details on survey data collection and methodology can be found in each program chapter, if applicable.

5.2 Free Ridership

Free ridership refers to energy savings that would have occurred in the absence of the program. Survey questions were used to calculate intention and influence scores, the two parts of the score separately, then these scores were combined, to estimate one free ridership score for each survey respondent. Respondents were assigned free ridership scores based on program-specific scoring methodologies; these scoring methodologies are provided in the accompanying appendices.

5.3 Participant and Nonparticipant Spillover

Spillover refers to energy-saving purchases or actions that result from program influence but did not receive direct program support, such as incentives. This can occur both with participants and nonparticipants. ADM investigated participant spillover through its Whole Home, Whole Business Efficiency, and Hard-to-Reach Businesses participant surveys. Nonparticipant spillover was not investigated in PY1 for the KEEIA programs; this aspect of NTG may be investigated in future program years.

5.4 Establishing Free Ridership and Spillover Values

Table 5-1 below outlines the sources of free ridership and spillover values for PY1.

Table 5-1: PY1 Free Ridership and Spillover Sources

Program	Source	Method	Year Determined
Free Ridership			
Whole Home Efficiency	Participant Survey	Calculated	PY1
Whole Business Efficiency	Participant Survey	Calculated	PY1
Hard-to-Reach Businesses	Participant Survey	Calculated	PY1
Spillover			
Whole Home Efficiency	Participant Survey	Calculated	PY1
Whole Business Efficiency	Participant Survey	Calculated	PY1
Hard-to-Reach Businesses	Participant Survey	Calculated	PY1
Other Programs			
Foodbank Giveaways	ADM assumed an NTG value of 1.0 for these programs/program channels, or the program was designed as a randomized control trial.		
Income-Eligible Multi-Family			
Kits & Assessments			
Weatherization			
Home Energy Education			
Home Demand Response			
Business Demand Response			

6 Process Evaluation Approach

This chapter provides a general overview of the process evaluation activities that ADM performed for the evaluation of the KEEIA programs in their first program year. Additional program specific detail can be found in report appendices.

Table 6-1 outlines the process evaluation outreach activities performed in PY1.

Table 6-1: Process Evaluation Outreach Activities by Program

Program	Process Evaluation Activity	Group
Whole Home Efficiency	In-depth interviews	Evergy and implementation program staff
	Online survey	Program participants
	Mixed mode survey (online/phone)	Participating contractors
Hard-to-Reach Homes	In-depth interviews	Evergy and implementation program staff
	Phone survey	Income-Eligible Multi-Family Participating Property Manager
	Mixed mode survey (online/phone)	Weatherization participants
Home Energy Education	In-depth interviews	Evergy and implementation program staff
	Phone survey	Participants and nonparticipants
Whole Business Efficiency & Hard-to-Reach Businesses Programs	In-depth interviews	Evergy and implementation program staff
	Mixed mode survey (online/phone)	Program participants
	Mixed mode survey (online/phone)	Participating contractors
Business Demand Response	In-depth interviews	Evergy and implementation program staff
	Online survey	Program participants
Home Demand Response	In-depth interviews	Evergy and implementation program staff
	Online survey	Program participants

6.1 Program Tracking Review

ADM reviewed the program databases to determine that they were capturing all critical information. The database review included verification of essential program metrics such as number of measures installed, number of unique participants, and unit level savings assumptions. Multiple database sources were reviewed and compared for consistency.

6.2 Program Staff and Implementer Interviews

ADM conducted phone interviews with both Evergy program staff and implementation staff. ADM conducted interviews with Evergy's program staff responsible for deploying the programs. These interviews discussed roles and responsibilities, current program design, program operations, outreach and marketing approaches, customer and contractor satisfaction, barriers to participation and areas for program improvement.

6.3 Participant Surveys

ADM conducted participant surveys as part of the process evaluation in PY1. These surveys were administered via both email and phone and assessed program satisfaction, customer decision making, and identified areas for program improvement.

The programs that had ADM-managed surveys in PY1 are listed below:

- Whole Home Efficiency
- Hard-to-Reach Homes
- Home Energy Education
- Whole Business Efficiency
- Hard-to-Reach Businesses
- Business Demand Response
- Home Demand Response

Detailed information regarding each survey's sample size, administration methods, response rate, and results are included in each program appendix section.

6.4 Survey Bias & Methodology Overview

ADM recognizes that various sources of bias may affect surveys, and this justifies caution and care in the design of survey instruments, administration strategies, as well as interpretation of results. Sources of bias include sample bias, survey mode effects, and various types of response bias. These sources of bias are often interrelated and may impact one another.

6.4.1 Sample Bias and Non-Observation Effects

Sample bias refers to cases in which a sample is more or less likely to include certain members of a population. There are numerous causes of sample bias, ranging from how the sample is drawn from the population to nonresponse bias (non-observation effects).

Sample frame error relates to how a sample is drawn and suggests drawing a non-representative sample or sampling the wrong population. For example, program records may include a subset of customers with only phone numbers and no email addresses. Thus, if researchers conduct an email invitation survey, the sample frame would exclude customers without that information.

Relatedly, survey mode may cause non-observation effects, relating to who responds to different modes of survey administration. Non-observation effects may result in systematic underrepresentation when different types of respondents choose or are only able to complete the survey in a specific mode. Mode of survey administration may affect the demographic distinctiveness of respondents; studies have found that survey mode can affect the demographics of survey respondents, specifically income, sex, age, and education.²⁰ Nonresponse bias also occurs when certain members of a population are less likely to respond to a survey (e.g., prefer not to take surveys or do not see the invitation within the allotted time).

A low response rate increases the risk of nonresponse bias. However, there are some ways to address low response rates which can be employed (e.g., multiple reminders, incentives, mixed-mode outreach). Moreover, it is important to note that lower response rates in surveys do not automatically create bias. Bias only occurs when the people who do not respond differ meaningfully on key variables from those who do respond. If nonrespondents are randomly distributed across the sample population regarding the variables being studied, then nonresponse does not create bias. In other words, it is more crucial to understand whether individuals who take a survey are distinct from the larger population rather than focusing on an effort's response rate. Expensive efforts to boost response rates might waste resources without improving data quality and might even introduce measurement errors through excessive follow-up attempts.²¹

ADM has completed research to investigate nonignorable nonresponse and continues to monitor methods for understanding this issue. For example, in a recent study ADM staff found that the lack (or presence) of an incentive may impact sample composition and

²⁰ Christensen, Anne Illemann, Ola Ekholm, Charlotte Glümer, and Knud Juel. 2013. "Effect of Survey Mode on Response Patterns: Comparison of Face-to-Face and Self-Administered Modes in Health Surveys." *European Journal of Public Health* 24 (2): 327–32. <https://doi.org/10.1093/eurpub/ckt067>. Google Scholar

²¹ Holbrook, A. L., Krosnick, J. A., & Pfent, A. (2008). The causes and consequences of response rates in surveys by the news media and government contractor survey research firms. In J. M. Lepkowski, C. Tucker, J. M. Brick, E. de Leeuw, L. Japac, P. J. Lavrakas, M. W. Link, & R. L. Sangster (Eds.), *Advances in telephone survey methodology* (pp. 499–528). John Wiley & Sons, Inc.

failing to provide an incentive may lead to more responses from people who are more interested in the survey topic.²²

6.4.2 Observation Effects

Observation effects occur when the mode of administration affects the types of responses provided. For example, respondents may provide different information orally than they would in a written or online survey. Research indicates that item nonresponse and respondent willingness to answer sensitive questions may relate to mode, though if and how survey administration mode may relate to non-substantive response (choosing "don't know or "prefer not to answer") and the most appropriate methods for addressing this data quality issue remains an area of ongoing research.²³

Examples of response biases include acquiescence, recall, extreme response, and social desirability. Acquiescence bias refers to a tendency to select a positive response option. Recall bias is related to respondents being unable to accurately recall events, information, or experiences. The length of a survey may lead respondents to provide extreme responses or straightline their responses, or an interviewer-led survey may make respondents more prone to provide socially desirable responses. Though good survey design may be used to attempt to address these issues, research has found these issues may persist and remain challenges depending on the mode of survey delivery and research needs.

6.4.3 KEEIA PY1 Survey Method Summary

ADM conducted several surveys of KEEIA customers to understand their experiences, decision-making, and backgrounds. The survey efforts ADM completed in PY1 used various sampling, recruitment, and administration strategies. These strategies were chosen based on each program's unique design, available tracking data, and with the intention of mitigating nonresponse bias:

- **Whole Home Efficiency:** Web survey sent to a sample of participating customers with \$10 electronic gift card incentive. Mixed mode (web/phone) survey of participating contractors, no incentive.
- **Hard-to-Reach Homes:** Phone survey of participating Multifamily property manager, no incentive. Mixed mode (web/phone) survey of Weatherization program participants with \$10 electronic gift card incentive.

²² Soszynski, Michael. 2024. "Incentive Impact on Data Quality, Sample Composition, and Respondents' Topic Interest." Survey Practice 17 (September). <https://doi.org/10.29115/SP-2024-0013>.

²³ Soszynski, Michael, and Ryan Bliss. 2022. "Does Survey Administration Mode Relate to Non-Substantive Responses? A Comparison of Email versus Phone Administration of a Residential Utility-Sponsored Energy Efficiency Program Survey." Survey Practice 15 (1). <https://doi.org/10.29115/SP-2022-0009>.

- **Home Energy Education:** Phone survey of participants and nonparticipants with \$10 electronic gift card incentive.
- **Whole Business Efficiency:** Mixed mode (web/phone) survey of participating customers, no incentive. Mixed mode (web/phone) survey of participating contractors, no incentive.
- **Hard-to-Reach Businesses:** Mixed mode (web/phone) survey of participating customers, no incentive. Mixed mode (web/phone) survey of participating contractors, no incentive.
- **Business Demand Response:** Email survey of participating customers, no incentive.
- **Home Demand Response:** Email survey of participating customers with \$10 electronic gift card incentive.

Survey response rates ranged from 29 percent to 60 percent for the Whole Home Efficiency, Hard-to-Reach Weatherization, Whole Business and Hard-to-Reach Business, Business Demand Response, and Home Demand Response programs. The Home Energy Education participant and nonparticipant surveys had a combined response rate of 1.9 percent. Response rates for the PY1 ADM-led outreach efforts are generally in-line with other evaluations of similar utility-administered energy efficiency programs. As an example, the table below (Table 6-2) provides response rates for Home Energy Report participant and nonparticipant surveys from three other jurisdictions.

Table 6-2: Home Energy Report Participant & Nonparticipant Survey Response Rate Benchmark

State	Year	Response Rate	Source
Oklahoma	2023	4.9%	https://oklahoma.gov/content/dam/ok/en/occ/documents/pu/energy_efficiency/demand-program-annual-reports/2023-pso-demand-report.pdf
New Jersey	2022	1.4%	https://www.njcleanenergy.com/files/file/Utility%20Info/Utility%20-%20MV%20Report/ETG%20PY1%20MV%20Report%20-%202022_21_2023.pdf
Wyoming	2022	3.5%	https://www.pacificorp.com/content/dam/pcorp/documents/en/pacificorp/environment/dsm/wyoming/2022-2023_WY_HER_Evaluation.pdf

7 Cost-Effectiveness Approach

This section discusses the cost effectiveness approaches conducted by ADM to determine the PCT, RIM, UCT, TRC, and SCT scores for each program for PY1. Additionally, the sources of cost effectiveness input data and the definitions of the cost categories are discussed in this section.

7.1 Calculation

Cost-effectiveness ratios were calculated using an Excel based model that incorporated ADM-verified EM&V findings, including energy and demand impacts, incremental costs, NTG ratios, and measure lifetimes. Avoided costs, discount rates, and program data were provided by Evergy. Incremental costs were calculated using inputs from the Evergy PY1 TRM. A table listing cost effectiveness calculation inputs is provided in Section 7.3.

7.2 Cost Tests Utilized

ADM performed the PCT, RIM, UCT, TRC, and SCT for PY1. These tests help to provide a wholistic perspective on the program's annual cost effectiveness.

KEEIA Cycle III uses the TRC test as "the preferred cost effectiveness test" to measure program cost effectiveness. In addition to TRC results, ADM completed four other cost effectiveness tests to provide a more comprehensive view of each program.

Each test is useful, accurate, intends to answer a distinct set of questions, and focuses on a different perspective. The questions and perspectives to be addressed by each cost test²⁴ are shown in Table 7-1.

²⁴ National Action Plan for Energy Efficiency (2008) Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy-Makers. Energy and Environmental Economics, Inc., and Regulatory Assistance Project. Last accessed March 2020 via: <https://www.epa.gov/sites/production/files/2015-08/documents/cost-effectiveness.pdf>

Table 7-1: Questions Addressed by the Various Cost Tests

Cost Test	Perspective	Questions Addressed
Total Resource Cost Test	The utility system plus participating customers	- What is the regional benefit of the energy efficiency project including the net costs and benefits to the utility and its customers? - Are the benefits greater than the costs (regardless of who pays the costs and who receives the benefits)? - Is more or less money required by the region to pay for energy needs?
Utility Cost Test (also referred to as the Program Administrator Cost Test or PACT)	The utility system	- Do total utility costs increase or decrease? - What is the change in total customer bills required to keep the utility whole?
Ratepayer Impact Measure	Impact on rates paid by all customers	- What is the impact of the energy efficiency project on the utility's operating margin? - Would the project require an increase in rates to reach the same operating margin?
Societal Cost Test	Society as a whole	- What is the overall benefit to the community of the energy efficiency project? - Are the benefits greater than the costs (regardless of who pays the cost and who receives the benefits)?
Participant Cost Test	Customers who participate in an efficiency program	- Is it worth it to the customer to install energy efficiency? - Is the customer likely to want to participate in a utility program that promotes energy efficiency?

The results of all five-cost effectiveness tests provide a more comprehensive picture than the use of any one test alone. The TRC and SCT cost tests help to answer whether energy efficiency is cost-effective overall. The PCT, UCT, and RIM help to answer where the selection of measures and design of the program is balanced from participant, utility, and nonparticipant perspectives, respectively. In order for a program to be considered cost effective, a TRC test score of 1.0 or above must be reached. In addition, there is a requirement in Kansas that the RIM test score must reach 0.7 or above. The scope of the benefit and cost components included in each test ADM performed are summarized in Table 7-2.

Table 7-2: Summary of Benefits and Costs Included in Cost-Effectiveness Test

Test	Benefits	Costs
TRC (Benefits and costs from the perspective of all utility customers in the utility jurisdiction)	■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution ■ Applicable tax credits	■ Program overhead costs ■ Program installation costs ■ Incremental measure costs
UCT (Perspective of utility, government agency, or third party implementing the program)	■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation	■ Program overhead costs ■ Utility/program administrator incentive & installation costs
RIM (Impact of efficiency measure on non-participating ratepayers overall)	■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution	■ Program overhead costs ■ Utility/program administrator incentive & installation costs ■ Lost revenue due to reduced energy bills
SCT (Benefits and cost to all in the utility jurisdiction, state, or nation)	■ Energy-related costs avoided by the utility ■ Capacity-related costs avoided by the utility, including generation, transmission, and distribution	■ Program overhead costs ■ Program installation costs ■ Incremental measure costs
PCT (Benefits and costs from the perspective of the customer installing the measure)	■ Incentive payments ■ Bill Savings ■ Applicable tax credits or incentives	■ Incremental equipment costs ■ Incremental installation costs

7.3 Source of Cost Effectiveness Input Data

The inputs and sources utilized for the cost effectiveness calculations are outlined in Table 7-3.

Table 7-3: Inputs and Sources for Cost Effectiveness Calculations

Input	Source
Avoided energy costs	Provided by Evergy
Avoided capacity costs	
Retail rates	
Load shapes	
Discount rates	
Line loss factors	
Program Costs	
Program Incentives	
EUL	Evergy TRM and IL TRM and project invoices for CI custom. ²⁵
Equipment Costs	
Energy and peak demand reductions	ADM program evaluations
NTG	

7.4 Cost Categories

Evergy spending, as reported to ADM, may fall into five categories. These categories and their definitions are listed in Table 7-4 below.

²⁵ If the EUL was not specifically listed for a measure in the Evergy TRM, the EUL was pulled from the IL TRM.

Table 7-4: Cost Categories and Definitions

Cost Category	Definition
Administration	Labor or program managers, market intelligence, EM&V manager, accounting and regulatory Costs to implement and deliver the tracking tool Program design costs
Evaluation	EM&V charges by contractor
Incentives	Incentives paid to or on behalf of customers for energy savings measures Materials provided to customers for energy savings measures Labor provided to customers for implementation of energy savings measures
Marketing	Marketing for energy saving measures and programs
Program Delivery	Implementer contractor delivery charges

Expenses that are recorded to a specific jurisdiction under the overall project are allocated during Evergy's monthly company-wide expense allocation process. Each program has a different allocation percentage.

8 Gross and Net Savings

This chapter summarizes the gross and net savings for each program during PY1 of the KEEIA program.

8.1 Whole Home Efficiency

8.1.1 Gross Savings

Based on the impact evaluation results, the total verified gross savings for the WHE Program are 3,346,139 kWh, which resulted in a realization rate of 54 percent, and 2,195.49 kW, which resulted in a realization rate of 48 percent. Table 8-1 presents the gross verified energy savings and demand reduction savings and realization rates by measure category and jurisdiction.

Table 8-1: Reported and Verified Gross Energy Savings & Demand Reduction

Jurisdiction	Measure	RP at 90% CL	Reported Energy (kWh)	Gross Verified Energy (kWh)	Verified Energy Savings (kWh) 90% CI (Lower)	Verified Energy Savings (kWh) 90% CI (Upper)	Reported Demand (kW)	Gross Verified Demand (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	Air Source Heat Pump	3.4%	555,111	302,610	287,053	318,166	181.97	164.41	155.95	172.86	55%	52%	57%	90%	86%	95%
	Central Air Conditioner	1.2%	1,611,953	1,173,455	1,158,264	1,188,646	1,516.19	784.30	774.14	794.45	73%	72%	74%	52%	51%	52%
	Ductless Mini Split Heat Pump	23.5%	43,549	227	-5,662	3,606	3.59	0.08	-2.03	1.29	1%	-13%	8%	2%	-56%	36%
	Duct Repair and Sealing	18.2%	10,537	24,270	21,278	27,263	2.27	20.61	18.07	23.15	230%	202%	259%	907%	796%	1019%
	Ground Source Heat Pump	7.9%	195,838	27,370	20,616	34,123	0.00	19.79	14.91	24.67	14%	11%	17%	100%	100%	100%
	Building Shell	11.0%	17,934	4,961	3,921	6,002	8.48	5.00	3.95	6.05	28%	22%	33%	59%	47%	71%
	Subtotal	1.2%	2,434,922	1,532,893	1,485,469	1,577,806	1,712.50	994.19	965.00	1,022.48	63%	61%	65%	58%	56%	60%
KS Metro	Air Source Heat Pump	3.4%	733,232	277,148	262,585	291,710	218.37	150.57	142.66	158.49	38%	36%	40%	69%	65%	73%
	Central Air Conditioner	1.2%	2,691,435	1,423,035	1,404,356	1,441,713	2,533.58	951.11	938.62	963.59	53%	52%	54%	38%	37%	38%
	Ductless Mini Split Heat Pump	23.5%	8,295	160	-1,622	1,159	0.68	0.06	-0.58	0.42	2%	-20%	14%	8%	-85%	61%
	Duct Repair and Sealing	18.2%	36,881	59,068	50,294	67,843	7.95	50.17	42.72	57.62	160%	136%	184%	631%	537%	725%
	Ground Source Heat Pump	7.9%	170,294	17,169	13,045	21,292	0.00	12.41	9.43	15.40	10%	8%	13%	100%	100%	100%
	Building Shell	11.0%	171,414	36,667	31,010	42,323	63.89	36.97	31.27	42.68	21%	18%	25%	58%	49%	67%
	Subtotal	1.3%	3,811,552	1,813,246	1,759,669	1,866,040	2,824.48	1,201.29	1,164.12	1,238.18	48%	46%	49%	43%	41%	44%
Total		0.9%	6,246,474	3,346,139	3,245,139	3,443,846	4,536.98	2,195.49	2,129.12	2,260.67	54%	52%	55%	48%	47%	50%

8.1.2 Net Savings

Most Whole Home Efficiency program participants indicated they would not have purchased the qualifying equipment without the program. ADM calculated a weighted average program-level free ridership ratio of 0.27 and a standard error of 0.022. The absolute precision of the estimate was 0.04 with a 90 percent level of confidence. The program level free ridership is a weighted average of reported kWh savings for the sampled survey respondents. See Table 8-2 for additional detail on estimated net savings for the Whole Home Efficiency program.

Table 8-2: Free Ridership Estimates for Whole Home Efficiency Program

Measure	n ²⁶	RP at 90% Level of Confidence ²⁷	Free Ridership Ratio	Free Ridership 90% CI (Lower)	Free Ridership 90% CI (Upper)	Spillover	Spillover 90% CI (Lower)	Spillover 90% CI (Upper)
Central Air Conditioner	120	0.040	0.3	0.29	0.31	0.003	0.0029	0.0031
Air Source Heat Pump	26	0.081	0.17	0.16	0.18	0.003	0.0028	0.0032
Ground Source Heat Pump	2	0.220	0.35	0.27	0.43	0.003	0.0023	0.0037
Duct Sealing	3	0.250	0.11	0.08	0.14	0.003	0.0023	0.0038
Air Sealing	1	0.000	0.69	0.69	0.69	0.003	0.0030	0.0030
Program Level FR	150	0.035	0.27	0.26	0.28	0.003	0.0029	0.0031

²⁶ Respondents were asked about up to two measures; total n is total number of unique survey respondents that provided at least one net-to-gross battery response (free-ridership and/or spillover).

²⁷ Small samples may not capture enough variability to provide a reliable estimate of precision.

8.2 Hard-to-Reach Homes

8.2.1 Gross Savings

Performance metrics for PY1 are summarized in Table 8-3. Gross energy savings achieved 160 percent of the realized verified savings for the total Hard-to-Reach Homes Program in PY1, while gross peak demand reduction achieved 103 percent of the realized verified peak demand.

Table 8-3: Performance Metrics - Hard-to-Reach Homes Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants*	18,283	15,893	2,390
Energy Impacts (kWh)			
Reported Energy Savings	2,477,770	2,143,662	334,107
Gross Verified Energy Savings	3,971,299	3,491,415	479,883
Net Verified Energy Savings	3,971,299	3,491,415	479,883
Peak Demand Impacts (kW)			
Reported Peak Demand Reduction	1,303.69	1,225.37	78.32
Gross Verified Peak Demand Reduction	1,336.93	1,269.33	67.60
Net Verified Peak Demand Reduction	1,336.93	1,269.33	67.60
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.21	1.26	0.96

Represents the number of kits distributed in the Community Energy Efficiency program component and the number of unique account numbers in all other program components.

Table 8-4 below shows the overall program level savings by jurisdiction.

Table 8-4: Measure-Level Energy Savings (kWh) and Demand Reduction (kW)

Jurisdiction	Measure	RP at 90% CL*	Reported Energy (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Reported Demand Reduction (kW)	Verified Demand (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	Advanced Power Strips	0.0%	66,469	67,156	67,156.00	67,156.00	7.43	7.67	7.67	7.67	101%	101%	101%	103%	103%	103%
	Deluxe Window Film Kit	0.0%	1,692	56	56.40	56.40	0.00	0.00	0.00	0.00	3%	3%	3%	100%	100%	100%
	Faucet Aerators - Bathroom	0.0%	11,351	20,548	20,548.13	20,548.13	14.87	3.66	3.66	3.66	181%	181%	181%	25%	25%	25%
	Faucet Aerators - Kitchen	0.0%	40,633	20,892	20,892.12	20,892.12	9.72	3.72	3.72	3.72	51%	51%	51%	38%	38%	38%
	LED Bulbs	0.0%	1,472,905	2,652,460	2,652,459.88	2,652,459.88	304.01	377.64	377.64	377.64	180%	180%	180%	124%	124%	124%
	LED Nightlights	0.0%	196,468	370,233	370,232.66	370,232.66	0.00	0.00	0.00	0.00	188%	188%	188%	100%	100%	100%
	Low Flow Showerhead	0.0%	20,747	66,154	66,153.61	66,153.61	2.41	19.25	19.25	19.25	319%	319%	319%	799%	799%	799%
	Outlet Gaskets	0.0%	186	60	59.78	59.78	0.00	0.00	0.00	0.00	32%	32%	32%	102%	102%	102%
	Pipe Insulation	0.0%	10,916	13,941	13,941.29	13,941.29	1.40	1.59	1.59	1.59	128%	128%	128%	113%	113%	113%
	Smart Thermostats	0.0%	95,735	95,735	95,734.62	95,734.62	775.20	775.20	775.20	775.20	100%	100%	100%	100%	100%	100%
	Switch Insulators	0.0%	112	36	35.87	35.87	0.00060	0.00061	0.00	0.00	32%	32%	32%	102%	102%	102%
	Weatherization Assistance	10.3%	225,491	184,131	173,169.52	195,093.08	110.32	80.60	75.80	85.40	82%	77%	87%	73%	69%	77%
	Weatherization Strips	0.0%	958	14	13.51	13.51	0.00	0.00	0.00	0.00	1%	1%	1%	100%	100%	100%
Kansas Metro	LED Bulbs	0.0%	207,594	372,852	372,851.82	372,851.82	42.79	53.08	53.08	53.08	180%	180%	180%	124%	124%	124%
	LED Nightlights	0.0%	39,237	73,879	73,878.56	73,878.56	0.00	0.00	0.00	0.00	188%	188%	188%	100%	100%	100%
	Weatherization Assistance	10.3%	87,276	33,153	31,178.06	35,128.11	35.53	14.51	13.65	15.38	38%	40%	42%	41%	38%	43%
Total		0.5%	2,477,770	3,971,299	3,958,361.81	3,984,235.42	1,303.69	1,336.93	1,331.27	1,342.59	160%	160%	161%	103%	102%	103%

8.2.2 Net Savings

A deemed net-to-gross ratio of 1.0 was used for qualified customers that participated in the Hard-to-Reach Homes Program, as this is typical practice for income-qualified program evaluations in other jurisdictions.

8.3 Home Energy Education

8.3.1 Gross Savings

Estimated savings for the HEER over the 2024-2027 program period is approximately 25,282 MWh,²⁸ attributed to the HEER behavioral component.

Table 8-5 provides a summary of program metrics for PY1 for the HEE Program.

Table 8-5: Performance Metrics – Home Energy Education Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants*	82,009	57,004	25,005
Energy Savings (kWh)			
Reported Energy Savings	1,655,816	964,244	691,572
Gross Verified Energy Savings	827,689	589,077	238,612
Net Verified Energy Savings	827,689	589,077	238,612
Peak Demand Reduction (kW)			
Reported Peak Demand Reduction	401.80	178.65	223.16
Gross Verified Peak Demand Reduction	297.23	211.54	85.69
Net Verified Peak Demand Reduction	297.23	211.54	85.69
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	5.30	5.06	6.01

Based on the impact evaluation results, the total verified net energy savings for the HEE Program were 827,689 kWh, and the total verified net peak demand savings were 297.23 kW. The lower realization rate could be attributed to the reporting period. First-year savings only consider months from April to December, so part of the heating season is excluded. Reported and verified gross energy and demand savings are shown by jurisdiction in Table 8-6.

²⁸ Evergy's Proposed EM&V Methodology pg. 13

Table 8-6: Reported and Verified Gross Energy and Demand Savings

Jurisdiction	RP_90	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Verified kWh Realization Rate	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Verified kW Realization Rate	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	0.7%	964,244	178.65	589,077	584,982	593,172	211.54	210.07	213.01	61%	61%	61%	118%	117%	119%
KS Metro	1.1%	691,572	223.16	238,612	235,996	241,228	85.69	84.75	86.63	35%	35%	35%	38%	38%	38%
Total	0.6%	1,655,816	401.81	827,689	822,378	833,000	297.23	295.32	299.14	50%	50%	50%	74%	74%	74%

8.3.2 Net Savings

For this program, the net savings estimates are equivalent to the gross savings estimates, as the net-to-gross ratio for behavioral programs is 1.0.

8.4 Whole Business Efficiency

8.4.1 Gross Savings

A summary of stratum-level and verified gross energy and demand impacts and realization rates are shown in Table 8-7.

Table 8-7: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Strata

Sampling Stratum	Relative Precision	Sum of Reported kWh Savings	Sum of Verified kWh Savings	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Realization Rate kWh (%)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Sum of Reported kW Savings	Sum of Verified kW Savings	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate kW (%)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
1	0.00%	417,899	336,730	336,730	336,730	81%	81%	81%	3.98	-	-	-	0%	0%	0%
2	9.50%	838,687	923,583	835,843	1,011,323	110%	100%	121%	240.20	119.90	108.51	131.30	50%	45%	55%
3	20.15%	706,832	1,093,025	872,780	1,313,269	155%	123%	186%	265.29	86.09	68.74	103.44	32%	26%	39%
4	13.95%	693,430	597,008	513,725	680,290	86%	74%	98%	381.83	145.34	125.07	165.62	38%	33%	43%
5	24.42%	745,782	1,651,083	1,247,889	2,054,278	221%	167%	275%	407.03	149.87	113.27	186.46	37%	28%	46%
6	43.18%	163,686	585,519	332,692	838,346	358%	203%	512%	111.89	40.30	22.90	57.71	36%	20%	52%
Total	7.64%	3,566,316	5,186,947	4,790,665	5,583,230	145%	134%	157%	1,410	541.51	500.14	582.88	38%	35%	41%

A summary of reported and verified gross energy and demand impacts are shown in Table 8-8.

Table 8-8: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Jurisdiction

Jurisdiction	Relative Precision	Reported Energy Savings (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings kWh 90% CI (Lower)	Verified Energy Savings kWh 90% CI (Upper)	RR (kWh)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	7.64%	1,804,073	2,209,915	2,041,077	2,378,752	122%	113%	132%	691.03	256.52	236.92	276.12	37%	34%	40%
Kansas Metro	7.64%	1,762,243	2,977,033	2,749,588	3,204,478	169%	156%	182%	719.19	284.99	263.22	306.76	40%	37%	43%
Total	7.64%	3,566,316	5,186,947	4,790,665	5,583,230	145%	134%	157%	1,410.22	541.51	500.14	582.88	38%	35%	41%

8.4.2 Net Savings

Most Whole Business Efficiency program participant survey respondents indicated they would not have purchased the qualifying equipment without the program. ADM calculated a weighted average program-level free ridership ratio of 0.03 for the Whole Business Efficiency program. The program level free ridership score is the weighted average of verified gross kWh savings for the sampled survey respondents for each program. See Table 8-9 for additional details on estimated net savings.

Table 8-9: Free Ridership Estimates for Whole Business Efficiency Program

Program	n	Precision at 90% Level of Confidence	Free Ridership Ratio	Free Ridership 90% CI (Lower)	Free Ridership 90% CI (Upper)	Net- to- Gross Ratio	Net-to- Gross 90% CI (Lower)	Net-to- Gross 90% CI (Upper)
Whole Business Efficiency	17	0.03	0.03	0.0291	0.0309	0.97	0.9409	0.9991

8.5 Hard-to-Reach Businesses

8.5.1 Gross Savings

A summary of stratum-level and verified gross energy and demand impacts and realization rates are shown in Table 8-10.

Table 8-10: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Strata

Sampling Stratum	Relative Precision	Sum of Reported kWh Savings	Sum of Verified kWh Savings	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Realization Rate kWh (%)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Sum of Reported kW Savings	Sum of Verified kW Savings	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate kW (%)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
7	24.10%	401,116	363,471	275,887	451,055	91%	69%	112%	140.00	10.29	7.81	12.77	7%	6%	9%
8	26.17%	744,556	841,193	621,025	1,061,360	113%	83%	143%	315.85	71.31	52.65	89.98	23%	17%	28%
9	15.55%	845,059	889,060	750,796	1,027,324	105%	89%	122%	373.62	88.33	74.59	102.06	24%	20%	27%
10	16.07%	670,488	831,658	698,000	965,316	124%	104%	144%	261.89	60.13	50.46	69.79	23%	19%	27%
11	20.01%	722,429	601,961	481,492	722,430	83%	67%	100%	207.99	63.22	50.56	75.87	30%	24%	36%
12	50.62%	185,073	404,116	199,551	608,681	218%	108%	329%	93.09	26.07	12.87	39.26	28%	14%	42%
Total	9.12%	3,568,721	3,931,459	3,572,991	4,289,926	110%	100%	120%	1,392.44	319.34	290.22	348.46	23%	21%	25%

A summary of reported and verified gross energy and demand impacts are shown in Table 8-11.

Table 8-11: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Jurisdiction

Jurisdiction	Relative Precision	Reported Energy Savings (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Realization Rate (kWh)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	9.12%	1,804,073	2,209,915	2,008,416	2,411,413	122%	111%	121%	691.03	256.52	233	280	37%	34%	41%
Kansas Metro	9.12%	1,762,243	2,977,033	2,705,589	3,248,477	169%	154%	168%	719.19	284.99	654	311	40%	91%	43%
Totals	9.12%	3,566,316	5,186,947	4,714,005	5,659,890	145%	132%	144%	1,410.22	541.51	1,281.64	590.88	38%	91%	42%

8.5.2 Net Savings

Most Hard-to-Reach Businesses program participant survey respondents indicated they would not have purchased the qualifying equipment without the program. ADM calculated a weighted average program-level free ridership ratio of 0.07 for the Hard-to-Reach Businesses program. The program level free ridership score is the weighted average of verified gross kWh savings for the sampled survey. See Table 8-12 for additional details on estimated net savings for the two programs.

Table 8-12: Free Ridership Estimates for Hard-to-Reach Businesses Programs

Program	n	Precision at 90% Level of Confidence	Free Ridership Ratio	Free Ridership 90% CI (Lower)	Free Ridership 90% CI (Upper)
Hard-to-Reach Business	25	0.06	0.07	0.07	0.07

8.6 Home Demand Response

8.6.1 Gross Savings

Peak demand reduction was determined as the maximum hourly difference between event hours and a counterfactual non-event period on the system peak day for the jurisdiction. The method used to determine the counterfactual baseline is described in Appendix F.

The tables below (Table 8-13 and Table 8-14) summarize the verified energy savings and peak demand reduction for the HDR Program. The overall realization rate for peak demand reductions for smart thermostats is 6 percent and the realization rate for energy savings is 125 percent.

The realization rate for peak demand reductions differs from 100 percent due to the following factors:

1. Google devices, which accounted for 67 percent of smart thermostat devices, were not sent a curtailment signal on the event date and did not contribute to the peak demand reduction.
2. EcoBee smart thermostat devices had a high non-contributing device rate, indicating a possible curtailment signal issue.

Based on the impact evaluation results, the total verified energy savings for smart thermostats are 646,020 kWh, and the total verified peak demand reductions are 694.72 kW.

Table 8-13: Gross Peak Demand Reduction (kW), Smart Thermostats

Jurisdiction	RP at 90% CL	Reported Demand Reduction (kW) per Unit	Verified Demand Reduction (kW) per Unit	Verified Demand Reduction per Participant (Lower)	Verified Demand Reduction per Participant (Upper)	Eligible Units	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	13%	1.20	0.22	0.19	0.25	2,301	7,503.60	505.39	439.87	570.91	7%	6%	8%
KS Metro	13%	1.20	0.22	0.19	0.25	862	3,826.80	189.33	164.78	213.88	5%	4%	6%
Total	10%					3,163	11,330.40	694.72	624.75	764.69	6%	5%	7%

Table 8-14: Gross Energy Savings (kWh), Smart Thermostats

Jurisdiction	RP at 90% CL	Reported Energy Savings (kWh) per Unit	Verified Energy Savings (kWh) per Unit	Verified Demand Reduction per Participant (Lower)	Verified Demand Reduction per Participant (Upper)	Eligible Units	Reported Energy Savings (kWh)	Verified Energy Savings (kWh)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kWh)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	13%	148	185	161.02	208.98	2,666	395,091	493,210	429,268.20	557,151.80	125%	109%	141%
KS Metro	13%	148	185	161.02	208.98	826	122,114	152,810	132,999.08	172,620.92	125%	109%	141%
Total	10%					3,492	517,204	646,020	579,079.53	712,960.47	125%	112%	138%

Table 8-15 provides verified demand reduction (kW) for Legacy devices in PY1. The total verified peak demand reductions for Legacy devices are 18,213.27 kW. The realization rate for peak demand reductions differs from 100 percent because the reported demand reduction (kW) per device is based on previous estimates for Legacy devices provided by Evergy, while the verified demand reduction (kW) per device is based on estimates from PY1.

Table 8-15: Gross Peak Demand Reduction (kW), Legacy

Jurisdiction	RP at 90% CL	Reported Demand Reduction (kW) per Participant	Verified Demand Reduction per Participant (kW)	Verified Demand Reduction per Participant (Lower)	Verified Demand Reduction per Participant (Upper)	Number of Devices	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	3%	0.38	0.35	0	0	49,622	18,856.00	17,316.44	16,809.79	17,823.09	92%	89%	95%
KS Metro	3%	0.38	0.06	0	0	14,263	5,420.00	896.83	870.59	923.07	17%	17%	17%
Total	3%	0.38	0.29	0	0	63,885	24,276.25	18,213.27	17,705.94	18,720.60	75%	73%	77%

8.6.2 Net Savings

The net-to-gross ratio for this program is assumed to be 1.0 and the net savings equal the gross savings.

ADM conducted a supplemental analysis to explore net savings for this program using its survey of participants that received thermostats through the program. Most thermostat program participants indicated they would not have purchased a smart thermostat if they had not received one through the program. ADM calculated a weighted average program-level free ridership ratio of 0.16 and a standard error of 2.4 percent. The absolute precision of the estimate was 3.9 percent with a 90 percent level of confidence. The program level free ridership is a weighted average using the number of thermostats received by each participant for the sampled survey respondents. Eight of the participants indicated having been influenced by the Program to make additional un-incented energy saving improvements after participating in the Program and ADM calculated a spillover ratio of 0.5 percent.

8.7 Business Demand Response

8.7.1 Gross Savings

Table 8-16 provides impact results for all BDR events called in PY1. The average kW reduction for Kansas Metro participants during the DR season was 393, while Kansas Central participants averaged 573 kW. Evergy does not claim energy savings for demand response; thus, the evaluation team did not calculate energy savings. The realization rate is 100 percent across both jurisdictions.

Table 8-16: Gross Peak Demand Reduction (kW) Summary

Jurisdiction	# of Customers	# of Service Point IDs	RP at 90% CL	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	19	111	12%	11,022.57	10,888.15	9,624.80	12,151.50	99%	88%	110%
KS Metro	9	75	12%	3,401.22	3,535.64	3,125.40	3,945.88	104%	92%	116%
Total	28	186	9%	14,423.79	14,423.79	13,095.51	15,752.07	100%	91%	109%

Table 8-17 provides DR event savings versus weather during event hours.

Table 8-17: DR Event Savings vs. Weather

Jurisdiction	Event Date	Verified Demand Reduction (kW)	Avg. Temp (°F) Event Hours
KS Central	6/13/2024	3,321.90	91.5
KS Central	6/24/2024	5,241.84	96.8
KS Central	7/2/2024	1,118.94	91.8
KS Central	7/15/2024	7,867.46	93.0
KS Central	7/16/2024	4,044.84	80.2
KS Central	7/31/2024	2,661.59	92.5
KS Central	8/1/2024	3,317.74	88.7
KS Central	8/26/2024	3,934.29	97.3
KS Central	8/27/2024	3,194.73	94.1
KS Metro	6/13/2024	1,995.13	91.5
KS Metro	6/24/2024	2,775.24	96.8
KS Metro	7/2/2024	349.51	91.8
KS Metro	7/15/2024	2,671.86	93.0
KS Metro	7/16/2024	2,299.53	80.2
KS Metro	7/31/2024	1,510.67	92.5
KS Metro	8/1/2024	1,691.43	88.7
KS Metro	8/26/2024	1,755.22	97.3
KS Metro	8/27/2024	1,026.35	94.1

8.7.2 Net Savings

The net-to-gross ratio for this program is assumed to be 1.0 and the net savings equal the gross savings.

Appendix A Whole Home Efficiency Program-Specific Methodologies and Results

This appendix describes the evaluation activities that were performed by ADM to evaluate the Whole Home Efficiency Program (WHE).

A.1 Program Overview

The Whole Home Efficiency Program provided rebates for Heating, Ventilation, and Air Conditioning (HVAC) and building envelope measures in single and multi-family residences. In PY1, the Whole Home Efficiency Program included HVAC Rebates and Air Sealing and Insulation Rebates.

PY1 performance metrics are summarized in Table A-1. Gross energy savings achieved 54 percent of the realized verified savings for the total WHE Program in PY1, while gross peak demand achieved 48 percent of the realized verified peak demand.

Table A-1: Performance Metrics – Whole Home Efficiency Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants*	1,765	803	962
Energy Savings (kWh)			
Reported Energy Savings	6,246,474	2,434,922	3,811,552
Gross Verified Energy Savings	3,346,139	1,532,893	1,813,246
Net Verified Energy Savings	2,457,425	1,126,992	1,330,433
Peak Demand Reduction (kW)			
Reported Peak Demand Reduction	4,536.98	1,712.50	2,824.48
Gross Verified Peak Demand Reduction	2,195.49	994.19	1,201.29
Net Verified Peak Demand Reduction	1,607.43	727.76	879.67
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	2.22	1.99	2.47

*Represents the number of unique account numbers in the program

A.1.1 HVAC Rebates

Heating and cooling equipment is a large investment, and customers often opt for the least expensive option. This rebate offsets the incremental cost of investing in the lower efficiency, less expensive equipment to a higher efficiency but more expensive option. This rebate can only be applied to replace broken or inoperable equipment. Eligible efficient heating equipment was required to be “like for like” technology to existing technology.

A.1.2 Air Sealing & Insulation Rebates

In PY1, Evergy planned to optimize performance and comfort of its customers' homes by recruiting and training a contractor network to promote these rebates for air sealing and attic insulation. Evergy provided a customer application intake tool to streamline rebate processing and quality assurance/quality control (QA/QC) of customer projects to ensure that quality standards are maintained.

A.2 EM&V Methodology

This section provides an overview of the gross and net impact evaluation of the Whole Home Efficiency Program. Data collection included participant surveys, trade ally surveys, and in-depth interviews with program staff. Additional sources of data to inform the impact evaluation were a census of program tracking data from the program implementor's tracking and reporting system and customer advanced metering infrastructure (AMI) data for usage analysis. Program tracking data included customer contact information and descriptions of the measures installed. Table A-2 provides a summary of the savings approach by program year.

Table A-2: Savings Approaches by Program Year

Program Year	Energy Savings	Peak Demand Reduction
2024	Usage analysis	Energy Savings Curve

In evaluating the WHE Program in 2024, ADM implemented a variety of impact evaluation exercises including estimation of gross energy savings, as well as peak demand reductions as framed by the following questions:

- How many Evergy customers participated in the program?
- What is the quantity and type of measures rebated?
- What are the energy savings for each rebated measure?
- What is the peak demand reduction for each rebated measure?

A.2.1 Sampling Plan

When estimating energy savings and peak demand reductions, ADM sampled participants by measure type with sufficient post-installation data (six months) for inclusion in the usage analysis. An extrapolated energy savings and peak demand reduction value from participants in the usage analysis was applied to remaining participants with installation in PY1. The sampling plan can be viewed in Table A-3.

Table A-3: Sampling Plan

Measure	Sample Size (n)	Number of Participants	Precision at 90% CI
Air Source Heat Pumps	184	267	3.4%
Central Air Conditioners	1,040	1,363	1.2%
Ductless Mini Split Heat Pumps	7	15	23.5%
Duct Repair and Sealing	15	53	18.2%
Ground Source Heat Pump	30	41	7.9%
Building Shell	29	59	11.0%

A.2.2 Data Collection

ADM performed an on-site monitoring study using a sample of projects (51 central air conditioners and 28 air source heat pumps) to assess equivalent full-load hour (EFLH) for HVAC cooling and heating loads. ADM deployed current transducers onto the HVAC units to identify the actual amperage passing through the unit. ADM compared the readings to on-time measurements taken during the deployment to identify the compressor versus the fan load out of the total load. As a supplement to the relative usage information collected through the current transducers, ADM also deployed motor on/off loggers onto the compressor motor for a subset of sites to gather simple on/off characteristics for the unit. The monitoring results were normalized using local weather station data and extrapolated onto a typical meteorological year (TMY) to develop a yearly cooling and heating EFLH value.

A.2.2.1 Participant Survey

ADM conducted an email survey of Whole Home Efficiency Program participants in December 2024. There was a total of 1,243 unique projects in the program through November 2024 and 1,078 projects (87 percent) had email addresses in program tracking data. Seventy-three email addresses were associated with two or more projects. There were 1,059 unique email addresses in the tracking data. Five emails were determined to be associated with contractor companies and were not invited to the survey. All 1,054 customers with an email address were sent an invitation to share their feedback. ADM offered selected customers a \$10 gift card to take the survey. One hundred and fifty-two customers that participated in the program completed the survey (14 percent response rate).

A.2.2.2 Contractor Survey

In December 2024, ADM received feedback from 21 contractors that participated in the Whole Home Efficiency Program. A total of 105 unique contractor company names were in the program tracking data as of December 2024. All participating contractors were sent an email invitation and one reminder. ADM also performed targeted phone outreach to the twenty most active contractors to follow-up and offer to administer the survey over the phone and to ensure the contact information on file was accurate. Four of the twenty contacts provided updated contact information. ADM collected 7 responses over the phone and 14 via email.

A.2.2.3 Program Staff Interviews

A facilitated discussion was held with Evergy and implementor program staff in January 2025. The call was held with Evergy and ICF staff. The purpose of the call was to investigate program design, implementation, barriers to success, and future plans for the program.

A.2.3 Gross Impact Methodology

In the evaluation of the WHE Program, energy savings and peak demand reductions were estimated using regression analyses consisting of population-level normalized metered energy consumption (NMEC) in which energy savings were determined using an NMEC approach based on pre- and post-installation AMI data. For this approach, the work effort was divided into the following categories:

- Data preparation and cleaning
- Run regression model to calculate savings

A.2.3.1 Data Preparation

ADM used participant AMI data in the pre-period (before installation of the measure) and in the post-period (after installation of the measure) in a mixed effects panel regression model to predict energy savings.

The following steps were taken to prepare the data:

1. Exclude homes that received a combination of measures.
2. Exclude homes without sufficient pre-period AMI data (minimum of 9 months).
3. Exclude homes without sufficient post-period AMI data (minimum of 6 months).
4. Remove large periods of no consumption (24 hours or more).
5. Exclude homes with consumption data indicating it as an outlier.

ADM examined data for outliers using multiple accepted identification techniques, including simple Z-scores, Bonferroni Outlier Test and Grubbs Test for Outliers (G-test).

A.2.3.2 Linear Regression

ADM used a mixed-effect model specification containing customer-specific dummy variables to account for exogenous heterogeneity that cannot be explicitly controlled for and is not relevant to the estimation of program savings. The specification of customer-specific effects allows the model to capture the baseline differences across customers while obtaining reliable estimates of the impact of the program.

ADM included independent Heating Degree Hours (HDH) and Cooling Degree Hours (CDH) for weather control to improve model confidence. ADM then fit the mixed effect panel regression model to estimate weather-dependent and non-weather dependent hourly consumption differences between the pre- and post-period. The following model was fit for each measure, independently, including participants that only received that measure.

Equation 8-1: Linear Regression Model

$$AHC_{it} = \alpha_0 + \beta_1(Post)_{it} + \beta_2(HDH)_{it} + \beta_3(CDH)_{it} + \beta_4(Post \times HDH)_{it} + \beta_5(Post \times CDH)_{it} + \varepsilon_{it}$$

Where:

AHC_{it} = Estimated average hourly consumption (dependent variable) in home i during period t

$Post_{it}$ = Dummy variable indicating whether period t was in pre- or post- retrofit

HDH_{it} = Average heating degree hours during period t at home i

CDH_{it} = Average cooling degree hours during period t at home i

ε_{it} = Customer-level random error

α_0 = The model intercept for home i

β_{1-5} = Coefficients determined via regression

The coefficient β_1 represents the average change in hourly non-weather-related consumption between the pre- and post-period. The coefficients β_4 and β_5 represent the average change in hourly weather-related consumption between the pre- and post-period. If coefficients β_1 , β_4 , and β_5 are negative and statistically significant ($p < 0.05$), this indicates non-weather-related and weather-related energy savings in the post-installation period. Calculation of annual energy savings using these coefficients is presented below. HDH and CDH were calculated from local weather data using a range of base temperatures (e.g., 55-degree temperature base for heating and 70-degree temperature base for

cooling). Optimal CDH and HDH base temperatures were estimated for each site to better quantify how power consumption relates to the weather at each location. The selection of optimal base temperatures was accomplished through conducting regression analyses across a range of base temperatures and selecting those that result in the minimum RMSE.

Table A-4 shows the results from the regression analyses for each measure category. Pre-post is the non-weather-related hourly savings in the post-period, while CDHx and HDHx are the weather-related savings in the post-period. If the coefficients are negative and significant ($p < 0.05$), this indicated energy savings in the post-installation period. If coefficients are positive and significant, this indicates increased consumption in the post-installation period. If the coefficient was not significant, these values were zeroed out when extrapolating results to a typical meteorological year (TMY) using TMYx data. Normalized root mean squared error (NRMSE) represents the percentage error of predicted to actual values. ADM considered NRMSE of less than 5 percent as a good model fit.

Table A-4: Whole Home Efficiency Regression Results

Prepost	Prepost p-value	CDHx	CDHx p-value	HDHx	HDHx p-value	R ²	RMSE	NRMSE (% Error)	Premise count	MODEL
-0.05	0.0000	-0.91	0.0000	-0.01	0.0000	0.50	0.70	1.96%	1,040	CAC only
-0.08	0.0000	-0.80	0.0000	-0.01	0.0387	0.49	0.72	0.58%	184	ASHP only
-0.04	0.0001	-0.47	0.0000	0.08	0.0000	0.53	0.70	1.88%	30	GSHP only
-0.08	0.0000	0.09	0.0897	0.21	0.0000	0.38	0.80	2.81%	7	Mini Split only
0.03	0.0000	-0.79	0.0000	-0.05	0.0000	0.42	0.76	3.08%	29	Building Shell only
0.00	0.8499	-1.02	0.0000	-0.03	0.0004	0.41	0.77	4.37%	15	Duct Sealing only

Table A-5 shows the average per unit/home and per ton annual savings estimates of each measure for each jurisdiction from the regression analyses results.

Table A-5: Per Unit/Home and Per Ton Annual Savings

Jurisdiction	Measure	kWh/(unit/home)	kW/(unit/home)	kWh/ton	kW/ton
Kansas Central	Air Source Heat Pumps	2,161	1.17	687	0.37
	Central Air Conditioners	1,860	1.24	638	0.43
	Ductless Mini Split Heat Pumps	23	0.01	19	0.01
	Duct Repair and Sealing	2,023	1.72	-	-
	Ground Source Heat Pumps	977	0.71	402	0.29
	Building Shell	331	0.33	-	-
Kansas Metro	Air Source Heat Pumps	2,116	1.15	654	0.36
	Central Air Conditioners	1,797	1.20	558	0.37
	Ductless Mini Split Heat Pumps	53	0.02	44	0.02
	Duct Repair and Sealing	1,406	1.19	-	-
	Ground Source Heat Pumps	904	0.65	284	0.21
	Building Shell	296	0.30	-	-

A.2.3.3 Energy Savings Calculation

ADM utilized TMYx data to calculate annual savings per customer based on the regression results. The calculation of energy savings used the following methodology:

Equation 8-2: Annual Savings Calculation

$$\text{Annual Savings (kWh)} = \beta_1 \times \text{Hours} + \beta_4 \times \text{TMYx(HDH)} + \beta_5 \times \text{TMYx(CDH)}$$

Where:

β_1 = Average change in hourly non-weather-related consumption between the pre- and post-period

β_4 = Average change in hourly weather-related consumption (HDH) between the pre- and post-period

β_5 = Average change in hourly weather-related consumption (CDH) between the pre- and post-period

Hours = Number of hours in a year (8760)

TMYx(HDH) = Total hourly heating degree hours based on TMYx data for the period of interest

TMYx(CDH) = Total hourly cooling degree hours based on TMYx data for the period of interest

For customers excluded from the analysis, either due to insufficient data or having a combination of measures installed, ADM extrapolated the savings results to these customers by taking the average savings per home for each jurisdiction.

A.2.3.4 Peak Demand Reduction Savings

ADM utilized normalized energy savings curves to determine peak demand reduction savings for each participant. A normalized energy savings curve is comprised of 8,760 hourly fractions summing to exactly 1 (unity).²⁹ For each measure, ADM determines verified annual kWh savings, which is then multiplied by each of the 8,760 hourly fractions to disaggregate the annual kWh into 8,760 hourly kW bins.

Normalized energy savings curves were developed for each measure by summing the TMYx savings estimates for each hour across all customers in the regression analyses and dividing each hour by the total savings. Normalized energy savings curves were developed for each measure in the program.

The normalized energy savings curves were then used to determine the maximum value in July during hour 17, which is the middle of Every KS peak demand hours (July, hours 16-18). For customers excluded from the analysis, either due to insufficient data or having a combination of measures installed, ADM extrapolated the savings results to these customers by taking the average savings per home for each jurisdiction.

A.3 Impact Evaluation Results

This section details the level of program activity for the PY1 WHE Program, which includes gross energy savings and gross peak demand reduction that resulted from that activity.

A.3.1 Program Activity

The WHE Program in PY1 had 1,765 total participants as part of the program. Final energy savings were based on a total of 1,947 energy savings measures. The measure quantity and reported energy and demand savings from all projects are outlined by jurisdiction in Table A-6.

²⁹ A typical year has 8,760 hours, i.e., 365 days times 24 hours per day equals 8,760 hours (other than Leap Year, which have an additional 24 hours on February 29, or a total of 8,784 hours per Leap Year).

Table A-6: Measure Quantity and Reported Impacts Per Jurisdiction

Jurisdiction	Measure	Measure Quantity	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)
KS Central	Air Source Heat Pump	140	555,111	181.97
	Central Air Conditioner	631	1,611,953	1,516.19
	Ductless Mini Split Heat Pump	10	43,549	3.59
	Duct Repair and Sealing	12	10,537	2.27
	Ground Source Heat Pump	28	195,838	0.00
	Building Shell	15	17,934	8.48
	Subtotal	836	2,434,922	1,712.50
KS Metro	Air Source Heat Pump	131	733,232	218.37
	Central Air Conditioner	792	2,691,435	2,533.58
	Ductless Mini Split Heat Pump	3	8,295	0.68
	Duct Repair and Sealing	42	36,881	7.95
	Ground Source Heat Pump	19	170,294	0.00
	Building Shell	124	171,414	63.89
	Subtotal	1,111	3,811,552	2,824.48
Total		1,947	6,246,474	4,536.98

A.3.1.1 Gross Energy Savings and Demand Reduction

Based on the impact evaluation results, the total verified gross savings for the WHE Program are 3,346,139 kWh, which resulted in a realization rate of 54 percent, and 2,195.49 kW, which resulted in a realization rate of 48 percent. Table A-7 presents the gross verified energy savings, demand reduction savings, and realization rates by measure and jurisdiction.

Table A-7: Reported and Verified Gross Energy Savings & Demand Reduction

Jurisdiction	Measure	RP at 90% CL	Reported Energy (kWh)	Gross Verified Energy (kWh)	Verified Energy Savings (kWh) 90% CI (Lower)	Verified Energy Savings (kWh) 90% CI (Upper)	Reported Demand (kW)	Gross Verified Demand (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	Air Source Heat Pump	3.4%	555,111	302,610	287,053	318,166	181.97	164.41	155.95	172.86	55%	52%	57%	90%	86%	95%
	Central Air Conditioner	1.2%	1,611,953	1,173,455	1,158,264	1,188,646	1,516.19	784.30	774.14	794.45	73%	72%	74%	52%	51%	52%
	Ductless Mini Split Heat Pump	23.5%	43,549	227	-5,662	3,606	3.59	0.08	-2.03	1.29	1%	-13%	8%	2%	-56%	36%
	Duct Repair and Sealing	18.2%	10,537	24,270	21,278	27,263	2.27	20.61	18.07	23.15	230%	202%	259%	907%	796%	1019%
	Ground Source Heat Pump	7.9%	195,838	27,370	20,616	34,123	0.00	19.79	14.91	24.67	14%	11%	17%	100%	100%	100%
	Building Shell	11.0%	17,934	4,961	3,921	6,002	8.48	5.00	3.95	6.05	28%	22%	33%	59%	47%	71%
	Subtotal	1.2%	2,434,922	1,532,893	1,485,469	1,577,806	1,712.50	994.19	965.00	1,022.48	63%	61%	65%	58%	56%	60%
KS Metro	Air Source Heat Pump	3.4%	733,232	277,148	262,585	291,710	218.37	150.57	142.66	158.49	38%	36%	40%	69%	65%	73%
	Central Air Conditioner	1.2%	2,691,435	1,423,035	1,404,356	1,441,713	2,533.58	951.11	938.62	963.59	53%	52%	54%	38%	37%	38%
	Ductless Mini Split Heat Pump	23.5%	8,295	160	-1,622	1,159	0.68	0.06	-0.58	0.42	2%	-20%	14%	8%	-85%	61%
	Duct Repair and Sealing	18.2%	36,881	59,068	50,294	67,843	7.95	50.17	42.72	57.62	160%	136%	184%	631%	537%	725%
	Ground Source Heat Pump	7.9%	170,294	17,169	13,045	21,292	0.00	12.41	9.43	15.40	10%	8%	13%	100%	100%	100%
	Building Shell	11.0%	171,414	36,667	31,010	42,323	63.89	36.97	31.27	42.68	21%	18%	25%	58%	49%	67%
	Subtotal	1.3%	3,811,552	1,813,246	1,759,669	1,866,040	2,824.48	1,201.29	1,164.12	1,238.18	48%	46%	49%	43%	41%	44%
Total		0.9%	6,246,474	3,346,139	3,245,139	3,443,846	4,536.98	2,195.49	2,129.12	2,260.67	54%	52%	55%	48%	47%	50%

Figure A-1 shows the energy savings each measure contributed to the program overall.

Figure A-1: kWh Savings Per Measure

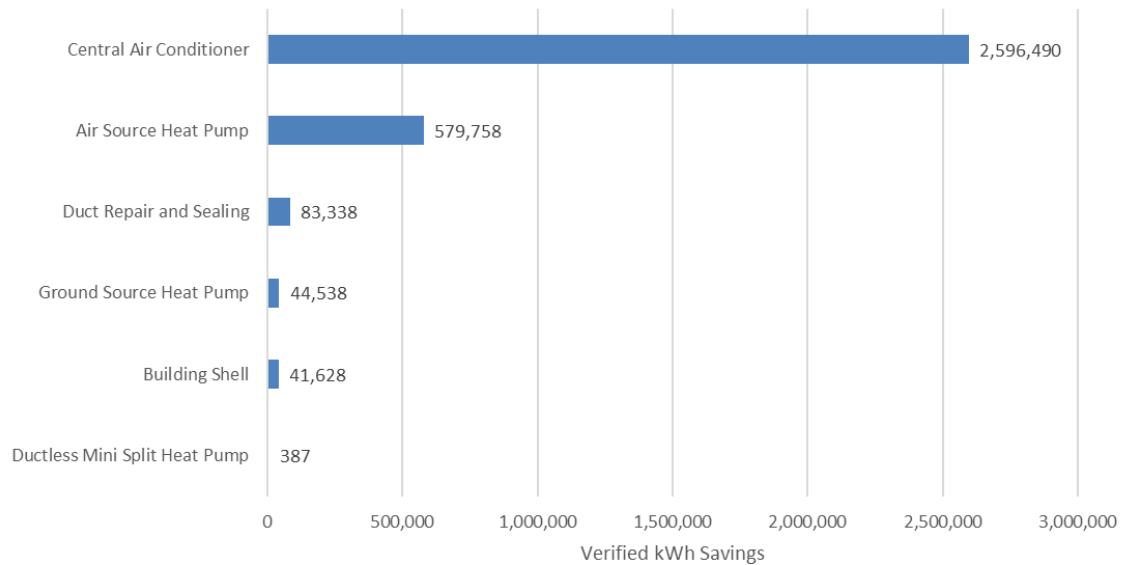


Figure A-2 shows the average savings per home for reported and verified gross energy savings for each measure category.

Figure A-2: WHE Average Savings per Home

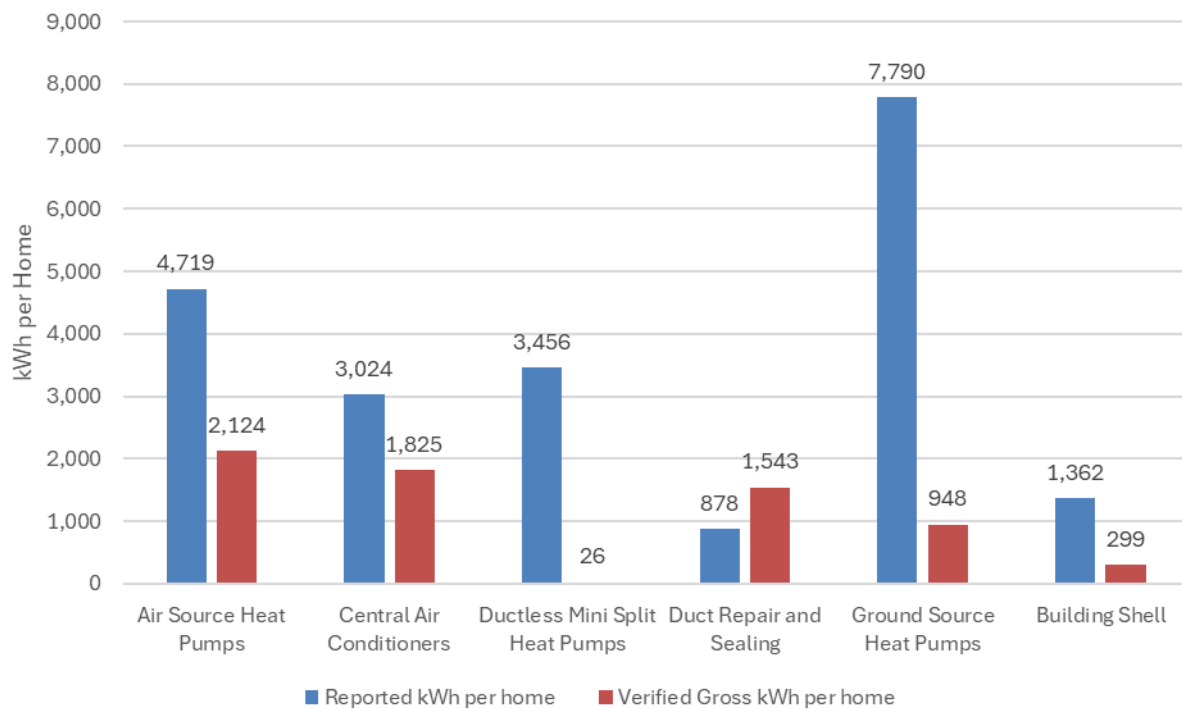
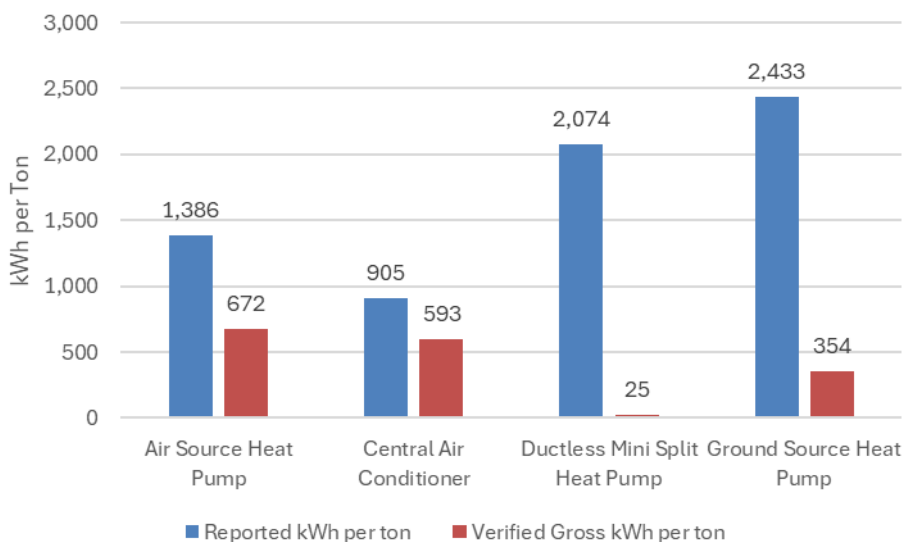


Figure A-3 shows the average savings per ton for reported and verified gross energy savings for HVAC units.

Figure A-3: WHE Average Savings per Ton



A.3.1.2 Realization Rate Factors

This section details the realization rate factors impacting discrepancies between reported and verified gross savings for each measure category.

Air Source Heat Pumps – HVAC Rebates: The energy savings for air source heat pumps have a realization rate of 45 percent and the demand savings have a realization of 79 percent. The differences in energy and demand savings between reported savings and verified savings are outlined below:

- The main differences between reported and verified gross saving for air source heat pumps was due to the designation and calculations of early replacement (ER) units. Reported savings engineering algorithms for early replacement units assume a baseline condition of 9.26 SEER, 4.92 HSPF and 7.51 EER, which results in an average of 4.5 times the savings of time of sale (ToS) units. These baseline values date back to the federal minimum baselines from 1992 to 2005, which is outside the EUL of an air source heat pump (16 years). ADM ran an exploratory regression analysis to separating time of sale units from early replacement to confirm that the early replacement units in the tracking data were either incorrectly designated and/or baseline assumptions do not align with real world savings. Table A-8 shows the per unit savings between time of sale units and early replacement units from these analyses compared to reported per unit savings.

Table A-8: ASHP Time of Sale vs Early Replacement

Jurisdiction	Measure	Reported kWh (per unit)	Gross kWh (per unit)
KS Central	ASHP ToS	1,146	2,153
	ASHP ER	6,978	2,064
KS Metro	ASHP ToS	1,104	2,315
	ASHP ER	7,086	2,008

- Additional differences between reported and verified gross savings for air source heat pumps are due to homes with a primary heating fuel type of gas showing an increase in electric usage during the heating season after installation. Approximately 25 percent of homes that received an air source heat pump were reported in the tracking data as having primary gas heating. A possible reason for this increase in usage during the heating season could be due to differences in temperature setpoints in which the air source heat pump is utilized between the pre- and post-period. Table A-9 shows the results of an exploratory regression analysis to confirm the increase in usage during the post-period for homes with primary gas heating. The coefficient HDHx is the interaction effect between pre- and post-period with HDH. The coefficient is significant and positive, indicating an increase in usage in the post-period compared to those with primary electric heating, which is significant and negative.

Table A-9: ASHP Regression Results between Primary Electric Heat and Gas Heat

Prepost	Prepost_p	CDHx	CDHx_p	HDHx	HDHx_p	Model
-0.15	0.0000	-0.54	0.0000	-0.15	0.0000	ASHP Elec Heat
0.06	0.0000	-1.23	0.0000	0.19	0.0000	ASHP Gas Heat

Central Air Conditioners – HVAC Rebates: The energy savings for central air conditioners have a realization rate of 60 percent and the demand savings have a realization of 43 percent. The differences in energy and demand savings between reported savings and verified savings are outlined below:

- The main difference between reported and verified gross savings for central air conditioners was due to a calculation error in reported savings estimates for early replacement units. The deemed savings value for early replacement units in the KS Evergy TRM is labelled as per ton savings but is per unit savings. These deemed values are being multiplied by the unit tonnage in reported savings, which is drastically over-estimating savings. ADM ran additional exploratory regression analyses separating time of sale units from early replacement units to determine how the error in reported savings impacted realization rates. The results confirmed that the reported savings for early replacement units were overestimated; however, ADM found that time of sale units had significantly greater savings than reported. Table A-10 shows the per unit savings between time of sale units and early replacement units from these analyses compared to reported per unit savings.

Table A-10: CAC Time of Sale vs Early Replacement

Jurisdiction	Measure	Reported kWh (per unit)	Gross kWh (per unit)
KS Central	CAC ToS	538	1,853
	CAC ER	3,462	1,806
KS Metro	CAC ToS	591	1,710
	CAC ER	4,056	1,814

Ductless Mini Split Heat Pumps – HVAC Rebates: The energy savings for ductless mini split heat pumps have a realization rate of 1 percent and the demand savings have a realization rate of 3 percent. The differences in energy and demand savings between reported savings and verified savings are outlined below:

- The differences between reported and verified gross savings for ductless mini split heat pumps was due to an increase in usage in the post-period during both the cooling and heating season, determined from the usage analysis. This increased usage could be due to differences in use between the pre-existing equipment and the installed units. Five of the fifteen customers replaced their central air conditioning unit, while one customer had no pre-existing cooling according to the tracking data. Three customers have primary gas heating, which may have resulted in increased electricity usage during the heating season if the temperature setpoint for the backup heating was higher than in the pre-period. ADM will continue to include these homes in future analyses to confirm the persistence of these savings.

Duct Repair and Sealing – HVAC Rebates: The energy savings for duct repair and sealing have a realization rate of 176 percent and the demand savings have a realization of 692 percent. The differences in energy and demand savings between reported savings and verified savings are outlined below:

- The usage analysis for duct repair and sealing showed far greater savings than reported savings. Δ CFM50 values in the tracking data were considerably high (over 100) for many of the homes. This would indicate large failures in the duct work, which would impact the energy used to cool and heat the home. Repairing and sealing of these failures would greatly reduce the runtime and energy used by cooling and heating equipment. ADM will continue to include these homes in future analyses to confirm the persistence of these savings.

Ground Source Heat Pump – HVAC Rebates: The energy savings for ground source heat pumps have a realization rate of 12 percent and the demand savings have a realization of 100 percent. The differences in energy and demand savings between reported savings and verified savings are outlined below:

- The differences between reported and verified gross energy savings for ground source heat pumps was due to an increase in usage during the heating season in the post-period. ADM was unable to determine potential causes for this increased usage as customers in the usage analysis were like-for-like replacements of ground source heat pumps. ADM will continue to include these homes in future analyses to confirm the persistence of these savings.
- The differences between reported and verified demand savings were due to no reported savings for demand reduction. ADM is uncertain as to why demand savings were not reported for this measure.

Building Shell – Air Sealing and Insulation Rebates: The energy savings for building shell measures have a realization rate of 22 percent and the demand savings have a realization rate of 58 percent. The differences in energy and demand savings between reported savings and verified savings are outlined below:

- The primary difference between reported and verified gross savings for building shell measures is likely due to errors in the calculation of reported saving and artifacts of KS Evergy TRM deemed savings. Based on calculated savings using engineering algorithms, it appears that reported savings are claiming electric heating savings for homes with gas heating. Additionally, air sealing deemed savings are based on the square footage of install air sealing, which is misrepresentative of actual savings as square footage is not part the of the engineering algorithm for air sealing.

A.3.2 Final Savings Tables

Based on the impact evaluation results, the total verified gross savings for the WHE Program are 3,346,139 kWh and 2,195.49 kW and the total verified net savings are 2,457,425 kWh and 1,607.43 kW. A summary of gross and net verified energy savings and demand reduction is shown in Table A-11 through Table A-14. The WHE Program had an overall realization rate of 54 percent for energy savings and 48 percent for peak demand reductions. The WHE Program had an overall net-to-gross realization rate of 39 percent for energy savings and 35 percent for peak demand reductions.

Table A-11: WHE Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	RP at 90% CL	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Energy Savings (kWh) - CI at 90% (Lower)	Gross Verified Energy Savings (kWh) - CI at 90% (Upper)	Gross Verified Demand Reduction (kW)	Gross Verified Demand Reduction (kW)- CI at 90% (Lower)	Gross Verified Demand Reduction (kW) - CI at 90% (Upper)	RR (kW)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	1.2%	2,434,922	1,712.50	1,532,893	1,485,469	1,577,806	994.19	965.00	1,022.48	63%	61%	65%	58%	56%	60%
KS Metro	1.3%	3,811,552	2,824.48	1,813,246	1,759,669	1,866,040	1,201.29	1,164.12	1,238.18	48%	46%	49%	43%	41%	44%
Total	0.9%	6,246,474	4,536.98	3,346,139	3,245,139	3,443,846	2,195.49	2,129.12	2,260.67	54%	52%	55%	48%	47%	50%

Table A-12: WHE Lifetime Energy Savings (kWh)

Measure Name	RP at 90% CL	Energy Savings (kWh)	EUL	Lifetime Energy Savings (kWh)	Lifetime Energy Savings 90% CI (Lower)	Lifetime Energy Savings 90% CI (Upper)
Air Source Heat Pump	3.4%	579,758	18	10,435,637	9,893,492	10,977,782
Central Air Conditioner	1.2%	2,596,490	16	41,543,838	41,001,930	42,085,747
Ductless Mini Split Heat Pump	23.5%	387	20	7,748	-145,676	95,293
Duct Repair and Sealing	18.2%	83,338	25	2,083,461	1,789,289	2,377,632
Ground Source Heat Pump	7.9%	44,538	15	668,072	504,915	831,228
Building Shell	11.0%	41,628	20	832,560	698,622	966,498
Total	0.9%	3,346,139	-	55,571,315	53,742,571	57,334,180

Table A-13: WHE Verified Gross and Net Energy Savings (kWh)

Jurisdiction	RP at 90% CL	Spillover (Participant)	Free Ridership	NTG (kWh)	NTG (Lower)	NTG (Upper)	Gross Verified Energy Savings (kWh)	Net Energy Savings (kWh)	Net Energy Savings (Lower)	Net Energy Savings (Upper)
KS Central	3.5%	0.3%	27%	74%	71%	77%	1,532,893	1,126,992	1,087,547	1,166,437
KS Metro	3.5%	0.3%	27%	74%	71%	77%	1,813,246	1,330,433	1,283,868	1,376,998
Total	2.5%	0.3%	27%	74%	72%	76%	3,346,139	2,457,425	2,396,394	2,518,456

Table A-14: WHE Verified Gross and Net Peak Demand Reduction (kW)

Jurisdiction	RP at 90% CL	Spillover (Participant)	Free Ridership	NTG (kW)	Gross Verified Demand Reduction (kW)	Net Energy Savings (kW)	Net Energy Savings (Lower)	Net Energy Savings (Upper)
KS Central	3.5%	0.3%	27%	74%	994.19	727.76	702	753
KS Metro	3.5%	0.3%	27%	74%	1,201.29	879.67	849	910
Total	2.5%	0.3%	27%	74%	2,195.49	1,607.43	1,567	1,647

A breakdown of energy savings and demand by measure is included in Table A-15.

Table A-15: WHE Gross and Net Verified Energy Savings & Demand Reduction Per Measure

Measure	Gross Verified Energy (kWh)	Gross Verified Demand (kW)	Net Verified Energy (kWh)	Net Verified Demand (kW)	NTG _{kWh} *	NTG _{kW} *
Air Source Heat Pump	579,758	314.98	484,098	263.01	84%	84%
Central Air Conditioner	2,596,490	1,735.41	1,838,315	1,228.67	71%	71%
Ductless Mini Split Heat Pump	387	0.14	287	0.10	74%	74%
Duct Repair and Sealing	83,338	70.78	74,838	63.56	90%	90%
Ground Source Heat Pump	44,538	32.21	29,083	21.03	65%	65%
Building Shell	41,628	41.98	30,805	31.06	74%	74%
Total	3,346,139	2,195.49	2,457,425	1,607.43	73%	73%

* Differences in NGT from the above tables are due to rounding.

A.3.3 Ongoing Activities to Mitigate Realization Rate Issues

In PY1, the Whole Home Efficiency program produced lower realization rates than expected among all measures. This is primarily due to error in the TRM in which per unit savings were designated as per ton savings resulting in inflation savings. Additionally, homes with primary gas heating that received heat pump measures saw an increase in usage in the heating season post-installation. To mitigate this in PY2, ADM and Evergy will be updating the TRM using the per unit savings estimates determined from this evaluation. ADM has also recommended capturing the pre- and post-installation setpoints for backup heat pump heating for homes with primary gas heat to determine potential causes for the increased usage in the heating season.

A.4 Supplementary Analysis Results

This section details the supplementary analyses undertaken by ADM for comparison of usage regression results to engineering algorithms and the Missouri Evergy TRM. The KS Evergy TRM is outdated and contains numerous errors in the calculation of deemed savings. This section highlights the potential results, had the values in the MO Evergy TRM been used, which is updated on a yearly basis. These results are for informational purposes only.

A.4.1 Impact Evaluation Results (MO Evergy TRM)

Table A-16 shows the impact evaluation results from the panel linear regression models in comparison to the MO Evergy TRM deemed values.

Table A-16: WHE Verified Gross Savings vs MO Evergy TRM

Jurisdiction	Measure	MO TRM (kWh)	Gross Verified Energy (kWh)	MO TRM (kW)	Gross Verified Demand (kW)	RR _{kWh}	RR _{kW}
KS Central	Air Source Heat Pump	695,262	302,610	152.90	164.41	44%	108%
	Central Air Conditioner	512,403	1,173,455	571.01	784.30	229%	137%
	Ductless Mini Split Heat Pump	8,777	227	2.34	0.08	3%	3%
	Duct Repair and Sealing	14,626	24,270	1.09	20.61	166%	1884%
	Ground Source Heat Pump	330,292	27,370	43.53	19.79	8%	45%
	Building Shell	3,177	4,961	2.25	5.00	156%	223%
	Subtotal	1,564,536	1,532,893	773.11	994.19	98%	129%
KS Metro	Air Source Heat Pump	877,409	277,148	186.88	150.57	32%	81%
	Central Air Conditioner	767,244	1,423,035	846.94	951.11	185%	112%
	Ductless Mini Split Heat Pump	1,672	160	0.45	0.06	10%	13%
	Duct Repair and Sealing	51,191	59,068	3.83	50.17	115%	1310%
	Ground Source Heat Pump	287,211	17,169	37.85	12.41	6%	33%
	Building Shell	57,675	36,667	30.03	36.97	64%	123%
	Subtotal	2,042,402	1,813,246	1,105.97	1,201.29	89%	109%
Total		3,606,938	3,346,139	1,879.09	2,195.49	93%	117%

A.4.2 Engineering Analysis Results

ADM conducted a supplemental engineering analysis for comparison of results with the verified gross savings results from the usage regression analyses. ADM used AHRI data for relevant measures (HVAC) when calculating savings. Table A-17 shows the results from the engineering analysis. While savings differ on a measure-by-measure basis, the results from the usage regression analyses showed greater energy savings and slightly lower demand savings for the program overall. ADM used the EFLH (EFLH_{cooling} = 962

and $EFLH_{\text{heating}} = 1335$) values obtained from the monitoring study results when calculating savings for HVAC units.

Table A-17: WHE Engineering Analysis Results

Jurisdiction	Measure	Reported Energy (kWh)	Engineering (kWh)	Reported Demand (kW)	Engineering (kW)	RR _{kWh}	RR _{kW}
KS Central	Air Source Heat Pump	555,111	360,461	181.97	63.98	65%	35%
	Central Air Conditioner	1,611,953	885,016	1,516.19	755.56	55%	50%
	Ductless Mini Split Heat Pump	43,549	23,104	3.59	0.72	53%	20%
	Duct Repair and Sealing	10,537	5,454	2.27	1.88	52%	83%
	Ground Source Heat Pump	195,838	230,667	0.00	54.16	118%	100%
	Building Shell	17,934	7,349	8.48	3.00	41%	35%
	Subtotal	2,434,922	1,512,051	1,712.50	879.30	62%	51%
KS Metro	Air Source Heat Pump	733,232	369,528	218.37	77.69	50%	36%
	Central Air Conditioner	2,691,435	1,494,788	2,533.58	1,213.94	56%	48%
	Ductless Mini Split Heat Pump	8,295	3,029	0.68	0.60	37%	88%
	Duct Repair and Sealing	36,881	16,735	7.95	5.52	45%	69%
	Ground Source Heat Pump	170,294	208,450	0.00	50.29	122%	100%
	Building Shell	171,414	51,158	63.89	15.26	30%	24%
	Subtotal	3,811,552	2,143,687	2,824.48	1,363.30	56%	48%
Total		6,246,474	3,655,738	4,536.98	2,242.59	59%	49%

A.5 Net Savings Methodology

This chapter describes the proposed net savings methodology to be used to estimate free ridership and spillover for the Whole Home Efficiency Program.

Program savings include both gross savings and net savings. Gross savings are those savings that result from the installation of energy efficiency measures. Net savings are those measured savings that are directly attributable to the program. ADM will estimate net savings, or the savings directly attributable to the programs, through the assessment of net-to-gross (NTG) values. ADM will apply NTG values to the program's verified gross savings to calculate the estimated net savings as follows:

Equation 8-3: Net Savings Calculation

$$\text{Net Savings} = \text{Verified Gross Savings} \times \text{NTG}$$

The NTG values used to adjust the verified gross energy savings estimates account for free ridership and spillover as follows:

Equation 8-4: Net-to-Gross Calculation

$$NTG = 1 - \text{Free ridership} + \text{Spillover}$$

Free ridership refers to energy savings that would have occurred in the absence of the program. Spillover refers to additional energy savings attributable to the program when no rebates were paid and are added to program savings.

Information collected from a sample of program participants, through a customer decision-maker survey, was used for NTG analysis. ADM incorporated a battery of free ridership and spillover questions in its customer surveys. The measures included in the Whole Home Efficiency Program included efficient HVAC systems (such as central air conditioners and heat pumps) and building envelope measures. The participant survey asked questions about each measure type, as applicable.

A.5.1 Free Ridership Methodology

This section provides a summary of the method to score the responses from the participant survey for the free ridership (FR) score. The methodologies, survey questions, and calculations are outlined in the sections below. Free ridership scores were determined through questions about intentions and program influence as well as a consistency check question.

A.5.1.1 Intention Score

A survey of participants that received a rebate was used to assess free ridership for the upgrades provided through the Whole Home Efficiency Program. The tables below summarize intention free ridership scoring for HVAC and home envelope measures. When scoring intentions, ADM will begin with a score of 100 percent and apply adjustments based on the responses as shown in the table. All intention scores will range between 0 percent (no free ridership) and 100 percent (full free ridership).

Table A-18: HVAC Rebate Intention Score

FR1: Before speaking with your contractor, were you aware of what sets high-efficiency HVAC systems apart from standard efficiency ones?	FR2. Before learning about the incentive, had you already planned to install high-efficiency [Equipment] as opposed to a new standard efficiency system?	FR2. Would you have installed the same high efficiency [Equipment] without the incentive?	FR3. If the program was not available, would you have installed the same [Equipment] system, a system that was less efficient, or not installed a system at all?	FR4. If the incentives were not available, when would you most likely have installed the [Equipment]?
Yes [-0%]	Yes [-0%]	Yes [-0%]	Would have installed the same system. [- 0%]	At the same time [- 0%]
No [-25%]	No [-25%]	No [-25%]	Would have installed a less efficient system [- 50%]	Later, but within the same year [-50%]
Don't Know [-0%]	Don't Know [-0%]	Don't Know [-0%]	Would have installed the least efficient system available [-100%]	One to two years out [-100%]
			Would not have purchased a new system [-100%]	More than two years out or never [-100%]
			Don't Know [-0%]	Don't Know [-0%]

Table A-19: Home Envelope Incentive Intention Score

FR1: Before speaking with a contractor, were you aware your home [AIR/DUCT SEALING OR INSULATION] could be improved?	FR2: Before learning about the incentive, had you already planned to make [AIR/DUCT SEALING OR INSULATION] improvements?	FR3: Would you have installed the same [AIR/DUCT SEALING OR INSULATION] without the incentive?	FR4: If the incentives were not available, when would you most likely have installed the [AIR/DUCT SEALING OR INSULATION]?
Yes [-0%]	Yes [-0%]	Yes [-0%]	At the same time [- 0%]
No [-25%]	No [-25%]	No [-25%]	Later, but within the same year [-50%]
Don't Know [-0%]	Don't Know [-0%]	Don't Know [-0%]	One to two years out [-100%]
			More than two years out or never [-100%]
			Don't Know [-0%]

A.5.1.2 Influence Score

The program influence score was based on ratings of the importance of a series of program factors. Respondents were asked to rate how important each of the factors was in their decision to make the energy efficiency improvements. The highest score possible was a '5' for the importance of the rebate or discount and represents the influence part of the free ridership score for the program. High program influence and free ridership have an inverse relationship – the greater the program influence, the lower the free ridership score. The list of factors that respondents rated were:

- The program rebate/incentive
- Recommendation from program staff
- Information about energy efficiency that program provided
- Information or recommendation from contractor (if applicable)
- Previous participation in an Evergy energy efficiency program

Influence score assignments can be viewed in Table A-20.

Table A-20: Whole Home Efficiency Program Influence Score Assignments

Response	Influence Score
1 (Not at all important)	100%
2 (Slightly important)	75%
3 (Moderately important)	50%
4 (Very important)	25%
5 (Extremely important)	0%

A.5.1.3 Consistency Check

The survey included a question to describe what impact, if any, the program had on customers' decision to implement or install energy efficient equipment:

- In your own words, can you please describe how important the incentive and information or education from Everygy was on your decision to purchase and install the high efficiency [MEASURE]?

If a respondent was determined to be a non-free rider (0 percent) or pure free rider (100 percent) and their response to the open-ended consistency question contradicted the determination of non-free rider or pure free rider, an adjustment to their free ridership score was considered (for example customers' intention free ridership score and/or influence free ridership score may have been adjusted to 50 percent).

A.5.1.4 Final Free Ridership Score

The final free ridership value for the program (and measure categories) was calculated as the arithmetic mean of the verified gross savings weighted intention (maximum score 100 percent) and verified gross savings weighted influence (maximum score 100 percent) free ridership components, resulting in a value between 0 percent and 100 percent, as shown in Equation 8-5.

Equation 8-5: Free Ridership Score

$$\text{Final Freeridership Ratio} = \frac{\text{Intention Score} + \text{Influence Score}}{2}$$

A.5.2 Procedure for Estimating Participant Spillover

Participant spillover addresses situations where the participant reports activities, purchases, and/or installations of high-efficiency equipment that is not funded through the program but was influenced by the customer's participation in the program. ADM collected data using questions that ask program participants if the program prompted a decision to install other energy efficient measures or to make other energy efficient improvements beyond what was specifically rebated through the program.

The Whole Home Energy Efficiency participant survey included questions similar to the following:

“Since participating in the program, have you made any energy-efficiency improvements or installed any other energy-efficiency products or made any improvements that you did NOT receive for free or a program incentive for from Evergy or another organization?”

[If yes] Please select the energy-efficient products or improvements that you purchased (and installed, if applicable) since participating in the program. Select all that apply.”

The survey then asked respondents about the level of influence the program participation had on their decision to install the added measures, using a question similar to the following:

“On a scale from 1 to 5, with 1 meaning not at all important and 5 meaning extremely important, please rate how important your experience with the Evergy program was in your decision to install this/these energy-efficient products(s) or make these improvements.”

Additional measure purchases associated with an “extremely important” program rating were considered for spillover attribution to the program.

Residential participants will be asked an open-ended question about how they knew the additional non-incentivized measures they purchased were high efficiency. ADM included an open-ended question in the survey that asked why customers did not apply for an Evergy program rebate if the additional measure was like one rebated through an Evergy program. Additionally, the year of purchase was confirmed with a follow-up survey question.

Following data collection, ADM reviewed program tracking data to ensure customers who report spillover measures did not receive a rebate for that measure through the program. Once program influence and lack of rebate are confirmed, ADM reviewed reported information about the spillover measure (e.g., efficiency rating, amount). If insufficient

data was collected about the spillover measure, average or deemed savings values from the Kansas TRM and/or program analysis were assigned for each measure.

In general, the steps to estimating participant spillover were as follows:

Calculate total spillover savings for each participant as the product of measure savings and number of units associated with “extremely important” program influence ratings.

Equation 8-6: Measure Spillover

$$\text{Measure Spillover} = \text{Measure Savings} \times \text{Number of Units}$$

Total the savings associated with each program participant, to give the overall participant spillover savings.

Equation 8-7: Participant Spillover

$$\text{Participant Spillover} = \text{Sum of Measure Spillover}$$

Multiply the mean participant spillover savings for the participant sample by the total number of participants to yield an estimated total participant spillover savings for the program.

Equation 8-8: Total Participant Spillover

$$\text{Total Participant Spillover Savings} = \text{Sum of Participant Spillover} \div \text{Sample } n \times \text{Population } N$$

Divide that total participant spillover savings by the total gross program savings to yield a participant spillover ratio to be included in the calculation of the NTG ratio.

Equation 8-9: Participant Spillover Ratio

$$\text{Participant Spillover Ratio} = \text{Total Participant Spillover} \div \text{Total Gross Program Savings} \times 100\%$$

A.6 Net Savings Results

Most Whole Home Efficiency program participants indicated they would not have purchased the qualifying equipment without the program. ADM calculated a weighted average program-level free ridership ratio of 0.27 and a standard error of 0.0215. The absolute precision of the estimate was 0.03 with a 90 percent level of confidence. The program level free ridership is a weighted average of verified gross kWh savings for the sampled survey respondents. See Table A-21 for additional details on estimated net savings for the Whole Home Efficiency program. To provide context for the NTGRs found for the KEEIA Whole Home Efficiency program, we referenced an NMR literature review report completed for the state of New Jersey in 2023. This report found NTGRs ranging

from 0.60-0.89 for various downstream HVAC equipment types as well as home weatherization measures such as air sealing, attic insulation, and duct sealing.³⁰

Table A-21: Free Ridership Estimates for Whole Home Efficiency Program

Measure	n ³¹	RP at 90% Level of Confidence ³²	Free Ridership Ratio	Free Ridership 90% CI (Lower)	Free Ridership 90% CI (Upper)	Spillover	Spillover 90% CI (Lower)	Spillover 90% CI (Upper)
Central Air Conditioner	120	0.040	0.3	0.29	0.31	0.003	0.0029	0.0031
Air Source Heat Pump	26	0.081	0.17	0.16	0.18	0.003	0.0028	0.0032
Ground Source Heat Pump	2	0.220	0.35	0.27	0.43	0.003	0.0023	0.0037
Duct Sealing	3	0.250	0.11	0.08	0.14	0.003	0.0023	0.0038
Air Sealing	1	0.000	0.69	0.69	0.69	0.003	0.0030	0.0030
Program Level FR	152	0.035	0.27	0.26	0.28	0.003	0.0029	0.0031

A.7 Process Evaluation Methodology

The process evaluation was designed to explore the Whole Home Efficiency Program’s design, barriers to participation, implementation, and outcomes. To investigate these areas, ADM reviewed program documents, spoke with program staff, conducted interviews with contractors, and surveyed program participants.

Process evaluation activities sought to answer the following research questions and offer specific recommendations to support program improvements.

³⁰ New Jersey Statewide Evaluation Team. (2023, March 20). New Jersey recommended net-to-gross ratios overall report. NMR Group, Inc. Retrieved May 7, 2025, from <https://www.njcleanenergy.com/main/public-reports-and-library/market-analysis-protocols/market-analysis-baseline-studies/market-an>

³¹ Respondents were asked about up to two measures; total n is total number of unique survey respondents that provided at least one net-to-gross battery response (free-ridership and/or spillover).

³² Small samples may not capture enough variability to provide a reliable estimate of precision.

A.7.1 Program Design and Implementation Score

ADM used the following questions to guide the design and implementation of the process evaluation documents, interviews, and surveys:

- How well did the program staff, implementation staff, and contractors work together? Are there data tracking and communication efficiencies that can be gained?
- How are the program operations designed for each channel and what are the perceived outcomes – are these being fulfilled as expected? Are there ways to improve the design or implementation process?
- Is there cross-participation between the distribution channels or between the Whole Home Efficiency Program and other programs offered by Evergy?
- Are there underlying assumptions about the program design and operation that impact how effective the program is?
- What are the contractor experiences with the rebate application process?
- How are customers learning about the available rebates? Are the marketing efforts effective and useful, or are customers finding out about the program in other ways?
- Are customers learning about the program through contractors directly or from other sources? How are contractors marketing the program? Are there ways to support contractor marketing?
- Were participants satisfied with the rebate amount, the application process (whether through Evergy directly or through their contractor), and the product they installed? What are the causes of dissatisfaction?
- What are participants' experiences like with contractors?
- Were participants satisfied with their interactions with the contractor they worked with? What are the causes of dissatisfaction?
- What are barriers to customer participation from the contractors' perspective?

A.7.2 Implementation and Barriers to Participation

ADM used its interviews with program and implementation staff to explore their roles in marketing, administering, and implementing the program. We asked staff to describe their organization's work and investigate barriers to participation in the program with questions such as:

- When customers are not at all interested in participating in the program, what are the reasons? Based on your customer interactions, what do you perceive could bolster the interest of these customers?

- What are the obstacles to getting partially interested customers involved with the program? Are there ways that those obstacles could be mitigated?
- Have there been challenges with marketing?

A.7.3 Outcomes

To understand program outcomes, the Whole Home Efficiency participant survey asked customers if they were satisfied with the program and utility service in general. These questions were used to answer research questions such as:

- Were participants satisfied with their experience? What are the causes of dissatisfaction?
- Is the program adequately serving different types of customers (e.g., based on homeownership, income level, education level, geographic area, ethnicity)?
- Looking forward, what are key impediments and drivers to program success?

A.8 Process Evaluation Results

The process-related data collection activities for the WHE Program evaluation included a facilitated discussion with Evergy management and program implementation staff and surveys of WHE participants and contractors. The customer survey explored customers' purchase process, their decision-making, measures purchased, and overall experience. The contractor survey explored their experience with the program's application and payment process, perceptions about customer awareness and effectiveness of incentive levels and the range of measures offered through the program.

A.8.1 Summary of Process Evaluation Activities

ADM conducted an email survey of Whole Home Efficiency Program participants in December 2024. There were a total of 1,243 unique projects in the program through November 2024 and 1,078 projects (87 percent) had email addresses in program tracking data. Seventy-three email addresses were associated with two or more projects. There were 1,059 unique email addresses in the tracking data. Five emails were determined to be associated with contractor companies and were not invited to the survey. All 1,054 customers with an email address were sent an invitation to share their feedback. ADM offered selected customers a \$10 incentive to take the survey. One hundred and fifty-two customers completed the survey. Two customers completed the survey but were determined to be non-participants after data collection had been completed as their projects entailed fuel switching.³³ Findings presented here are based on 150 participant

³³ Approximately 150 fuel switching projects were removed from the WHE Program tracking data prior to the survey administration.

survey responses. Note: these two customers were not included in the final reported data, the customers did not receive rebates, and the utility is being reimbursed for program cost. Due to the timing of availability of program data, ADM used data provided by the implementor for sampling purposes.

In December 2024, ADM received feedback from 21 contractors that participated in the WHE Program. A total of 105 unique contractor company names were in the program tracking data as of December 2024. All participating contractors were sent an email invitation and one reminder. ADM also performed targeted phone outreach to the twenty most active contractors to follow-up and offer to administer the survey over the phone and to ensure the contact information on file was accurate. Four of the twenty contacts provided updated contact information. ADM collected 7 responses over the phone and 14 via email.

A facilitated discussion was held with Evergy and implementor program staff in January 2025. The call was held with Evergy and ICF staff. The purpose of the call was to investigate program design, implementation, barriers to success, and future plans for the program.

A.8.2 Participant Survey Respondent Characteristics

Nearly all participant survey respondents were homeowners, living in single-family homes. Ninety percent of respondents said they lived with no more than three other people. Table A-22 summarizes survey respondents' home characteristics.

Table A-22: Whole Home Efficiency Respondent Home Characteristics

Question	Response	Percent (n=150)
Do you own or rent your home?	Own	99%
	Other Arrangement	1%
Which of the following best describes your home type?	Single-family detached	90%
	Duplex	3%
	Apartment/condo in a 2-4 unit building	1%
	Apartment/condo in a 5+ unit building	2%
	Single-family townhouse or row house (adjacent walls to another house)	3%
	Don't Know	1%
When was your home built?	Before 1960	12%
	1960 to 1979	18%
	1980 to 1999	31%
	2000 to 2009	35%
	2010 or later	3%
	Don't Know	1%
Including yourself, how many people live in your household?	1	15%
	2	48%
	3	17%
	4	11%
	5	5%
	6	1%
	Prefer not to answer	4%
About how many square feet is your home?	Less than 1,000 square feet	1%
	1,000-1,999 square feet	35%
	2,000-2,999 square feet	35%
	3,000-3,999 square feet	19%
	4,000 or more square feet	7%
	Don't know	3%
What is the main fuel used for heating your home?	Electricity	22%
	Natural Gas	73%
	Propane	3%
	Don't Know	1%
What is the main fuel used to heat your water?	Electricity	20%
	Natural Gas	76%
	Propane	2%
	Don't know	2%

The distribution of survey respondents skewed middle-aged or older, most identified as white and over half said their income was more than 300 percent of the Federal Poverty Level (FPL). Four percent of respondents said they were under 35 years old. About 7 percent of respondents noted that their income was below 200 percent of the Federal Poverty Level (FPL), while 7 percent said it was between 200 percent and 300 percent of the FPL. Table A-23 provides further details on reported household income levels as well as additional self-reported demographic information. In comparison, using Census Bureau data, ADM estimates that about 29 percent of households served by Evergy have incomes under 200 percent of FPL.³⁴

Table A-23: Whole Home Efficiency Respondent Demographics

Question	Response	Percent (n=150)
What is your age?	25 to 34 years	4%
	35 to 44 years	16%
	45 to 54 years	15%
	55 to 64 years	15%
	65 or older	47%
	Prefer not to answer	3%
How would you identify your race or ethnicity? ³⁵	Black	2%
	Hispanic or Latino/Latina	3%
	American Indian and Alaska Native	1%
	Asian	5%
	White	86%
	Prefer not to answer	7%
What is the primary language spoken in your home?	English	97%
	Spanish	1%
	Tamil	1%
	Prefer not to answer	1%

³⁴ U.S. Census Bureau 2022 American Community Survey (ACS) Five Year Estimates Public Use Microdata Sample (PUMS)

³⁵ Sums to over 100 percent because respondents were able to select more than one race or ethnicity.

Question	Response	Percent (n=150)
What is your highest level of education?	Less than high school	1%
	High School Graduate/GED	10%
	Associates Degree, Vocation/Technical School, Or some college	15%
	Four-year college degree	35%
	Graduate or professional degree	37%
	Prefer not to say	3%
Household Income	Under 200% Federal Poverty Line	7%
	Between 200 percent and 300 percent of the FPL	7%
	More than 300 percent of FPL	62%
	Prefer not to say/Don't know	24%

A.8.3 Contractor Respondent Characteristics

Whole Home Efficiency contractor interviewees held various roles including owners, managers, sales staff, as well as office and administrative staff. All the contacts indicated that their companies provided residential HVAC services; however, some also noted providing other services such as plumbing, electrical, energy auditing, and home envelope improvements (air sealing, duct sealing, and insulation). The contractors represented small, medium, and large HVAC companies. Six respondents said fewer than 10 people worked at their company, six said their companies had 10-20 employees, and nine said their companies had more than 20 employees.

A.8.4 Program Design and Operations

The Whole Home Efficiency Program exceeded its PY1 goals for the Kansas City Metro region, but did not meet goals for the Central region. The program was launched in June 2024. Every staff indicated the Kansas City region benefited from contractor and customer familiarity with Evergy's programs for its Missouri customers, while more time and effort were needed to grow familiarity among customers and contractors in the Central part of Evergy Kansas territory.

Rebate payments typically take 6 to 8 weeks to process but can be quicker. Implementation staff explained that contractors are advised to tell program participants rebates should be received within 6 to 8 weeks. They noted that rebates may be processed in as quickly as 3 to 4 weeks.

Rebate processing delays occurred due to program start-up and internal reallocation of funds. Evergy and implementor staff indicated rebate processing issues had been

addressed at the time of the facilitated discussion in January 2024, but there had been delays in payment initially and in Winter 2024. Initial delays were attributed to overperformance or demand for the program in the Kansas Metro jurisdiction.

The program has a robust network of participating HVAC contractors. A total of approximately 170 contractors have been signed up and completed onboarding training for the Whole Home Efficiency Program. Implementation staff noted that about half of participating contractors are based in the Metro jurisdiction, while the other half are in the Central jurisdiction. Most contractors engaged with the program provide assistance with HVAC equipment.

A lack of home envelope contractors and energy auditors has been a challenge for the program in the Central region. Implementation and Evergy staff noted that the Kansas Metro jurisdiction has 11 energy auditor contractors engaged with the program and two in the Kansas Central territory, with one in Wichita and one in Topeka. Evergy staff mentioned that there is a single energy auditor in Wichita and one in Topeka. This lack of energy auditors has been a challenge for the program in this region. Evergy staff explained that this component of the program had not been marketed strongly because it was unclear if there were sufficient contractor companies to meet the demand that marketing might have created.

A contractor training for energy auditors was held as part of a pilot initiative to provide workforce development. Evergy staff mentioned that this initiative was conducted to raise both the single-family and multi-family energy auditor workforce in PY1 and there were plans to continue the offering. The training included multiple certification tests, including Building Analyst Professional, Building Analyst Technician, and Multi-Family Building Analyst. Out of the 17 contractors who completed the class in PY1, eight passed all three tests and nine needed to retake the MFBA test. Implementation staff mentioned that most participants were based in the Metro jurisdiction and Evergy staff stated that those that did not pass the MFBA (Multifamily Building Analyst) test will retake it in 2025.

Contractors generally approve of the range of equipment that qualifies for the program, though two suggested specific changes. Eighteen of the 21 contractors that provided feedback were satisfied with the equipment Evergy offers rebates for. Two indicated they were very dissatisfied and one provided a neutral rating. Two contractors made comments that related to equipment eligibility or the range of equipment offered. One stated that some customers with central air conditioners are better off with heat pumps, but the program has a “like for like” replacement requirement. One made a recommendation to expand the range of measures offered to include rebates for installing LED lighting.

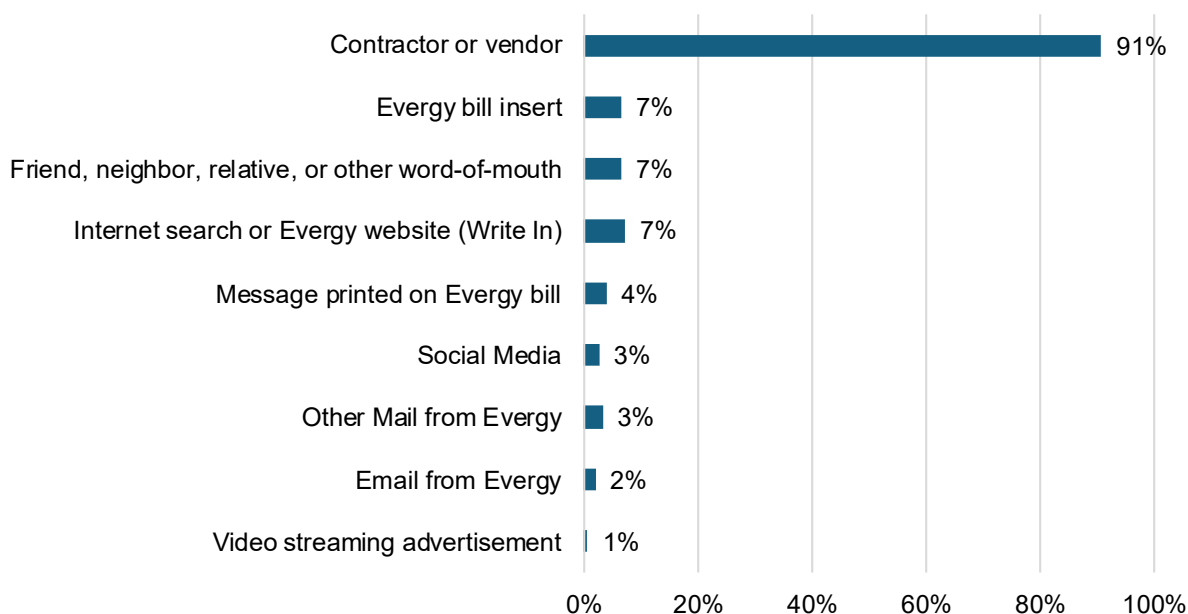
Most contractors confirmed that Evergy is sending the rebate to customers. Twenty of the 21 contractors that provided feedback said that customers receive payment from Evergy;

the remaining contractor said they receive payment from Evergy and customers are provided with an instant discount.

A.8.5 Program Awareness

Whole Home Efficiency Program participants tend to learn about the program from contractors. Of program participants that purchased a HVAC or water heating measure, 91 percent said they learned about the program from a contractor. Figure A-4 displays customers' source of program awareness.

Figure A-4: Whole Home Efficiency Participants' Sources of Program Awareness



Contractors perceive there to be low but growing program awareness. Fourteen of the contractors that responded to the survey said that 50 percent or less of their customers knew about the program before they told them about it in the past 12 months. Four said that more than half of their customers knew about the program before they told them about it. The other three contractors did not know or could not estimate the portion of customers that knew about it before they informed them.

All contractors that provided feedback in the survey said they are promoting or marketing the program to Evergy customers. The primary method that contractors use to inform customers is word-of-mouth during sales visits, on sales calls, or during the proposal process. Other methods of promotion are listed in Table A-24.

Table A-24: Contractor Methods of Program Promotion

Source	Count (n = 21)
Word of mouth during in-person sales visits	20
Sales calls	11
Information included on written or electronic project proposals	10
Posts on social media	9
On company website	8
Information sent in marketing emails	7
Materials sent via US Mail	3

A.8.6 Application Process

Most program participants receive the rebate as a check in the mail. Eighty-five percent of respondents said they received their rebate in the mail, compared to six percent who indicated it was a discount taken off their invoice and four percent who could not recall how they received their rebate. Two percent of respondents said they had not received the rebate yet. Three percent said they received the rebate in some other manner and wrote in a description. These respondents noted receiving the rebate on their electric bill, as an ACH deposit, from the State of Kansas, or from an Evergy maintenance person (note: These options were not payment options utilized by the program).

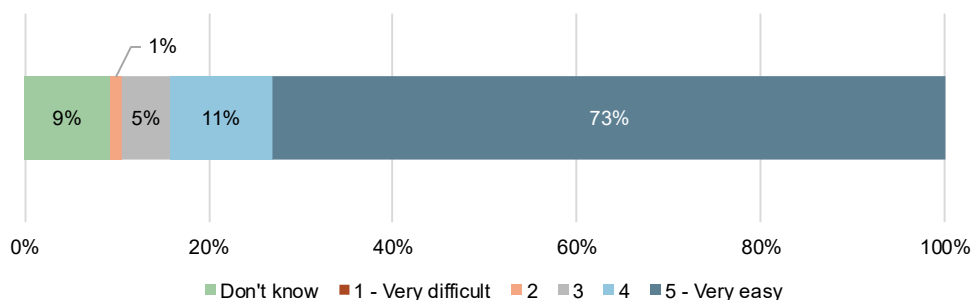
Participating contractors are required to go through a structured training and onboarding process to ensure they understand the program requirements and how to submit rebates. Implementation staff explained that contractors must complete an electronic participation agreement and are required to submit proof of insurance, a W-9 form, and a business license. After these steps are completed, contractors are invited to an orientation session that includes a presentation on program rules and requirements. After the orientation they receive a link to a training video that guides them through the rebate submission process using the online intake tool (OIT). Contractors are provided with a username and password to access this video, and additional hands-on support is available if needed. The training video was highlighted as a useful tool that has helped streamline the training process; implementation staff noted that it gave contractors a useful reference to assist with the application process, and reduced the time required for individual training sessions.

Implementation staff noted internal quality control measures and requirements for participating Whole Home Efficiency contractors. Contractors must have necessary certifications, such as BPI certification for energy auditors. The program also has internal quality assurance and quality control (QA/QC) requirements. For HVAC contractors,

random checks (in-person, virtual) are conducted each quarter to verify installed equipment serial and model numbers match the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) certificates. Forty-five checks are conducted during the two busiest quarters (second and third quarters), and 25 checks are conducted during the two off-season quarters (first and fourth quarters). Six on-site inspections are performed for insulation and air sealing projects each quarter to confirm blower door test results and insulation levels.

The rebate process is generally considered straightforward and easy for customers to understand. Eighty-four percent of customer survey respondents said it was easy to apply for the rebate (see Figure A-5). Customers that rated the process a 3 or less were given an opportunity to elaborate (n=10). Seven provided comments or suggestions to improve the process. These comments primarily related to information required on the application, challenges coordinating the application submission with the contractor, or the length of time it took to receive the rebate.

Figure A-5: Ease of Whole Home Efficiency Rebate Application

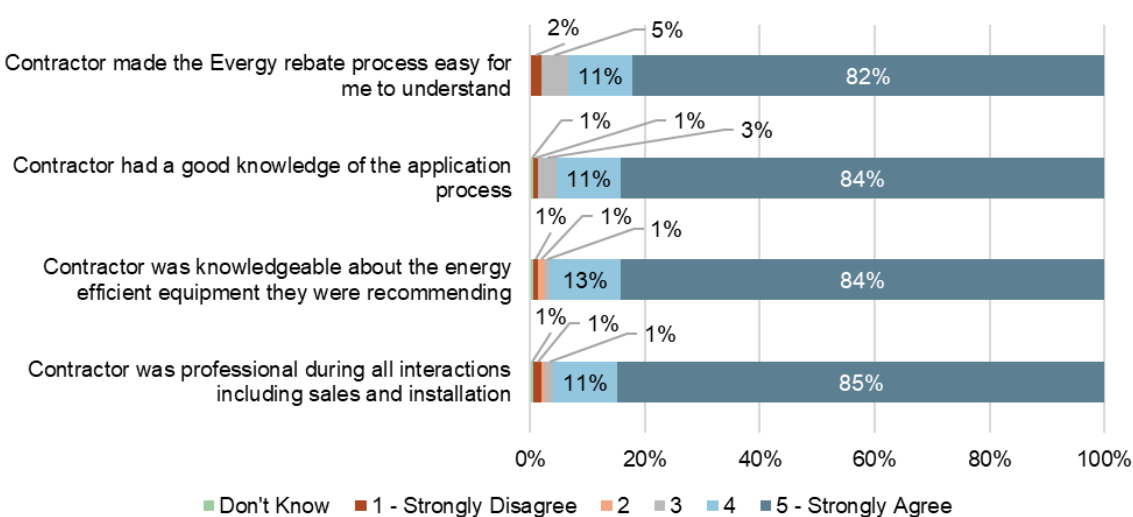


Contractor survey findings suggest there is an opportunity to increase the portion of Evergy customers that purchase program-qualifying equipment and apply for rebates. ADM asked contractors what portion of their customers were purchasing program-qualifying equipment. Sixteen contractors provided estimates. Eight indicated that more than half of their customers purchased program-qualifying equipment, while the other eight said that 50 percent or fewer of their customers had chosen program-qualifying equipment in 2024. Additionally, 15 contractors reported that 70 percent or more of their customers who purchase qualifying equipment apply for Evergy rebates. Reasons cited by contractors for not applying for rebates included excessive paperwork, long processing times for rebates, and a desire to avoid dealing with Evergy. One contractor noted that they do not follow up with customers to complete an authorization form and this had led to about 10 percent of their customers that purchased qualifying equipment not applying for rebates.

A.8.7 Participation Experience and Satisfaction

Participating customers rated contractors as professional, knowledgeable, and generally able to make the rebate process easy to understand. Ninety-six percent of respondents were satisfied with their experience with the contractor that assisted them with the program.³⁶ Figure A-6 displays customer agreement with four statements about their experience with the contractor that assisted them with their program participation. The survey collected responses from participants that were served by 58 different contractors. ADM attempted to investigate participants' experience with different contractors. However, since each contractor had too few survey respondents, we could not make meaningful conclusions about customer satisfaction and experience.

Figure A-6: Customer Agreement with Statements about Whole Home Efficiency Contractor



Whole Home Efficiency Program participants are satisfied with the rebated equipment. Ninety-six percent of respondents were satisfied with the rebated measures they purchased.³⁷ Sixty-three percent of customers said they had noticed savings on their Evergy bill since installing the rebated measures.

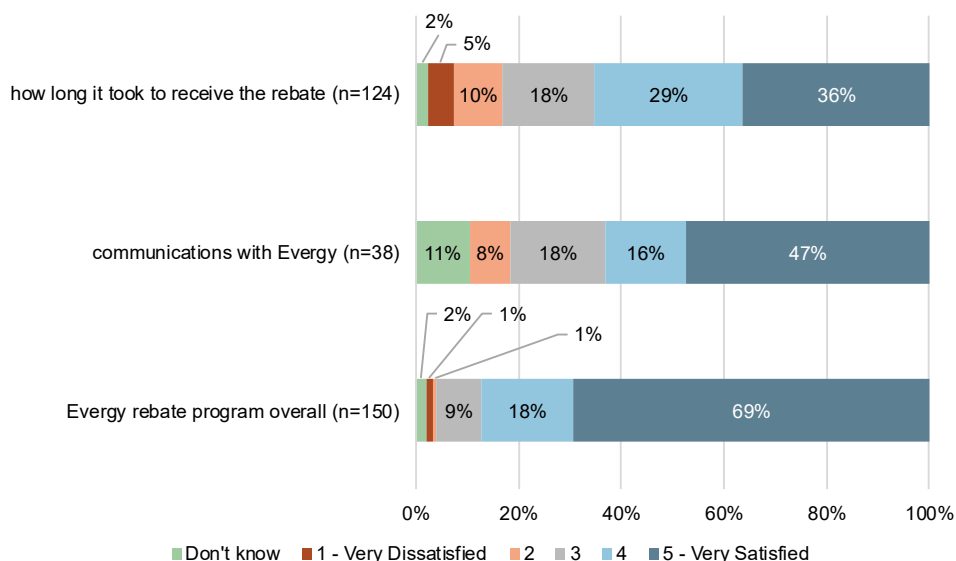
Whole Home Efficiency Program participants were satisfied with the program overall and with various aspects of their experience with Evergy. Most participants were satisfied with their program experience (see Figure A-7). Forty-eight percent said they had recommended the program to someone else and of those who had not recommended the

³⁶ Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).

³⁷ Four percent of respondents provided a rating of 3 out of 5. None of the respondents rated their satisfaction lower than a 3 on a from 1 (very dissatisfied) to 5 (very satisfied).

program, 77 percent said they would recommend it.³⁸ Further, when asked what they would change about the program, about half of participant survey respondents said they either would not change anything (47 percent) or did not know what they would change (3 percent).

Figure A-7: Whole Home Efficiency Participant Satisfaction



The most common reason for participant dissatisfaction was the amount of time it took to receive the rebate check. Fifteen percent of participant survey respondents shared dissatisfaction with some aspect of their experience and provided write-in comments. Eleven percent of write-in comments indicated dissatisfaction was the wait time to receive rebate payment. Of the participants that received the rebate as a check in the mail 67 percent estimated that it took 4 weeks or longer to receive it. Table A-25 displays the number of weeks program participants estimated it took to receive their rebate.

Three percent of respondents who indicated dissatisfaction noted communication challenges between themselves, the contractor, and Evergy or program staff. One percent said Evergy staff had not been helpful. One percent noted only that they had experienced challenges installing the program-qualifying equipment. Table A-26 displays customers' recommendations to improve the program.

Program application requirements may be perceived as redundant, burdensome or onerous by contractors. Seven of the 21 contractors that provided feedback or made comments related to the program's paperwork requirements.

³⁸ Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

- Three noted that their company had experienced challenges with “AHRI matchups” or finding qualifying equipment information on the AHRI website.
- Two said that the application’s requirements were redundant. They both noted that equipment model and serial number information were included on project invoices that were required to be uploaded. One specifically noted that name, address, phone number, and customer email is on the terms and conditions sheet that must be turned in with a customer signature, account number, and email.
- One had required program staff support to submit an application.
- One voiced interest in being able to make changes to existing applications.
- One requested indicated interest in only requiring a single submission for projects with multiple furnaces at a single property.
- One noted that customers with multiple adults in their household may not provide the correct electric account name for jobs and aligning this information is often required to complete the application process.

Findings from the contractor survey suggest program start-up may have impacted rebate fulfillment time. Three of the 21 contractors voiced dissatisfaction with the amount of time it took the program to issue rebate checks. One noted that during first two to three months of the program they had customers calling to inquire about the status of their rebate checks, but at the time of the survey it seemed as if the issue had largely been resolved and checks were more regularly being sent out to customers. However, they noted that multiple customers that had jobs completed in October were still awaiting rebate payment in December 2024.

Table A-25: Length of Time to Receive Rebate for Whole Home Efficiency Participants

Source	Count (n = 124)
Less than 2 weeks	2%
2 weeks to less than 3 weeks	6%
3 weeks to less than 4 weeks	17%
4 weeks to less than 5 weeks	12%
5 weeks to less than 6 weeks	14%
6 weeks or more	41%
Don't Know	9%

Table A-26: Whole Home Efficiency Respondent Recommendations to Improve Program³⁹

Question	Percentage (n=150)
Prompted Responses – Select All That Apply	
Speed up rebate payment time	27%
Increase rebate amount	23%
Increase variety of products with rebates available	15%
Everygy could provide more info about how much I will save by installing qualifying equipment	15%
Everygy should improve program marketing	13%
Improve the program application process	2%
Unprompted Responses – Open-end or “Other” Recommendations	
Allow customers to apply for rebates themselves	1%
Provide rebate as a bill credit or refund	1%
Improve ease of navigating list of contractors available to perform the energy audit	1%
Ensure customer is informed of correct rebate amount	1%

Program staff provide satisfactory support for contractors. Twenty of the 21 contractors that provided feedback were satisfied with the support from program staff.⁴⁰ Of the 16 that received program training in 2024, 15 said it was helpful. The contractor that indicated

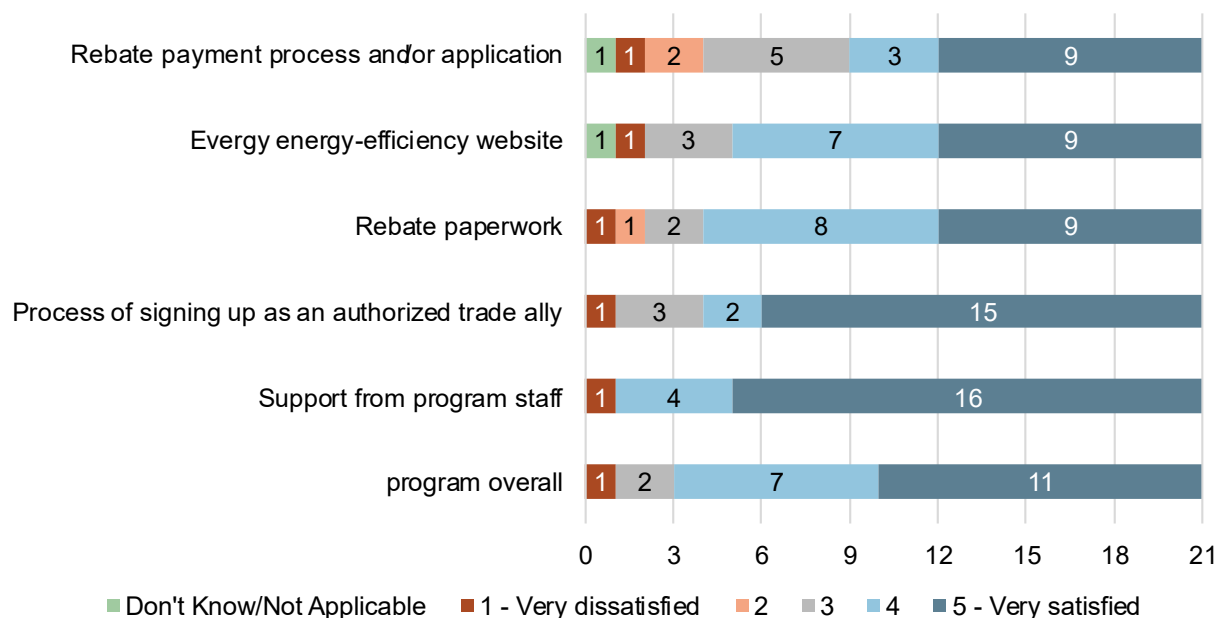
³⁹ Respondents could provide more than one recommendation. Percentages represent portion of all survey respondents that provided a recommendation.

⁴⁰ Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).

dissatisfaction with the support also rated the training as not at all helpful. When asked to elaborate, this contractor only noted that the program had burdensome requirements and was difficult for employees and customers. They stated it was confusing, hard to apply for, and had stringent requirements.

Most contractors indicated they were satisfied with the program overall and with the various rated aspects of the program. Satisfaction ratings suggested that the contractors were largely satisfied with their experiences with the program, though there are opportunities to improve, especially with regard to the rebate payment process and/or application. Figure A-8 displays contractor satisfaction.

Figure A-8: Contractor Satisfaction



A.8.8 Barriers to Program Participation

Findings from the contractor survey suggest the availability of qualifying equipment may be an exterior barrier to program success. Two contractors said that some customers may opt for non-qualifying equipment because qualifying equipment may not be available or have long lead times. One of these contractors said they are unable to find qualifying equipment that meets AHRI guidelines for the program based on its size and type at about 25 percent of their jobs. A third contractor indicated that though equipment availability was not an issue that had affected their participation yet, they noted that the availability of equipment may impact their company's ability or interest in participating in the future.

Contractors cited cost as the primary barrier to greater adoption of energy efficient equipment. Fifteen contractors said that customers may opt for lower efficiency equipment because the rebate does not cover enough to offset the upfront cost of

qualifying equipment. Two contractors also noted that the cost of labor to install qualifying equipment was a barrier and one noted that customers may not believe the return on investment for qualifying equipment justifies its higher cost, compared to non-qualifying equipment.

Four contractors called on the program to increase rebates. One noted that upfront costs may be more challenging for customers in Topeka as they have lower incomes. One contractor provided specific feedback related to rebate levels:

- Provide rebate for the required test-out procedure. The \$250 energy audit rebate is appreciated but does not account for a second trip for test-out procedure. A second rebate for the test-out visit of \$150 would offset contractors' cost for this requirement.
- Incorporate a sliding scale for air and duct sealing improvements. The 20 percent improvement requirement is challenging to reach. Homes that achieve a close-to but below 20 percent improvement would benefit from a sliding scale.
- Increase rim joist rebate. The \$50 rebate for rim joists was noted as too low.
- Adjust insulation rebate for cases where old insulation must be removed. Pest infestation may require old attic insulation to be removed; the current rebate to add more insulation back only helps if you started at R30 or worse.

A.9 Conclusions and Recommendations

The following summarizes the key findings of the process evaluation of the Whole Home Efficiency program.

- **Conclusion: In PY1, the WHE Program achieved 3,346,139 kWh and 2,195.49 kW savings with a 54 percent and 48 percent realization rate, respectively.** The primary realization rate factors were errors in reported savings calculations from deemed values in the KS Evergy TRM, potential incorrect designation of early replacement units, and undetermined increased usage in the post-period by participants.
- **Conclusion: Contractors are driving awareness of the Whole Home Efficiency program.** All contractors that provided feedback to the survey said they are promoting or marketing the program to Evergy customers; most participant survey respondents said they learned about the program from contractors. The primary method contractors use to inform customers is word-of-mouth during sales visits, on sales calls, or during the proposal process. Of program participants that purchased a rebated program measure, 89 percent said they learned about the program from a contractor.

- **Conclusion: Contractors perceive there to be low but growing program awareness.** Fourteen of the contractors that responded to the survey said that 50 percent or less of their customers knew about the program before they told them about it in the past 12 months. Four said that more than half of their customers knew about the program before they told them about it. The other three did not know or could not estimate the portion of customers that knew about it before they informed them.
- **Conclusion: Program paperwork requirements may be perceived as redundant, burdensome or onerous by contractors.** Feedback included challenges with “AHRI matchups” or finding qualifying equipment information on the AHRI website and frustration with redundancy of application requirements.
- **Conclusion: There may be opportunities to improve contractors’ experience with the application process and better enable participation.** Contractor recommendations included allowing changes to existing applications and only requiring a single application for projects with multiple furnaces at a single property.
- **Conclusion: Participants rated contractors as professional, knowledgeable, and generally able to make the rebate process easy to understand.** Ninety-six percent of respondents were satisfied with their experience with the contractor that assisted them with the program.⁴¹ Figure A-6 displays customer agreement with four statements about their experience with the contractor that assisted them with their program participation. The survey collected responses from participants that were served by 58 different contractors. ADM attempted to investigate participants’ experience with different contractors. However, since each contractor had too few survey respondents, we could not make meaningful conclusions about customer satisfaction and experience.
- **Conclusion: Whole Home Efficiency Program participants were satisfied with the program overall and experience with Evergy.** Most participants were satisfied with their program experience. Forty-eight percent said they had recommended the program to someone else and of those who had not recommended the program, 77 percent said they would recommend it.⁴² Further, when asked what they would change about the program, half of participant survey respondents said they either would not change anything (47 percent) or did not know what they would change.

⁴¹ Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).

⁴² Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

- **Conclusion: The most common reason for participant dissatisfaction was the time it took to receive the rebate check; some evidence from the contractor survey suggested program start-up may have impacted rebate fulfillment time.** Eleven percent of write-in comments indicated dissatisfaction was the wait time to receive rebate payment. Of the participants that received Three of the 21 contractors voiced dissatisfaction with the amount of time it took the program to issue rebate checks. One noted that during first two to three months of the program they had customers calling to inquire about the status of their rebate checks, but at the time of the survey it seemed as if the issue had largely been resolved and checks were more regularly being sent out to customers.
- **Conclusion: Program participation has skewed toward higher-income customers; cost is a significant barrier to high efficiency equipment adoption and qualifying improvements, particularly for lower-income customers.** Fifteen of the 21 contractors that provided feedback cited upfront costs as the primary barrier to the adoption of efficient equipment, even with current rebate levels. One contractor specifically noted that Topeka customers face greater cost challenges due to lower incomes.
- **Conclusion: Equipment availability may be a barrier to program success for some contractors.** Two contractors indicated that qualifying equipment may sometimes be unavailable or have long lead times. One contractor estimated that customers' equipment choices at about 25 percent of jobs were affected by equipment availability.

The following recommendations are offered for continued improvement of the Whole Home Efficiency Program:⁴³

- **Recommendation: Utilize the per home and per ton savings determined from the usage analysis for reported savings.** ADM found that real world savings do not align with TRM deemed values for all measures in the program. Updating the KS Evergy TRM to utilize per home and per ton savings determined from this evaluation would better represent actual savings of participants in the program.
- **Recommendation: Investigate how early replacement designations for HVAC units are being determined.** The usage analysis did not find a significant difference between units classified as time of sale and early replacement. On average, early replacement units using TRM algorithms claim nearly 4 times the savings of time of sale units. This could indicate either incorrect designation of early replacement units or that TRM algorithms for these units do not align with real world savings.

⁴³ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

- **Recommendation: Thoroughly QC tracking data for errors in quantities, reported savings and measure designation.** There were numerous errors in the tracking data, including line-items with no reported savings and deemed savings being multiplied by the wrong value. A thorough QC of the tracking data would catch these errors before submission of the data for evaluation.
- **Recommendation: Record the temperature setpoint for backup heating before and after heat pump units are installed for homes with primary gas heating.** ADM found an increase in consumption in the heating season post-installation for heat pumps in homes with primary gas heating. This could be due to a change in the temperature setpoint for backup heating during installation of the heat pump.
- **Recommendation: Consider updates to the application requirements to further ease the contractor participation process.** Reviewing application requirements to reduce redundant input requirements and minimize opportunities for contractor input errors may ease the participation process and increase contractor satisfaction and engagement. Providing an in-application dropdown or other method to input equipment AHRI numbers could alleviate some of the administrative burden for contractors.
- **Recommendation: Continue to work to ensure timely rebate check disbursement and communicate expected fulfillment times to customers and contractors.** The most frequently cited source of dissatisfaction in the participant survey was the wait time to receive the rebate check. A portion of contractor survey respondents also noted the issue as a potential area for improvement (3 of 21 contractor survey respondents expressed dissatisfaction with this aspect of their experience). This may suggest that there is an opportunity to explore ways to improve the rebate processing timeline.
- **Recommendation: Evaluate implementing an income-qualified component, tiered rebate structure, or on-bill financing to improve program accessibility.** The program could consider offering enhanced rebates for income-qualified customers to address the upfront cost barrier while maintaining standard rebate levels for other participants. This could include an integration with the Hard-to-Reach homes program and exploring the potential for on-bill financing for qualified customers. ADM acknowledges the Hard-to-Reach Homes Program is designed to target these customers; however, the range of measures provided through that program does not currently include heating and cooling equipment.

Appendix B Hard-to-Reach Homes Program-Specific Methodologies and Results

This appendix describes the evaluation activities that were performed by ADM to evaluate the Home-to-Reach Homes Program.

B.1 Program Overview

The Hard-to-Reach Homes Program provides home upgrades for multi-family residences, weatherization home upgrades, foodbank giveaways, energy assessments and energy savings kits for income eligible customers. In PY1, the Hard-to-Reach Homes Program included four components: Community Energy Efficiency Kits, No Cost Energy Assessments and Free Energy Savings Kits, Income Eligible Multi-Family, and Weatherization Assistance. The following is a brief description of each program component of the Hard-to-Reach Homes program.

- **Community Energy Efficiency Kits:** This component includes Energy Savings Kits provided for free at local Kansas food pantries/banks and through Wichita Connect and local community events.
- **No Cost Energy Assessment and Free Energy Savings Kits:** Offers income-eligible customers an Energy Assessment that includes the direct installation of energy-saving measures (kits) at no cost to the customer.
- **Income Eligible Multi-Family:** No cost upgrades for income eligible multi-family units and enhanced rebates for income eligible multi-family common areas.
- **Weatherization Assistance:** Continued support of federal weatherization program delivered and implemented through local agencies such as Kansas Housing Resources Center.

In PY1, the Community Energy Efficiency Kits Program component ran through both Kansas Central and Kansas Metro, while the other subprograms were only run in Kansas Central. Table B-1 shows the measures rebated through each program component.

Table B-1: Program Components and Equipment Offered

Program Component	Measure
Energy Savings Kits	Advanced Power Strips
	Deluxe Window Film Kit
	Faucet Aerators
	LED Bulbs
	Outlet Gaskets
	Switch Insulators
	Weatherization Strips
Community Energy Efficiency Kits	LED Bulbs
	LED Nightlights
Income Eligible Multi-Family	Advanced Power Strips
	Faucet Aerators
	LED Bulbs
	Low Flow Showerhead
	Pipe Insulation
	Smart Thermostats
Weatherization Assistance	Custom Measure

Performance metrics for PY1 are summarized in Table B-2. Gross energy savings achieved 163 percent of the realized verified savings for the total Hard-to-Reach Homes Program in PY1, while gross peak demand reduction achieved 107 percent of the realized verified peak demand.

Table B-2: Performance Metrics – Hard-to-Reach Homes Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants/Kits*	18,283	15,893	2,390
Energy Impacts (kWh)			
Reported Energy Savings	2,477,770	2,143,662	334,107
Gross Verified Energy Savings	3,971,299	3,491,415	479,883
Net Verified Peak Demand Reduction	3,971,299	3,491,415	479,883
Peak Demand Impacts (kW)			
Reported Peak Demand Reduction	1,303.69	1,225.37	78.32
Gross Verified Peak Demand Reduction	1,336.93	1,269.33	67.60
Net Verified Peak Demand Reduction	1,336.93	1,269.33	67.60
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.21	1.26	0.96

*Represents the number of kits distributed in the Community Energy Efficiency program component and the number of unique account numbers in all other program components.

B.2 EM&V Methodology

This section details the impact analysis methodologies that were used to determine verified gross energy impacts for each of the measure categories.

B.2.1 Community Energy Efficiency Kits, Energy Savings Kits, and Income Eligible Multi-Family

ADM primarily relied on the Kansas TRM for algorithms and deemed inputs to calculate measure savings, which includes industry standard algorithms for an engineering review of the program measures. Where possible, program tracking data was also used to supplement the algorithm inputs for efficiency measure values (i.e., SEER, EER, HSPF, R-value, etc.) and inputs based on home demographics (i.e., heating/cooling fuel type, water heating fuel type, square footage, etc.).

B.2.2 Weatherization Assistance

In the evaluation of the Weatherization Assistance Program, energy savings and peak demand reductions were estimated using regression analyses consisting of population-level normalized metered energy consumption (NMEC) in which energy savings were determined using an NMEC approach based on pre- and post-installation AMI data. For this approach, the work effort was divided into the following categories:

- Data preparation and cleaning
- Run regression model to calculate savings

B.2.2.1 Data Preparation

ADM used participant AMI data in the pre-period (before installation of the measure) and in the post-period (after installation of the measure) in a mixed effects panel regression model to predict energy savings.

The following steps were taken to prepare the data:

1. Exclude homes without sufficient pre-period AMI data (minimum of 9 months).
2. Exclude homes without sufficient post-period AMI data (minimum of 6 months).
3. Remove large periods of no consumption (24 hours or more).
4. Exclude homes with consumption data indicating it as an outlier.

ADM examined data for outliers using multiple accepted identification techniques, including simple Z-scores, the Bonferroni Outlier Test, and the Grubbs Test for Outliers (G-test).

B.2.2.2 Linear Regression

ADM used a mixed-effect model specification containing customer-specific dummy variables to account for exogenous heterogeneity that cannot be explicitly controlled for and is not relevant to the estimation of program savings. The specification of customer-specific effects allows the model to capture the baseline differences across customers while obtaining reliable estimates of the impact of the program.

ADM included independent Heating Degree Hours (HDH) and Cooling Degree Hours (CDH) for weather control to improve model confidence. ADM then fit the mixed effect panel regression model to estimate weather-dependent and non-weather dependent hourly consumption differences between the pre- and post-period.

Equation 8-10: Linear Regression Model

$$AHC_{it} = \alpha_0 + \beta_1(Post)_{it} + \beta_2(HDH)_{it} + \beta_3(CDH)_{it} + \beta_4(Post \times HDH)_{it} + \beta_5(Post \times CDH)_{it} + \varepsilon_{it}$$

Where:

AHC_{it} = Estimated average hourly consumption (dependent variable) in home i during period t

$Post_{it}$ = Dummy variable indicating whether period t was in pre- or post- retrofit

HDH_{it} = Average heating degree hours during period t at home i

CDH_{it} = Average cooling degree hours during period t at home i

ε_{it} = Customer-level random error

α_0 = The model intercept for home i

β_{1-5} = Coefficients determined via regression

The coefficient β_1 represents the average change in hourly non-weather-related consumption between the pre- and post-period. The coefficients β_4 and β_5 represent the average change in hourly weather-related consumption between the pre- and post-period. If coefficients β_1 , β_4 , and β_5 are negative and statistically significant ($p < 0.05$), this indicates non-weather-related and weather-related energy savings in the post-installation period. Calculation of annual energy savings using these coefficients is presented below. HDH and CDH were calculated from local weather data using a range of base temperatures (e.g., 55-degree temperature base for heating and 70-degree temperature base for cooling). Optimal CDH and HDH base temperatures were estimated for each site to better quantify how power consumption relates to the weather at each location. The selection of optimal base temperatures was accomplished through conducting regression analyses across a range of base temperatures and selecting those that result in the minimum RMSE.

Table B-3 shows the results from the regression analyses for the Weatherization Assistance Program. Pre-post is the non-weather-related hourly savings in the post-period, CDHx and HDHx are the weather-related savings in the post-period. All coefficients were negative and significant ($p < 0.05$), indicating energy savings in the post-installation period. Normalized root mean squared error (NRMSE) represents the percentage error of predicted to actual values. ADM considered NRMSE of less than 5 percent as a good model fit.

Table B-3: Weatherization Assistance Regression Results

Prepost	Prepost p-value	CDHx	CDHx p-value	HDHx	HDHx p-value	R ²	RMSE	NRMSE (% Error)	Premise Count
-0.04	0.0000	-0.72	0.0000	-0.23	0.0000	0.37	0.80	4.26%	39

B.2.2.3 Energy Savings Calculator

ADM utilized TMYx data to calculate annual savings per customer based on the regression results. The calculation of energy savings used the following methodology:

Equation 8-11: Annual Savings Calculation

$$\text{Annual Savings (kWh)} = \beta_1 \times \text{Hours} + \beta_4 \times \text{TMYx(HDH)} + \beta_5 \times \text{TMYx(CDH)}$$

Where:

β_1 = Average change in hourly non-weather-related consumption between the pre- and post-period

β_4 = Average change in hourly weather-related consumption (HDH) between the pre- and post-period

β_5 = Average change in hourly weather-related consumption (CDH) between the pre- and post-period

Hours = Number of hours in a year (8760)

$TMY_x(HDH)$ = Total hourly heating degree hours based on TMYx data for the period of interest

$TMY_x(CDH)$ = Total hourly cooling degree hours based on TMYx data for the period of interest

For customers excluded from the analysis, either due to insufficient data or having a combination of measures installed, ADM extrapolated the savings results to these customers by taking the average savings per home.

B.2.2.4 Peak Demand Reduction Savings

ADM utilized normalized energy savings curves to determine peak demand reduction savings for each participant. A normalized energy savings curve is comprised of 8,760 hourly fractions summing to exactly 1 (unity).⁴⁴ ADM determines verified annual kWh savings, which is then multiplied by each of the 8,760 hourly fractions to disaggregate the annual kWh into 8,760 hourly kW bins.

Normalized energy savings curves were developed for each measure by summing the TMYx savings estimates for each hour across all customers in the regression analyses and dividing each hour by the total savings. Normalized energy savings curves were developed for each measure in the program.

The normalized energy savings curves were then used to determine the maximum value in July during hour 17, which is the middle of Everygy KS peak demand hours (July, hours 16-18). For customers excluded from the analysis, either due to insufficient data or having a combination of measures installed, ADM extrapolated the savings results to these customers by taking the average savings per home.

⁴⁴ A typical year has 8,760 hours, i.e., 365 days times 24 hours per day equals 8,760 hours (other than Leap Year, which have an additional 24 hours on February 29, or a total of 8,784 hours per Leap Year).

B.3 Impact Evaluation Methodology and Results

This section details the level of program activity for the Hard-to-Reach Home program in PY1 including the gross energy savings and gross demand reduction that resulted from that activity. Table B-4 shows the overall program level savings by jurisdiction. The following subsections provide the results broken out by program component. Table B-5 shows the lifetime energy savings.

Table B-4: Measure-Level Energy Savings (kWh) and Demand Reduction (kW)

Jurisdiction	Measure	RP at 90% CL*	Reported Energy (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Reported Demand Reduction (kW)	Verified Demand (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	Advanced Power Strips	0.0%	66,469	67,156	67,156.00	67,156.00	7.43	7.67	7.67	7.67	101%	101%	101%	103%	103%	103%
	Deluxe Window Film Kit	0.0%	1,692	56	56.40	56.40	0.00	0.00	0.00	0.00	3%	3%	3%	100%	100%	100%
	Faucet Aerators - Bathroom	0.0%	11,351	20,548	20,548.13	20,548.13	14.87	3.66	3.66	3.66	181%	181%	181%	25%	25%	25%
	Faucet Aerators - Kitchen	0.0%	40,633	20,892	20,892.12	20,892.12	9.72	3.72	3.72	3.72	51%	51%	51%	38%	38%	38%
	LED Bulbs	0.0%	1,472,905	2,652,460	2,652,459.88	2,652,459.88	304.01	377.64	377.64	377.64	180%	180%	180%	124%	124%	124%
	LED Nightlights	0.0%	196,468	370,233	370,232.66	370,232.66	0.00	0.00	0.00	0.00	188%	188%	188%	100%	100%	100%
	Low Flow Showerhead	0.0%	20,747	66,154	66,153.61	66,153.61	2.41	19.25	19.25	19.25	319%	319%	319%	799%	799%	799%
	Outlet Gaskets	0.0%	186	60	59.78	59.78	0.00	0.00	0.00	0.00	32%	32%	32%	102%	102%	102%
	Pipe Insulation	0.0%	10,916	13,941	13,941.29	13,941.29	1.40	1.59	1.59	1.59	128%	128%	128%	113%	113%	113%
	Smart Thermostats	0.0%	95,735	95,735	95,734.62	95,734.62	775.20	775.20	775.20	775.20	100%	100%	100%	100%	100%	100%
	Switch Insulators	0.0%	112	36	35.87	35.87	0.00060	0.00061	0.00	0.00	32%	32%	32%	102%	102%	102%
	Weatherization Assistance	10.3%	225,491	184,131	173,169.52	195,093.08	110.32	80.60	75.80	85.40	82%	77%	87%	73%	69%	77%
	Weatherization Strips	0.0%	958	14	13.51	13.51	0.00	0.00	0.00	0.00	1%	1%	1%	100%	100%	100%
Kansas Metro	LED Bulbs	0.0%	207,594	372,852	372,851.82	372,851.82	42.79	53.08	53.08	53.08	180%	180%	180%	124%	124%	124%
	LED Nightlights	0.0%	39,237	73,879	73,878.56	73,878.56	0.00	0.00	0.00	0.00	188%	188%	188%	100%	100%	100%
	Weatherization Assistance	10.3%	87,276	33,153	31,178.06	35,128.11	35.53	14.51	13.65	15.38	38%	40%	42%	41%	38%	43%
Total		0.5%	2,477,770	3,971,299	3,958,361.81	3,984,235.42	1,303.69	1,336.93	1,331.27	1,342.59	160%	160%	161%	103%	102%	103%

Table B-5: Lifetime Energy Savings (kWh)

Measure Name	RP at 90% CL	Energy Savings (kWh)	EUL	Lifetime Energy Savings (kWh)	Lifetime Energy Savings 90% CI (Lower)	Lifetime Energy Savings 90% CI (Upper)
Advanced Power Strips	0.0%	67,156	7	470,092	470,092	470,092
Deluxe Window Film Kit	0.0%	56	10	564	564	564
Faucet Aerators - Bathroom	0.0%	20,548	10	205,481	205,481	205,481
Faucet Aerators - Kitchen	0.0%	20,892	10	208,921	208,921	208,921
LED Bulbs	0.0%	3,025,312	10	30,253,117	30,253,117	30,253,117
LED Nightlights	0.0%	444,111	8	3,552,890	3,552,890	3,552,890
Low Flow Showerhead	0.0%	66,154	10	661,536	661,536	661,536
Outlet Gaskets	0.0%	60	15	897	897	897
Pipe Insulation	0.0%	13,941	15	209,119	209,119	209,119
Smart Thermostats	0.0%	95,735	11	1,053,081	1,053,081	1,053,081
Switch Insulators	0.0%	36	15	538	538	538
Weatherization Assistance	10.3%	217,284	0	0	0	0
Weatherization Strips	0.0%	14	25	338	338	338
Total	0.5%	3,971,299	-	36,616,574	36,439,382	36,793,766

* Weatherization assistance does not have an EUL as savings were calculated per home and not per measure

B.3.1 Community Energy Efficiency Kits

B.3.1.1 Program Activity

The Community Energy Efficiency Kits Program provided 18,176 Evergy customers with energy-saving measures in PY1. Final energy savings were based on a total of 87,417 measures. The measure quantities and reported energy and demand savings from all projects are outlined by jurisdiction in Table B-6.

Table B-6: Community Energy Efficiency Kits Measure Quantity and Reported Impacts Per Jurisdiction

Jurisdiction	Measure Type	Measure Quantity	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)
KS Central	LED Bulbs	63,640	1,388,959	286.71
	LED Nightlights	11,902	196,451	0.00
KS Metro	LED Bulbs	9,500	207,677	42.81
	LED Nightlights	2,375	39,254	0.00
Total		87,417	1,832,341	329.51

B.3.1.2 Gross Energy Savings and Demand Reduction

Based on the impact evaluation results, the total verified gross savings for the Community Energy Efficiency Kits Program component in PY1 are 3,314,678 kWh, which resulted in a realization rate of 181 percent and 408.69 kW, which resulted in a realization rate of 124 percent. Table B-7 presents the gross verified energy and demand reduction and realization rates by measure.

Table B-7: Community Energy Efficiency Kits Measure-Level Energy Savings (kWh) and Demand Reduction (kW)

Jurisdiction	Measure	RP at 90% CL	Reported Energy (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	LED Bulbs	0.0%	1,389,042	2,497,715	2,497,715	2,497,715	286.73	355.61	355.61	355.61	180%	180%	180%	124%	124%	124%
	LED Nightlights	0.0%	196,468	370,233	370,233	370,233	0.00	0.00	0.00	0.00	188%	188%	188%	100%	100%	100%
	Subtotal	0.0%	1,585,509	2,867,947	2,867,947	2,867,947	286.73	355.61	355.61	355.61	181%	181%	181%	124%	124%	124%
KS Metro	LED Bulbs	0.0%	207,594	372,852	372,852	372,852	42.79	53.08	53.08	53.08	180%	180%	180%	124%	124%	124%
	LED Nightlights	0.0%	39,237	73,879	73,879	73,879	0.00	0.00	0.00	0.00	188%	188%	188%	100%	100%	100%
	Subtotal	0.0%	246,831	446,730	446,730	446,730	42.79	53.08	53.08	53.08	181%	181%	181%	124%	124%	124%
Total		0.0%	1,832,341	3,314,678	3,314,678	3,314,678	329.52	408.69	408.69	408.69	181%	181%	181%	124%	124%	124%

The per measure ISR and ISR source are summarized in Table B-8.

Table B-8: Community Energy Efficiency Kits ISRs and ISR Sources

Measure Type	ISR	ISR Source
LED Bulbs	100%	2024 Participant Survey
LED Nightlights	100%	2024 Participant Survey

B.3.1.3 Explanation of Realization Rates

LED Bulbs: The energy savings for LED Bulbs have a realization rate of 180 percent, and the demand savings have a realization rate of 124 percent for both Kansas Central and Kansas Metro. The energy savings realization rate was primarily affected by a difference in Hours of Use applied between reported and verified gross savings. Reported savings were calculated using the Hours of Use provided in the Illinois TRM, which is the source of KS Evergy TRM. ADM used the higher Hours of Use, provided in the MO Evergy TRM.

Realization rates were also raised slightly by the ISR. While the reported savings used the TRM-provided ISR, ADM collected survey data to determine the ISR. Survey results found a 100 percent ISR, increasing savings compared to the 94.5 percent ISR in the KS Evergy TRM.

LED Nightlights: The energy savings for LED Nightlights have a realization rate of 188 percent, and the demand savings have a realization rate of 100 percent for both Kansas Central and Kansas Metro. ADM was unable to determine the cause for discrepancies between reported and verified gross savings for this measure as the calculations used in reported savings were not provided and the KS Evergy TRM contains limited inputs used in the engineering algorithms.

B.3.1.4 Ongoing Activities to Mitigate Realization Rate Issues

Realization rates for the Community Energy Efficiency Kits program were driven by errors and outdated values in the TRM calculations of savings. To mitigate issues with realization rates in PY2, ADM and Evergy will be updating errors and outdated values in the TRM.

B.3.2 No Cost Energy Assessment and Free Energy Savings Kits

B.3.2.1 Program Activity

The No Cost Energy Assessment and Free Energy Savings Kits Program installed kits in the homes of six Evergy customers in PY1. All kits were installed in the Kansas Central jurisdiction. Final energy savings were based on a total of 131 energy savings measures.

The measure quantities and reported energy and demand savings from all projects are outlined in Table B-9.

Table B-9: Energy Savings Kits Measure Quantity and Reported Impacts per Jurisdiction

Jurisdiction	Measure Type	Measure Quantity	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)
KS Central	Advanced Power Strips	6	611.67	0.0684
	Deluxe Window Film Kit	60	1692.00	0.0000
	Faucet Aerators - Bathroom	3	56.57	0.0741
	LED Bulbs	20	436.67	0.0900
	Outlet Gaskets	20	186.45	0.0010
	Switch Insulators	12	111.87	0.0006
	Weatherization Strips	10	957.78	0.0000
Total		131	4,053	0.23

B.3.2.2 Gross Energy Savings and Demand Reduction

Based on the impact evaluation results, the total verified gross savings for the No Cost Energy Assessment and Free Energy Savings Kits Program component in PY1 are 1,569 kWh, which resulted in a realization rate of 39 percent and 0.19 kW, which resulted in a realization rate of 80 percent. Table B-10 presents the gross verified energy and demand reduction and realization rates by measure.

Table B-10: Energy Savings Kits Measure-Level Energy Savings (kWh) and Demand Reduction (kW)

Jurisdiction	Measure	RP at 90% CL	Reported Energy (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	Advanced Power Strips	0.0%	612	618	618	618	0.07	0.07	0	0	101%	101%	101%	103%	103%	103%
	Deluxe Window Film Kit	0.0%	1,692	56	56	56	0.00	0.00	0	0	3%	3%	3%	100%	100%	100%
	Faucet Aerators - Bathroom	0.0%	57	0	0	0	0.07	0.00	0	0	0%	0%	0%	0%	0%	0%
	LED Bulbs	0.0%	437	785	785	785	0.09	0.11	0	0	180%	180%	180%	124%	124%	124%
	Outlet Gaskets	0.0%	186	60	60	60	0.00	0.00	0	0	32%	32%	32%	102%	102%	102%
	Switch Insulators	0.0%	112	36	36	36	0.00	0.00	0	0	32%	32%	32%	102%	102%	102%
	Weatherization Strips	0.0%	958	14	14	14	0.00	0.00	0	0	1%	1%	1%	100%	100%	100%
Totals		0.0%	4,053	1,569	1,569	1,569	0.23	0.19	0	0	39%	39%	39%	80%	80%	80%

The per measure ISR and ISR source are summarized in Table B-11.

Table B-11: Energy Savings Kits ISRs and ISR Sources

Measure Type	ISR	ISR Source
Advanced Power Strips	100%	2024 Participant Survey
Deluxe Window Film Kit	100%	2024 Participant Survey
Faucet Aerators - Bathroom	100%	2024 Participant Survey
LED Bulbs	100%	2024 Participant Survey
Outlet Gaskets	100%	2024 Participant Survey
Switch Insulators	100%	2024 Participant Survey
Weatherization Strips	100%	2024 Participant Survey

B.3.2.3 Explanation of Realization Rates

LED Bulbs: The energy savings for LED Bulbs have a realization rate of 180 percent, and the demand savings have a realization rate of 107 percent. The energy savings realization rate was primarily affected by a difference in Hours of Use applied between reported and verified gross savings. Reported savings were calculated using the Hours of Use provided in the Illinois TRM, which is the source of Evergy's TRM. ADM used the higher Hours of Use, provided in the MO Evergy TRM.

Realization rates were also raised slightly by the ISR. While reported savings used the TRM provided ISR, ADM collected survey data to determine the ISR. Survey results found a 100 percent ISR, increasing savings compared to the 94.5 percent ISR in the TRM.

Advanced Power Strips: The energy savings for Advanced Power Strips have a realization rate of 101 percent, and the demand savings have a realization rate of 103 percent. ADM was unable to determine the cause for discrepancies between reported and verified gross savings for this measure as the calculations used in reported savings were not provided and the KS Evergy TRM contains limited inputs used in the engineering algorithms.

Weatherization Strips: The energy savings for Weatherization Strips have an energy savings realization rate of 1 percent. Evergy did not claim demand reduction savings for this measure, though the TRM did provide an algorithm for calculating demand reduction. The low energy savings realization rate was caused by the reported savings calculation erroneously multiplying the unit savings by the quantity twice.

Switch Insulators: The energy savings for Switch Insulators have a realization rate of 32 percent, and the demand savings have a realization rate of 102 percent. The program tracking data shows that the homes that received this measure all had a gas furnace for

heating; however, reported savings calculations assumed the homes had 100 percent electric heating, greatly inflating energy savings. Because demand savings are based on the cooling energy savings only, this discrepancy did not carry over to the demand savings realization rate.

Faucet Aerators: The energy savings and demand savings for Faucet Aerators have a realization rate of 0 percent in the Energy Savings Kits program component. All three of the Faucet Aerators installed through this program were installed in homes with gas water heating. Thus, though reported savings calculations projected electric energy savings for this measure, there were no verified gross energy savings for this program component. At the Hard-to-Reach Homes program level, however, these records had little impact on the overall savings, as the vast majority of Faucet Aerators were rebated through the Income Eligible Multi-Family program component.

Window Film Kits: The energy savings for Window Film Kits have a realization rate of 3 percent, and the demand savings have a realization rate of 100 percent. The significant discrepancy in the energy savings realization rate was caused by the reported savings calculation erroneously multiplying the unit savings by the quantity twice.

Outlet Gaskets: The energy savings for outlet gaskets have a realization rate of 32 percent, and the demand savings have a realization rate of 102 percent. The program tracking data shows that the homes that received this measure all had a gas furnace for heating; however, reported savings calculations assumed the homes had 100 percent electric heating. Since this measure produces more heating savings than cooling savings, the inclusion of the heating savings raised the projected savings significantly, leading to the low realization rate. Because demand savings are based on the cooling energy savings only, this discrepancy did not carry over to the demand savings realization rate.

B.3.2.4 Ongoing Activities to Mitigate Realization Rate Issues

Realization rates for the Energy Savings Kits program were primarily driven by reported savings not accounting for differences in heating and water heating fuel types, as well as errors in the calculation of savings in which deemed values were multiplied by quantity twice. To mitigate issues with realization rates in PY2, ADM and Evergy will be updating the TRM to account for differences heating and water heating fuel types. Additionally, implementation and Evergy should develop a tracking data QC process that catches errors in reported savings estimates.

B.3.3 Income Eligible Multi-Family

B.3.3.1 Program Activity

A total of three Evergy customers participated in the Income Eligible Multi-Family (IEMF) program in PY1. All of the customers fell in Kansas Central's jurisdiction. Final energy

savings were based on a total of 6,902 energy savings measures. The measure quantities and reported energy and demand savings from all projects are outlined in Table B-12.

Table B-12: IEMF Measure Quantity and Reported Impacts per Jurisdiction

Jurisdiction	Measure	Measure Quantity	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)
KS Central	Advanced Power Strips	646	65,857	7.36
	Faucet Aerators - Bathroom	599	11,295	14.80
	Faucet Aerators - Kitchen	589	40,633	9.72
	LED Bulbs	3,821	83,426	17.19
	Low Flow Showerhead	259	20,747	2.41
	Pipe Insulation	342	10,916	1.40
	Smart Thermostats	646	95,735	775.20
Total		6,902	328,609	828.08

B.3.3.2 Gross Energy Savings and Demand Reduction

Based on the impact evaluation results, the total verified gross savings for the IEMF program component in PY1 are 437,768 kWh, which resulted in a realization rate of 133 percent and 832.95 kW, which resulted in a realization rate of 101 percent. Table B-13 presents the gross verified energy and demand reduction and realization rates by measure.

Table B-13: IEMF Measure-Level Energy Savings (kWh) and Demand Reduction (kW)

Jurisdiction	Measure	RP at 90% CL	Reported Energy (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	Advanced Power Strips	0	65,857	66,538	66,538	66,538	7.36	7.60	8	8	101%	101%	101%	103%	103%	103%
	Faucet Aerators - Bathroom	0	11,295	20,548	20,548	20,548	14.80	3.66	4	4	182%	182%	182%	25%	25%	25%
	Faucet Aerators - Kitchen	0	40,633	20,892	20,892	20,892	9.72	3.72	4	4	51%	51%	51%	38%	38%	38%
	LED Bulbs	0	83,426	153,960	153,960	153,960	17.19	21.92	22	22	185%	185%	185%	127%	127%	127%
	Low Flow Showerhead	0	20,747	66,154	66,154	66,154	2.41	19.25	19	19	319%	319%	319%	799%	799%	799%
	Pipe Insulation	0	10,916	13,941	13,941	13,941	1.40	1.59	2	2	128%	128%	128%	113%	113%	113%
	Smart Thermostats	0	95,735	95,735	95,735	95,735	775.20	775.20	775	775	100%	100%	100%	100%	100%	100%
Totals		0	328,609	437,768	437,768	437,768	828.08	832.94	833	833	133%	133%	133%	101%	101%	101%

The per measure ISR and ISR source are summarized in Table B-14.

Table B-14: IEMF ISRs and ISR Sources

Measure Type	ISR	ISR Source
Advanced Power Strips	100%	2024 Participant Survey
Faucet Aerators - Bathroom	100%	2024 Participant Survey
Faucet Aerators - Kitchen	100%	2024 Participant Survey
LED Bulbs	100%	2024 Participant Survey
Low Flow Showerhead	100%	2024 Participant Survey
Pipe Insulation	100%	2024 Participant Survey
Smart Thermostats	100%	2024 Participant Survey

B.3.3.3 Explanation of Realization Rates

LED Bulbs: The energy savings for LED Bulbs have a realization rate of 185 percent, and the demand savings have a realization rate of 127 percent. The energy savings realization rate was primarily affected by a difference in the Hours of Use applied by reported and verified gross savings. Reported savings were calculated using the Hours of Use provided in the Illinois TRM, which is the source of KS Evergy's TRM. ADM used the higher Hours of Use, provided in the MO Evergy TRM.

Realization rates were also raised slightly by the ISR. While reported savings used the TRM-provided ISR, ADM collected survey data to determine the ISR. Survey results found a 100 percent ISR, increasing savings compared to the 94.5 percent ISR in the TRM.

Advanced Power Strips: The energy savings for Advanced Power Strips have a realization rate of 101 percent, and the demand savings have a realization rate of 103 percent. ADM was unable to determine the cause for discrepancies between reported and verified gross savings for this measure as the calculations used in reported savings were not provided and the KS Evergy TRM contains limited inputs used in the engineering algorithms.

Faucet Aerators - Bathroom: The energy savings for faucet aerators (bathroom) have a realization rate of 182 percent, and the demand savings have a realization rate of 25 percent. Reported savings for this measure were deemed, based on the TRM algorithm, assuming installation in a single-family home. ADM used the TRM algorithm to calculate energy but used the algorithm inputs for a multi-family home, since all of the homes in this subprogram were multi-family. Demand savings were calculated using energy savings curves developed for this measure

Faucet Aerators - Kitchen: The energy savings for faucet aerators (kitchen) have a realization rate of 51 percent, and the demand savings have a realization rate of 38 percent. As with the bathroom-installed faucet aerators, the reported savings used the deemed savings value from the TRM, based on installation in a single-family home. This effect would have raised realization rates for this installation type too; however, a discrepancy in the efficient aerators' flow rate lowered realization rates substantially. The reported savings calculation assumed the new faucet aerators have a one gallon per minute (GPM) flow rate, while ADM used a 1.5 GPM flow rate for the efficient faucet aerator.

Low Flow Showerheads: The energy savings for Showerheads have a realization rate of 319 percent, and the demand savings have a realization rate of 799 percent. The main driver of the high realization rate is the difference in the flow rate assigned by reported and verified gross savings calculations. Reported savings assumed that the new showerhead has a two GPM flow rate. This was contradicted by the tracking data, which showed the showerheads installed by this program all had a 1.5 GPM flow rate. Realization rates were also raised slightly by the ISR. ADM used survey data to determine the ISR, which was 100 percent, while reported savings used the 97 percent ISR provided in the TRM.

Pipe Insulation: The energy savings for Pipe Insulation have a realization rate of 128 percent, and the demand savings have a realization rate of 113 percent. The main driver of the high realization rate is due to outdated values used in the calculation of reported savings.

Smart Thermostats: The energy savings for Smart thermostats have a realization rate of 100 percent, and the demand savings have a realization rate of 100 percent. These thermostats were installed in late December 2024, which did not allow for a usage analysis for this measure due to limited post-installation data. Reported savings were based on a historical usage regression analysis. ADM benchmarked these values and found them to be reasonable estimates. ADM will include these buildings in a usage analysis in PY2 to confirm savings estimates.

B.3.3.4 Explanation of Realization Rates

Realization rates for the Income Eligible Multifamily program were primarily driven by outdated values in the TRM. To mitigate issues with realization rates in PY2, ADM and Evergy will be updating the outdated values in the TRM.

B.3.4 Weatherization Assistance

B.3.4.1 Program Activity

The Weatherization Assistance program had a total of 98 projects completed in PY1. The reported energy and demand savings from all projects are outlined in Table B-15.

Table B-15: Weatherization Assistance Measure Quantity and Reported Impacts per Jurisdiction

Jurisdiction	Number of Projects	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)
KS Central	83	225,491	110.32
KS Metro	15	87,276	35.53
Total	98	312,767	145.85

B.3.4.2 Gross Energy Savings and Demand Reduction

Based on the impact evaluation results, the total verified gross savings for the Weatherization Assistance program component in PY1 are 217,284 kWh, which resulted in a realization rate of 69 percent and 95.11 kW, which resulted in a realization rate of 65 percent. Table B-16 presents the gross verified energy and demand reduction and realization rates by measure.

Table B-16: Weatherization Assistance Measure-Level Energy Savings (kWh) and Demand Reduction (kW)

Jurisdiction	Measure	RP at 90% CL	Reported Energy (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	RR _{kWh}	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	RR _{kW}	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	All Measures	10.3%	225,491	184,131	173,170	195,093	110.32	80.60	75.80	85.40	82%	77%	87%	73%	69%	77%
Kansas Metro	All Measures	10.3%	87,276	33,153	31,178	35,128	35.53	14.51	13.65	15.38	38%	36%	40%	41%	38%	43%
Total		8.8%	312,767	217,284	204,348	230,221	145.85	95.11	89.45	100.78	69%	65%	74%	65%	61%	69%

B.3.4.3 Explanation of Realization Rates

The realization rates for Weatherization Assistance were based on the usage regression analysis results for the entire program population. Participants in the program were not provided with the same combination of measures, and the measure level information for each project was not provided in the tracking data. Had this information been included in the tracking data, ADM could have provided some insight into the differences in reported and verified gross savings.

B.3.4.4 Ongoing Activities to Mitigate Realization Rate Issues

To mitigate issues with realization rates in PY2, ADM recommends using the per home annual savings (2,217 kWh) determined from the usage analysis. Additionally, ADM has requested that measure-level information be included in the tracking data to provide insight into the differences in reported and verified gross savings in PY2.

B.4 Net Savings Methodology and Results

A deemed net-to-gross ratio of 1.0 was used for qualified customers that participated in the Hard-to-Reach Homes Program, as this is typical practice for income-qualified program evaluations in other jurisdictions.^{45, 46}

B.5 Process Evaluation Methodology

The process evaluation was designed to explore the Hard-to-Reach Homes Program's design, barriers to participation, implementation, and outcomes. To investigate these areas, ADM reviewed program documents, spoke with program staff, and surveyed program participants.

ADM explored general research questions about the Hard-to-Reach Homes Program, as well as questions that are specific to either downstream or online marketplace distribution channels. Process evaluation activities sought to answer the following research questions and offer specific recommendations to support program improvements.

⁴⁵ Violette, D. M., & Rathbun, P. (2017). Chapter 21: Estimating net savings – Common practices. In The Uniform Methods Project: Methods for determining energy efficiency savings for specific measures (Subcontract Report NREL/SR-7A40-68578). National Renewable Energy Laboratory (NREL). <https://www.nrel.gov/docs/fy18osti/68578.pdf>

⁴⁶ Morris, J. (2019, August 7). Income eligible net-to-gross and the IL-NTG methods [Presentation]. Stakeholder Advisory Group (SAG), Illinois Commerce Commission (ICC).

B.5.1 Program Design and Implementation

ADM used the following questions to guide the design and implementation of the process evaluation documents, interviews, and surveys:

- How well did the program staff, implementation staff, and contractors work together? Are there data tracking and communication efficiencies that can be gained?
- How are the program operations designed for each channel and what are the perceived outcomes – are these being fulfilled as expected? Are there ways to improve the design or implementation process?
- Is there cross-participation between the distribution channels or between the Hard-to-Reach Homes Program and other programs offered by Evergy?
- Are there underlying assumptions about the program design and operation that impact how effective the program is?
- How are customers learning about the available programs? Are the marketing efforts effective and useful or are customers finding out about the program in other ways?
- Are customers learning about the program through contractors directly or from other sources? How are contractors marketing the program? Are there ways to support contractor marketing?
- Were participants satisfied with the rebate amount, the application process (whether through Evergy directly or through their contractor), and the product they installed? What are the causes of dissatisfaction?
- What are participants' experiences like with contractors?
- Were participants satisfied with their interactions with the contractor they worked with? What are the causes of dissatisfaction?
- What are barriers to customer participation from the contractors' perspective?

B.5.2 Implementation and Barriers to Participation

ADM used its interviews with program and implementation staff to explore their roles in marketing, administering, and implementing the program. ADM asked staff to describe their organization's work and investigate barriers to participation in the program with questions such as:

- When customers are not at all interested in participating in the program, what are the reasons? Based on your customer interactions, what do you perceive could bolster the interest of these customers?

- What are the obstacles to getting partially interested customers involved with the program? Are there ways that those obstacles could be mitigated?
- Have there been challenges with marketing?

B.5.3 Outcomes

To understand program outcomes, the Hard-to-Reach Homes participant survey asked customers if they were satisfied with the program and utility service in general. These questions were used to answer research questions such as:

- Were participants satisfied with their experience? What are the causes of dissatisfaction?
- Is the program adequately serving different types of customers (e.g., based on homeownership, income level, education level, geographic area, ethnicity)?
- Looking forward, what are key impediments and drivers to program success?

B.6 Process Evaluation Results

The process-related data collection activities for the Hard-to-Reach Homes Program evaluation included a facilitated discussion with Evergy management and program implementation staff and surveys of Hard-to-Reach Homes participants in the Weatherization, Kits & Assessments, and IEMF channels. The surveys explored the sign-up process, participation experience, decision-making, measures installed, and overall experience.

ADM held two facilitated discussions with Evergy and implementor program staff in January 2025. The calls were held with Evergy and ICF staff. The purpose of these calls was to investigate program design, implementation, barriers to success, and future plans for the program.

The evaluation team conducted a phone interview in January 2025 with a property manager who provided insights for both of the participating IEMF properties from PY1. The property manager indicated the two participating properties were owned and operated by the same organization. They noted that the other contact listed as in program tracking data for the other participating property had departed, but they were able to offer feedback for both sites. They indicated day-to-day maintenance and smaller improvements did not require ownership approval, but larger projects and remodeling decisions required it. IEMF program participation required ownership approval.

ADM reviewed invoice and program tracking data for the Weatherization program. The purpose of the review was to understand the improvements that Evergy had funded through the program and to create a list of improvements received to verify during the

participant survey. Evergy staff provided invoices and program tracking data for the Weatherization program.

ADM conducted a mixed-mode survey of customers who participated in the Weatherization program in February 2025. Tracking data contained contact information and limited participation details; invoices were reviewed to determine measures received through the Weatherization program that were funded by Evergy. All customers with an email address in the tracking data were sent one invite and one reminder. Customers with phone numbers that did not have email addresses (or that had an invalid email) were called two times (one voice mail). Table B-17 displays sampling and recruitment disposition information. There was a combined response rate of 38 percent for the phone and email surveys.

Table B-17: Survey Response Rate Details

Participants	Metric
Initial contact list	53
Invalid email or email address not provided	15
Invalid email (%)	28%
Email invitations sent	38
Email completions	12
Initial phone list	15
Disconnected/wrong number	1
Invalid phone (%)	7%
Phone completions	8
Total completions	20
Response rate (%)	38%

B.6.1 Weatherization Assistance

B.6.1.1 Program Design and Operations

Hard-to-Reach Homes Weatherization Program did not meet its PY1 savings goals, though Evergy staff foresee it meeting its PY2 goals. The program launched in June 2024 and began receiving documentation from completed homes in August 2024. Evergy staff observed that the first five to six months provided time for KHRC, Evergy, and Community Action Agencies (CAAs) to acclimate to the program design and learn how to navigate the program's requirements. They observed that the four CAAs and KHRC were "eager to utilize funding" after working to effectively setup program operations.

Measure level information is included as an attachment for each project but is not included in program tracking data. ADM requested access to measure level information to assist with verification efforts. Evergy staff noted that projects have measure-level documentation uploaded but program tracking data does not contain measure level information.

The invoice review indicated Evergy funds were used to pay for worker rebates as well as a wide array of improvements. Evergy provided ADM with six invoices for the Central region (July – December 2024) and five invoices for the Metro region (August – December 2024). Program invoices had a total of 137 job numbers. Fifty-three job numbers were found in both the tracking data and in the program’s invoices from July to December 2024. Thirty-nine identified rebates that were paid to workers at participating agencies from July to November 2024. Forty-five were associated with weatherization improvements in invoice documentation that were not included in the program tracking data. Table B-18 and Table B-19 provide a summary of the tracking data and invoice review (counts represent unique job numbers).

Table B-18: Weatherization Invoice & Tracking Data Review

Classification	Count of Project Numbers	Percent (n=137)
Worker incentive	39	28%
Weatherization projects included in tracking data	53	39%
Weatherization projects not in tracking data	45	33%
Total unique project numbers	137	100%

Table B-19: Everygy Funded Weatherization Measures⁴⁷

Classification	Count	Percent (n=53)
Insulation (Attic, Sidewall)	43	81%
Air Sealing	37	70%
LED lightbulbs	33	62%
CO2 or Smoke Detector	34	64%
Ventilation	24	45%
Water Heater Insulation (Water Heater Pipe Wrap or Jacket)	15	28%
HVAC System Replacement	13	25%
Lead Safe Work	8	15%
Duct Insulation	8	15%
Sump Pump Cover	3	6%
HVAC Tune Up	2	4%
Windows	1	2%

B.6.1.2 Survey Respondent Characterization

All respondents owned their home and three-quarters lived in a single-family home that used natural gas for heating their home. Table B-20 summarizes basic home characteristic information of the Weatherization survey respondents. The typical respondent also reported living in an older, smaller home alone or with one or two others.^{48, 49, 50}

⁴⁷ Table only includes jobs that were represented by projects in the program's tracking data.

⁴⁸ Seventy-five percent of respondents said their home was less than 2,000 square feet.

⁴⁹ Seventy percent said their house was built before 1980.

⁵⁰ Seventy-five percent said they lived alone or with one or two other people.

Table B-20: Weatherization Assistance Survey Respondent Home Characteristics

Question	Response	Count	Percent
Which of the following best describes your home?	Single-family home	15	75%
	Mobile home or trailer	5	25%
What is the main fuel used to heat your home?	Electricity	3	15%
	Natural gas	15	75%
	Propane	2	10%
What is the main fuel used to heat your water?	Electricity	6	30%
	Natural gas	11	55%
	Propane	2	10%
	Don't Know	1	5%
How large is your home?	Less than 1,000 square feet	5	25%
	1,000-1,999 square feet	10	50%
	2,000-2,999 square feet	3	15%
	Don't Know	2	10%
When was your home built?	Before 1960	10	50%
	1960-1979	4	20%
	1980-1999	4	20%
	2000-2009	1	5%
	2010 or later	1	5%
Including yourself, how many people live at the property that received improvements?	1	9	45%
	2	4	20%
	3	2	10%
	4	1	5%
	5	1	5%
	6 or more	3	15%

All respondents indicated the primary language spoken in their home is English and most said they identify as White. Table B-21 displays respondent demographic characteristics.

Table B-21: Respondent Demographic Characteristics

Question	Response	Count	Percent
What is your age?	Under 35 years old	1	5%
	35-55 years old	6	30%
	Over 55 years old	13	65%
Which of the following racial and ethnic backgrounds best describe you? Please select all that apply.	White	18	90%
	Hispanic or Latino	2	10%
	Prefer not to answer	1	5%
What's the highest level of education you've completed?	Less than high school	1	5%
	High School Graduate/GED	6	30%
	Associate's degree, Vocation/Technical School, Or some college	9	45%
	Four-year college degree	2	10%
	Graduate or professional degree	2	10%

B.6.1.3 Program Awareness, Communication, and Marketing

The two largest sources of program awareness were from friends, relatives, landlords, or colleagues or a community or government agency (see Table B-22). Twenty percent of the respondents did not have concerns before signing up. These respondents noted skepticism or uncertainty about their eligibility, the no-cost nature of the program, as well as the availability of services.

Table B-22: Weatherization Participant Source of Program Awareness

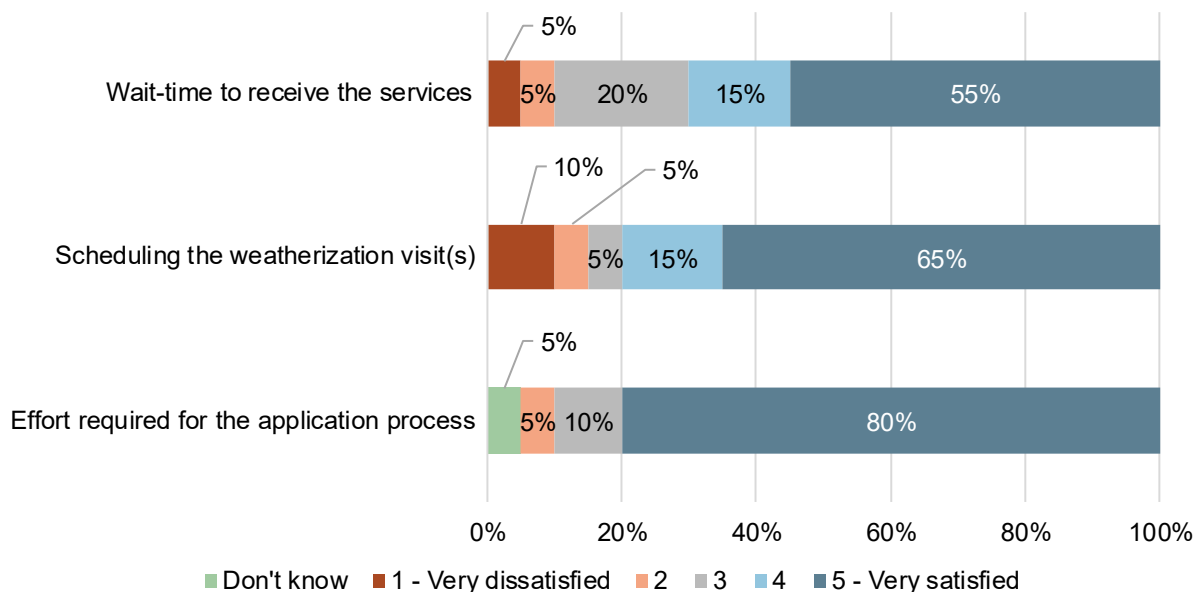
Source	Count	Percent
Non-profit organization or governmental agency	7	35%
Word of mouth from friends, relatives, or colleagues	5	25%
Internet search or advertisement	3	15%
Eversource website	1	5%
Eversource customer service	1	5%
Email from Eversource	1	5%
Contractor	1	5%
Don't know	2	10%

B.6.1.4 Program Participation Experience

Survey findings suggest signing up for the program is easy, though some responses indicate there may be a significant waiting period. Eighty-five percent of survey respondents said signing up for the program was easy.⁵¹ Survey findings indicate that most participants were satisfied with the application process, scheduling, and wait time to receive services (see Figure B-9). Twenty-five percent noted they had experienced a long wait-time to sign-up and participate in the program (e.g., one year or longer).

⁵¹ Rated the ease of signing up a 4 or 5 on a scale from 1 (very difficult) to 5 (very easy). Fifteen percent rated the sign-up process a 2 (5 percent) or 3 (10 percent). These respondents stated that the process was time consuming, the application was long and required income information, and there had been miscommunication about the likelihood of approval.

Figure B-9: Respondents' Satisfaction with the Application and Scheduling Process



Participants generally perceive program participation to have led to an increase in home comfort and reduced bills. ADM inquired with survey-takers regarding how much savings they had noticed on their monthly utility bill since participating in the Weatherization Program (see Figure B-10). Sixty-five respondents indicated significant savings.⁵² Eighty percent of respondents said they had experienced improved comfort since participating in the program (see Figure B-11).⁵³

Customers may not have had sufficient time between their participation and the survey to evaluate savings attributed to the improvements made through the program. Electricity rate adjustments, year-to-year weather variation, and usage changes may also impact whether a customer notices or experiences savings following program participation.

⁵² Provided a rating of 4 (25 percent) or 5 (40 percent) on a scale from 1 (no savings) to 5 (substantial savings).

⁵³ Rated the change in home comfort a 4 (28 percent) or 5 (42 percent) using a scale where 5 means “a substantial improvement” and 1 means “no improvement”. Does not sum to 69 percent due to rounding.

Figure B-10: Respondents' Perceived Savings Since Participating in the Program

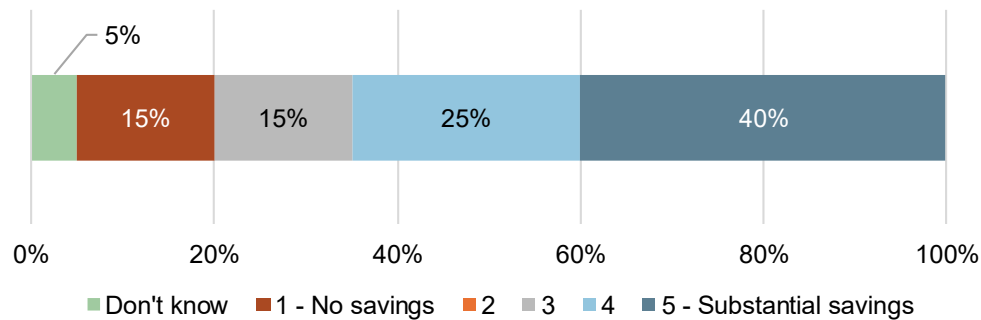
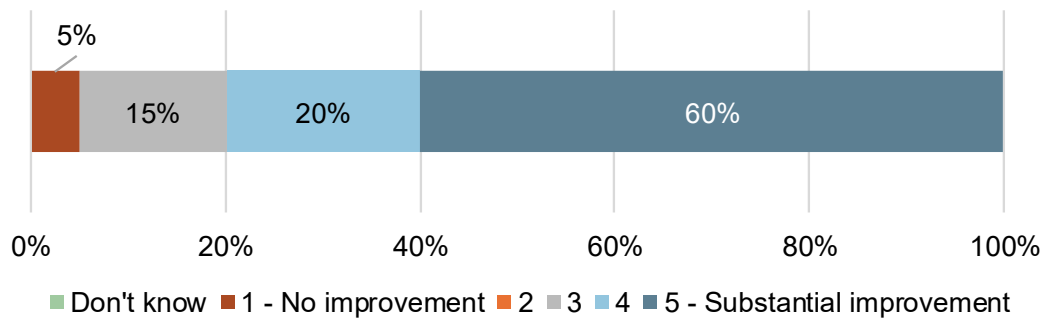


Figure B-11: Respondents' Perceived Improvement in Home Comfort



Survey findings indicate that most participants who receive a summary report find it useful. Of the respondents who confirmed receiving a summary report during their assessment, 77 percent said it was useful (n=13). One respondent noted that the phone number and name of HVAC contractor was written in ink on one of the installed items and preferred to have their contact information provided on a business card or report.

Weatherization staff often promote additional energy-saving actions. Seventy percent of respondents said that the person who completed the home energy assessment talked to them about ways to use less energy in their home and 93 percent of these respondents said that the information they provided was useful (n=14).⁵⁴

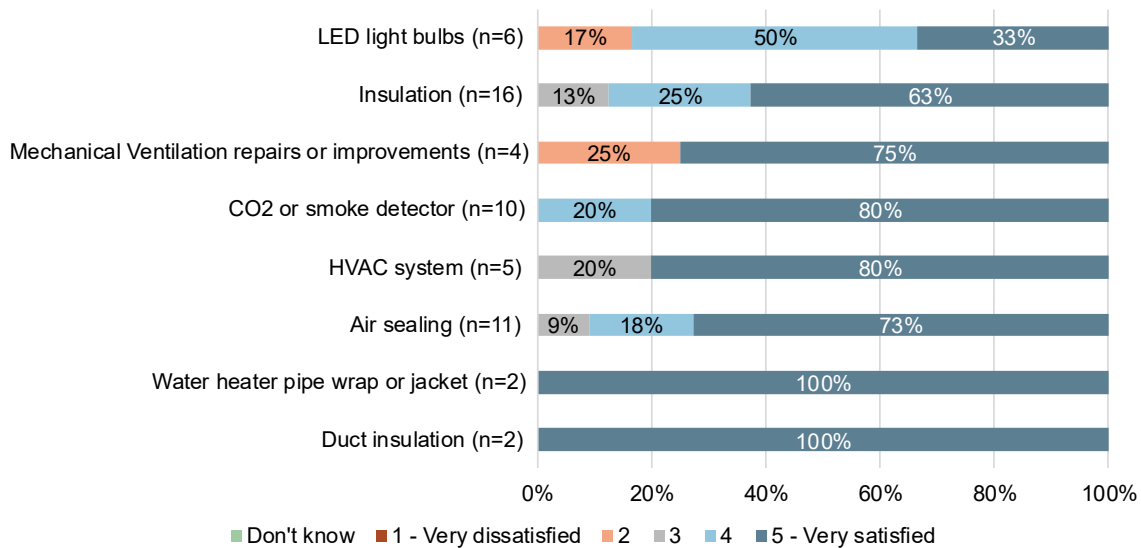
Most survey respondents confirmed invoice project descriptions. However, 25 percent reported not receiving one or more improvements claimed on program invoices.

⁵⁴ Rated the usefulness of the information a 4 or 5 a scale from 1 (not at all useful) to 5 (extremely useful).

B.6.1.5 Customer Satisfaction

Most survey respondents were satisfied with the measures they received through the program (see Figure B-12). Ten percent of the respondents mentioned dissatisfaction with work done to their homes' ducts or ventilation. Five percent were dissatisfied with the LED lightbulbs that were installed.

Figure B-12: Satisfaction with Weatherization Measures

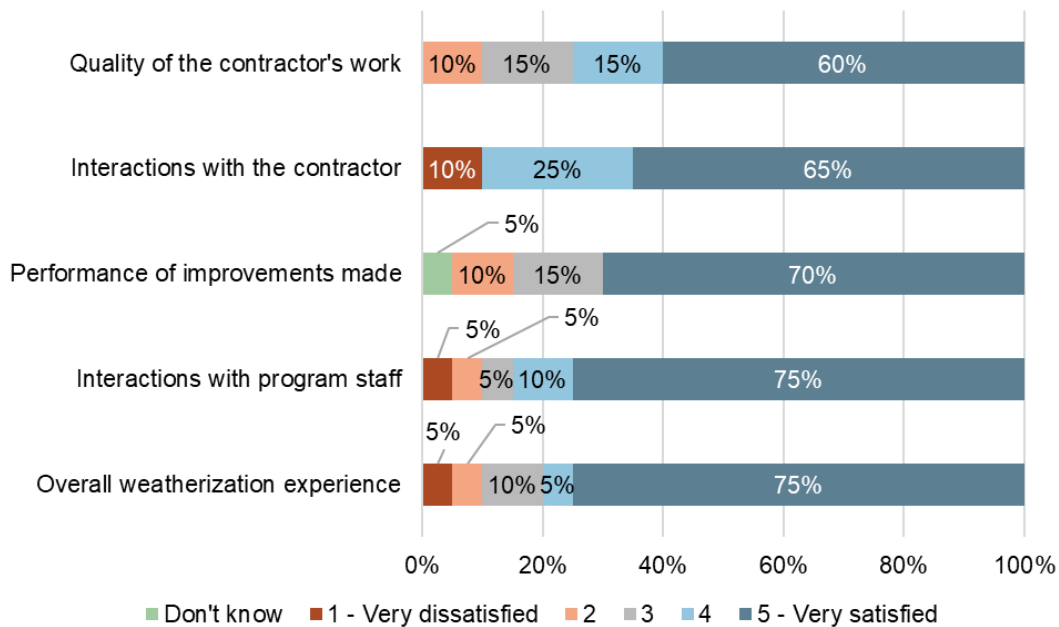


Eighty percent of survey respondents were satisfied with their experience overall.⁵⁵ Most stated they were satisfied with the performance of the improvements, the quality of the contractor's work, and interactions with the contractor and program staff (see Figure B-13). Further, 75 percent of respondents said they had recommended the program to someone else. Of those who had not recommended the program, 40 percent said they would be likely to recommend it (n=5).⁵⁶

⁵⁵ Rated their overall satisfaction with the home weatherization service a 4 (75 percent) or 5 (5 percent).

⁵⁶ Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Figure B-13: Weatherization Participant Satisfaction



Survey feedback suggested most respondents were satisfied with their experience, though over half made comments that suggested opportunities to improve the program.

Sixty percent of respondents provided comments to open-ended questions in the survey that suggested either dissatisfaction with their experience or opportunities to improve the program. Invoices and program tracking data did not provide sufficient information to investigate whether feedback related to the contractor company (ECKAN, NCRPC, SCKEDD).

- Twenty-five percent noted they had experienced a long wait-time to sign up and participate in the program (e.g., one year or longer).
- Twenty-five percent of respondents said they were dissatisfied with the measures received or desired additional improvements.
- Twenty percent mentioned dissatisfaction with the quality or cleanliness of the contractor's work.
- Fifteen percent said that the contractor was unprofessional or were dissatisfied with their interactions with the workers that completed the improvements.
- Fifteen percent mentioned dissatisfaction with the quality or cleanliness of the contractor's work.
- Five percent voiced interest in clearer communication or a better explanation of the improvements completed.

B.6.2 Kits and Assessments

All KEEIA customers are eligible to participate in Energy Savings Kits (ESK), though marketing specifically targets income-eligible customers. This Kits & Assessments offering was promoted with targeted email outreach and at Low Income Energy Assistance Program (LIEAP) events in PY1. Evergy staff noted that the program had targeted the Wichita area in 2024.

The geographic dispersion of KEEIA customers was cited as a barrier to program participation in PY1. Evergy staff noted that all four ESK staff were located in Missouri and related the targeted implementation of the program in the Wichita area to this limitation. There are plans to hire dedicated staff in Kansas for the program in 2025.

The Evergy Connect location in Wichita was noted as part of the program's marketing effort. At the time of the facilitated discussion a dedicated energy efficiency program education staff had recently been hired to work at the Evergy Connect location in Wichita. Evergy staff stated that Evergy customers could visit the Evergy Connect location for assistance with billing and learn more about Evergy's services. Further, they specifically highlighted the potential for staff to connect customers with the ESK offering and for customers to receive energy efficiency kit items at the location.

B.6.3 Income Eligible Multi-Family

B.6.3.1 Program Design

The Income Eligible Multi-Family Program focused on recruitment for direct install measures in PY1 and will seek to engage customers with its custom and deeper retrofit components in future program years. Evergy staff noted that potential participants are identified by implementation contractor and their subcontractor or through contacts made through a similar program being offered to Evergy Missouri customers. Implementation staff noted that their outreach team vets potential participants and once eligibility is determined the program's DBE subcontractor (Aleo Prime) will complete direct install measures. They noted once a customer has completed a program application "it's a matter of weeks to get the direct install." They said that only direct install measures had been completed through the program in its first year and foresaw "building a pipeline" for prescriptive and custom projects in future years as these projects have longer lead times and may require financing to be secured before they proceed. Evergy staff noted that three of the six participants in the direct install portion of the program had been identified as potential participants for deeper retrofit projects.

B.6.3.2 Program Awareness and Participation Process

The two participating properties were recruited by the program's subcontractor. The property manager indicated that they were recruited to participate by Aleo Prime, the subcontractor for the program.

Findings from the survey suggest little is required of property management staff and that the program's subcontractor completes most of the program's paperwork. The property manager reported that the sign-up process was easy for them to understand and that the subcontractor had good knowledge of the sign-up and participation process. The IEMF program requires properties to meet certain income eligibility requirements.

The property manager stated that interest in reducing tenants' utility bills motivated them to sign up for the program. They noted that the participating properties had electric space and water heating and that tenants are responsible for paying utility bills. They indicated they were motivated to sign up for the program to improve tenant comfort, reduce tenant property bills, and reduce property bills.

Most measures included in tracking data were confirmed; however, the participating property manager was unable to confirm the installation of hot water pipe insulation. Following the survey implementation staff confirmed installation of this measure.

Faucet aerators, showerheads, pipe insulation, and LED lightbulbs are installed by the program's subcontractor. Packaged advanced power strip(s) are distributed to tenants for self-installation.

The property manager indicated that measures had been installed in at least 90 percent of the units at both participating properties; they noted that some rooms had not received improvements as they were being worked on at the time of program participation.

The participating property manager was very satisfied with their program experience. The property manager reported that the sign-up and participation process was easy to understand and they were satisfied with the amount of time it took between signing up and the improvements being completed, the program materials, and the program overall. Further, they agreed that the program's subcontractor was professional, had good knowledge of the application process, made the Everygy rebate process easy for them to understand, was timely responding to requests for assistance, and was knowledgeable about the energy efficient equipment they were recommending and installing. They said that they had recommended the program to others.

Participating properties received a verbal summary of improvements received; they did not receive or were unaware of additional suggestions for improvements. The property manager stated that the subcontractor did a pre- and post-inspection of their properties to verify the properties' needs and ensure improvements had been completed appropriately. They noted receiving a verbal summary of the improvements that had been

completed and indicated this was sufficient and were not interested in any further documentation of the improvements completed or potential improvements to improve the efficiency of the properties.

B.6.4 Community Energy Efficiency Kits

Community Energy Efficiency kits were distributed during one community event and in two wide-spread distributions to foodbank, pantry, and nonprofit locations in PY1. All kits contained four A19 LED lightbulbs and one LED nightlight. Kits were distributed directly to participating foodbanks, pantries, and nonprofits at a Convoy of Hope event, as well as provided to customers visiting the Wichita Connect location.

Two distributions were made to an extensive network of foodbanks, pantries, and nonprofits. ADM was provided with a list of agencies that received kits in PY1. The list indicated 14,008 kits were distributed to 85 unique addresses in PY1.⁵⁷ Eighty-four unique email addresses were included in the list.

Participating organizations' limited storage space and holiday availability inhibited the distribution of kits in PY1. Evergy staff noted that 26 of the participating organizations had limited space to store kits and declined a second shipment in December 2024. They noted that these organizations agreed to have the shipment delivered in January 2025. Also a few foodbanks were unable to receive kits as they had been unavailable or hard to reach during the 2024 holiday season.

B.7 Conclusions and Recommendations

The following summarizes the key findings of the evaluation of the Hard-to-Reach Homes Program:

- **Conclusion: In PY1, the HTRH Program achieved 3,861,99 kWh and 563.23 kW savings with a 163 percent and 107 percent realization rate, respectively.** The primary realization rate factors were errors in reported savings calculations from deemed values in the KS Evergy TRM.

⁵⁷ Two kits were distributed to an address associated with the implementation contractor.

- **Conclusion: Hard-to-Reach Homes Weatherization Program did not meet its PY1 savings goals, though Evergy staff foresees it meeting its PY2 goals.** The program launched in June 2024 and began receiving documentation from completed homes in August 2024. Evergy staff observed that the first five to six months provided time for KHRC, Evergy, and CAAs to acclimate to the program design and learn how to navigate the program’s requirements. They observed that the four CAAs and KHRC were “eager to utilize funding” after working to effectively setup program operations.
- **Conclusion: Survey findings suggest there are opportunities to improve the Home Weatherization contractors’ professionalism, work quality, and/or cleanliness.** Twenty percent of respondents mentioned dissatisfaction with the quality or cleanliness of the contractor’s work. Fifteen percent said that the contractor was unprofessional or were dissatisfied with their interactions with the workers that completed the improvements.
- **Conclusion: Weatherization participants generally indicate signing up for the program is easy, though a portion experienced long wait times to receive improvements.** Eighty-five percent of survey respondents said signing up for the program was easy. Survey findings indicate that most participants were satisfied with the application process, scheduling, and wait time to receive services. Twenty-five percent noted they had experienced a long wait-time to sign up and participate in the program (e.g., one year or longer).
- **Conclusion: Most measures included in Income Eligible Multifamily tracking data were confirmed; however, the participating property manager was unable to confirm the installation of hot water pipe insulation.** Following the survey implementation staff confirmed installation of this measure.

The following recommendations are offered for continued improvement of the Hard-to-Reach Homes Program:⁵⁸

- **Recommendation: Update the Kansas Evergy TRM to remove errors and account for differences in fuel types.** Kansas Evergy TRM deemed values are either outdated or were calculated incorrectly, including not accounting for differences in fuel types. ADM was unable to determine the cause of many errors in the TRM due to lack of provided inputs in the calculations. This TRM update process will be completed by the evaluation team during the second quarter of PY2.

⁵⁸ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

- **Recommendation: Thoroughly QC tracking data for errors in quantities, reported savings and measure names.** ADM found errors in the tracking data including no reported savings and deemed savings being multiplied by the wrong column. Additionally, numerous line-items had the measure in the wrong column causing confusion during the evaluation process. A thorough QC of the tracking data would help to catch these errors and allow for consistency in reporting prior to submission of data for evaluation.
- **Recommendation: Ensure participating property managers receive oral or written communication summarizing improvements made to properties.** Findings from the participating property manager survey suggest an opportunity to improve program communication.
- **Recommendation: Provide detailed measure level information for the Weatherization Assistance component of the program.** Measure level information was not provided in the tracking data for Weatherization Assistance Program. Providing this information in the tracking data would allow for a more refined regression analysis and comparison of results with TRM savings estimates. Without this information, ADM is unable to determine the cause of differences between reported and verified gross savings.
- **Recommendation: Increase quality control and feedback mechanisms available to the program.** Third-party verification or internal quality control procedures may benefit from a supplemental feedback mechanism. The addition of measure detail and CAA information to Weatherization program tracking data could enable ADM to administer its customer satisfaction / verification survey more regularly. ADM could follow each round of survey administration with communication to Everygy and/or KHRC containing a summary of satisfaction and list of potentially actionable feedback.
- **Recommendation: Continue to investigate Weatherization participant wait times, quality of service, and communication from staff at participating community action agencies.** Everygy could investigate customers' experiences at the three participating community action agencies and verify customers are receiving adequate communication about wait times, high quality improvements, and professional service. Everygy may also seek to understand demand at each agency and to provide support to KHRC as needed.

- *Evaluability Recommendation:* **Add measure details and community action agency information to Weatherization program tracking data.** Evergy staff provided program invoices to enable ADM to conduct its participant survey; invoices did not contain community action agency classification for all participants. Invoices included information on Evergy-funded improvements. Participating homes often receive non-Evergy-funded improvements in addition to Evergy-funded improvements. Inclusion of information on all measures received at each participating home would assist ADM in its efforts to verify the details of customers' participation experience.

Appendix C Home Energy Education Program-Specific Methodologies and Results

This appendix describes the evaluation activities that were performed by ADM to evaluate the Home Energy Education (HEE) Program. ADM's EM&V methodology for the census of energy savings measures in this program will follow M&V 2.0 and NMEC standards.

C.1 Program Overview

The HEE Program aims to provide energy efficiency by transforming customers' behavior and encouraging them to adopt energy-saving behaviors or install energy efficient equipment. There are three main program components to the HEE Program: marketing for residential education and program promotion and outreach (including community events, rural community engagement, and the Kansas Low Income Leadership in Essential Services (LILIES)), the Home Energy Analysis (HEA) online tool and survey, and the Home Energy Education Report (HEER).

The program consists of two separate measure types: (1) behavioral measures which are intended to directly produce energy savings by directly influencing customers, and (2) market transformation and outreach measures which intend to increase overall knowledge and accessibility to energy savings measures and behaviors. Estimated savings for the HEER over the 2024-2027 program period is approximately 25,282 MWh,⁵⁹ attributed to the HEER behavioral component.

The HEE Program aims to provide energy efficiency by transforming customers' behavior and encouraging them to adopt energy-saving behaviors or install energy efficient equipment. There are six main program components to the HEE Program:

- Marketing for Residential Education,
- Digital Tools (Online Education and Outreach),
- Community Events,
- Rural Community Engagement,
- Kansas LILIES (Low Income Leadership in Essential Services), and
- Home Energy Education Reports (HEER)

Table C-1 provides a summary of program metrics for PY1 for the HEE Program.

⁵⁹ Evergy's Proposed EM&V Methodology pg. 13

Table C-1: Performance Metrics – Home Energy Education Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants*	82,009	57,004	25,005
Energy Savings (kWh)			
Reported Energy Savings	1,655,816	964,244	691,572
Gross Verified Energy Savings	827,689	589,077	238,612
Net Verified Energy Savings	827,689	589,077	238,612
Peak Demand Reduction (kW)			
Reported Peak Demand Reduction	401.80	178.65	223.16
Gross Verified Peak Demand Reduction	297.23	211.54	85.69
Net Verified Peak Demand Reduction	297.23	211.54	85.69
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	5.30	5.06	6.01

*Represents the number of unique account numbers in the program.

This is the first year of the program since its launch at the end of April 2024. The program consists of the first cohort, which is split by jurisdiction waves, Kansas Central and Kansas Metro. Both waves were created using randomized controlled trials (RCT), which randomly assigned a subset of Evergy’s residential customers into a treatment or control group.

Table C-2 summarizes the cohorts implemented in the HEE Program within the Evergy service area. The counts in this table represent the total number of customers active at any point during PY1.

Table C-2: Summary of Evergy Home Energy Education Program Participation

Jurisdiction	Cohort	Treatment Start Date	Number of Treatment Group Customers	Number of Control Group Customers
KS Central	2024	April 2024	57,004	19,876
KS Metro	2024	April 2024	25,005	16,606
Total			82,009	36,482

Although the program currently uses the third-party implementation contractor, Opower, ADM estimated savings for HEE Program using the originally designated control groups developed by Oracle. ADM analyzed each of the cohorts treated during the PY1 using the same methodology. Table C-3 displays the impact evaluation findings for the HEE Program.

Table C-3: Home Energy Education Program Impact Evaluation Results

Jurisdiction	RP_90	Reported kWh Savings (kWh)	Reported Demand Savings (kW)	Verified kWh Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Verified Demand Savings (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Verified kWh Realization Rate	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Verified kW Realization Rate	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	0.7%	964,244	178.65	589,077	584,982	593,172	211.54	210	213	61%	61%	61%	118%	117%	119%
KS Metro	1.0%	691,572	223.16	238,612	236,196	241,028	85.69	85	87	35%	35%	35%	38%	38%	38%
Total	0.6%	1,655,816	401.8	827,689	822,378	833,000	297.23	295.32	299.14	50%	50%	50%	74%	74%	74%

For the HEE Program, the verified savings were found to be 827,689 kWh with an average first-year household savings value of 10.1 kWh. Further impact evaluation results are provided in the sections below.

C.2 EM&V Methodology

This section describes the gross impact evaluation of the HEE Program. Each of the cohorts treated during PY1 was analyzed using the same methodology.

The participant and control group billing data in the pre-period (defined as the period *before* a household starts receiving HEERs) and in the post-period (defined as the period *after* a household starts receiving HEERs that also occurs during PY1) was used to estimate program impact for each cohort. The methods detailed in the Uniform Methods Project (UMP) behavioral chapter by the National Renewable Energy Laboratory⁶⁰ were followed for this evaluation. In addition, the cross-participant savings were estimated from other downstream energy efficiency programs offered to Evergy residential customers.

C.3 Impact Evaluation Methodologies

ADM's analysis was divided into six distinct steps:

1. Data preparation and cleaning, including true-up, calendarization, and combination with weather data;
2. Validity testing of remaining treatment and control groups during the baseline period;
3. Estimation of monthly and annual billed consumption differences between treatment and control groups via regression modeling;
4. Estimation and removal of cross-participant savings from other programs (uplift);
5. Estimation of demand savings; and
6. Exploratory analysis.

ADM explored several linear regression models for the impact evaluation of the behavioral component of the program. Each approach involves panel linear regression models to estimate energy savings for the treatment group. The explored methods required monthly billing data for the program participants and a comparable counterfactual group. In cases where groups did not pass equivalency tests, control groups were reshaped using Propensity Score Matching (PSM) in an attempt to better equate to the treatment group.

⁶⁰ Li, M.; Haeri, H.; Reynolds, A. (2018). The Uniform Methods Project: Methods for Determining Energy-Efficiency Savings for Specific Measures. Golden, CO; National Renewable Energy Laboratory. NREL/SR-7A40-70472. <http://www.nrel.gov/docs/fy18osti/70472.pdf>

The following types of Linear Fixed Effect Regression (LFER) models were explored during the evaluation of this program: Difference in Difference (D-in-D) with weather controls and Post-Program Regression (PPR) models. The UMP recommends both the D-in-D and PPR model regressions. The D-in-D uses data from the treatment and control groups during the pre- and post-period. The PPR model is a panel regression model that calculates the differences between treatment and control consumption in the post-program period. However, it includes summer, winter, and total pre-treatment period energy usage to consider any small systematic differences in pre-treatment usage trends between the participant and control customers.

ADM utilized both the PPR and D-in-D models to present the evaluated savings, as this combination displayed sufficient fitness and consistency across waves. This specification is recommended by the UMP to obtain precise savings estimates by comparing the treatment and control groups during the pre- and post-periods.

ADM presents savings estimates in three formats for each program year:

- Daily and annual energy savings per home
- Annual percent savings per home
- Program-level savings

The percent savings per home is calculated by dividing the average annual energy savings estimated in the treatment group by the average annual energy consumption from the treatment group for each program year. The program-level savings are calculated by multiplying the average annual household impact estimate by the number of active program participants in the treatment group after removing double-counted savings due to cross-participation, by program year.

C.3.1 Data Preparation and Cleaning

The following data were provided to support the analysis:

- Pre-treatment and post-treatment AMI data for participants and non-participants. The data started on April 1, 2023, and ended on February 28, 2025, with the start date depending on when customers were added to program cohorts;
- Treatment and control group account activation and account inactivation dates; and
- Participant tracking data, including date of installation and reported kWh savings for each measure installed through each Evergy program.

C.3.2 True-Up

In some cases, the AMI data used estimated meter readings. As part of the data preparation process, ADM corrected for estimated readings by adjusting actual readings to account for them, otherwise known as a “true-up” process. Estimated readings were dropped, and actual readings were used to calculate the average usage. The 15-minute interval data were converted to daily usage for the energy savings regression and hourly usage for demand savings.

C.3.3 Restrictions

After aggregating AMI data to daily usage, the following filters and changes were applied:

- Participants who were missing a HEER start date were assumed to have a starting date as the program start date. This applied to approximately 1.6 percent of treatment customers.
- Customers without at least 6 months of pre-period data, as well as at least 1 month of post-period data were removed from the analysis. A requirement of 12 months of pre-period data removed about 11 percent of accounts, so a 6-month period was used instead, which only removed about 1 percent of accounts.
- Daily usage data that exceeded 300 kWh were removed. Only the measurements were removed, not the accounts.
- Customers who opted out, either by email or print, were removed from the analysis.
- Customers with missing or invalid zip codes were removed. Zip codes are required to associate the home with the proper weather station.
- Customer data that had average daily usage that differed from the first quartile or third quartile by 1.5 times the inter-quartile range or more at the cohort level were excluded from the analysis. Such records were considered outlier data since the average daily kWh usage was unusually small or unusually large. These levels of consumption are unrealistic for residential households and can be reasonably categorized as the result of a reading error rather than a valid reading from high or low users.

Overall, ADM aimed to remove erroneous readings rather than remove high and low users, as these subgroups contribute real behaviors to the average savings estimates. Customers removed using the criteria above were not included in the regression analysis but were still counted in the total program savings estimates.

C.3.4 Weather Data

ADM identified the US Air Force code for each airport closest to each customer's listed ZIP code. Customers were mapped to the airports in Kansas City, Wichita, or Topeka. Weather data from the National Oceanic and Atmospheric Administration (NOAA) was utilized to calculate heating degree days (HDD) and cooling degree days (CDD) for each unique weather station. This data was then combined with customers' calendarized billing data to assign HDD and CDD values, matching based on the US Air Force airport code, billing start date, billing end date, and customer ID.

HDD and CDD are defined as the difference between the daily temperature and a pre-defined temperature setpoint during the heating and cooling seasons, respectively. A base of 65 degrees Fahrenheit was used to calculate both HDD and CDD.

C.3.5 Validity Testing

The evaluation method requires the counterfactual group to remain statistically valid for each treatment group. Validity is tested by examining the energy usage in the pretreatment period for customers from both the treatment and control groups, which is tested by a simple two-tailed t-test. This was performed for each jurisdiction wave, Kansas Central and Kansas Metro. The validity of each RCT was tested by completing t-tests for the average daily usage of each of the pre-period between the data start date and the first HEER date. If the pre-period average daily usage rejected the null hypothesis, the pre-period usage was statistically different and could result in bias in the estimated savings.

For cohorts that do not pass equivalency testing, PSM was performed to create an ad-hoc control group comprising of participants that have not received HEERs. In this case, equivalency testing was performed on the created control group to confirm that it is statistically comparable to the treatment group in pre-period usage.

C.3.6 Panel Regression Modeling

ADM explored multiple linear regression models that compare the treatment group and valid comparison group. The comparison control group used was created during the RCT design. This approach, with a randomized control trial, is detailed in the UMP as a preferred method for the evaluation of opt-out behavioral programs. The following sections summarize the model specifications that were utilized to estimate impact savings for the program.

C.3.7 Post-Program Regression Model Specification

A post-period regression (PPR) model, also commonly referred to as a lag-term regression model, compares the energy use of a treatment group to that of a

control/comparison group in the post-treatment period only. The model is a panel-data regression model, meaning that the regression occurs across customers rather than on an individual customer level. The model includes independent variables that represent energy consumption in the pre-treatment period to account for individual variation.

The three pre-usage variables included in the model include: (1) a pre-treatment variable spanning the customers' average consumption across the one-year pre-treatment period, (2) a pre-treatment summer variable spanning the customers' average consumption across June through September in the pre-treatment period, and (3) a pre-treatment winter variable spanning the customers' average consumption across December through March in the pre-treatment period.

The model specification is detailed in the following regression equation:

Equation 8-12: PPR Model Regression Specification

$$kWh_i = \beta_0 + \beta_s * (AvgPre_i + AvePreSummer_i + AvePreWinter_i) + \beta_{cdd} * CDD_i + \beta_{hdd} * HDD_i \\ + \tau_{main} * treatment_i + \tau_{cdd} * treatment_i * CDD_i + \tau_{hdd} * treatment_i * HDD_i \\ + \varepsilon$$

Variables definitions are presented in the table below:

Table C-4: Definition of Variables for the PPR Model

Variable	Definition
kWh_i	Customer i 's daily energy consumption.
β_0	Intercept of the regression equation.
β_s	A series of coefficients for each season.
$AvgPre_i$	Average daily usage for customer i in the pre-treatment period.
$AvePreSummer_i$	Average daily usage for customer i in the pre-treatment period from June through September.
$AvePreWinter_i$	Average daily usage for customer i in the pre-treatment period from December through March.
β_{cdd}	The main effect of CDD.
CDD_i	CDD for customer i .
β_{hdd}	The main effect of HDD.
HDD_i	HDD for customer i .
$treatment_i$	The treatment indicator variable. Equal to one for the treatment group.
τ_{main}	The main effect of treatment.
τ_{cdd}	The cooling-dependent treatment effect.
τ_{hdd}	The heating-dependent treatment effect.
ε	The error term.

From the above model, the coefficients of interest are: τ_{main} , τ_{cdd} , and τ_{hdd}

C.3.8 Difference-in-Difference Model Specification

In contrast to the PPR model, the LFER model compares the change in energy usage of the treatment group over time to the change in energy usage of the control/comparison group. Individual variability in the model is controlled using a customer fixed effects term, represented as a customer-specific intercept for every customer in the regression model. Although the LFER is more susceptible to biases of unusual events in the pre/post periods, the customer-specific intercept allows for better control of individual variability by de-meaning the observed values on a customer-specific basis. Furthermore, because of the pre/post nature of the model, customer observations in the treatment group are not only compared to the control group but also to observations in the pre-period. Thus, the LFER is better suited to circumstances in which the qualitative differences between the treatment and control/comparison group are not well understood.

Equation 8-13: LFER model regression specification.

$$kWh_i = \beta_i + \beta_{post} * post_i + \beta_{cdd} * CDD_i + \beta_{hdd} * HDD_i + \beta_{post,cdd} * post_i * CDD_i \\ + \beta_{post,hdd} * post_i * HDD_i + \beta_{treat,cdd} * treat_i * CDD_i + \beta_{treat,hdd} * treat_i \\ * HDD_i + \tau_{post,treat} * post_i * treat_i + \tau_{post,treat,cdd} * post_i * treat * CDD_i \\ + \tau_{post,treat,hdd} * post_{i,d} * treat * HDD_{i,d} + \varepsilon$$

Variable definitions are presented in the table below:

Table C-5: Definition of Variables for the LFER Model

Variable	Definition
kWh_i	Customer i's daily consumption.
β_i	The intercept term for customer i, or the "fixed effect" term.
β_{post}	The coefficient for the main effect of "post."
β_{cdd}	The coefficient of the main effect of CDD.
β_{hdd}	The coefficient of the main effect of HDD.
$\beta_{post,cdd}$	The coefficient of the interactive effect of CDD and post.
$\beta_{post,hdd}$	The coefficient of the interactive effect of HDD and post.
$\beta_{treat,cdd}$	The coefficient of the interactive effect of CDD and treatment.
$\beta_{treat,hdd}$	The coefficient of the interactive effect of HDD and treatment.
$post_i$	An indicator variable that equals one during the post-period for customer i.
CDD_i	Customer i's CDD.
HDD_i	Customer i's HDD.
$treat_i$	An indicator variable that equals 1 for customers in the treatment group and 0 for customers in the comparison group.
$\tau_{post,treat}$	The estimated treatment effect in kWh per day; the main parameter of interest. Estimated separately for each month and year
$\tau_{post,treat,cdd}$	The estimated treatment effect in kWh per CDD.
$\tau_{post,treat,hdd}$	The estimated treatment effect in kWh per HDD.
ε	The error term.

From the above model, the coefficients of interest are: $\tau_{post,treat}$, $\tau_{post,treat,cdd}$, and $\tau_{post,treat,hdd}$.

C.3.9 Remove Double Counted Savings

Participants in both the treatment and control groups participate in other Evergy residential energy efficiency programs. Additionally, the HEERs sent to customers include information about other Evergy rebates and programs, which may lead to customers adopting more energy efficient upgrades for their homes. This additional participation of HEERs recipients in other Evergy programs can lead to an increase in regression-derived savings, referred to as uplift. When a household participates in an efficiency program because of this encouragement, the utility might count their savings twice: once in the regression-based estimate of HEE program savings and again in the estimate of savings for the other energy efficiency program. Although uplift rarely displays a statistically significant difference between the treatment and control groups, the UMP recommends removing uplift from each group at the household level.

The double-counted savings, whether positive or negative, are subtracted from the cohort's savings estimates from the regression analysis to get total verified savings. The approach for the removal of double-counted savings will differ based on whether the other program is a downstream program or upstream program.

C.3.10 Downstream Programs

For downstream measures, ADM followed the method recommended in Chapter 17 of the UMP⁶¹, which recommends using tracking and reporting system data to correct for cross-program uplift of downstream programs. For downstream measures, ADM completed a review of the tracking and reporting system for each experimental cohort to identify energy efficiency program participation that occurred from the treatment start date onwards. The following steps detail the process of correcting for these measures:

1. The measures for the treatment group and control group were assigned to an appropriate month based on the reported date of installation for measures installed after the treatment start date.
2. For each month of the program year, the annual savings for all measures installed prior to the month of interest dating back to the treatment start date that had not yet reached the end of their effective useful life were summed for all active participants for each group. For measures installed prior to the current program year, ADM used verified savings for cross-program uplift adjustment. For measures installed during

⁶¹ Chapter 17: Residential Behavior Protocol. The Uniform Methods Project: Methods for Determining Energy Efficiency Savings for Specific Measures; Period of Performance September 2011 – December 2014

the program year, ADM utilized reported savings as verification activities occurred concurrently with the evaluation of this program.

3. The totaled savings for each group were then divided by 365.25 and then divided by the number of active customers in each group to create a daily average dual participation savings value per home.
4. For each month, the daily average dual participation savings value per home for the control group was then subtracted from the daily average dual participation savings value per home from the treatment group. This resulted in an adjustment factor which can then be subtracted from the daily savings value extrapolated from the billing analysis prior to using these values to calculate gross verified energy savings.

C.3.11 Savings Calculations

The following section details ADM's calculation of gross energy savings and demand impacts.

C.3.11.1 Gross Energy Savings Calculation

Gross energy savings was calculated using the three treatment coefficients as output by the regression models: the main effect of treatment, the CDD-dependent coefficient, and the HDD-dependent coefficient:

- The main effect of treatment was scaled to an annual value as appropriate (i.e., by multiplying by 365.25 for daily data),
- The CDD-dependent effect was scaled to an annual value as appropriate (i.e., by multiplying by the sum of TMY-based CDD annually), and
- The HDD-dependent effect was scaled to an annual value as appropriate (i.e., by multiplying by the sum of TMY-based HDD annually).
- The three values above were summed together, and the cross-program uplift impact was subtracted from savings to generate final gross energy savings.

C.3.11.2 Gross Demand Impacts Calculation

The calculation of demand reduction was based on the per-treatment participant energy savings values. The critical peak demand period per month is defined as the hour when the system load is most likely to reach a critical peak. In PY1, ADM completed an analysis of Evergy's system-level peak demand, also known as critical peak demand, which is described in the Monthly Critical Peak Hour Memo (Oct. 2024). The purpose of the analysis was to determine which hour (or hours) per month should be designated as the

critical peak demand hour for subsequent measurement and verification analyses and reporting.

Based on ADM's analysis, the system load is most likely to reach an annual maximum level on any given summer (June through September) day during the hour ending at either 16:00 hours (4:00 pm), 17:00 hours (5:00 pm), or 18:00 hours (6:00 pm) for Kansas Central, and at either 17:00 hours (5:00 pm), 18:00 hours (6:00 pm), or 19:00 hours (7:00 pm) in June or 16:00 hours (4:00 pm), 17:00 hours (5:00 pm), or 18:00 hours (6:00 pm) in July-September for Kansas Metro.

To allocate critical peak demand (kW) savings per month, ADM developed a program specific 'HEER Energy Savings Curve' for each Evergy jurisdiction. The curves were developed from AMI data spanning April 2023 through March 2025 from control group customers for the HEE program's behavioral component.

For each HEER treatment customer, verified annualized energy savings were allocated to the specific energy savings curve. The result was a two-dimensional matrix providing savings per hour for all 8,760 hours of the typical calendar year. The results were inspected for each month to identify the maximum average hourly demand by hour (or hours) per month.

C.3.11.3 Lifetime Savings Calculation

A measure life for behavioral measures has not been specified in the 2024 KEEIA TRM. A measure life of 1 year is generally assumed for behavioral measures in the absence of a previously defined measure life. Persistence savings may be measured in future program years for cohorts that no longer receive treatment to understand savings persistence, savings decay, and lifetime savings for behavioral programs. For PY1, lifetime savings were assumed to be equal to the measured program-year savings.

C.4 Impact Evaluation Results

This section details the level of program activity for PY1 as well as the reported and verified gross savings.

C.4.1 Data Preparation and Cleaning

Billing data provided by Evergy was prepared and cleaned. Table C-6 represents the unique number of customers per cohort and treatment group throughout the data-cleaning process.

Table C-6: Treatment Group Customer Counts by Jurisdiction

Restriction	KS Central	KS Metro
All accounts listed as active in the program during PY1	57,004	25,005
After outlier removal steps	56,979	24,996
After removing opt-outs and invalid zip codes	56,922	24,977
After removing customers with insufficient amount of data	56,644	24,649

C.4.2 Validity Testing

Clean data was tested for statistically significant differences in usage between the treatment and control groups for each wave. Results are listed in Table C-7. PSM did not increase equivalency, so the original control and treatment groups were used for both jurisdictions.

Table C-7: Equivalency T-Test Results

Data Groups	KS Central			KS Metro		
	Treatment Usage (kWh/day)	Control Usage (kWh/day)	P-value	Treatment Usage (kWh/day)	Control Usage (kWh/day)	P-value
Original	22.5888	22.6027	0.0353	27.8489	27.9292	<0.01
With PSM	22.5828	22.5574	0.0003	26.8935	26.8057	<0.01

The pre-period usage was statistically different for each group, meaning the estimated savings could have some bias. The difference for Kansas Central pre-period usage was small, but still different at the 90 percent level.

C.4.3 Double Counting Analysis

Participants in both the treatment and control groups participate in other Evergy residential energy efficiency programs. The double-counted savings, defined in the methodology, whether positive or negative, were subtracted from the cohort's gross savings estimates from the regression analysis to get total verified savings. This section summarizes the results of the double-counting analysis.

C.4.3.1 Downstream Programs

For downstream program savings, Evergy delivered tracking data for all downstream programs, including the Hard-to-Reach Homes, Weatherization Assistance, and Whole Home Efficiency programs as part of the impact evaluation. The average savings for control and treatment groups are summarized.

Table C-8 displays the verified cross-participation savings to be subtracted from each group's annual program savings for each program year and evaluation period. The double-counted savings analysis included all downstream savings from residential programs that occurred during PY1. The double-counted savings are the difference between the average treatment and control group savings for each household at the cohort level.

Table C-8: Downstream Double Counting Results by Cohort

Cohort	Average Treatment Household Annual Savings (kWh/year)	Average Control Household Annual Savings (kWh/year)	Treatment Customers	Control Customers	Average Household Annual Savings Adjustment (kWh/year)
KS Central	204,245.75	63,429.31	57,004	19,876	0.39
KS Metro	408,083.85	284,861.93	25,005	16,606	-0.83

C.4.4 Linear Regression Modeling Results

The LMER model coefficients and savings are presented in the following tables. The LMER model was chosen over the PPR because it had a greater R-squared value, and the savings better matched the tracking data by wave.

Table C-9: Kansas Central LMER Coefficients

Coefficient	Estimate	Std Error	P Value
Intercept	15.1319	0.0406	<0.01
CDD	0.2121	0.0003	<0.01
HDD	1.3308	0.0006	<0.01
Post	0.6231	0.0103	<0.01
Post * CDD	-0.0569	0.0010	<0.01
Post * HDD	-0.0269	0.0004	<0.01
Treatment * CDD	-0.0069	0.0007	<0.01
Treatment * HDD	-0.0038	0.0004	<0.01
Post * Treatment	-0.2642	0.0121	<0.01
Post * Treatment * CDD	0.0239	0.0011	<0.01
Post * Treatment * HDD	0.0045	0.0005	<0.01

Table C-10: Kansas Metro LMER Coefficients

Coefficient	Estimate	Std Error	P Value
Intercept	19.1428	0.0604	<0.01
CDD	0.2317	0.0004	<0.01
HDD	1.4951	0.0008	<0.01
Post	0.2755	0.0119	<0.01
Post * CDD	-0.0731	0.0012	<0.01
Post * HDD	-0.0178	0.0005	<0.01
Treatment * CDD	-0.0027	0.0010	<0.01
Treatment * HDD	-0.0044	0.0005	<0.01
Post * Treatment	-0.2491	0.0156	<0.01
Post * Treatment * CDD	0.0192	0.0015	<0.01
Post * Treatment * HDD	0.0076	0.0007	<0.01

C.4.4.1 Aggregated Cohort Results

Positive, statistically significant savings are presented for all cohorts evaluated. Regression results were adjusted with double-counted savings from the downstream programs to arrive at the final program savings estimate. The following tables summarize each cohort's annual household energy savings impact for PY1. Note that results are shown as first-year savings from April to December 2024.

Table C-11: Program Savings Summary by Cohort

Cohort	Post * Treatment	Post * Treatment * CDD	Post * Treatment * HDD	Days	CDD	HDD	Annual Savings per Home (kWh/year)	Annual Savings per Home 90% CI (Lower)	Annual Savings per Home 90% CI (Upper)
KS Central	-0.2642	0.0239	0.0045	250	1,940	2,108	10.33	10.26	10.40
KS Metro	-0.2491	0.0192	0.0076	250	1,976	1,943	9.54	9.44	9.64

To calculate final energy savings, average double-counted savings from other programs are subtracted from the regression estimate.

Table C-12: Adjusted Program Savings by Cohort

Cohort	Annual Unadjusted Savings per Home (kWh/year)	Double Counted Savings Adjustment (kWh/year)	Annual Adjusted Savings per Home (kWh/year)	Pre Period Usage per Home (kWh/year)	Annual Percent Savings per Home
KS Central	10.33	0.39	9.94	8,250.57	0.12%
KS Metro	9.54	-0.83	10.38	10171.80	0.10%

C.4.5 Demand Savings

The calculation of demand reduction was based on the per-treatment participant energy savings values. For each HEER treatment customer, verified annualized energy savings were allocated to the energy savings curve for the appropriate jurisdiction. The total summer critical peak demand reduction for this program was 297.23 kW; see Table C-13 for more details.

Table C-13: Demand Reduction by Cohort

Cohort	RP_90	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Verified kW Realization Rate	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	0.7%	178.65	211.54	210.07	213.01	118%	118%	119%
KS Metro	1.0%	223.16	85.69	84.82	86.56	38%	38%	39%
Total	0.6%	401.81	297.23	295.32	299.14	74%	73%	74%

C.4.1 Impact Evaluation – Final Savings Tables

Based on the impact evaluation results, the total verified net energy savings for the HEE Program were 827,689 kWh, and the total verified net peak demand savings were 297.23 kW. The lower realization rate could be attributed to the reporting period. First-year savings only consider months from April to December, so part of the heating season is excluded. Detailed results can be found in Table C-14.

Table C-14: Reported and Verified Gross Energy and Demand Savings

Jurisdiction	RP_90	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Verified kWh Realization Rate	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Verified kW Realization Rate	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	0.7%	964,244	178.65	589,077	584,982	593,172	211.54	210.07	213.01	61%	61%	61%	118%	117%	119%
KS Metro	1.1%	691,572	223.16	238,612	235,996	241,228	85.69	84.75	86.63	35%	35%	35%	38%	38%	38%
Total	0.6%	1,655,816	401.81	827,689	822,378	833,000	297.23	295.32	299.14	50%	50%	50%	74%	74%	74%

C.5 Ongoing Activities to Mitigate Realization Rate Issues

Factors that led to a lower energy savings realization rate include: the first year not including the full 12 months, the difference in regression methodology between ADM and Oracle, and the difference in pre-period consumption between control and treatment groups. In the next program year, including heating-season months is expected to increase savings since winter months had greater expected savings, and the program started just before the summer months. ADM and Oracle are to align methodologies, such as including and/or excluding weather variables in the regression. To match pre-period consumption, Evergy and Oracle can consider using treatment and control group season consumption when creating future waves.

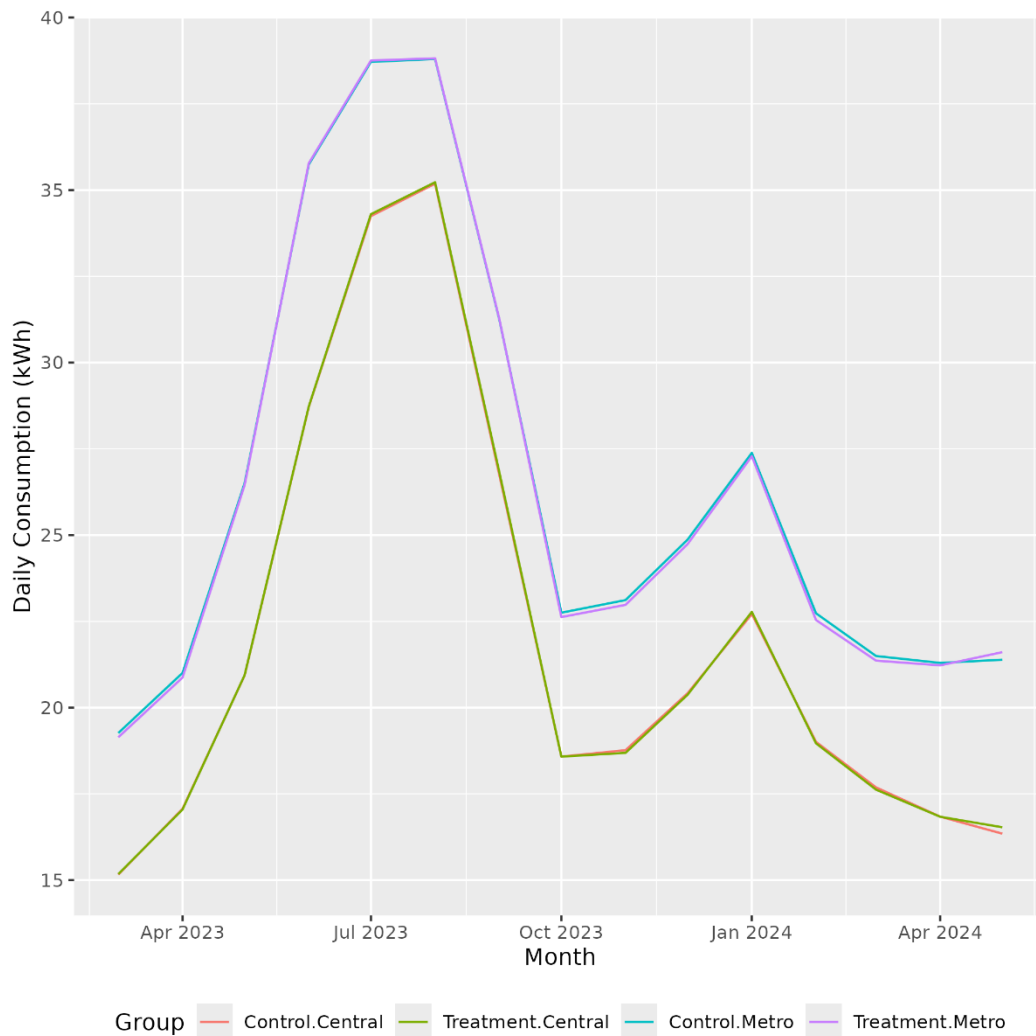
C.6 Supplementary Analysis

The following section summarizes the results from additional exploratory analyses. These analyses aimed to better understand the behavioral data and provide insights that may be able to support improved program design as well as inform EM&V analyses in future program years.

C.6.1 Pre-Period Consumption

In the regression analysis, the pre-period consumption was statistically different between the control and participant groups for each wave. Furthermore, using PSM did not improve the equivalency. Figure C-1 illustrates the differences between participant groups. The summer and winter months are well-matched, but the fall and spring months show some differences, which may explain why the equivalency tests did not pass.

Figure C-1: Pre-Period Consumption by Treatment and Wave



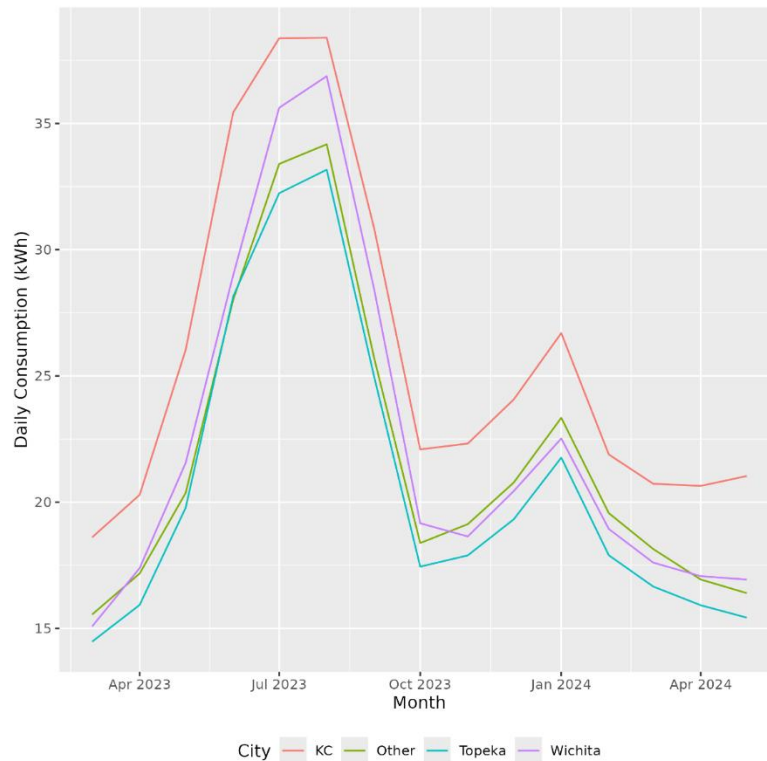
The difference in pre-period consumption could also be affected by the geographical distribution of customers in each wave. The distribution of customers by treatment group, wave, and city are shown in Table C-15. Customers were assigned to a city based on their zip codes. Customers with zip codes not listed in the metropolitan area of Kansas City, Wichita, or Topeka were assigned a city of type “Other.” Participants in “Other” city type tended to be in rural areas. A Chi-squared test of independence ($p < 0.01$) suggests that the control and treatment group distributions by city are equivalent for each wave.

Table C-15: City Distribution by Wave and Treatment Group

City	KS Metro		KS Central	
	Control (%)	Treatment (%)	Control (%)	Treatment (%)
Kansas City	15,366 (93.9%)	23,142 (93.9%)	1,640 (8.3%)	4,915 (8.7%)
Other	992 (6.1%)	1,500 (6.1%)	7,561 (38.3%)	21,605 (38.1%)
Topeka	0 (0%)	2 (0%)	2,463 (12.5%)	6,889 (12.2%)
Wichita	-	-	8,090 (41.0%)	23,231 (41.0%)

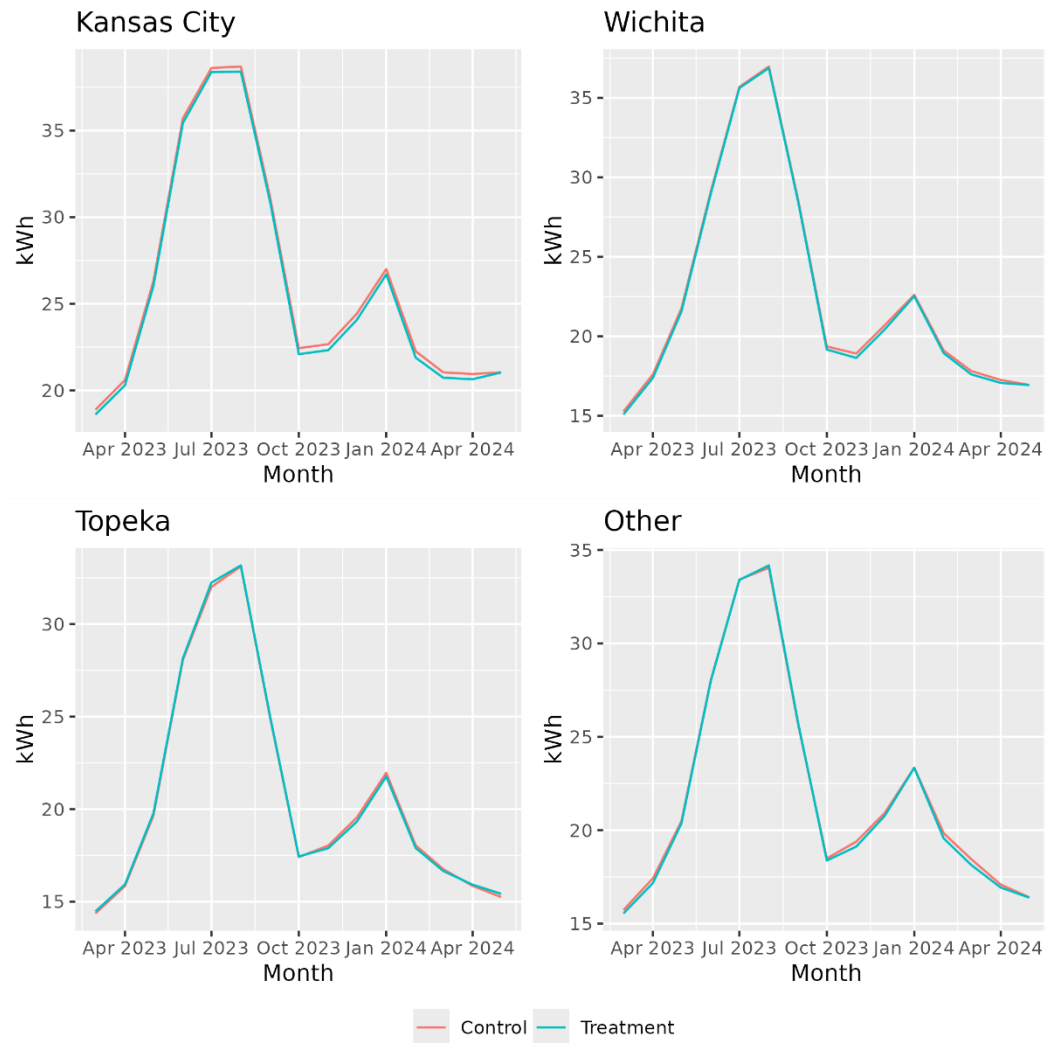
When generating waves, it is important to maintain the balance across cities for control and treatment groups. If PY1 groups were imbalanced by city, the difference between pre-treatment period consumption may have been greater. The pre-period consumption by city for the treatment groups is shown in Figure C-2. Customers in the metropolitan areas, Kansas City and Wichita, have greater consumption than those in the more rural areas.

Figure C-2: Pre-Period Treatment Consumption by City



Equivalency can be improved by selecting control and treatment customers by their pre-period consumption by season. In Figure C-3, pre-period consumption is better matched for the summer and winter months compared to the fall and spring months.

Figure C-3: Pre-Period Consumption by City and Group



C.6.2 Full Year Savings

First-year savings are estimated for the start of the program to the end of 2024 (April through December). Because the period does not include January through March, heating-season savings are partially accounted for. Full-year savings, which extend to a full year, are displayed in Table C-16 and Table C-17.

Table C-16: LFER Estimated Full-Year Savings

Cohort	Post * Treatment	Post * Treatment * CDD	Post * Treatment * HDD	Days	CDD	HDD	Projected Full-Year Annual Savings per Home (kWh/year)
KS Central	-0.2642	0.0239	0.0045	365	1,967	4,538	29.32
KS Metro	-0.2491	0.0192	0.0076	365	1,998	4,471	18.64

Table C-17: LFER Full-Year Savings Summary

Cohort	Projected Full- Year Annual Unadjusted Savings per Home (kWh/year)	Double Counted Savings Adjustment (kWh/year)	Projected Full- Year Annual Adjusted Savings per Home (kWh/year)	Pre Period Usage per Home (kWh/year)	Annual Percent Savings per Home
KS Central	29.32	0.39	28.93	8,250.57	0.35%
KS Metro	18.64	-0.83	19.48	10,171.80	0.19%

Compared to first-year savings, the adjusted full-year savings are almost tripled for Kansas Central and about doubled for Kansas Metro. Including additional months shows that savings from these cohorts could be heavily weighted towards the winter months, which may be correlated with a higher prevalence of heat pumps installed in the high-energy-consuming homes targeted by the program. Alternatively, what appear to be higher savings during the heating season may have less to do with seasonality and more to do with program ramp up, since savings should increase as the customers are sent reports throughout the first year or so of treatment.

C.6.3 Energy Savings by City

As shown in the previous graphs, energy consumption is affected by geographic location. Customers have been mapped to their closest city, and this section investigates how savings differ by location.

The same methodology for estimating energy savings was used. The LFER model was used, and PSM improved pre-period equivalency for Kansas City and Wichita. PSM was not used for Topeka and customers were labeled as Other for their city. Pre-period consumption is summarized in Table C-18. Only Topeka had a consumption that was not statistically different.

Table C-18: Pre-Period Consumption by City

City	Control Pre-Period Daily Usage (kWh/day)	Treatment Pre-Period Daily Usage (kWh/day)	P-Value
Kansas City	26.5251	26.2894	<0.01*
Wichita	23.1393	23.0115	<0.01*
Topeka	21.4393	21.4230	0.3515
Other	22.6070	22.4709	<0.01

* PSM improved equivalency and was used

For all models, the coefficients for the variables of interest (post*treatment, post*treatment*cdd, post*treatment*hdd) were all significant at the 90 percent confidence level. Annual savings were estimated using the typical CDD and HDD for each city. The weighted average CDD and HDD were used for Other. The savings results are shown in Table C-19.

Table C-19: Estimated Savings by City

City	Treatment Pre-Period Annual Usage (kWh/year)	Projected Full- Year Annual Savings per Home (kWh)	Annual Percent Savings per Home
Kansas City	9,602.20	6.72	0.07%
Wichita	8,404.94	33.86	0.40%
Topeka	7,824.75	81.61	1.04%
Other	8,207.51	-10.87	-0.13%

Customers in Topeka had the greatest savings but also the least pre-period usage. On the other hand, customers in Kansas City had the least savings and the greatest pre-period usage. It was also estimated that participants with a city type of Other did not have savings.

These results by city are consistent with the results by wave; the large majority of Kansas Metro participants are near Kansas City and had lower savings than Kansas Central, which has more participants in the other two cities. Income level could also be a determinant of savings, which could further explain the savings in Kansas City and rural areas.

C.6.4 Energy Savings by Magnitude of Consumption

Pre-period energy consumption could be an indicator of energy savings. In the previous section, cities with higher consumption had less savings. However, higher consumption could also mean that there is more room for savings.

The same methodology for estimating energy savings was used. Customers were split into two groups: high pre-period consumption and low pre-period consumption. The pre-period median daily usage (23.71 kWh/day) was used as the threshold for splitting customers into high- and low-usage groups. PSM was used for both groups to improve equivalency. Despite control-matching, both usage groups still had statistically different consumption. The pre-period consumption and estimated savings are summarized in Table C-20 and Table C-21.

Table C-20: Pre-Period Consumption by Group

Pre-Period Usage	Control Pre-Period Daily Usage (kWh/day)	Treatment Pre-Period Daily Usage (kWh/day)	P-Value
High	33.1345	32.8572	<0.01*
Low	15.8264	15.7267	<0.01*

* PSM improved equivalency and was used

Table C-21: Estimated Savings by Consumption Group

Pre-Period Usage	Treatment Pre-Period Annual Usage (kWh/year)	Projected Full-Year Annual Savings per Home (kWh)	Annual Percent Savings per Home
High	12,001.10	62.57	0.52%
Low	5,744.18	9.79	0.17%

High-usage customers had higher percentage savings than low-usage customers. This result validates that participants with more room for energy improvements are taking steps to reduce their consumption.

C.6.5 PPR Model

The results from the PPR Model are shown in this section.

PPR Coefficients are shown in Table C-22. Average annual savings differ from the D-in-D model in that Kansas Metro has greater predicted savings in the PPR model.

Table C-22: PPR Annual Savings by Wave

Cohort	Post * Treatment	Post * Treatment * CDD	Post * Treatment * HDD	Days	CDD	HDD	Projected Full-Year Annual Savings per Home (kWh/year)
KS Central	-0.1560	0.0155	0.0013	365.25	1,967	4,538	20.6898
KS Metro	-0.2245	0.0139	0.0040	365.25	1,998	4,471	36.5213

The savings percentage is summarized in Table C-23.

Table C-23: PPR Savings Summary

Cohort	Projected Full- Year Annual Unadjusted Savings per Home (kWh/year)	Double Counted Savings Adjustment (kWh/year)	Projected Full- Year Annual Adjusted Savings per Home (kWh/year)	Pre Period Usage per Home (kWh/year)	Annual Percent Savings per Home
KS Central	22.59	0.39	22.20	8,107.48	0.26%
KS Metro	27.85	-0.83	28.68	10,476.44	0.35%

The PPR model better aligns with the projected savings per customer where Kansas Metro customers have greater savings per home. The comparison between models is shown below. The LFER models have a slightly greater R-squared value.

Table C-24: Comparison of LFER Model Performances

Cohort	Reported Annual Savings per Home (kWh/year)	LFER Model		PPR Model	
		R-Squared	Projected Full- Year Annual Unadjusted Savings per Home (kWh/year)	R- Squared	Projected Full- Year Annual Unadjusted Savings per Home (kWh/year)
KS Central	22.63	0.6583	29.32	0.6506	20.69
KS Metro	37.00	0.6852	18.64	0.6654	36.52

C.7 Net Savings Methodology

The net-to-gross ratio for behavioral programs is 1.0 after correcting for cross-program uplift as needed. Therefore, ADM considered the uplift-adjusted verified savings to be both net and gross savings.

C.8 Net Savings Results

For this program, the net savings estimates are equivalent to the gross savings estimates, as the net-to-gross ratio for behavioral programs is 1.0.^{62, 63}

C.9 Process Evaluation Methodology

The process evaluation was designed to explore the HEE Program's design, barriers to participation, implementation, and outcomes. To investigate these areas, ADM reviewed program documents, held a facilitated discussion with program and implementation staff, and surveyed a sample of HEER recipients and control group customers.

ADM explored general research questions about the HEE Program, as well as questions that are specific to the Home Energy Education Program's design and implementation in PY1. Process evaluation activities sought to answer the following research questions and offer specific recommendations to support program improvements:

- How well did program staff and implementation staff work together? Are there data tracking and communication efficiencies that can be gained?
- What are the end user experiences throughout the program?
- Are there ways to improve the design for subsequent treatment waves or enhance the implementation process (e.g., modifications to the HEER's delivery method, modification to the HEER's content)?
- Are the customers satisfied with the HEERs they receive through the program? What are any causes of dissatisfaction?
- Do customers recall the specific recommendations that they received in their HEERs? Have they followed those recommendations and with what frequency?
- What are the demographics of the customers enrolled in the program (e.g., based on homeownership, income level, education level, geographic area, ethnicity) compared to those in the control group?
- Looking forward, what are key barriers and drivers to success with the current cohort(s) and/or with new cohort(s)?

⁶² Violette, D. M., & Rathbun, P. (2017). Chapter 21: Estimating net savings – Common practices. In *The Uniform Methods Project: Methods for determining energy efficiency savings for specific measures* (Subcontract Report NREL/SR-7A40-68578). National Renewable Energy Laboratory (NREL). <https://www.nrel.gov/docs/fy18osti/68578.pdf>

⁶³ Morris, J. (2019, August 7). Income eligible net-to-gross and the IL-NTG methods [Presentation]. Stakeholder Advisory Group (SAG), Illinois Commerce Commission (ICC).

C.10 Process Evaluation Results

The process-related data collection activities for the HEE Program evaluation included a review of program documents, facilitated discussion with program and implementation staff, and survey of home energy education report recipients and control group customers.

C.10.1 Summary of Process Evaluation Activities

ADM held an in-depth interview in January 2025. The call was held with Evergy and Oracle staff. The purpose of the call was to investigate program design, implementation, barriers to success, and future plans for the program.

ADM surveyed Evergy customers who received HEERs and a sample of customers designated as controls in February and March 2025. Customers who received HEERs are referred to as participants, while those designated as part of the control group are referred to as nonparticipants. The survey was conducted via phone and targeted customers that did not have an email address in the program's tracking data. Forty-eight participants and 51 nonparticipants completed the survey. Table C-25 displays response rate information. Respondents were offered a \$10 electronic gift certificate.

A portion of participant and nonparticipant records contained invalid phone contact information or customers unaware of participation. Twenty percent of customers that ADM attempted to reach had invalid contact information included in the program's tracking data. This included phone numbers that call staff noted as disconnected, wrong numbers, or as having technical issues. One hundred and thirty-one participants were screened out from the survey as they said they did not recall receiving reports (4 percent of the initial participant phone list). Six nonparticipants were screened out as they said they were not Evergy customers (less than 1 percent of the initial nonparticipant phone list).

Table C-25: Summary of HEER Survey Response Rate Information

Metric	Participants	Nonparticipants	Total
Initial phone list	3422	1793	5215
<i>Disconnected/wrong number/technical phone problem</i>	716	353	1069
<i>Invalid phone (%)</i>	21%	20%	20%
Completions	48	51	99
Response rate (%)	1%	3%	2%

C.10.2 Participant Survey Respondent Characteristics

The survey collected information about the program participants' experiences with the HEERs and their satisfaction with Evergy. The survey also inquired about nonparticipant and participant customers' engagement with Evergy's website, energy efficiency attitudes, and about energy-saving actions customers have taken (e.g., behavioral changes, or installing energy efficient appliances and equipment). ADM compared responses from customers who received HEERs and nonparticipants.⁶⁴

Participants and nonparticipants had similar home characteristics (see Table C-26). Most participants and nonparticipants owned a single-family home, with gas space and water heating.

⁶⁴ Because much of the impact of Home Energy Education Reports programs tend to come from high usage households, making up a small percentage of participant group customers, survey-based investigations with small sample sizes often do not find differences between participant and nonparticipant groups related to their reported behaviors, attitudes, or purchases.

Table C-26: HEER Survey Respondent Home Characteristics⁶⁵

Response	All Respondents (n = 99)	Participants (n = 48)	Nonparticipants (n = 51)
Home Ownership			
Rent	19%	21%	18%
Own	79%	75%	82%
Prefer not to say/Don't know	2%	4%	0%
Home Type			
Single-family detached	85%	85%	84%
Duplex	2%	2%	2%
Apartment/condo in a 2-4 unit building	3%	4%	2%
Apartment/condo in a 5+ unit building	4%	2%	6%
Townhouse or row house (adjacent walls to another house)	3%	2%	4%
Mobile home or trailer	1%	0%	2%
Berm house (write-in)	1%	2%	0%
Prefer not to say	1%	2%	0%
Year Home Was Built			
Before 1960	32%	33%	31%
1960 to 1979	17%	17%	18%
1980 to 1999	13%	15%	12%
2000 to 2009	13%	13%	14%
2010 or later	6%	4%	8%
Don't know	18%	19%	18%

⁶⁵ Percentages may not equal 100 percent due to rounding.

Response	All Respondents (n = 99)	Participants (n = 48)	Nonparticipants (n = 51)
Number of Members in Household			
1	32%	31%	33%
2	40%	42%	39%
3	10%	13%	8%
4	5%	2%	8%
5	4%	2%	6%
6 or more	1%	2%	0%
Prefer not to say	7%	8%	6%
Home Size			
Less than 1,000 square feet	9%	10%	8%
1,000-1,999 square feet	30%	35%	25%
2,000-2,999 square feet	16%	13%	20%
3,000-3,999 square feet	3%	4%	2%
4,000 or more square feet	2%	4%	0%
Don't know	39%	33%	45%
Home Heating Type			
Electricity	20%	19%	24%
Natural Gas	64%	63%	67%
Propane	6%	6%	6%
Geothermal	2%	2%	2%
Wood	2%	2%	2%
Don't know	5%	8%	2%
Water Heating Type			
Electricity	24%	27%	22%
Natural Gas	63%	56%	69%
Propane	6%	8%	4%
Don't know	7%	8%	6%

Demographic characteristics were similar for the participants and nonparticipants (see Table C-27). Most respondents said that their primary language spoken in their household was English and identified as White and aged 55 or older.

Table C-27: HEERs Survey Respondent Demographics⁶⁶

Response	All Respondents (n = 99)	Participants (n = 48)	Nonparticipants (n = 51)
Age			
35 to 44 years	4%	2%	6%
45 to 54 years	8%	10%	6%
55 to 64 years	19%	17%	22%
65 or older	59%	56%	61%
Prefer not to answer	10%	15%	6%
Primary Language			
English	86%	81%	90%
Spanish	7%	6%	8%
German	1%	0%	2%
Albanian	1%	2%	0%
Prefer not to answer	5%	10%	0%
Race/Ethnicity			
Black or African American	6%	4%	8%
Hispanic or Latino/Latina	7%	6%	8%
American Indian and Alaska Native	1%	2%	0%
White	75%	75%	75%
Prefer not to answer	11%	13%	10%
Income			
Under 250% FPL	16%	21%	12%
Between 250-400% FPL	11%	8%	14%
Over 400% FPL	18%	13%	24%
Don't know	6%	4%	8%
Prefer not to answer	48%	54%	43%

⁶⁶ Percentages may not equal 100 percent due to rounding.

C.10.3 Marketing and Outreach

Marketing for the residential programs is managed under the HEE program and is used to promote multiple Evergy programs. Evergy staff indicated that the marketing budget comes out of the HEE Program. They indicated that the Evergy marketing team develops a comprehensive 12-month calendar outlining promotional priorities for all of its residential offerings. Outreach and marketing strategies for PY1 included in-person community outreach, emails, bill inserts, social media, and program promotion through the HEERs.

Marketing modules follow a coordinated annual schedule for both general marketing and the HEER program. Evergy staff noted that they have a 12-month planning calendar for email and print communications. Modules appear monthly in email reports and coordinate with print reports, serving to connect customers with products and services while also sharing important updates like storm information through joint efforts between the Evergy marketing and implementation teams.

Residential program marketing through the HEERs involves close collaboration between Evergy's marketing team and the HEER implementation contractor. The Evergy team provides the implementation contractor with content which the implementation contractor formats and inserts into the HEERs. Marketing modules promote utility energy efficiency programs and provide Evergy a channel for delivering general information to report recipients (e.g., storm information). Implementation staff noted that the reports have personalized tips for each customer to the extent possible, by using an algorithm that determines tips based on proprietary or purchased data as well as information gathered through the HEA survey offered through Evergy's website. They also noted that they seek to avoid repeating tips too frequently, and both the tips and marketing modules are updated with each new report.

Evergy employs multiple strategies to reach and engage customers. Evergy staff described various digital tools available to all customers, including high bill alerts, weekly energy reports, and rate education reports. For non-digital customers they mentioned potential future strategies such as bill inserts, targeted mailers, and promotional contests.

The Kansas LILIES program is a new partnership-based initiative that aims to work with partner organizations to connect customers to needed services. Currently in its early development stages, the program focuses on establishing partnerships with organizations that have direct community connections for Evergy's customers in Kansas. Evergy staff noted that they were currently working to establish partnerships with organizations in Kansas for this program. The program will be designed to connect customers with weatherization programs through local community agencies and other services and programs as needed.

C.10.4 Home Energy Analysis and Widgets

Online widgets allow customers to take an HEA survey as well as access usage and cost data, trend information, bill forecasts, and similar home comparisons. Program documentation indicates that Evergy customers can login to their online account and access various features to explore their usage and bills and get information on how to save energy. Customers with an online account can access an interactive graph that allows them to visualize their usage and bill trends and costs up to 2 years back while viewing similar home and weather benchmark information. The Similar Homes Comparison view or tool shows the customer's usage in comparison to homes with similar characteristics and highlights the most efficient homes (top 20 percent for a year period). Customers can also view tips and rate plan information, download usage and cost data, as well as take an HEA survey.

Evergy staff confirmed that all HEA features and available widgets are accessible to all Evergy customers who have a MyAccount login. ADM inquired whether the similar home comparison and similar homes trend information was available to both HEERs recipients and non-recipients; staff confirmed HEERs recipients do not have access to exclusive content or features. All customers with a MyAccount login have access to the HEA tool and various widgets such as the Similar Homes Comparison view.

The HEA and online widgets are integrated with the energy reports, though all Evergy customers have access to the HEA, whereas only a select group receives HEERs. The HEA survey and other online widgets have been operational since 2015 but began tracking for the current program in March 2024. Evergy staff provided ADM with both HEA engagement data and background information on the widgets that are available to customers. The HEA and online widgets serve as a data source for personalizing HEERs and targeting energy-saving tips to customers. When HEERs recipients complete the analysis, their responses about their home energy use and occupancy characteristics help personalize their report and potentially determine which version of energy reports they receive.

The Home Energy Analysis tool and widgets saw significant increases in engagement statistics year-over-year. Evergy staff reported that home energy analysis completions nearly doubled from 2023 to 2024, with Kansas Metro increasing from 7,000 to nearly 12,000 completions, and Central Kansas increasing from 20,000 to over 31,000 completions, though they noted this included an extra quarter beyond PY1.

C.10.5 Home Energy Education Reports

C.10.5.1 Program Design and Operations

The HEER program is focused on engaging customers with no email address or digital engagement with Evergy. Implementation staff explained that all customers received print reports initially, with a built-in marketing module encouraging email signup. Implementation staff estimated that a portion of the targeted customers (“less than a couple hundred”) had provided email addresses after being selected for the program but before the first reports were sent and thus received email reports from the beginning of the program. ADM verified that there were 244 unique account numbers that received HEER emails in April 2024.

Evergy staff estimated that the HEERs had a 5 percent conversion rate from print-only to digital customers in its first eight months. The first paper and email reports were sent to customers at the end of April 2024. Evergy staff noted that converting traditionally non-digital customers is challenging and perceived the first year’s conversion rate as a success. For PY2, they stated the target is a total of 17 percent digital conversion by year-end, based on linear forecasting from the first eight months’ performance.

While energy savings were below initial targets, the program achieved success in other key metrics. Implementation staff explained that savings were lower than original goals due to targeting non-digital customers and the late April launch date. However, Evergy staff emphasized they were “extremely happy” with success in other aspects, particularly the digital conversion rates. They noted these additional metrics, while not filed program targets, are important internal key performance indicators (KPIs) they track.

HEERs have a standardized design, though there is some variety depending on customer characteristics and time of year or program cycle. Evergy staff indicated that there were several versions of the HEERs including welcome reports for new customers, default regular reports, specialized versions for electric vehicle (EV) customers, a low/medium income (LMI) version, and an annual summary report. This segmentation is based on data provided by Evergy to the program’s implementer as well as from HEA survey responses for customers that opt to create an online account and complete the survey. Implementation staff provided ADM example default, LMI, and EV reports. The example LMI report included end-use consumption and the default report had a year-over-year usage comparison. The examples also provided different energy-saving tips. The example LMI report promoted the free smart thermostat program, whereas the default report had a module dedicated to promoting online Evergy account sign-ups.

HEERs module differences are standard across all the implementation contractor’s utility clients, except for the marketing modules provided by Evergy. The implementation contractor stated that marketing modules are the same across all report variants (LMI, EV, Default) and change every report cycle. In the print report, customers always receive

the 'Save with email Home Energy Reports' module until they sign up with an email. Email report recipients receive variable content as provided by Evergy.

The program has experienced modest attrition but maintains strong participation levels. Evergy staff indicated they started with 82,000 participants and are now at around 78,000. They noted attrition was primarily due to customers moving rather than opt-outs, with opt-out rates being "way less than 1 percent." For the control group of 20,000 customers, implementation staff indicated similar attrition patterns were likely but would need to verify the exact numbers.

C.10.5.2 Program Experience

Most participants that confirmed receiving reports stated that they read all or most of them and they were the sole reader of the reports. Table C-28 displays how often participants reported reading the HEERs in the last 12 months. Typically, one person per household reads the HEERs, though some households may have multiple readers. Ten percent of survey respondents reported that someone else in their household had read the HEERs.

Table C-28: How often did you read the HEERs in the last 12 months?

Portion Read	Percent (n = 48)
All the Reports	71%
Most of the Reports	6%
About half of the Reports	10%
A few of the reports	13%

A lack of time and repetitive content were the two most cited reasons that customers said they did not read more of the reports. Table C-29 displays the reasons participants cited for not reading more of the HEERs.

Table C-29: Reasons Participants Have Not Read More Reports

Answer	Percent (n=14)
Prompted Responses – Selected All That Apply	
Do not have the time	43%
Report content was repetitive	29%
I did not find the information in the report to be valuable	21%
I prefer a language other than English	14%
Unprompted Responses – Open-Ended or “Other” Reasons	
Too much information. Prefer information broken down more simply.	7%
We are too old to care about making the changes suggested	7%

Most survey respondents found the HEER information on their home’s energy use easy to understand. Table C-30 displays how participants rated the ease of understanding the information in the HEERs.

Table C-30: Rated Ease of Understanding HEER Information

Answer	Percent (n=48)
1 - Very difficult	4%
2	0%
3	6%
4	10%
5 - Very easy	77%
Don't know	2%

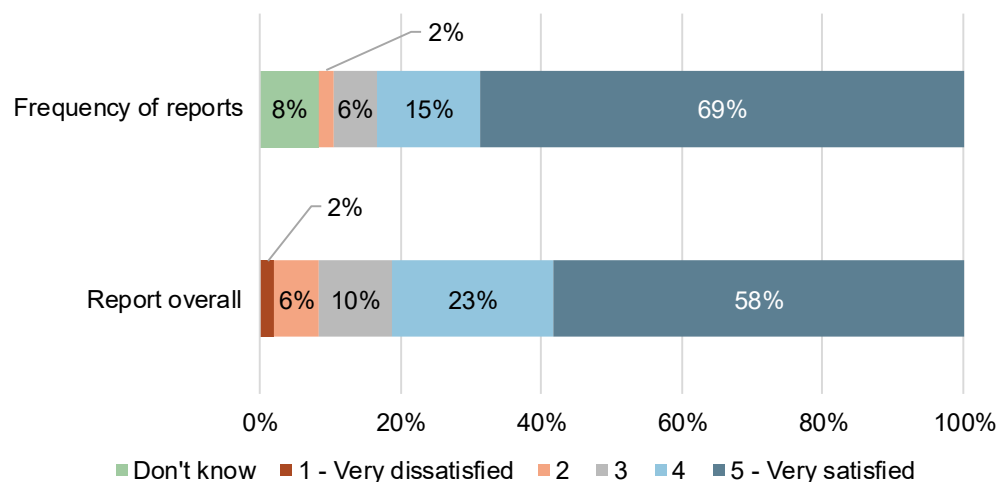
Survey findings suggest that participants generally find the information on their home’s energy use to be accurate. Table C-31 displays participants' rated accuracy of the HEERs. The respondents who said the HEER information was inaccurate (rated as a 1 or 2 on a 5-point scale) provided some explanation for their rating (n=2). One comment on the reports’ accuracy related to customer skepticism regarding the reports’ ability to accurately capture usage information and to compare their usage to similar homes or average or efficient homes. The other noted that they do not trust Evergy or other larger companies to listen to or prioritize customer needs.

Table C-31: Rated Accuracy of HEER Information

Answer	Percent (n=48)
1 - Not at all accurate	2%
2	2%
3	8%
4	21%
5 - Very accurate	58%
Don't know	8%

Most respondents were satisfied with the reports overall and their frequency. Figure C-4 displays HEERs participant satisfaction with the reports overall and their frequency. Thirteen percent, or 6 respondents, provided open-ended feedback or suggestions to improve the reports. Two indicated the reports caused them to feel mad or badly; one specified that the comparison was the source of these feelings. Two said they did not need the reports; one specified that they had already completed steps to make their home as efficient as possible. Two offered suggestions to improve the reports: larger print and information on “surge pricing” for “using energy during peak hours.”

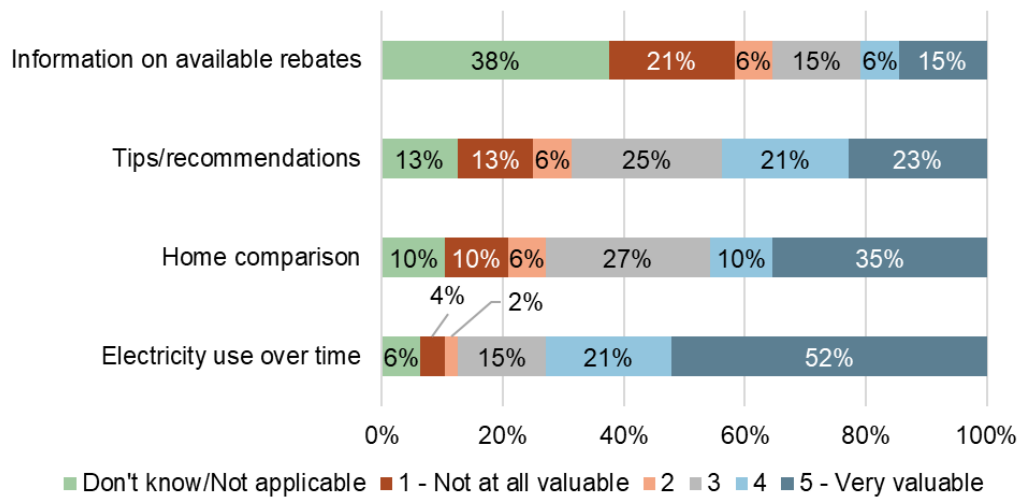
Figure C-4: Satisfaction with HEERs



HEER participants rated the usage history and home comparison sections as most valuable. Electricity usage over time was perceived as valuable by nearly three-quarters of respondents. Less than half of respondents rated the other three sections of the reports as valuable (see Figure C-5).⁶⁷

⁶⁷ Rated the value of the sections a 4 or 5 on a scale from 1 (not at all valuable) to 5 (very valuable).

Figure C-5: Perceived Value of HEERs Sections



Most HEERs participant survey respondents have not visited the HEER website, primarily because they are unaware of it. Eight percent of participant respondents recalled visiting Evergy's HEER website in the past 12 months. All of the participant survey respondents who indicated visiting the website agreed it was easy to navigate (n=4). Three quarters of these participants said it provided interesting, helpful, and easy-to-understand information.⁶⁸ Table C-32 displays reasons customers noted for not having visited the Home Energy Education Report website.

Table C-32: Reasons Why HEER Customers Had Not Visited Home Energy Report Website

Reason	Participants (n=44)
Prompted Responses – Selected All That Apply	
Was not aware of the website	34%
Did not think the website would provide useful information	20%
Did not know how to access the website	9%
Did not have the time to use the website	5%
Don't know	9%
Unprompted Responses – Open-Ended or "Other" Recommendations	
Prefer not to use computer or the internet	20%
Do not have a computer	5%

⁶⁸ The other respondents were unable to provide ratings or otherwise said they did not know how to rate their agreement with the statements about the website.

Most customers have not created an online account on the Evergy website. Overall, 11 percent of customers said they had created an account on the Evergy website. Though engagement with the website differed across the HEER participants and nonparticipants, the difference was not statistically significant. Over half of respondents indicated that the reason they had not created an online account was that they either did not have a computer or smartphone or preferred to avoid using them. Table C-33 displays the reasons customers have not created an online account.

Table C-33: Reasons Customers Had Not Created Online Account

Reason	Participants (n=44)	Nonparticipants (n=41)
Don't know how to	11%	15%
I didn't know about it	11%	10%
Technical difficulties	0%	7%
I don't think it would provide valuable or interesting information	2%	2%
Unprompted Responses – Open-end or “Other” Reasons		
Do not perceive need - prefer to pay bill over phone or by mail	32%	17%
Prefer not to use computer or the internet	32%	17%
Do not have a computer	14%	32%

C.10.5.3 Program Influence

The portion of nonparticipants and participants who indicated buying one or more energy efficiency items in the past 12 months was similar. Twenty-five percent of HEERs recipients reported they had installed one or more energy-saving products in the past 12 months; this was similar to nonparticipant respondents (see Table C-34). The number and types of energy-saving purchases made by nonparticipants and participants were similar in the past 12 months, and there were no statistically significant differences between the groups for individual item purchases (see Table C-35).

Table C-34: Comparison of Participants and Nonparticipants on Energy-Saving Purchases

	Participants (n=51)	Nonparticipants (n=48)
Bought one or more energy efficiency items	25%	27%
Number of Items Bought – All Respondents		
None	75%	73%
1 to 5	25%	27%

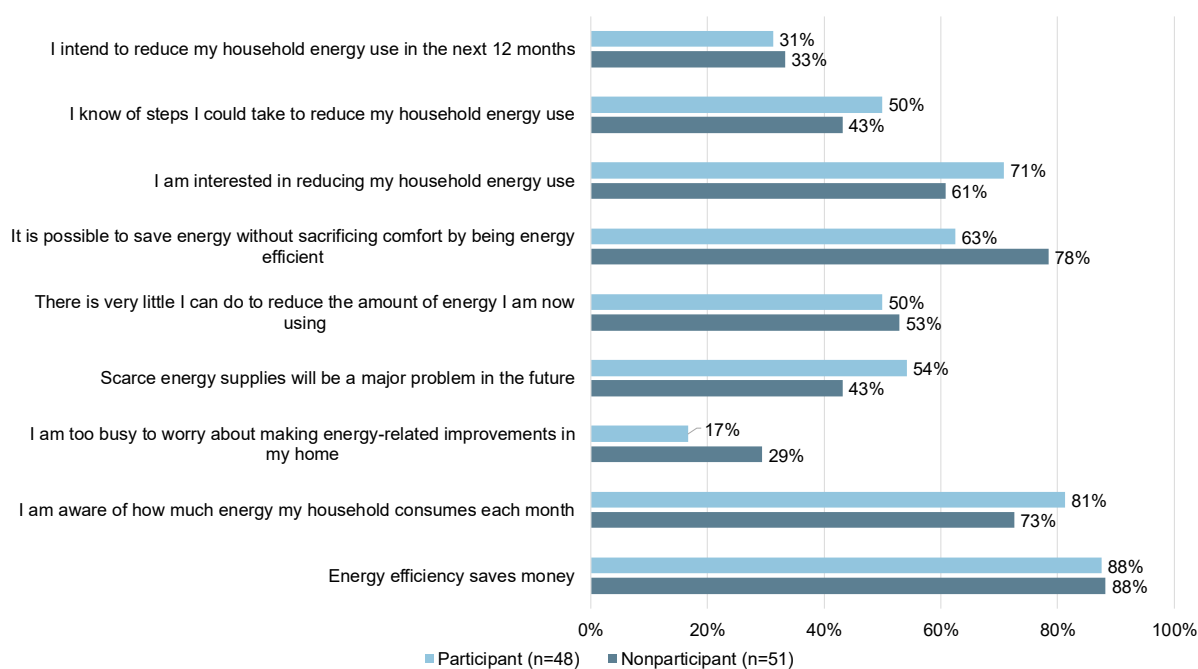
Table C-35: Installation of Energy Efficient Items/Products in Past 12 Months by Participants and Nonparticipants

Measure	Participants (n=51)	Nonparticipants (n=48)
Smart thermostat (e.g., Nest, Lyric, EcoBee, Sensi)	4%	4%
Energy efficient windows	0%	4%
Attic, floor or wall insulation	0%	4%
Low flow showerheads	4%	0%
ENERGY STAR® dishwasher	8%	0%
ENERGY STAR® clothes dryer	6%	2%
ENERGY STAR® clothes washer	8%	2%
ENERGY STAR® central air conditioner	6%	8%
ENERGY STAR® heat pump	2%	0%

Survey respondents generally endorsed positive beliefs and attitudes about energy efficiency, with similar attitudes among participants and nonparticipants (see Figure C-6). The portion of nonparticipants and participants that endorsed beliefs was similar. There were no statistically significant differences between participants and nonparticipants.

Barriers to additional energy-saving actions and purchases may include a lack of knowledge about the steps to take and awareness about household energy use. Responses to the level of agreement questions regarding energy attitudes and behaviors indicated that these factors were barriers. About half of all respondents indicated that they did not know of steps they can take to save energy. Survey findings also indicate being too busy to make energy-related improvements and not being interested in household energy use may also be barriers, though to a lesser extent (see Figure C-6).

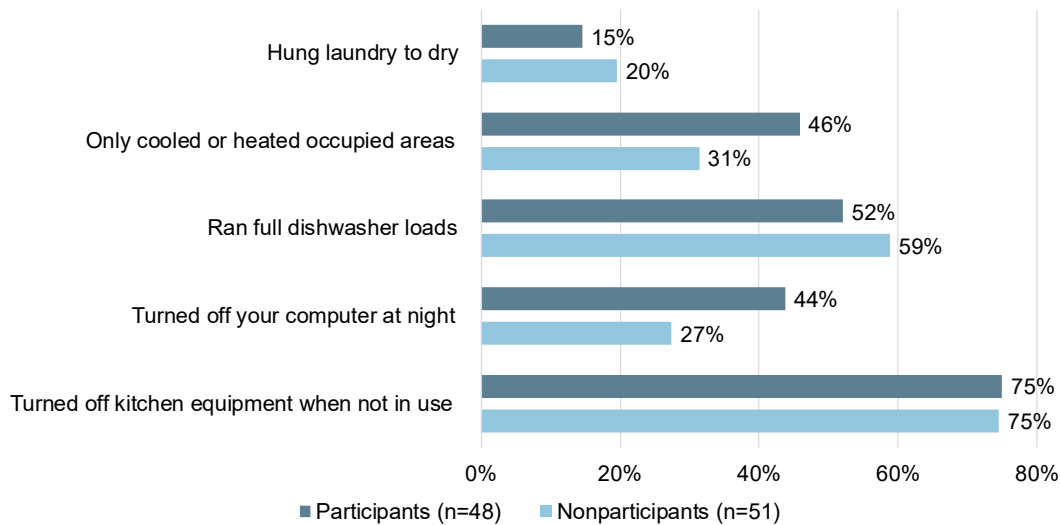
Figure C-6: HEER Customers' Energy Efficiency Beliefs and Attitudes⁶⁹



Participants and nonparticipants reported taking routine energy-saving actions at similar rates. ADM asked HEER participants and nonparticipants about up to five routine energy-saving actions that they had been recommended through the reports. The portion of respondents who indicated they took these actions most or all of the time was similar, and there were no statistically significant differences between the participants and nonparticipants (see Figure C-7).

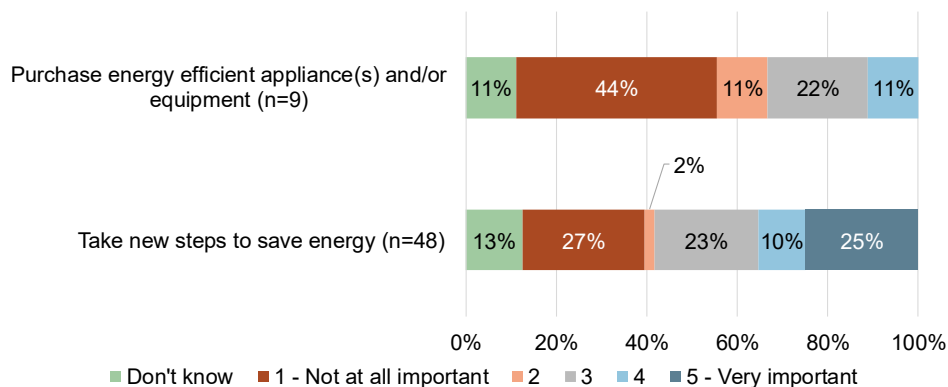
⁶⁹ Figure displays agreement as defined with a rating of 7 or higher on scale from 0 (strongly disagree) to 10 (strongly agree). ADM compared the proportions with two proportion z-tests.

Figure C-7: Routine Energy-Saving Actions Taken in Past 12 Months⁷⁰



Most HEERs participants indicated that the reports were not important in their decision to take steps to save energy or buy energy efficient products. ADM asked participants to rate the importance of the HEERs on their decision to take new steps to save energy and purchase energy efficient appliance(s) and/or equipment (See Figure C-8).

Figure C-8: Importance of HEERs on Participant Energy Saving Actions and Purchases



Most survey respondents had not participated in any Evergy energy efficiency program in the past 12 months. The portion of HEER participants and nonparticipants that reported having participated in an Evergy program in the past 12 months was similar. None of the treatment customers indicated that they had participated in an Evergy energy efficiency offering in the past 12 months, compared to 2 percent of control customers.

⁷⁰ Figure displays portion of respondents who indicated taking these actions all or most of the time. Respondents were asked “How often in the last 12 months had you thought about or done the following?” and given six options (never considered, considered, done sometimes, done most of the time, done all the time and not applicable to my home).

A similar portion of participants and nonparticipants noticed advertisements for Evergy energy efficiency programs in the past 12 months. Twenty-five percent of nonparticipants and 27 percent of participants said they had noticed advertisements for Evergy's programs.

The primary reason customers had not taken advantage of Evergy offerings is that they were not aware of them. Forty-four percent of respondents indicated the reason they had not participated was that they were not aware of Evergy's offerings. Table C-36 displays the reasons that survey respondents had not participated in Evergy offerings.

Table C-36: Reasons HEER Participants and Nonparticipants Had Not Participated in Evergy Offerings

Reason	Percentage of Respondents (n=97)
Was not aware of them	44%
Home is not in need of any of the equipment or services offered	16%
Had not considered action prior to taking this survey	8%
Too much effort or cost to participate for expected reduction in electric usage	6%
Time it would take	6%
Not interested in reducing my electric usage	5%
Don't have the authority to take actions	5%
Don't know	4%
Unprompted Responses – Open-Ended or “Other” Reasons	
Do not qualify to participate in programs	3%
Difficulty navigating program offerings (materials not in native language or other issues understanding offerings)	2%
Programs or services were not clear in home energy report	2%
Not interested in participating in programs (No additional information provided)	1%
Signed up to participate in weatherization program but did not hear back	1%
Do not believe participation will reduce electricity consumption	1%

Nonparticipants are learning about Evergy programs from bill inserts and other mail from Evergy. Of those who had noticed advertisements about Evergy's programs in the past 12 months, 85 percent said they noticed them in bill inserts or other mail from Evergy. Table C-37 displays where nonparticipants had seen advertisements about Evergy's programs.

Table C-37: Nonparticipant Sources of Evergy Program Awareness (n=13)⁷¹

Source	Percent (n=13)
Evergy bill insert	77%
Other mail from Evergy	31%
Word of mouth (e.g., colleague/friend, family)	8%
Post by someone other than Evergy on a social networking site (e.g., Facebook or Twitter)	8%
Television	8%

HEER participants and nonparticipants reported similar heating and cooling behaviors. Forty-six percent of all survey respondents indicated their home had a programmable or smart thermostat (47 percent of participants, 46 percent of nonparticipants). Average summer and winter setpoints were similar across groups (see Table C-38). About a third of all respondents said they had adjusted their thermostat settings in the past 12 months in order to save energy (33 percent of participants, 31 percent of nonparticipants).

Table C-38: Average Participant and Nonparticipant Thermostat Setpoints (Degrees Fahrenheit)

	Summer			Winter		
	Participants	Nonparticipants	Overall	Participants	Nonparticipants	Overall
Someone home during the day	74.00	73.10	73.55	71.45	69.96	70.69
No one home during the day	75.95	74.05	75.00	69.41	68.43	68.91
During the night	74.05	72.30	73.20	70.23	68.32	69.27

Nonparticipants indicated that their homes tended to be occupied more often than participants. ADM asked survey respondents to estimate the number of hours their homes were occupied on weekdays and weekends (see Table C-39).⁷² Nonparticipants indicated their homes tended to be occupied by about 2.5 hours more on weekdays and 2 hours more on weekends.

⁷¹ Respondents could select more than one source of program awareness.

⁷² The difference in occupancy was statistically significant at p=0.05 for weekdays and p=0.10 for weekends.

Table C-39: Average Home Occupancy for Participant and Nonparticipants (Hours)

Type of Day	Participants	Nonparticipants	Overall
Weekday	18.85	21.31	20.12
Weekend	19.96	21.88	20.95

C.11 Conclusions and Recommendations

The following summarizes the key findings of the evaluation of the Home Energy Education Program:

- **Conclusion: The verified program energy savings of 827,689 kWh and verified program demand savings of 297.23 kW for PY1.**
- **Conclusion: Cohorts had annual percent savings of approximately 0.10 percent annual savings per home.** Savings were only considered for the first year, from April 2024 to December 2024.
- **Conclusion: The two cohorts had statistically different pre-period daily usage.** These differences are more prominent in the spring and fall seasons, but better matching is shown during the summer and winter seasons.
- **Conclusion: Projected full-year results indicate that a large portion of savings occurred during the heating season.** When including January through March, Kansas Central annual savings per home increased from 9.94 kWh to 28.93 kWh, and Kansas Metro increased from 10.38 kWh to 19.48 kWh. These findings may be correlated with a higher prevalence of heat pumps installed in the high-energy-consuming homes targeted by the program. Alternatively, what appear to be higher savings during the heating season may have less to do with seasonality and more to do with program ramp up.
- **Conclusion: When split by city, Kansas City showed the lowest projected full-year annual savings per home at 0.07 percent out of the three metropolitan areas.** Topeka had the greatest savings at 1.04 percent, and rural (city type “Other”) did not have savings.
- **Conclusion: A similar portion of participants and nonparticipants noticed advertisements for Evergy energy efficiency programs in the past 12 months.** Twenty-five percent of nonparticipants and 27 percent of participants said they had noticed advertisements for Evergy’s programs.

- **Conclusion: Most survey respondents had not participated in any Evergy energy efficiency program in the past 12 months.** The portion of HEER participants and nonparticipants that reported having participated in an Evergy program in the past 12 months was similar. None of the treatment customers indicated that they had participated in an Evergy energy efficiency offering in the past 12 months, compared to 2 percent of control customers.
- **Conclusion: The primary reason customers had not taken advantage of Evergy offerings is that they were not aware of them.** Forty-four percent of all survey respondents indicated the reason they had not participated was that they were not aware of Evergy's offerings.
- **Conclusion: One-fifth of participant and nonparticipant records contained invalid phone contact information or customers unaware of participation.** Twenty percent of customers ADM attempted to reach had invalid contact information included in the program's tracking data. This included phone numbers that call staff noted as disconnected, wrong numbers, or as having technical issues.
- **Conclusion: There may be a ceiling to the portion of HEER participants that are willing to sign up for Evergy online accounts due to a lack of comfort with or aversion to using technology or the internet and/or preference for other methods of bill payment.** Over half of all survey respondents (participant and control) indicated that the reason they had not created an online account was that they either did not have a computer or smartphone or preferred to avoid using them

The following recommendations are offered for continued improvement of the Home Energy Education Program:⁷³

- **Recommendation: Balance participant groups by pre-period energy consumption.** To better compare differences in usage between treatment and control groups, future waves should consider pre-period usage by season when constructed.
- **Recommendation: Consider investigating the savings of low-income and rural customers.** From the exploratory analysis, Kansas City and rural areas had smaller savings. The difference in savings could be explained by demographic factors.

⁷³ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

- **Recommendation: Continue to highlight Evergy’s energy efficiency program offerings through bill inserts, mailers, and HEERs to participants.** The non-digitally engaged customers targeted by the program may be more prone to learn about program offerings through forms of traditional outreach more than online advertisement such as paid search, videos, or website banners.
- **Recommendation: Provide customers with the opportunity to update contact information to facilitate future research.** Evergy or implementation staff could include a postage paid return letter with HEERs that allowed customers to update their account contact name, address, and phone number. Alternatively, a postage paid return letter could be provided to both participant and nonparticipant group customers as a bill insert.
- **Recommendation: Consider a more limited approach to promoting digital engagement in print HEERs—for instance, including digital sign-up messaging in every other report rather than all reports.** In print HEERs, customers always receive the ‘Save with email Home Energy Reports’ module until they sign up with an email. While promoting digital engagement can successfully encourage some participation, repeatedly pushing online account sign-ups in print HEERs may alienate a portion of customers or use valuable print report space inefficiently. A more limited approach to online account and digital HEER engagement would give reports more opportunities to highlight Evergy’s energy efficiency program offerings, ways to save energy, or more information on the normative comparison of customers energy use.

Appendix D Whole Business Efficiency Program-Specific Methodologies and Results

This appendix describes the evaluation activities that were performed by ADM to evaluate the Whole Business Efficiency (WBE) Program.

D.1 Program Overview

The Whole Business Efficiency program is designed to encourage effective utilization of electric energy by offering rebates for energy efficiency improvements for facility modernization, and industrial process improvement.

Measures include, but are not limited to, the following equipment types:

- Lighting and Controls
- Motors, Pumps, and Variable Frequency Drives
- HVAC – custom only
- Food Service and Refrigeration

Table D-1 provides a summary of program metrics for the PY1 Whole Business Efficiency Program.

Table D-1: Performance Metrics – Whole Business Efficiency Program

Metric	PY1 Total	KS Central	KS Metro
Number of Projects Completed	132	55	77
Energy Impacts (kWh)			
Reported Energy Savings	3,566,316	1,804,073	1,762,243
Gross Verified Energy Savings	5,186,947	2,209,915	2,977,033
Net Verified Energy Savings	5,031,339	2,143,617	2,887,722
Peak Demand Impacts (kW)			
Reported Peak Demand Reductions	1,410.22	691.03	719.19
Gross Verified Peak Demand Reductions	541.51	256.52	284.99
Net Verified Peak Demand Reductions	525.26	248.82	276.44
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.02	0.80	1.35

Table D-2 provides a breakdown of the types of businesses/industries served in the WBE Program.

Table D-2: Types of Businesses / Industries Served

Jurisdiction	Type of Businesses Served	Number of Projects*
KS Central	Automotive Services	1
	Manufacturing Facility	4
	Municipal Building	2
	Office - Low Rise	2
	Office - Mid Rise	2
	Other	1
	Restaurant	4
	Retail - Strip Mall	6
	School (Elementary)	24
	School (Middle/High)	7
	Warehouse	2
KS Metro	Automotive Services	1
	Convenience Store	2
	Entertainment/Recreation	2
	Grocery	1
	Hospital	1
	Manufacturing Facility	3
	Municipal Building	3
	Office - Low Rise	6
	Office - Mid Rise	1
	Other	10
	Religious Building	5
	Restaurant	14
	Retail - Strip Mall	11
	School (Elementary)	9
	School (Middle/High)	1
	Warehouse	7
Total		132

*A unique project could have multiple business served, i.e., projects with interior and exterior lights.

D.2 EM&V Methodology

The following section details the methodologies ADM used to estimate energy savings and peak demand reduction and assess the performance for the WBE Program.

D.2.1 Data Collection

Data collection included compiling information from program tracking data, and program specific documentation including specification sheets, invoices, calculators, and customer interviews. The program tracking data for M&V review was obtained from the iEnergy database. This tracking data was used as the basis for quantifying participation and assessing program impacts. Tracking data contained measure descriptions, measure characteristics, and project dates. Specification sheets, invoices, and calculators were downloaded from the implementation contractor's database. ADM performed site visits, installed monitoring equipment, and interviewed customers to confirm details about projects.

D.2.2 Sampling Plan

The sample consisted of measures that had valid program tracking data. Participants were identified with unique project numbers provided to each project by the implementation contractor. ADM used a stratified sampling plan to reach the overall target of ± 10 percent precision at the 90 percent confidence level (CL). Table D-3 shows the WBE sampling plan.

Table D-3: WBE Sampling Plan

Stratum	Number of Projects	Average Reported Savings per Project	Standard Deviation of Reported Savings	CV	Sum of Reported Savings	Number of M&V Sample Sites	Relative Precision	Absolute Precision
1	1	417,899	-	0.20	417,899	1	0.00%	-
2	4	209,672	37,092	0.20	838,687	3	9.50%	79,654
3	8	88,354	13,133	0.20	706,832	2	20.15%	142,406
4	16	43,339	11,387	0.26	693,430	6	13.95%	96,731
5	56	13,318	6,041	0.45	745,782	8	24.42%	182,143
6	47	3,483	1,636	0.47	163,686	3	43.18%	70,676
Total	132	27,018			3,566,316	23	7.64%	272,309

D.3 Impact Evaluation Methodology

D.3.1 Annual Energy Savings

The method used to calculate and verify energy savings (kWh) consisted of:

- **Program tracking data census review.** The tracking data was reviewed for a census of projects and measures. The data was verified for duplicate participation within the program and to ensure there were no discrepancies within the tracking data.
- **Reported savings reviewed for sampled sites.** Reported savings calculations were reviewed for all measures to determine the cause of savings discrepancies.
- **Standard for verification of savings.** The calculation of gross energy savings and demand reduction impacts primarily relied on energy savings values and algorithms from the Evergy TRM and custom algorithms. Data from the program tracking data, customer interviews, and site-specific inputs, from direct measurements and/or visual inspections, were used as inputs to the savings algorithms as outlined in the Evergy TRM.

D.3.2 Peak Demand Reduction Savings

ADM utilized normalized energy savings curves to determine peak demand reduction savings for each participant. A normalized energy savings curve is comprised of 8,760 hourly fractions summing to exactly 1 (unity). For each sampled project and non-sampled measure types, ADM assigns a verified annual kWh savings, which is then multiplied by each of the 8,760 hourly fractions to disaggregate the annual kWh into 8,760 hourly kW bins.

Normalized energy savings curves were developed for each sampled project by verifying energy use schedules. Non-sampled measures were assigned annual load shapes from the IL TRM.

The normalized energy savings curves were then used to determine the maximum value in July during hour 17, which is the middle of Evergy KS peak demand hours (July, hours 16-18).

D.4 Impact Evaluation Results

The gross verified energy and energy realization rates by customer project in the evaluation sample are shown in Table D-4.

Table D-4: Sample Project Energy Realization Rates

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
5863	417,899	336,730	81%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with amp monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets and one time power monitoring, no interactive energy factors for exterior lighting, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measure for (4) unique measure installations - HOU's increased RR for measures, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6109	186,347	67,732	36%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(6) KEEIA TRM Measures for (7) unique measure installations - HOU's decreased RR for measures, baseline and post fixture wattages decreased and increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6517	253,381	354,075	140%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs.	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(7) KEEIA TRM Measures for (23) unique measure installations - HOU's increased and decreased RR , baseline and post fixture wattages decreased and increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6681	172,413	252,297	146%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU as exterior photocell HOU, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(3) KEEIA TRM Measures for (3) unique measure installations - HOU increased RR, baseline and post fixture wattages increases and decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6230	76,756	105,413	137%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs.	Monitored Savings	Lighting: verified HOU with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(7) KEEIA TRM Measures for (18) unique measure installations - HOU increased and decreased RR, baseline and post fixture wattages decreased and increased, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6920	72,667	125,650	173%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU as exterior photocell HOU, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(3) KEEIA TRM Measures for (4) unique measure installations - HOU increased RR, baseline and post fixture wattages decreased and increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
5870	32,266	24,309	75%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(4) KEEIA TRM Measures for (5) unique measure installations - HOU decreased and increased RR, baseline and post fixture wattages decreased and increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6147	49,645	20,968	42%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs.	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU's increased and decrease RR, baseline and post fixture wattages decreased and increase RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6287	34,208	26,727	78%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs.	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(3) KEEIA TRM Measures for (5) unique measure installations - HOU's increased and decreased RR, baseline and post fixture wattages decreased RR and increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6335	37,761	15,408	41%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measure for (1) unique measure installation - HOU's decreased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6343	42,506	51,120	120%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs.	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(2) KEEIA TRM Measures for (3) unique measure installations - HOU's increased and decreased RR, baseline and post fixture wattages increased and decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6465	53,289	76,425	143%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU's as exterior photocell HOU's, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(1) KEEIA TRM Measure for (1) unique measure installation - HOU's increased RR, baseline and post fixture wattages increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
5889	11,014	11,845	108%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(4) KEEIA TRM Measures for (4) unique measure installations - HOU's increased and decreased RR, baseline and post fixture wattages increased and decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
6073	12,594	9,663	77%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(3) KEEIA TRM Measures for (3) unique measure installations - HOU's decreased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6177	26,709	39,991	150%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(3) KEEIA TRM Measures for (3) unique measure installations - HOU's increased and decreased RR, baseline and post fixture wattages increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
6478	8,375	10,675	127%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU's as exterior photocell HOU's, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU's increased RR, baseline and post fixture wattages increased and decreased, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
6537	18,348	140,598	766%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU's as 24/7, seems likely since the lights were installed at the entrance of a mine, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(1) KEEIA TRM Measure for (2) unique measure installations - HOU's slightly decreased RR, baseline and post fixture wattages increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
6931	7,568	18,103	239%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU's as exterior photocell HOU's, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(1) KEEIA TRM Measure for (1) unique measure installation - HOU's slightly increased RR, baseline and post fixture wattages increased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6940	19,217	21,323	111%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU as exterior photocell HOU, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU increased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
6948	19,633	21,125	108%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU as exterior photocell HOU, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(1) KEEIA TRM Measure for (1) unique measure installation - HOU increased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
5919	2,464	2,081	84%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measure for (1) unique measure installation - HOU decreased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.
6098	3,061	11,843	387%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(3) KEEIA TRM Measures for (2) unique measure installations - HOU increased and decreased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Energy Realization Rate (%)	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6103	3,891	19,759	508%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measure for (2) unique measure installations - HOU's increased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR.

The gross verified demand reductions and energy realization per load shape are shown in Table D-5.

Sampled sites used normalized energy savings curves were developed by creating project specific energy use schedules from the measured primary data. Non-sampled measures were assigned annual load shapes from the IL TRM. Many non-sampled measures were assigned to IL TRM load shaped based on their measure type and the project's given building type. When the building type wasn't provided for a given project, non-residential building types were assumed.

Flat load shapes were assigned to measures that uniform usage across a year: 24/7 lighting, ECM motors in refrigerator and freezers, miscellaneous customer measures.

Exterior lightings measures were assigned to an ADM created load shape based on KS sunrise and sunset times. All exterior lighting measures were assumed to be controlled with a photocell and follow sunrise and sunset times.

Table D-5: Demand Reductions Results for Sampled and Non-Sampled Projects

Type of Site	Load Shape Name	Verified Energy Savings (kWh)	Sum of Reported Demand Reduction (kW)	Sum of Verified Demand Reduction (kW)	Demand Reduction Realization Rate (%)
Sampled Site	5863	336,730	3.98	0.00	0%
Sampled Site	5870	24,309	18.47	4.24	23%
Sampled Site	5889	11,845	9.96	1.12	11%
Sampled Site	5919	2,081	2.34	0.26	11%
Sampled Site	6073	9,663	11.95	1.00	8%
Sampled Site	6098	11,843	2.90	1.49	51%
Sampled Site	6103	19,759	3.69	2.27	61%
Sampled Site	6109	67,732	109.72	7.42	7%
Sampled Site	6147	20,968	32.09	3.87	12%
Sampled Site	6177	39,991	0.99	0.28	28%
Sampled Site	6230	105,413	43.34	13.32	31%
Sampled Site	6287	26,727	31.62	7.30	23%
Sampled Site	6335	15,408	22.62	2.66	12%
Sampled Site	6343	51,120	26.89	11.19	42%

Type of Site	Load Shape Name	Verified Energy Savings (kWh)	Sum of Reported Demand Reduction (kW)	Sum of Verified Demand Reduction (kW)	Demand Reduction Realization Rate (%)
Sampled Site	6465	76,425	0.51	0.00	0%
Sampled Site	6478	10,675	0.08	0.00	0%
Sampled Site	6518	354,075	91.07	59.33	65%
Sampled Site	6537	140,598	0.04	16.05	44832%
Sampled Site	6681	252,297	1.64	0.00	0%
Sampled Site	6920	125,650	0.69	0.00	0%
Sampled Site	6931	18,103	0.07	0.00	0%
Sampled Site	6940	21,323	0.18	0.00	0%
Sampled Site	6948	21,125	0.19	0.00	0%
Non-Sampled Site	Cooling Non-Residential	378,822	69.20	97.40	141%
Non-Sampled Site	Flat	79,378	4.19	9.06	216%
Non-Sampled Site	Lighting Exterior	256,901	1.15	0.00	0%
Non-Sampled Site	Lighting Non-Residential	2,707,986	920.64	303.27	33%

A summary of stratum-level and verified gross energy and demand impacts and realization rates are shown in Table D-6.

Table D-6: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Strata

Sampling Stratum	Relative Precision	Sum of Reported kWh Savings	Sum of Verified kWh Savings	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Realization Rate kWh (%)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Sum of Reported kW Savings	Sum of Verified kW Savings	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate kW (%)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
1	0.00%	417,899	336,730	336,730	336,730	81%	81%	81%	3.98	-	-	-	0%	0%	0%
2	9.50%	838,687	923,583	835,843	1,011,323	110%	100%	121%	240.20	119.90	108.51	131.30	50%	45%	55%
3	20.15%	706,832	1,093,025	872,780	1,313,269	155%	123%	186%	265.29	86.09	68.74	103.44	32%	26%	39%
4	13.95%	693,430	597,008	513,725	680,290	86%	74%	98%	381.83	145.34	125.07	165.62	38%	33%	43%
5	24.42%	745,782	1,651,083	1,247,889	2,054,278	221%	167%	275%	407.03	149.87	113.27	186.46	37%	28%	46%
6	43.18%	163,686	585,519	332,692	838,346	358%	203%	512%	111.89	40.30	22.90	57.71	36%	20%	52%
Total	7.64%	3,566,316	5,186,947	4,790,665	5,583,230	145%	134%	157%	1,410	541.51	500.14	582.88	38%	35%	41%

A summary of reported and verified gross energy and demand impacts are shown in Table D-7.

Table D-7: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Jurisdiction

Jurisdiction	Relative Precision	Reported Energy Savings (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings kWh 90% CI (Lower)	Verified Energy Savings kWh 90% CI (Upper)	RR (kWh)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	7.64%	1,804,073	2,209,915	2,041,077	2,378,752	122%	113%	132%	691.03	256.52	236.92	276.12	37%	34%	40%
Kansas Metro	7.64%	1,762,243	2,977,033	2,749,588	3,204,478	169%	156%	182%	719.19	284.99	263.22	306.76	40%	37%	43%
Total	7.64%	3,566,316	5,186,947	4,790,665	5,583,230	145%	134%	157%	1,410.22	541.51	500.14	582.88	38%	35%	41%

Table D-8: Lifetime Energy Savings (kWh)

Stratum	Relative Precision	Energy Savings (kWh)	EUL	Lifetime Energy Savings (kWh)	Lifetime Energy Savings 90% CI (Lower)	Lifetime Energy Savings 90% CI (Upper)
1	0.00%	336,730	15	5,050,952	5,050,952	5,050,952
2	9.50%	923,583	11	9,812,460	8,880,276	10,744,643
3	20.15%	1,093,025	13	14,196,265	11,335,718	17,056,813
4	13.95%	597,008	14	8,646,248	7,440,096	9,852,399
5	24.42%	1,651,083	9	15,121,021	11,428,467	18,813,574
6	43.18%	585,519	7	3,822,794	2,172,112	5,473,477
Total	7.64%	5,186,947	-	56,649,740	52,321,699	60,977,780

D.5 Ongoing Activities to Mitigate Realization Rate Issues

In PY1, the Whole Business Efficiency and Hard to Reach Business programs produced highly variable realization rates and demand reduction realization rates. These differences are expected due to using outdated values in the TRM. However, the KEEIA TRM will be updated within the next couple of months: deemed savings values and incremental cost will be adjusted, and new measures will be added where appropriate. The TRM's deemed demand reductions, and its kW/kWh load factor, were significantly different than industry standard load factors and verified load factors.

Additionally, going forward, the programs could use the implementation contractor's measured savings for standard measures instead of the deemed number from the KEEIA TRM.

Large differences in realizations rates will always exist until both the implementation contractor and evaluation use similar methods. The evaluation contractor's verified energy and demand savings were calculated by using measured primary data. Many of the implementation contractor's savings calculations were based on the KEEIA TRM.

D.6 Net Savings Methodology

ADM incorporated a battery of free ridership and spillover questions in its customer surveys. The Whole Business Efficiency Program includes a range of energy efficiency measures. The participant survey asked questions for each measure type. Free ridership scores were determined through questions about intentions and program influence, as well as a consistency check question.

D.6.1 Intention Score

A survey of participants that received an incentive will be used to assess free ridership for the downstream upgrades of the Whole Business Efficiency Program. Table D-9 below summarizes intention free ridership scoring for the Whole Business Efficiency Program. When scoring intentions, ADM began with a score of 100 percent and applied adjustments based on the responses as shown in the table. All intention scores ranged between 0 percent (no free ridership) and 100 percent (full free ridership).

Table D-9: Whole Business Efficiency and Hard-to-Reach Businesses Incentive Intention Score

D1. Did your organization have specific plans to install the [MEASURE1] BEFORE learning about the Evergy program incentive?	D2. [ASK IF D1=Yes or DK] Before hearing about the program incentive, was the purchase of the [MEASURE] included in your organization's capital budget?	D3. [ASK IF D2=Yes or Do not have capital budget] Had your organization ALREADY ordered or purchased the [MEASURE] BEFORE you heard about the program?	D4. [ASK IF D3=Yes] Just to be clear, is it correct that you installed, ordered, or purchased the [MEASURE] before you heard anything about the EVERGY program?	D5. Without the incentive and information or education from Evergy would you most likely have still purchased the [MEASURE]?	D6. [ASK IF D5=No] So, without the incentive and information or education from EVERGY, you would not have installed or purchased the [MEASURE] at all. Is that correct?	D7. Without the incentive and information and education from Evergy, what efficiency level of [MEASURE] would you most likely have purchased?	D8. Without the incentive and program information from Evergy, when would you have installed this equipment without the program? Would you have installed it?	D9. Did the incentive help the [MEASURE] project receive implementation approval from your organization?	D10. Without the incentive and information or education from Evergy, how many [MEASURE](s) would you most likely have purchased?
Yes (Yes) [-0%]	Yes (Yes) [-0%]	Yes (Yes) [-0%]	Yes (Yes) [100% Intention FR Score assigned]	Yes (Yes) [-0%]	Yes/correct, would not have installed without the program incentive (No) [-100%]	Same efficiency installed or higher (Yes) [-0%]	In the same year (Yes) [-0%]	Yes (No) [-50%]	OPEN ENDED Final intention free ridership score = Initial intention free ridership score multiplied by percent would have installed without program (quantity adjustment)
No (No) [-50%]	No (No) [-50%]	No (No) [-0%]	No (No) [-0%]	No (No) [-50%]	No/not correct, would have installed something without the incentive (Yes) [-0%]	Lower efficiency (Partial2) [-50%]	Within one to two years (Partial2) [-50%]	No (Yes) [-0%]	Don't know [-0%]
Don't know [-0%]	Do not have a capital budget (-0%)	Don't know [-0%]	Don't know [-0%]	Don't know [-0%]	Don't know [-0%]	Lowest efficiency or lowest cost option available (No) [-100%]	Within three to five years (No) [-100%]	Don't know [-0%]	
	Don't know [-0%]					Would not have purchased [-100%]	In more than five years or (No) [-100%]		
						Don't know [-0%]	Never (No) [-100%]		
							Don't know [-0%]		

D.6.2 Influence Score

The program influence score was based on ratings of the importance of a series of program factors. Respondents were asked to rate how important each of the factors was in their decision to make the energy efficiency improvements. The highest score possible was a '5' for extremely important and represents the influence part of the free ridership score for the program. High program influence and free ridership have an inverse relationship – the greater the program influence, the lower the free ridership score. The list of factors that respondents rated were:

- The program incentives
- Recommendation from program staff (if applicable)
- Information about energy efficiency that program provided
- Information or recommendation from contractor (if applicable)
- Previous participation in an Evergy energy efficiency program

Table D-10: Whole Business Efficiency Free Ridership Influence Scores

Response	Influence Score
1 (Not at all important)	100%
2	75%
3	50%
4	25%
5 (Extremely important)	0%

D.6.3 Consistency Check

The survey included a question to describe what impact, if any, the program had on customers' decision to implement or install energy efficient equipment:

- In your own words, can you please describe how important the incentive and information or education from Evergy was on your decision to purchase and install the high efficiency [MEASURE]?

If a respondent was determined to be a non-free rider (0 percent) or pure free rider (100 percent) and their response to the open-ended consistency question contradicted the determination of non-free rider or pure free rider, an adjustment to their free ridership score was considered (for example, customers' intention free ridership score and/or influence free ridership score may have been adjusted to 50 percent).

D.6.4 Final Free Ridership Score

The final free ridership value for the program (and measure categories) was calculated as the arithmetic mean of the verified gross savings weighted intention (maximum score 100 percent) and verified gross savings weighted influence (maximum score 100 percent) free ridership components, resulting in a value between 0 percent and 100 percent, as shown in this equation:

Equation 8-14: Final Free Ridership

$$\text{Final Free Ridership Ratio} = \frac{\text{Intention Score} + \text{Influence Score}}{2}$$

D.6.5 Spillover

Participant spillover addresses situations where the participant reports activities, purchases, and/or installations of high-efficiency equipment that is not funded through the program but was influenced by the customer's participation in the program. ADM will collect data using questions that ask program participants if the program prompted a decision to install other energy efficient measures or to make other energy efficient improvements beyond what was specifically incentivized through the program.

The Whole Business Efficiency (Business Energy Savings) participant survey included questions similar to the following:

Since participating in the program, have you made any energy-efficiency improvements or installed any other energy-efficiency products or made any improvements that you did NOT receive for free or a program incentive for from Evergy or another organization?

[If yes] Please select the energy-efficient products or improvements that you purchased (and installed, if applicable) since participating in the program. Select all that apply.

The survey then asked respondents about the level of influence the program participation had on their decision to install the added measures, using a question similar to the following:

On a scale from 1 to 5, with 1 meaning not at all important and 5 meaning extremely important, please rate how important your experience with the Evergy program was in your decision to install this/these energy-efficient products(s) or make these improvements.

Additional measure purchases associated with an "extremely important" program rating were considered for spillover attribution to the program.

Respondents were asked measure-specific follow-up questions to provide ADM with information to determine whether the additional measures they purchased were high-efficiency. Following data collection, ADM reviewed program tracking data to ensure customers who report spillover measures did not receive a incentive for that measure through the program. Once program influence and lack of incentive were confirmed, ADM reviewed reported information about the spillover measure (e.g., efficiency rating, amount). If insufficient data was collected about the spillover measure, average or deemed savings values were assigned for each measure.

In general, the steps for estimating participant spillover were as follows:

Calculate total spillover savings for each participant as the product of measure savings and number of units associated with “extremely important” program influence ratings.

$$\text{Measure Spillover} = \text{Measure Savings} \times \text{Number of Units}$$

Total the savings associated with each program participant, to give the overall participant spillover savings.

$$\text{Participant Spillover} = \text{Sum of Measure Spillover}$$

Multiply the mean participant spillover savings for the participant sample by the total number of participants to yield an estimated total participant spillover savings for the program.

$$\text{Total Participant Spillover Savings} = \text{Sum of Participant Spillover} \div \text{Sample } n \times \text{Population } N$$

Divide that total participant spillover savings by the total gross program savings to yield a participant spillover ratio to be included in the calculation of the NTG ratio.

$$\text{Participant Spillover Ratio} = \text{Total Participant Spillover} \div \text{Total Gross Program Savings} \times 100\%$$

D.7 Net Savings Results

Most Whole Business Efficiency program participant survey respondents indicated they would not have purchased the qualifying equipment without the program. ADM calculated a weighted average program-level free ridership ratio of 0.03 for the Whole Business Efficiency program. The program level free ridership score is the weighted average of verified gross kWh savings for the sampled survey respondents for each program. See Table D-11 for additional detail on estimated net savings. There were 17 survey responses from Whole Business program participants. Five of these respondents indicated partial or full free ridership, ranging from 0.13-1.0. These respondents represented 12 percent of the kWh savings sampled in the survey. Of these respondents:

- Four said that without the incentive or program their organization would have purchased the same efficiency level of equipment

- Four indicated they had specific plans to install the high efficiency equipment before learning about the program
- Three said they would have installed the equipment in the same year
- One indicated their organization had already purchased the equipment before hearing about the program

To provide context for the NTG ratio found for the KEEIA Whole Business Efficiency program, we referenced an NMR literature review report completed for the state of New Jersey in 2023 (see reference in Section A.6. This NMR literature review, based on a review of 75 different commercial lighting NTG studies, found that NTG ratios ranged from 0.53-0.75 for various commercial lighting types for prescriptive and custom programs (the primary measure KEEIA Whole Business program survey respondents provided decision-making information on).

Table D-11: Free Ridership Estimates for Whole Business Efficiency Program

Program	n	Precision at 90% Level of Confidence	Free Ridership Ratio	Free Ridership 90% CI (Lower)	Free Ridership 90% CI (Upper)	Net-to-Gross Ratio	Net-to-Gross 90% CI (Lower)	Net-to-Gross 90% CI (Upper)
Whole Business Efficiency	17	0.03	0.03	0.0291	0.0309	0.97	0.9409	0.9991

D.8 Process Evaluation Methodology

The process evaluation was designed to explore the Whole Business Efficiency Program's design, barriers to participation, implementation, and outcomes. To investigate these areas, ADM reviewed program documents, spoke with program staff, conducted interviews with contractors, and surveyed customers. Process evaluation activities sought to answer the following research questions and offer specific recommendations to support program improvements.

D.8.1 Program Design and Implementation

ADM used the following questions to guide the design and implementation of the process evaluation documents, interviews, and surveys:

- How well did the program staff, implementation staff, and contractor contractors work together? Are there data tracking and communication efficiencies that can be gained?
- How are the program operations designed for each channel and what are the perceived outcomes? Are these being fulfilled as expected? Are there ways to improve the design or implementation process?

- Are there underlying assumptions about the program design and operation that impact how effective the program is?
- What are the contractor experiences with the rebate application process?
- How are customers learning about the available incentives? Are the marketing efforts effective and useful or are customers finding out about the program in other ways?
- Are customers learning about the program through contractors directly or from other sources? How are contractors marketing the program? Are there ways to support contractor marketing?
- Were participants satisfied with the incentive amount, the application process (whether through Evergy directly or through their contractor), and the product they installed? What are the causes of dissatisfaction?
- What are participants' experiences like with contractors?
- Were participants satisfied with their interactions with the contractor they worked with? What are the causes of dissatisfaction?
- What are barriers to customer participation from the contractors' perspective?

D.8.2 Implementation and Barriers to Participation

ADM used its interviews with program and implementation staff to explore their roles in marketing, administering, and implementing the program. ADM asked staff to describe their organization's work and investigate barriers to participation in the program with questions such as:

- When customers are not at all interested in participating in the program, what are the reasons? Based on your customer interactions, what do you perceive could bolster the interest of these customers?
- What are the obstacles to getting partially interested customers involved with the program? Are there ways that those obstacles could be mitigated?
- Have there been challenges with marketing?

D.8.3 Outcomes

To understand program outcomes, the Whole Home Efficiency participant survey asked customers if they were satisfied with the program and their utility service in general. These questions were used to answer research questions such as:

- Were participants satisfied with their experience? What are the causes of dissatisfaction?

- Is the program adequately serving different types of customers (e.g., based on business type, geographic area, business size)?
- Looking forward, what are key impediments and drivers to program success?

D.9 Process Evaluation Results

The process-related data collection activities for the Whole Business Efficiency Program evaluation included a facilitated discussion with Evergy management and program implementation staff as well as surveys of Whole Business Efficiency participants and contractors. The customer surveys explored customers' purchase process, their decision-making, measures purchased, and overall experience. The contractor survey explored their experience with the program's application and payment process, perceptions about customer awareness and effectiveness of the incentive levels, and the range of measures offered through the program. A summary of the process evaluation activity efforts is presented below, followed by findings by thematic area.

D.9.1 Summary of Process Evaluation Activities

ADM conducted a mixed mode survey of Whole Business Efficiency and Hard-to-Reach Businesses Program participants in December 2024 and January 2025. ADM used contact information and details available in the project Captures system to send an email invite with one reminder to all customers associated with projects that had statuses marked as 7-Completed or 5-Installed as of December 10, 2024. ADM then made phone calls with one voice mail and up to three follow-up calls, depending on the customer's availability or interest in providing feedback on a call. A total of 409 unique account numbers were included in the final tracking data. Twenty-two percent of accounts either did not have contact information or were determined to have contractor contact information included in the place of customer contact information. Sixteen percent of accounts were determined to have been added to the program after the administration of the survey.

Thirty-eight customers responded to the survey, representing 29 percent of the unique accounts (17 Whole Business Efficiency, 25 Hard-to-Reach Businesses). Four respondents were both Whole Business Efficiency and Hard-to-Reach Businesses projects.

Unless otherwise stated, the calculations, graphs, and tables in this section summarize all responses (n=38). ADM did not weight the responses as the survey sample was nearly proportional to the population.

ADM received feedback from 18 contractors that participated in the Whole Business Efficiency and Hard-to-Reach Businesses programs in December 2024 and January 2025. A total of 72 unique contractor company names and 79 unique emails were

in the program tracking data as of December 2024. All unique email addresses in the Captures data were sent an email invitation and one reminder. ADM also conducted phone outreach to follow-up, offer to administer the survey over the phone, and ensure the contact information on file was accurate. ADM collected 4 responses over the phone and 14 via email. Twenty-three percent of the unique contractors that ADM contacted responded to the survey effort, representing one-quarter of the unique contractor companies in the Captures data at the time of the survey. ADM received responses from 12 contractors that assisted Whole Business Efficiency participants and 14 contractors that assisted Hard-to-Reach Businesses participants. Eight respondents had assisted customers that had participated in both programs. The results in this section summarize all responses.

A facilitated discussion was held with Evergy and implementor program staff in January 2025. The call was held with Evergy and TRC staff. The purpose of the call was to investigate program design, implementation, barriers to success, and future plans for the program.

D.9.2 Respondent and Company Characteristics

The participants who responded to the survey had diverse titles and roles, though a significant portion said they held executive or managerial roles. Table D-12 summarizes respondents' roles or titles by category.

Table D-12: Participant Survey Respondents' Title or Roles⁷⁴

Response	Count	Percentage of Respondents (n=38)
Owner or officer	15	38%
President/CEO/Other Executive Position	9	23%
Proprietor/Owner	6	15%
Manager	9	23%
Manager (Type not specified)	3	8%
Energy manager or engineer	4	10%
Property manager	1	3%
Human Resources Accounting Manager	1	3%
Facilities or energy management/maintenance	9	23%
Facilities Manager	7	18%
Other facilities management/maintenance position	1	3%
Building and Groups Director	1	3%
Other financial/administrative position	5	13%

Most survey respondents represented small to medium organizations that owned their own facilities and were long-time Evergy customers. See Table D-13 for survey respondent firmographic information. Over three-quarters of respondents noted that their organization owned and occupied the facility where equipment had been installed and that their organization had been a customer with Evergy for 5 or more years. Forty percent of survey respondents said that their organization has a policy to always obtain quotes for high-efficiency equipment when purchasing new equipment.

⁷⁴ Percentage totals do not sum for role or title categories due to rounding. Bolded rows show sum of indented subcategories.

Table D-13: Participant Survey Respondents' Firmographic Details⁷⁵

Question	Response	Percent (n=38)
Approximate number of employees	Fewer than 10	24%
	10 to 49	21%
	50 to 99	16%
	100 to 249	16%
	250 to 499	3%
	500 or more	8%
	Don't know	13%
Which of the following best describes your organization's ownership of this facility?	Own and occupy facility	76%
	Owens facility, but it is rented to someone else	11%
	Leases facility from someone else	13%
How long has your business been a customer of Evergy?	2 to just under 3 years	5%
	3 to just under 5 years	3%
	5 to just under 10 years	3%
	10 years or longer	74%
	Don't know	16%
On average, how much does your business spend on electric and gas utility service each month?	Less than \$2,500 a month	29%
	\$2,500 to less than \$10,000	18%
	\$10,000 or more	34%
	Don't know	18%

D.9.3 Contractor Respondent Characteristics

Whole Business Efficiency and Hard-to-Reach Businesses contractor survey respondents held various positions and indicated their companies offered a range of services. Sixteen of the contacts indicated that their companies provided lighting services; the two who did not said their companies offer electrical contracting services. Other services offered included HVAC, water heating, energy consultation and engineering, building envelope measures, building automation systems, and “renewables.” Twelve respondents said their business employed 15 or fewer people; the other six said 21 or more people worked at their business. Survey respondents held various roles including

⁷⁵ Percentage totals do not sum for each category of this table due to rounding.

owners, managers, sales staff, as well as specialists, technicians, and office and administrative staff.

Most contractor survey respondents indicated having significant experience working with utility-funded energy efficiency programs. Eleven of the 18 respondents indicated their companies had six or more years of experience assisting customers with utility-funded energy efficiency programs. Two-thirds of respondents said their companies had experience working with Evergy's energy efficiency programs in Missouri.

D.9.4 Program Awareness

Evergy and implementation staff confirmed using a variety of strategies to build program awareness with contractors and customers in its first year. ADM reviewed Evergy Marketing meeting PowerPoint presentations from July to December 2024. The program conducts marketing through direct mail, email campaigns, paid search engine results, online video ads, and in-person events. Implementation staff reported that direct mail and email campaigns were particularly effective, with the capability to reach all business sites in their Customer Relationship Management (CRM) system. Use of paid search engine results was highlighted as especially valuable for reaching small businesses outside their existing contact lists.

Trade ally engagement forms a key component of the program's underlying marketing and outreach strategy. Implementation staff described treating trade allies as both partners and audience members. Seven trade ally-specific events were held in 2024. Implementation staff noted that interested trade allies have been provided with co-branded marketing materials (in-store signage and collateral). Marketing staff indicated they send monthly emails to trade allies aligned with customer campaigns, providing digital collateral and measure-specific information. They also noted sending quarterly email newsletters to maintain engagement. The program maintains a trade ally directory on Evergy's website where customers can search by location and service type. Implementation staff noted that while any contractor can participate in the program, becoming an official trade ally requires completing an orientation, providing insurance documentation, and submitting a W-9 form.

The Whole Business Efficiency and Hard-to-Reach Businesses programs are marketed similarly, though there are some targeted elements to help encourage participation. Implementation staff explained that the programs are generally marketed in the same way, though there are some tailored marketing efforts to more effectively engage with specific industries. Targeted mailings have been designed to engage representatives from sectors such as education, industrial data center services, and agriculture. They also noted that they have sent targeted messaging about bottom-line benefits to small businesses and purpose-driven content to nonprofits. Hard-to-Reach Businesses customers (small businesses and nonprofits) have also received specialized

communications directing them to specific web pages explaining qualifications as well as brochures showing enhanced incentives.

Most participating contractors inform customers of the program. Seventeen of the 18 surveyed contractors said they inform their customers of the program. The primary method contractors cited was word-of-mouth during sales visits, during sales calls, or in marketing emails. Methods of program promotion cited by the contractors are listed in Table D-14.

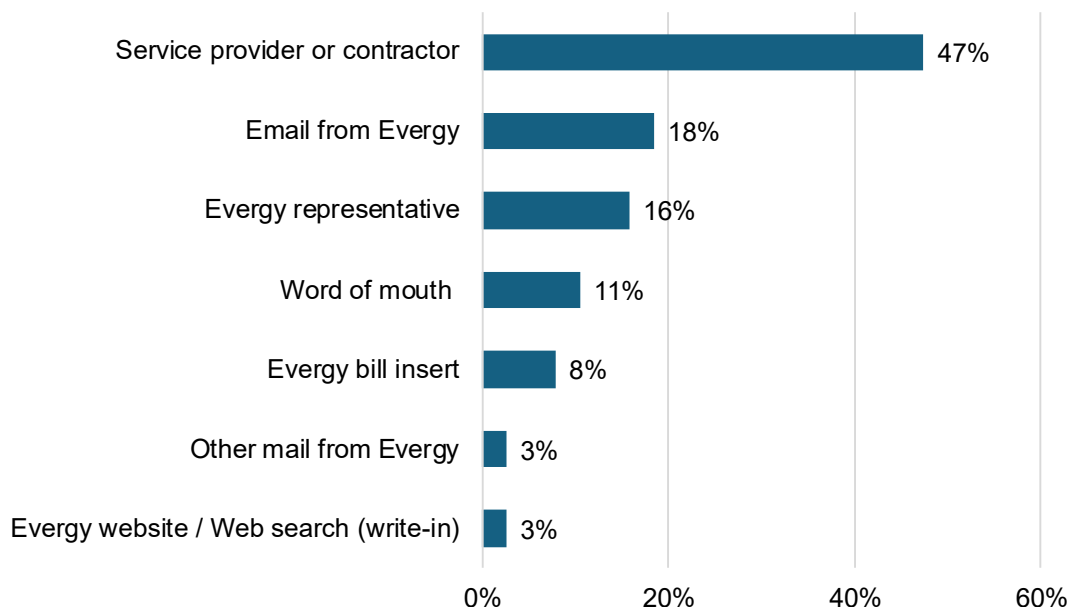
Table D-14: Contractors' Methods of Program Promotion⁷⁶

Source	Count (n = 17)
Word of mouth during in-person sales visits	15
Sales calls	7
Send information in marketing emails	7
Posts on social media	3
Send materials via US Mail	3
On company website	2
Written correspondence (Write-in)	1
During audit (Write-in)	1

Participant survey findings suggest program awareness is being driven by contractor outreach, though Evergy-led efforts are also increasing awareness. Figure D-1 displays survey respondents' sources of awareness of the Hard-to-Reach Businesses and Whole Business Efficiency programs. About half of respondents indicated they learned about the program from either the contractor that assisted them with participation (37 percent) or another contractor (11 percent).

⁷⁶ This survey question allowed respondents to select multiple responses.

Figure D-1: Participants' Sources of Program Awareness⁷⁷



Most contractors perceive customer awareness of the program to be low. Thirteen of the 18 contractors surveyed said that less than 50 percent of their customers knew about the program before they told them about it. Two contractors said that 50 percent or more of their customers knew about the program before they told them about it in the past 12 months. The other three contractors did not know or could not estimate the portion of customers that knew about it before they informed them.

D.9.5 Program Design and Operations

Higher incentives and tailored marketing are the main features that distinguish the Whole Business Efficiency and Hard-to-Reach Businesses offerings. Implementation staff noted that the primary distinction between the offerings is that the Hard-to-Reach Businesses Program offers enhanced incentives for small businesses and nonprofits. The Hard-to-Reach Businesses component of the program offers approximately 50 percent higher incentives targeted at small businesses and nonprofits. According to Evergy staff, the Whole Business Efficiency program incentives typically cover around 50 percent of incremental costs (including materials and labor), while Hard-to-Reach incentives aim to cover closer to 100 percent of incremental costs to help motivate participation from these harder-to-reach customers.

Application and payment processing time varies based on the size and type of project as well as the form of payment requested. Implementation staff stated that customers are

⁷⁷ This survey question allowed respondents to select multiple responses.

told to expect payment up to eight weeks after project completion. They noted that within six days of a project status being marked "7-Completed" they request the check from the bank; the next day the bank issues a check, and the check is mailed the next day. Bill credits typically take 4-8 weeks to process after project completion due to monthly data upload cycles. In PY1 bill credits were processed within approximately 1-2 weeks of Evergy being notified.

The program has established internal QA/QC procedures; no significant issues were identified in PY1. The implementation team conducts on-site inspections for all projects that require pre-approval and 10 percent of "fast track" projects under \$15,000. Implementation staff stated there were no trade ally specific QA/QC requirements or procedures but if they notice issues with a trade ally, they will "pause all the projects that they have and make sure we inspect all of them." They also noted that they provide additional support for trade allies as needed.

Mid-year startup and TRM updates were internal barriers for the program to meet its first-year kWh savings and kW reduction goals. Implementation staff noted that the program launched at the end of May 2024 impacted their ability to meet PY1 savings goals. Implementation staff attributed the program falling short of its goals to the need to build awareness in the first year of the program. Another barrier that impacted the program in its first year were ongoing updates to the Kansas TRM; implementation staff noted that the TRM was "outdated" and the updates had made program design difficult. Note: the TRM utilized for PY1 ex ante savings was from the initial Evergy plan filing.

Limitations on implementation contractor contact with large customers were cited as a barrier to success. Though implementation staff acknowledged multiple large users had engaged with the program in its first year, they noted that the program required all communication to Tier 1 customers to be through Evergy Customer Solutions Managers (CSMs). While the implementation team cited this requirement as a barrier to participation, both the Customer Success Managers (CSMs) and implementation teams are collaborating effectively. Marketing materials are provided to the CSMs to share with Tier 1 customers on a monthly basis, ensuring they are aware and participating in the program.

Lighting measures were a key driver of program savings in PY1. Implementation staff observed that lighting measures made up a significant portion of the measure mix in both the Whole Business Efficiency and Hard-to-Reach Businesses offerings. They noted that the program will seek to diversify savings with more focus on HVAC and refrigeration measures in the future.

Most participating contractors take full responsibility for the application process, though some indicated only providing support or assistance as needed. Two-thirds of surveyed contractors indicated they took full responsibility for the application and handled all aspects of the incentive application process (n=18). Four said that their company took a

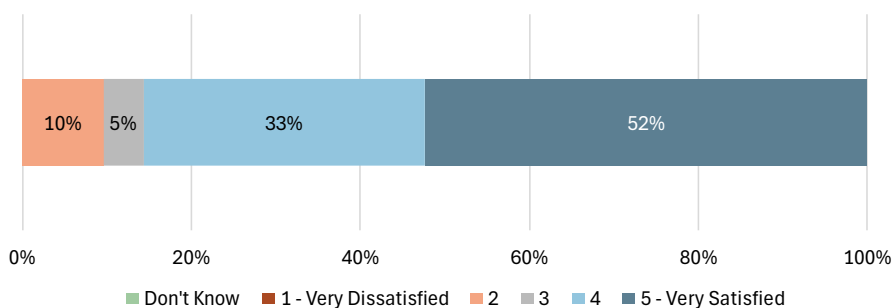
limited role and only provided necessary information while customers handled the incentive application process. The other two contractors said their role was project dependent; they handled project applications for some customers and provided support for others as needed.

The program offers customers and contractors flexible payment options. Nine of the 18 contractors said their company received incentive payments from Evergy and provided their customers with instant discounts. Eight said customers receive incentive payment from Evergy directly. The other contractor said about half of their customers receive the incentive payment directly from Evergy and half of the incentive payments are directed to their company.

D.9.6 Participant Experience and Satisfaction

Most program participants that were involved in the application process were satisfied with it. Fifty-five percent of respondents indicated they had completed the program's application themselves or had been involved in the process. Most of these participant survey respondents said they were satisfied with the process to fill out and submit their incentive application (see Figure D-2). The ten percent or two respondents who were dissatisfied with the application process found it to be difficult; one cited that it was hard to find detailed information about their old lighting to fill out the application, while the other mentioned difficulty with using Excel.

Figure D-2: Ease of Whole Business Efficiency & Hard-to-Reach Businesses Incentive Application

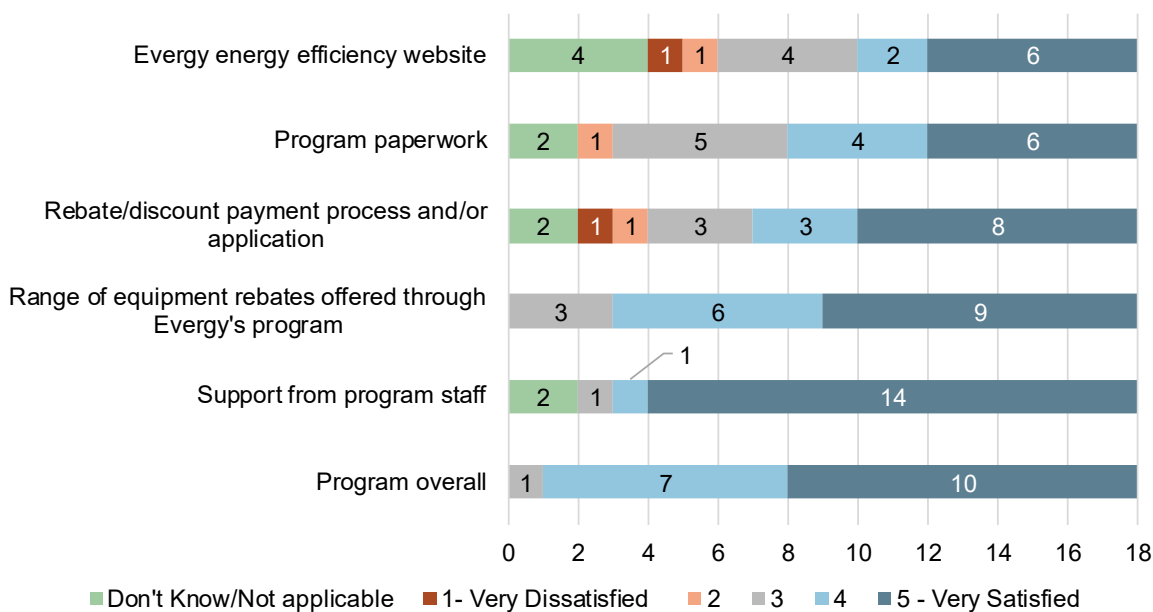


Nearly all program participants said the range of incentivized equipment met their needs. Ninety-five percent said the range of energy-saving equipment options offered through the program fit their needs completely or nearly completely. Five percent did not know or were unable to assess whether the range of equipment incentives offered by Evergy met their organization's needs. Five percent commented on the range of measures offered. These respondents noted that occupancy sensors for smaller classrooms had not been covered by the program, and another noted that "cost/justification for tennis courts and ball fields didn't work out."

Contractor survey findings suggest the program influences contractors' marketing of qualifying equipment and, to a lesser extent, overall equipment recommendations. Thirteen of the 18 contractors said that the Evergy program was important in influencing the level of marketing and selling of program-qualifying equipment and improvements to Evergy business customers in 2024.⁷⁸ Five said that they would have recommended different equipment types, quantities, or efficiency levels to customers if the program was not available.

Most contractors indicated they were satisfied with the program overall as well as the various aspects of the program. Satisfaction ratings suggested that the contractors were generally satisfied with their program experience (see Figure D-3). Eleven contractors stated that they had program training in 2024 and all of them rated it as at least moderately helpful.⁷⁹

Figure D-3: Contractor Satisfaction with Program



Contractor survey findings suggest opportunities to ease the application process and/or improve understanding of the program requirements. Half of the 18 contractor survey respondents noted opportunities to improve the application and/or program requirements. Six noted the application was the biggest challenge to program participation for their company. Three contractors made general statements suggesting a more streamlined, easier to understand application process and an easier to navigate website with more information on it. Another only noted that they or their staff needed to re-take the program

⁷⁸ Rated the importance of the program a 7 or higher on a scale from 0 (not at all important) to 10 (very important).

⁷⁹ Rated the training a 3 or higher on a scale from 1 (not at all helpful) to 5 (very helpful).

training. Six offered more specific suggestions or feedback about their program participation experience:

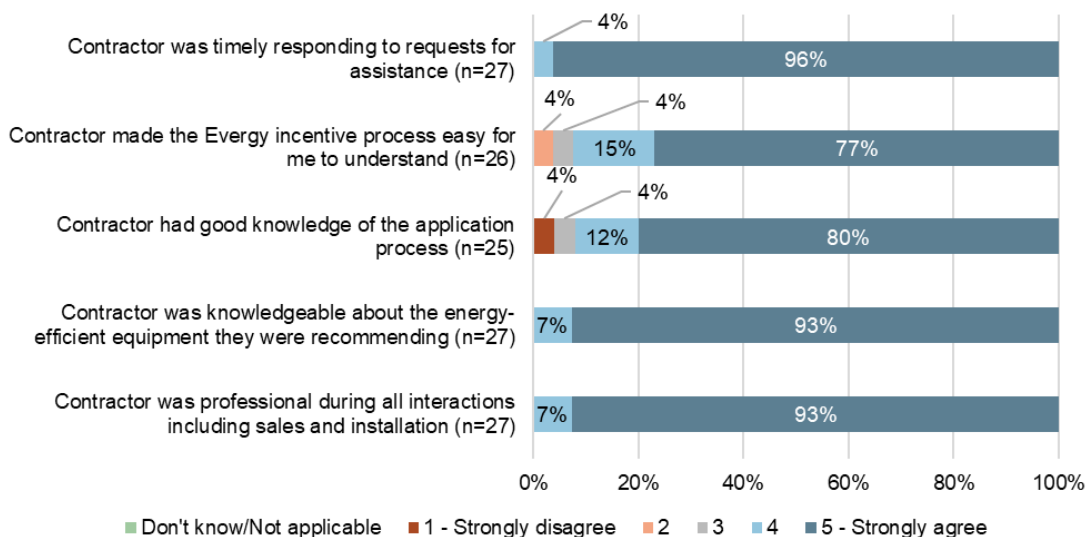
- Include information on Kansas incentive projects in the Trade Ally Portal.
- Dropdown menus on the online application are confusing. Provide better dropdown choices or a better online step-by-step tool. Contractors do not always use or recognize the same naming conventions.
- Requirements are redundant with both Letter of Authorization and customer signature on application required.
- Division of lighting projects into prescriptive, fast-track and custom is confusing and makes the application more confusing. Requiring certain lighting to have custom applications makes them ineligible based on a total resource cost test; a similar item in the prescriptive program might have the same cost to savings ratio.⁸⁰
- Standardize requirements with other utility incentive programs and avoid unique requirements to ease participation for contractors that assist customers in various geographies.
- Determining qualification for enhanced incentives was initially unclear. specifically with schools & government buildings, which might have different rate codes).

Participating customers rated contractors as professional, knowledgeable, and generally able to make the incentive process easy to understand. Figure D-4 displays customer agreement with four statements about their experience with the contractor that assisted them with their program participation. All respondents agreed that their contractor was timely responding to requests for assistance, was knowledgeable about the equipment they were recommending, and was professional.⁸¹ Four percent or one respondent said their contractor did not make the process easy for them to understand and did not have a good knowledge of the application process. They noted that the contractor did not know about the incentive program before they informed them of it.

⁸⁰ The prescriptive program does not have a cost to savings ratio requirement, but the standard incentive is limited to the amount of the total cost of a measure.

⁸¹ Rated their level of agreement a 4 or 5 on a scale from 1 (strongly disagree) to 5 (strongly agree).

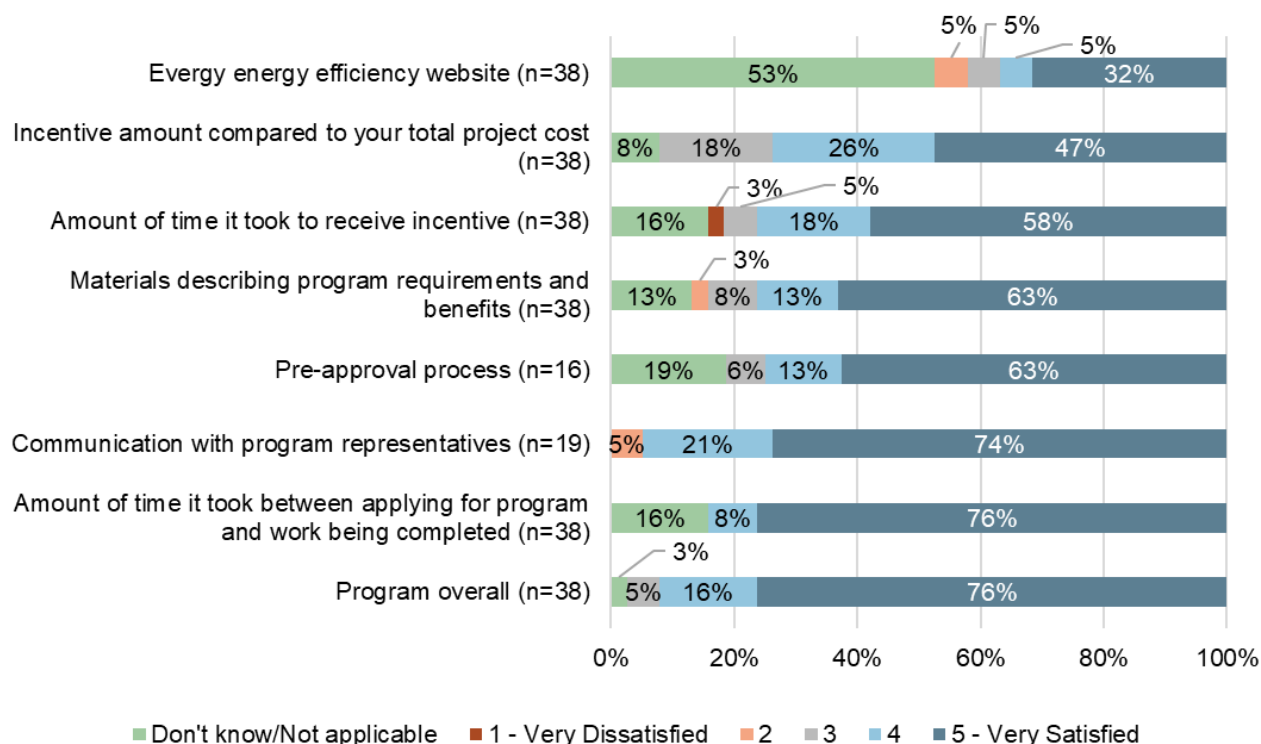
Figure D-4: Customer Agreement with Statements about Whole Business Efficiency Contractor



Whole Business Efficiency and Hard-to-Reach Businesses program participants were generally satisfied with the program overall and various aspects of their experience. Most participants were satisfied with their program experience (see Figure D-5). Half of respondents said they had recommended the program to someone else, and of those who had not recommended the program, 89 percent said they would recommend it.⁸²

⁸² Rated their likelihood of recommending the program a 7 or higher on a scale from 0 (not at all likely) to 10 (extremely likely).

Figure D-5: Whole Business Efficiency & Hard-to-Reach Businesses Participant Satisfaction⁸³



Participant survey feedback suggests there are opportunities to improve the application experience. Five participants (13 percent) commented on the application requirements. Participants noted having challenges completing the application because of a lack of equipment knowledge, technical proficiency in Excel, and the onerousness of inputting information about baseline equipment, and dividing inputs across their account meters. Comments also included calls for more information on the Evergy website about the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate a “best guess on costs” for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application.

Most participant survey feedback suggests strong program communication, though a portion of responses indicate there are some opportunities for improvement. Three participants (8 percent) noted communication challenges:

- Preference for phone communication. Participant stated that the program required email communication.

⁸³ Percentages do not sum to 100 percent for each category due to rounding.

- Request for notification of application status within one to two days of submission. Participant voiced interest in confirmation of application receipt and/or estimate of approval timeline.
- Request for confirmation of project or update on status. One participant stated they had sent in all the paperwork several months ago and had not received any communication at the time of the survey.

Some evidence suggests that Hard-to-Reach Businesses program participants may find the participation requirements more challenging to navigate. A larger portion of Hard-to-Reach Businesses survey respondents noted challenges with the application process or a desire for improved communication, compared to Whole Business Efficiency respondents. Twenty-eight percent of the Hard-to-Reach Businesses survey respondents provided feedback about the application process or noted interest in improved program communications (n=25). This compares to 12 percent of the Whole Business Efficiency survey respondents (n=17). This difference was not statistically significant.

D.9.7 Barriers to Program Participation

Findings from the contractor survey suggest an opportunity to increase the portion of customers purchasing program-qualifying equipment. Ten of the 18 contractors that responded to the survey said less than half of their customers purchased program-qualifying equipment in 2024. Seven said 70 percent or more of their customers purchased program-qualifying equipment in 2024. One was unable to provide an estimate. The most commonly cited reason contractors noted for customers opting for lower-efficiency equipment was the upfront cost (see Table D-15).

Table D-15: Reasons Customers Opt for Lower Efficiency / Non-Qualifying Equipment

Reason	Count (n = 14)
Upfront cost of qualifying equipment - incentive does not offset cost enough compared to standard equipment	10
Qualifying equipment installation would cost significantly more than standard equipment installation	4
Return on investment timeline for qualifying equipment (versus standard equipment)	4
Qualifying equipment is not available or has long lead times	1
Don't know	4

Contractors indicated a portion of customers are installing qualifying equipment without incentives. Five of the 18 contractors estimated that 20 percent or more of customers that purchase qualifying equipment do not apply for incentives. Two of these contractors said

too much paperwork is required to receive incentives. Each of the following barriers was cited by a different contractor: customers having adequate funds for upgrades without program assistance, challenges involving landlord billing and national accounts, insufficient return on investment, and incentives not covering enough of the equipment costs. One contractor stated that the program became available in October 2024 and thus customers had purchased high efficiency equipment prior to its availability in 2024.

D.10 Conclusions and Recommendations

Many of the conclusions and recommendations overlap with those for the Hard-to-Reach Businesses Program, though some are specific to the Whole Business Efficiency Program. As such, some duplication may exist between both sections of this report.

The following summarizes the key findings of the evaluation of the Whole Business Efficiency Program:

- **Conclusion: The program succeeded in building awareness with customers and contractors in its first program year; the groundwork laid in PY1 should enable the program to meet goals in future program years.** The program did not meet its PY1 goals because of a shorter program year, TRM alignment efforts, and Evergy CSM-implementor coordinator challenges. Implementation and Evergy staff were optimistic about increasing participation as customers and trade allies gain greater awareness and understanding of its benefits and participation processes.
- **Conclusion: Limitations on implementation contact with large customers were cited as a barrier to success by implementation staff.** Though implementation staff acknowledged multiple large users had engaged with the program in its first year, they noted that the program required all communication to Tier 1 customers to be through Evergy CSMs. Despite the implementation team identifying this requirement as a barrier to participation, both the Customer Success Managers (CSMs) and implementation teams are collaborating effectively to ensure Tier 1 customers are aware and participating in the program.
Conclusion: Contractor and customer survey findings suggest opportunities to ease the application process and/or improve understanding of the program requirements. Half of the 18 contractor survey respondents noted opportunities to improve the application and/or program requirements. Five participants (13 percent) provided feedback on the application requirements and/or suggested that the Evergy website present more information. Feedback included requests for more information on the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate

a “best guess on costs” for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application.

- *Evaluability Conclusion:* **Program tracking data contained invalid or incorrect contact information.** A total of 409 unique account numbers were included in the final tracking data. Twenty-two percent of accounts either did not have contact information or were determined to have contractor contact information included in the place of customer contact information.

The following recommendations are offered for continued improvement of the Whole Business Efficiency Program:⁸⁴

- *Recommendation:* **Continue to build program awareness through support for contractor engagement and direct outreach to customers.** Though the program has built a significant amount of awareness in PY1, there remains a need to increase customer awareness, as most surveyed contractors perceived customer awareness of the program to be low.
- *Recommendation:* **Everyday CSMs should continue to work with implementation contractor staff to engage with Tier 1 customers and promote energy efficiency.** Program design and operations were established in PY1; marketing and outreach efforts have engaged both Tier 1 and Tier 2 customers. There may be possibilities to engage with more Tier 1 customers while ensuring implementation contractor staff adhere to established communication requirements and expectations.
- *Recommendation:* **Consider updates to the application tool and participation requirements.** Six of the contractors offered specific suggestions or feedback about their program participation experience. Four were suggestions for the application and included: add information on Kansas incentive projects in the Trade Ally Portal, improve online application dropdown menu choices, add step-by-step instructions for/to tool, standardize requirements with other utility incentive programs, and reduce requirements for multiple documents with customer signatures.

⁸⁴ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

- **Recommendation: Continue to provide program support and consider providing additional information to Evergy's website to explain requirements.** Participants noted having challenges completing the application because of a lack of equipment knowledge, lack of technical proficiency in Excel, and the onerousness of inputting information about baseline equipment and dividing inputs across their account meters. Comments also included calls for more information on the Evergy website about the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate a "best guess on costs" for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application. Two contractor survey responses also indicated a continuing need for readily available, clear explanations of the program requirements (e.g., understanding qualifications and requirements for prescriptive, custom, or enhanced incentives and need for pre-approval or fast track application review).
- **Recommendation: Ensure customers are receiving timely follow-up communication and can reach program representatives using a preferred mode of communication.** Participant survey respondents indicated desires for more timely communication and the option to communicate with program staff via telephone rather than email.
- **Evaluability Recommendation: Generate monthly program tracking data reports.** Evergy staff should generate monthly tracking data reports instead of one report generated at the end of the program year. Stakeholders could then track program growth throughout the year. ADM relied on the implementation contractor pipeline data to proxy tracking data reports. It was found that many values were reported differently in Evergy's track data and the implementation contractor pipeline data. This recommendation is already in progress for PY2.
- **Evaluability Recommendation: Provide specific installation locations for installed measures.** By specifying exact locations where measures are installed, it becomes easier to track and monitor their performance. This helps in identifying any issues or inefficiencies quickly. Accurate location data ensures that the evaluation is based on precise and reliable information, leading to more accurate results. Specific locations allow evaluators to verify that the measures have been installed correctly and are functioning as intended.
- **Evaluability Recommendation: Make sure that measures reported in a project's application match the project's measures in the tracking data.** Ensuring that the project application and tracking data are aligned helps maintain consistency in reporting and evaluation. Accurate tracking data that matches the project application ensures that the evaluation is based on reliable information.

- *Evaluability Recommendation: **Include specific information about baseline equipment.*** To enhance the evaluability and accuracy of project tracking by including detailed information about baseline equipment. Document specific details from the equipment that serves as the baseline. Specific details could include photos, model numbers, baseline wattage. This should include make, model, age, condition, location, and any relevant performance metrics.
- *Evaluability Recommendation: **Provide incremental costs for all measures and projects in the tracking data.*** To enhance the evaluability and financial transparency of projects by including detailed incremental cost data for all measures and projects in the tracking system.
- *Evaluability Recommendation: **Validate tracking data contact information.*** Implementation staff should work to ensure customer contact information is accurate and aligned in Captures and in final tracking data. Further, the evaluability of the programs would be improved if data validation measures included:
 - Prohibit certain domains from being included in Premise Email addresses (e.g., "@rebateprocessing.com").
 - Require that the Service Provider Phone Number and Email fields do not match the Premise Phone Number and Email fields.
 - Consider labeling projects with customers that prefer not to be contacted (e.g., populate the Premise Email Address field with text such as "Do not contact customer").
 - Ensure all participant records have service provider and end use customer name, email address, and phone number information.

Appendix E Hard-to-Reach Businesses Program-Specific Methodologies and Results

This chapter describes the evaluation activities that were performed by ADM to evaluate the Hard-to-Reach Businesses Program.

E.1 Program Overview

The Hard-to-Reach Businesses Program provides enhanced incentive values and services to small business and nonprofit customers. Projects can include, but are not limited to, lighting, lighting controls, HVAC, motors, and refrigeration equipment.

Table E-1 provides a summary of program metrics for the PY1 Hard-to-Reach Businesses Program.

Table E-1: Performance Metrics – Hard-to-Reach Businesses Program

Metric	PY1 Total	KS Central	KS Metro
Number of Projects Completed	325	266	59
Energy Impacts (kWh)			
Reported Energy Savings	3,568,721	3,012,719	556,002
Gross Verified Energy Savings	3,931,459	3,288,102	643,357
Net Verified Energy Savings	3,656,257	3,057,935	598,322
Peak Demand Impacts (kW)			
Reported Peak Demand Reductions	1,392.44	1,109.27	283.18
Gross Verified Peak Demand Reductions	319.34	263.66	55.68
Net Verified Peak Demand Reductions	296.99	245.20	51.79
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.02	1.05	0.89

Table E-2 provides a breakdown of the types of businesses/industries served in the HTRB Program.

Table E-2: Types of Businesses / Industries Served

Jurisdiction	Type of Businesses Served	Number of Projects*
KS Central	Automotive Services	12
	Convenience Store	7
	Entertainment/Recreation	2
	Garage	4
	Grocery	77
	Healthcare Clinic	7
	Hospital	1
	Manufacturing Facility	8
	Municipal Building	40
	Office - High Rise	1
	Office - Low Rise	22
	Office - Mid Rise	2
	Other	7
	Religious Building	10
	Restaurant	35
	Retail - Department Store	15
	Retail - Strip Mall	35
	School (Elementary)	7
	School (Middle/High)	4
	Warehouse	14
KS Metro	Exterior	8
	Grocery	1
	Healthcare Clinic	2
	Office - Low Rise	14
	Office - Mid Rise	3
	Other	2
	Religious Building	11
	Restaurant	6
	Retail - Department Store	2
	Retail - Strip Mall	7
	School (Elementary)	2
	School (Middle/High)	1
	Warehouse	5
Total	-	374

*A unique project could have multiple business served, i.e., project with interior and exterior lights.

E.2 EM&V Methodology

The following section details the methodologies ADM used to estimate energy savings and peak demand reduction and assess the performance for the HTRB Program.

E.2.1 Data Collection

Data collection included compiling information from program tracking data, and program specific documentation including specification sheets, invoices, calculators, and customer interviews. The program tracking data for M&V review was obtained from the iEnergy database. This tracking data was used as the basis for quantifying participation and assessing program impacts. Tracking data contained measure descriptions, measure characteristics, and project dates. Specification sheets, invoices, and calculators were downloaded from the implementation contractor's database. ADM performed site visits, installed monitoring equipment, and interviewed customers to confirm details about projects.

E.2.2 Sampling Plan

The sample consisted of measures that had valid program tracking data. Participants were identified with unique project numbers provided to each project by the implementation contractor. ADM used stratified sampling plan to reach the overall target of ± 10 percent precision at the 90 percent confidence level (CL). Table E-3 shows the HTRB sampling plan.

Table E-3: HTRB Sampling Plan

Stratum	Number of Projects	Average Reported Savings per Project	Standard Deviation of Reported Savings	CV	Sum of Reported Savings	Number of M&V Sample Sites	Relative Precision	Absolute Precision
7	3	133,705	47,975	0.4	401,116	2	24.10%	96,655
8	15	49,637	11,997	0.2	744,556	2	26.17%	194,875
9	35	24,145	6,142	0.3	845,059	6	15.55%	131,421
10	56	11,973	2,428	0.2	670,488	4	16.07%	107,756
11	123	5,873	1,253	0.2	722,429	3	20.01%	144,578
12	93	2,034	1,102	0.5	185,073	3	50.62%	93,685
Total	325	10,981			3,568,721	20	9.12%	325,393

E.3 Impact Evaluation Methodology

The method used to calculate and verify energy savings (kWh), and demand reduction (kW) consisted of:

- **Program tracking data census review.** The tracking data was reviewed for a census of projects and measures. The data was verified for duplicate participation within the program and to ensure there were no discrepancies within the tracking data.
- **Reported savings reviewed for sampled sites.** Reported savings calculations were reviewed for all measures to determine the cause of savings discrepancies.
- **Standard for verification of savings.** The calculation of gross energy savings and demand reduction impacts primarily relied on energy savings values and algorithms from the Evergy TRM and custom algorithms. Data from the program tracking data, customer interviews, and site-specific inputs, from direct measurements and/or visual inspections, were used as inputs to the savings algorithms as outlined in the Evergy TRM.

E.4 Impact Evaluation Results

The gross verified energy and demand reduction and realization rates by customer project in the evaluation sample are shown in Table E-4.

Table E-4: Sample Project Realization Rates

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6170	80,850	111,089	137%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(3) KEEIA TRM Measures for (3) unique measure installations - HOU's increased and decreased RR, baseline and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had an unknown impact on RR
6504	174,496	120,293	69%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(4) KEEIA TRM Measures for (6) unique measures installations - HOU's decreased RR, baseline and post fixture wattages increased RR, quantity had no impact on RR, interactive energy factors had unknown impact on RR
5871	35,645	30,308	85%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(3) KEEIA TRM Measures for (14) unique measure installations - HOU's decreased RR, baseline and post fixture wattages and interactive energy factors increased RR, quantity had no impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
5888	46,822	62,863	134%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(5) KEEIA TRM Measures for (28) unique measure installations - baseline and post fixture wattages and interactive energy factors increased RR, HOU's and quantity decreased RR
5854	16,918	19,556	116%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measures for (1) unique measure installations - HOU's and post fixture wattages increased RR, baseline fixture wattages and quantity had no impact on RR, interactive energy factors had unknown impact on RR
5873	19,981	20,867	104%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(5) KEEIA TRM Measures for (7) unique measure installations - HOU's increased the RR for the exterior fixtures and decreased the RR for the interior fixtures, baseline and post wattages increased the RR for the exterior fixtures and decreased for the RR for interior fixtures, quantity had no impact on RR, interactive energy factors had unknown impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6075	22,032	18,847	86%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measures for (1) unique measure installations - HOU's, baseline fixtures wattage, and post fixture wattages decreased RR, quantity had no impact on RR, interactive energy factors had unknown impact on RR
6171	17,450	21,267	122%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review with Site Visit	Lighting: verified HOU's as exterior photocell HOU's, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU's increased the RR, the baseline and post wattages increased the RR for one measure and decreased the RR for the other measure, quantity had no impact on RR
6369	31,820	28,849	91%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU's increased the RR for the exterior fixtures and decreased the RR for the interior fixtures, the baseline and post fixtures wattages and the quantity decreased the RR
6439	34,049	40,271	118%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU's as exterior photocell HOU's, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(3) KEEIA TRM Measures for (6) unique measure installations - HOU's increased the RR, baseline and post wattages increased and decreased the RR, quantity had no impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
5855	10,904	12,772	117%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measures for (2) unique measure installations - HOU's increased the RR, the post fixtures wattages increased the RR, baseline fixture wattage and quantity had no impact on the RR, interactive energy factors had unknown impact on RR
5856	9,654	11,354	118%	Lighting: used prescriptive savings algorithms from KEEIA TRM with custom wattage and hours inputs	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measures for (3) unique measure installations - HOU's increased the RR, the post fixtures wattages increased the RR, baseline fixture wattages and quantity had no impact on the RR, interactive energy factors had unknown impact on RR
5865	12,951	17,141	132%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(5) KEEIA TRM Measures for (15) unique measure installations - HOU's increased the RR for the exterior fixtures and decreased the RR for the interior fixtures, the baseline and post wattages increased the overall RR, quantity had no impact on RR, interactive energy factors had unknown impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6072	14,957	18,849	126%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(5) KEEIA TRM Measures for (5) unique measure installations - the installed occupancy sensors increased the RR, HOU's increased the RR for the exterior fixture and decreased the RR for interior fixtures, baseline and post fixtures wattages increased and decreased the RR, quantity had no impact on RR, interactive energy factors had unknown impact on RR
6169	7,019	8,491	121%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU's increased the RR for the exterior fixtures and decreased the RR for the interior fixtures, the baseline and post wattages increased the RR for the exterior fixtures and decreased for the RR for interior fixtures, quantity had no impact on RR, interactive energy factors had unknown impact on RR
6291	7,740	5,128	66%	ECM Motor: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review with Site Visit	ECM Motor: verified refrigeration space type with site visit and application, verified quantity and size of motors with invoice, site visit, and application review, use per unit savings from IL TRM	(2) KEEIA TRM Measures for (2) unique measure installations - refrigeration space type decreased RR, quantity had no impact on RR

Project ID	Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate	Reported Savings Methodology	Evaluation Type	Verified Savings Methodology	Directional Impacts of Verified Inputs
6292	7,740	5,128	66%	ECM Motor: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review with Site Visit	ECM Motor: verified refrigeration space type with site visit and application, verified quantity and size of motors with invoice, site visit, and application review, use per unit savings from IL TRM	(1) KEEIA TRM Measure for (2) unique measure installations - refrigeration space type decreased RR, quantity had no impact on RR
6164	3,084	7,240	235%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(1) KEEIA TRM Measure for (1) unique measure installation - HOU's decreased the RR, the baseline and post wattages increased the RR, quantity had no impact on RR, interactive energy factors had unknown impact on RR
6172	2,097	3,621	173%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Monitored Savings	Lighting: verified HOU's with lighting monitoring, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM and customer building type, verified quantity of fixtures with invoice, site visit, and application review	(2) KEEIA TRM Measures for (3) unique measure installations - HOU's increased the RR, the baseline and post wattages increased and decreased the RR, quantity had no impact on RR, interactive energy factors had unknown impact on RR
6682	2,107	5,053	240%	Lighting: used per unit deemed savings numbers from KEEIA TRM primary key(s)	Engineering Desk Review	Lighting: verified HOU's as exterior photocell HOU's, verified baseline fixture wattages with application, verified post fixture wattages with spec sheets, verified interactive energy factors with IL TRM, verified quantity of fixtures with invoice and application review	(2) KEEIA TRM Measures for (2) unique measure installations - HOU's, baseline and post fixture wattages increased the RR, quantity had no impact on RR

The gross verified demand reductions and energy realization per load shape are shown in Table E-5.

Sampled sites used normalized energy savings curves were developed by creating project specific energy use schedules from the measured primary data. Non-sampled measures were assigned annual load shapes from the IL TRM. Many non-sampled measures were assigned to IL TRM load shaped based on their measure type and the project's given building type. When the building type wasn't provided for a given project, non-residential building types were assumed.

Flat load shapes were assigned to measures that uniform usage across a year: 24/7 lighting, ECM motors in refrigerator and freezers, miscellaneous customer measures.

Exterior lightings measures were assigned to an ADM created load shape based on KS sunrise and sunset times. All exterior lighting measures were assumed to be controlled with a photocell and follow sunrise and sunset times.

Table E-5: Demand Reductions Results for Sampled and Non-Sampled Projects

Type of Site	Load Shape Name	Verified Energy Savings (kWh)	Sum of Reported Demand Reduction (kW)	Sum of Verified Demand Reduction (kW)	Demand Reduction Realization Rate (%)
Sampled Site	5854	19,556	2.87	3.61	126%
Sampled Site	5855	12,772	1.70	2.19	129%
Sampled Site	5856	11,354	1.58	1.77	112%
Sampled Site	5865	17,141	7.76	3.64	47%
Sampled Site	5871	30,308	20.92	5.05	24%
Sampled Site	5873	20,867	6.77	0.63	9%
Sampled Site	5888	62,863	39.00	11.73	30%
Sampled Site	6072	18,849	5.60	-	0%
Sampled Site	6075	18,847	20.21	0.83	4%
Sampled Site	6164	7,240	1.79	1.77	99%
Sampled Site	6169	8,491	6.44	3.02	47%
Sampled Site	6170	111,089	3.61	2.42	67%
Sampled Site	6171	21,267	-	-	100%
Sampled Site	6172	3,621	1.92	0.61	32%

Type of Site	Load Shape Name	Verified Energy Savings (kWh)	Sum of Reported Demand Reduction (kW)	Sum of Verified Demand Reduction (kW)	Demand Reduction Realization Rate (%)
Sampled Site	6291	5,128	0.96	0.59	61%
Sampled Site	6292	5,128	0.96	0.59	61%
Sampled Site	6369	28,849	11.00	2.47	22%
Sampled Site	6439	40,271	-	-	100%
Sampled Site	6504	120,293	97.68	-	0%
Sampled Site	6682	5,053	-	-	100%
Non-Sampled Site	Cooking Non-Residential Electric	19,579	2.10	2.20	105%
Non-Sampled Site	Cooling Non-Residential	53,970	2.45	13.88	568%
Non-Sampled Site	Flat	156,845	40.22	17.90	45%
Non-Sampled Site	Lighting_Exterior	892,858	-	-	100%
Non-Sampled Site	Lighting_Grocery / Conv. Store	440,636	95.81	46.95	49%
Non-Sampled Site	Lighting_Hospital	48,949	33.54	5.08	15%
Non-Sampled Site	Lighting_Industrial	112,817	48.04	13.39	28%
Non-Sampled Site	Lighting_K-12 School	165,041	127.09	13.81	11%
Non-Sampled Site	Lighting_Non-Residential	675,110	371.69	75.61	20%
Non-Sampled Site	Lighting_Office	232,460	150.88	26.91	18%
Non-Sampled Site	Lighting_Restaurant	32,590	22.30	3.49	16%
Non-Sampled Site	Lighting_Retail	367,557	179.60	40.54	23%
Non-Sampled Site	Lighting_Warehouse	164,059	87.96	18.66	21%

A summary of stratum-level and verified gross energy and demand impacts and realization rates are shown in Table E-6.

Table E-6: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Strata

Sampling Stratum	Relative Precision	Sum of Reported kWh Savings	Sum of Verified kWh Savings	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Realization Rate kWh (%)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Sum of Reported kW Savings	Sum of Verified kW Savings	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate kW (%)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
7	24.10%	401,116	363,471	275,887	451,055	91%	69%	112%	140.00	10.29	7.81	12.77	7%	6%	9%
8	26.17%	744,556	841,193	621,025	1,061,360	113%	83%	143%	315.85	71.31	52.65	89.98	23%	17%	28%
9	15.55%	845,059	889,060	750,796	1,027,324	105%	89%	122%	373.62	88.33	74.59	102.06	24%	20%	27%
10	16.07%	670,488	831,658	698,000	965,316	124%	104%	144%	261.89	60.13	50.46	69.79	23%	19%	27%
11	20.01%	722,429	601,961	481,492	722,430	83%	67%	100%	207.99	63.22	50.56	75.87	30%	24%	36%
12	50.62%	185,073	404,116	199,551	608,681	218%	108%	329%	93.09	26.07	12.87	39.26	28%	14%	42%
Total	9.12%	3,568,721	3,931,459	3,572,991	4,289,926	110%	100%	120%	1,392.44	319.34	290.22	348.46	23%	21%	25%

A summary of reported and verified gross energy and demand impacts are shown in Table E-7.

Table E-7: Gross Energy Savings (kWh) and Peak Demand Reduction (kW) per Jurisdiction

Jurisdiction	Relative Precision	Reported Energy Savings (kWh)	Verified Energy Savings (kWh)	Verified Energy Savings 90% CI (Lower)	Verified Energy Savings 90% CI (Upper)	Realization Rate (kWh)	RR kWh - CI at 90% (Lower)	RR kWh - CI at 90% (Upper)	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction 90% CI (Lower)	Verified Demand Reduction 90% CI (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
Kansas Central	9.12%	1,804,073	2,209,915	2,008,416	2,411,413	122%	111%	121%	691.03	256.52	233	280	37%	34%	41%
Kansas Metro	9.12%	1,762,243	2,977,033	2,705,589	3,248,477	169%	154%	168%	719.19	284.99	654	311	40%	91%	43%
Total	9.12%	3,566,316	5,186,947	4,714,005	5,659,890	145%	132%	144%	1,410.22	541.51	1,281.64	590.88	38%	91%	42%

A summary of Lifetime Energy Savings are shown in Table E-8.

Table E-8: Lifetime Energy Savings (kWh)

Sampling Stratum	Relative Precision	Energy Savings (kWh)	EUL	Lifetime Energy Savings (kWh)	Lifetime Energy Savings 90% CI (Lower)	Lifetime Energy Savings 90% CI (Upper)
7	24.10%	363,471	13	4,862,675	3,690,938	6,034,412
8	26.17%	841,193	14	11,687,054	8,628,170	14,745,938
9	15.55%	889,060	14	12,164,836	10,272,998	14,056,674
10	16.07%	831,658	12	9,906,019	8,313,996	11,498,043
11	20.01%	601,961	14	8,299,400	6,638,461	9,960,340
12	50.62%	404,116	16	6,456,384	3,188,135	9,724,633
Total	9.12%	3,931,459	-	53,376,368	48,509,550	58,243,186

E.5 Ongoing Activities to Mitigate Realization Rate Issues

In PY1, the Whole Business Efficiency and Hard to Reach Business programs produced high energy realization rates and low demand reduction realization rates. These differences are expected due to using outdated values in the TRM. However, the KEEIA TRM will be updated within the next couple of months; deemed savings values and incremental cost will be adjusted, and new measures will be added where appropriate. The TRM's deemed demand reductions, and its kW/kWh load factor, were significantly different than industry standard load factors and verified load factors.

Additionally, going forward, the programs could use the implementation contractor's measured savings for standard measures instead of the deemed number from the KEEIA TRM.

Large differences in realizations rates will always exist until both the implementation contractor and evaluation use similar methods. The evaluation contractor's verified energy and demand savings were calculated by using measured primary data. Many of the implementation contractor's savings calculations were based on the KEEIA TRM.

E.6 Net Savings Methodology

ADM conducted its net savings evaluation of the Hard-to-Reach Businesses Program alongside the Whole Business Efficiency Program. The methods utilized are described in Section D.6.

E.7 Net Savings Results

Most Hard-to-Reach Businesses program participant survey respondents indicated they would not have purchased the qualifying equipment without the program. ADM calculated a weighted average program-level free ridership ratio of 0.07 for the Hard-to-Reach Businesses program. The program level free ridership score is the weighted average of verified gross kWh savings for the sampled survey. See Table E-9 for additional details on estimated net savings for the two programs.

There were 25 survey responses from Hard-to-Reach Businesses program participants. Ten of these respondents indicated partial or full free ridership, ranging from 0.13-1.0. These respondents represented 16 percent of the kWh savings sampled in the survey. Of these respondents:

- Nine said that without the incentive or program their organization would have purchased the same efficiency level of equipment.
- Eight indicated they had specific plans to install the high efficiency equipment before learning about the program.
- Six said they would have installed the equipment in the same year.
- Two indicated their organization had already purchased the equipment before hearing about the program.

To provide context for the NTG ratio found for the KEEIA Hard-to-Reach Business program, we referenced an NMR literature review report completed for the state of New Jersey in 2023 (see reference in Section A.6). For Direct Install or Small Business programs, NTGRs were generally found to range from 0.9-0.99.

Table E-9: Free Ridership Estimates for Hard-to-Reach Businesses Program

Program	n	Precision at 90% Level of Confidence	Free Ridership Ratio	Free Ridership 90% CI (Lower)	Free Ridership 90% CI (Upper)
Hard-to-Reach Business	25	0.06	0.07	0.07	0.07

E.8 Process Evaluation Methodology

Process evaluation activities for the Hard-to-Reach Businesses and Whole Business Efficiency Programs were conducted as a single effort due to similar program design and implementation strategies. See Appendix D.8 for more details.

E.9 Process Evaluation Results

Appendix D.9 provides process evaluation results for the Hard-to-Reach Businesses program.

E.10 Conclusions and Recommendations

Many of the conclusions and recommendations overlap with the conclusions and recommendations for the Whole Business Efficiency Program, though some are specific to the Hard-to-Reach Businesses Program. As such, some duplication may exist between both sections of this report.

The following summarizes the key findings of the evaluation of the Hard-to-Reach Businesses Program:

- **Conclusion: The program succeeded in building awareness with customers and contractors in its first program year; the groundwork laid in PY1 should enable the program to meet goals in future program years.** The program did not meet its PY1 goals because of a shorter program year, TRM alignment efforts, and Evergy/implementor coordination challenges. Implementation and Evergy staff were optimistic about increasing participation as customers and trade allies gain greater awareness and understanding of its benefits and participation processes.
- **Conclusion: Participant survey findings suggest program awareness is being driven by contractor outreach, though Evergy-led efforts are also increasing awareness.** About half of respondents indicated they learned about the program from either the contractor that assisted them with participation (37 percent) or another contractor (11 percent). Findings from the Evergy and implementation staff facilitated discussion findings and ADM's review of the presentations from Evergy's marketing meetings also suggests contractors' efforts have been strongly supported by in-person meetings, co-branded materials, emails, and other Evergy and implementor-led outreach efforts.

- **Conclusion: Contractor and customer survey findings suggest opportunities to ease the application process and/or improve understanding of the program requirements.** Half of the 18 contractor survey respondents noted opportunities to improve the application and/or program requirements. Five participants (13 percent) provided feedback on the application requirements and/or suggested that the Evergy website present more information. Feedback included requests for more information on the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate a “best guess on costs” for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application.
- **Conclusion: Some evidence suggests that Hard-to-Reach Businesses program participants may find the participation requirements more challenging to navigate.** A larger portion of Hard-to-Reach Businesses survey respondents noted challenges with the application process or a desire for improved communication, compared to Whole Business Efficiency respondents.
- **Conclusion: Most participant survey feedback suggests strong program communication, though a portion of responses indicate there are some opportunities for improvement.** Three participants (8 percent) noted communication challenges.
- **Evaluability Conclusion: Program tracking data contained invalid or incorrect contact information.** A total of 409 unique account numbers were included in the final tracking data. Twenty-two percent of accounts either did not have contact information or were determined to have contractor contact information included in the place of customer contact information.

The following recommendations are offered for continued improvement of the Hard-to-Reach Businesses Program:⁸⁵

- **Evaluability Recommendation: Generate monthly program tracking data reports.** Evergy staff should generate monthly tracking data reports instead of one report generated at the end of the program year. Stakeholders could then track program growth throughout the year. ADM relied on the implementation contractor pipeline data to proxy tracking data reports. It was found that many values were reported differently in Evergy’s track data and the implementation contractor pipeline data. This recommendation is already in progress for PY2.

⁸⁵ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

- *Evaluability Recommendation:* **Provide specific installation locations for installed measures.** By specifying exact locations where measures are installed, it becomes easier to track and monitor their performance. This helps in identifying any issues or inefficiencies quickly. Accurate location data ensures that the evaluation is based on precise and reliable information, leading to more accurate results. Specific locations allow evaluators to verify that the measures have been installed correctly and are functioning as intended.
- *Evaluability Recommendation:* **Make sure that measures reported in a project's application match the project's measures in the tracking data.** Ensuring that the project application and tracking data are aligned helps maintain consistency in reporting and evaluation. Accurate tracking data that matches the project application ensures that the evaluation is based on reliable information.
- *Evaluability Recommendation:* **Include specific information about baseline equipment.** To enhance the evaluability and accuracy of project tracking by including detailed information about baseline equipment. Document specific details from the equipment that serves as the baseline. Specific details could include photos, model numbers, baseline wattage. This should include make, model, age, condition, location, and any relevant performance metrics.
- *Evaluability Recommendation:* **Provide incremental costs for all measures and projects in the tracking data.** To enhance the evaluability and financial transparency of projects by including detailed incremental cost data for all measures and projects in the tracking system.
- *Recommendation:* **Continue to build program awareness through support for contractor engagement and direct outreach to customers.** Though the program has built a significant amount of awareness in PY1, there remains a need to increase customer awareness, as most surveyed contractors perceived customer awareness of the program to be low.
- *Recommendation:* **Investigate opportunities to ease the experience for Hard-to-Reach Businesses program participants.** Compared to the Whole Business Efficiency Program, a larger portion of Hard-to-Reach Businesses program participants found the program challenging to navigate or made comments about its requirements. Though the difference was not statistically significant, this suggests an opportunity to continue to investigate and improve different customers' experiences and meet their unique needs.

- **Recommendation: Consider updates to the application tool and participation requirements.** Six of the contractors offered specific suggestions or feedback about their program participation experience. Four were suggestions for the application and included: add information on Kansas incentive projects in the Trade Ally Portal, improve online application dropdown menu choices, add step-by-step instructions for/to tool, standardize requirements with other utility incentive programs, and reduce requirements for multiple documents with customer signatures.
- **Recommendation: Ensure Hard-to-Reach Businesses program participants have access to adequate application support and consider additional supports for those with less time or tech savviness.** A larger portion of Hard-to-Reach Businesses program participants voiced interest in clearer or easier application requirements. One noted a preference for phone rather than email communication and another said they had experienced challenges providing the required Excel documentation for their project.
- **Recommendation: Continue to provide program support and consider providing additional information to Evergy's website to explain requirements.** Participants noted having challenges completing the application because of a lack of equipment knowledge, lack of technical proficiency in Excel, and the onerousness of inputting information about baseline equipment and dividing inputs across their account meters. Comments also included calls for more information on the Evergy website about the difference between pre-approval and regular participation requirements, timeline expectations, and how to fill out the application. One customer also suggested the program provide a tool to calculate a "best guess on costs" for projects to help assess whether they would exceed the minimum threshold for pre-approval before filling out an entire application. Two contractor survey responses also indicated a continuing need for readily available, clear explanations of the program requirements (e.g., understanding qualifications and requirements for prescriptive, custom, or enhanced incentives and need for pre-approval or fast track application review).
- **Recommendation: Ensure customers are receiving timely follow-up communication and can reach program representatives using a preferred mode of communication.** Participant survey respondents indicated desires for more timely communication and the option to communicate with program staff via telephone rather than email.
- **Evaluability Recommendation: Validate tracking data contact information.** Implementation staff should work to ensure customer contact information is accurate and aligned in Captures and in final tracking data. Further, the evaluability of the programs would be improved if data validation measures included:

- Prohibit certain domains from being included in Premise Email addresses (e.g., "@rebateprocessing.com").
- Require that the Service Provider Phone Number and Email fields do not match the Premise Phone Number and Email fields.
- Consider labeling projects with customers that prefer not to be contacted (e.g., populate the Premise Email Address field with text such as "Do not contact customer").
- Ensure all participant records have service provider and end use customer name, email address, and phone number information.

Appendix F Home Demand Response Program-Specific Methodologies and Results

This appendix describes the evaluation activities that were performed by ADM to evaluate the Home Demand Response (HDR) Program.

F.1 Program Overview

The HDR Program uses automatic event call technology to curtail energy use during peak demand periods. Eligible customers are provided an incentive to participate in curtailment events. Participation channels are outlined as follows:

- Customers can purchase devices and install the device themselves.
- Customers can receive devices provided at a discounted price and receive professional installation.
- Customers can enroll their eligible existing device.

Called upon devices (in PY1) will increase a customer's setpoint between 2- and 5-degrees Fahrenheit. Pre-cooling occurs prior to an event and the customer receives notification via their smart device application.

The program also includes Legacy controllable Honeywell devices that were installed between 2010 and 2016. These devices are not smart thermostats, but they continue to provide load curtailment for residential customers in response to demand response events.

Table F-1 below provides a summary of program metrics for smart thermostats in PY1. Gross energy savings achieved 125 percent of the realized verified savings for the total HDR Program in PY1, while gross peak demand achieved 53 percent of the realized verified peak demand.

Table F-1: Performance Metrics – Home Demand Response Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants	68,456	51,571	16,885
Energy Impacts (kWh)			
Reported Energy Savings	517,204	395,091	122,114
Gross Verified Energy Savings	646,020	493,210	152,810
Net Verified Energy Savings	646,020	493,210	152,810
Peak Demand Impacts (kW)⁸⁶			
Reported Peak Demand Reduction	35,606.65	26,359.91	9,246.74
Gross Verified Peak Demand Reduction	18,907.98	17,821.83	1,086.16
Net Verified Peak Demand Reduction	18,907.98	17,821.83	1,086.16
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.35	1.68	0.59

F.2 EM&V Methodology

This chapter describes the impact evaluation activities and methodology that ADM performed for the HDR Program in PY1. Table F-2 provides a summary of the savings approach by program year.

Table F-2: Savings Approaches by Program Year

Program Year	Peak Demand Reductions (Demand Response)	Energy Savings
2024	Calculated	Evergy TRM

In evaluating the HDR Program in 2024, ADM implemented a variety of impact evaluation exercises including estimation of gross energy saving, as well as peak demand reductions as framed by the following research questions:

- How many Evergy customers participated in the program? What is the quantity and type of measures incentivized/rebated?
- What are the energy savings for each incentivized measure?
- What is the peak demand reduction for each incentivized measure?

⁸⁶ Peak Demand Impacts (kW) does not include Legacy devices for PY1 because Legacy devices were not included in the Evergy TRM and Evergy did not calculate reported peak demand reductions.

F.2.1 Data Collection

Data used for this evaluation includes the following:

- Program tracking data for 2024. This data identifies which customers participated in the program and contains data fields such as installation date, number of devices installed, device type, measure type, and other relevant data fields.
- 15-minute interval meter data (AMI) for each participating customer.
- A full schedule of program events, including the time of the event.
- ADM-collected recorded weather data from the National Oceanographic and Atmospheric Administration (NOAA) to estimate the impact of weather on usage.

ADM has found in previous program years that close to 100 percent of participants in the program have AMI data. As such, due to the large sample sizes available for estimating DR impacts, other sources of data including smart thermostat telemetry and on-site metering are not needed to estimate program impacts. The Evaluators also note that there is no requirement for customers to have AMI data to participate in the program.

ADM reviewed the data tracking systems associated with the program to ensure that the data provides sufficient information to calculate energy and demand impacts. ADM determined that all the relevant data fields were included in the tracking data and savings reported in the tracking system complied with energy savings calculations and guidelines set by the Evergy TRM.

ADM collected two types of weather data for the evaluation: 1) actual recorded weather from the NOAA and 2) 30-year weather normal or Typical Meteorological year (TMY) weather data. Actual weather data was used when fitting the models and TMY data was used to extrapolate savings (if appropriate).

ADM collected hourly Heating Degree Hours (HDH) and Cooling Degree Hours (CDH) from NOAA.gov for use in the regression analysis. Data was collected from the nearest available weather stations and assigned to each customer based on customer zip code. Daily Heating Degree Days (HDDs) are calculated as the sum of hourly average temperature values under the heating setpoint (65°F) on each day, while daily Cooling Degree Days (CDDs) are calculated as the sum of hourly average temperature values over the cooling setpoint (65°F) on each day. The setpoint values for HDDs and CDDs were determined by running regressions with multiple setpoints from 60°F to 80°F and choosing the setpoint combination with the highest adjusted R-squared value (i.e., best fit).

ADM collected TMY data from the Kansas City International Airport weather station to extrapolate estimated annual savings, as shown in Table F-3.

Table F-3: TMY for Kansas City International Airport

Annual TMY	HDD	CDD
	5,581	1,461

F.2.2 Sampling Plan

When estimating demand reductions, ADM sampled participants by jurisdiction and device type using a sample size for each cohort to achieve 90 percent confidence and 10 percent precision. EcoBee devices were dispatched in PY1; however, Google devices were not successfully dispatched in PY1. An extrapolated peak demand reduction value from participating thermostats was applied to thermostats with installation in PY1.

Table F-4: Demand Savings Sampling Plan

Device Type	Sample Size (n)	Number of Participants
Smart Thermostat: EcoBee ⁸⁷	146	2,710
Legacy: Honeywell	1,435	47,178

F.2.3 Gross Evaluation Methodology

This section details the impact evaluation activities and methodology that inform the savings values for the HDR Program in PY1, which includes the gross energy savings and gross demand reduction that resulted from that activity. Peak demand reductions were calculated using kW reductions from PY1. Annual energy savings were based on estimates from the Evergy TRM because enrollment occurred late in PY1 for most participants and there was insufficient post-period data for the analysis.⁸⁸

F.3 Impact Evaluation Methodology and Results

This section details the level of program activity for the PY1 HDR Program, which includes the gross energy savings and gross demand reduction that resulted from that activity.

⁸⁷ The sample size for Ecobee Smart Thermostats was smaller than desired because most participants signed up after the September 19 event.

⁸⁸ ADM require at least nine months of post-period consumption data to estimate energy savings impacts for smart thermostat measures.

F.3.1 Estimating Evaluation Impacts

F.3.1.1 Demand Reduction Methodology

In the evaluation of demand response programs, energy savings are estimated by comparing a participant's load shape during a demand response event with a baseline load shape. This baseline load is assumed to be a good estimate of the counterfactual load—that is, the load that would have manifested had there not been an event called that day.

Demand savings for the demand response portion of the program were estimated using the following baseline models:

- Regression Model (Linear Fixed Effects)
- Prior-Day-Averaging Customer Baselines (CBLs)

The following impact evaluation steps were taken to select a baseline model:

- Developed a regression baseline, an unadjusted CBL, a multiplicative adjusted CBL, and an additive adjusted CBL for each program participant. Baseline and actual consumption were calculated utilizing 1-hour AMI data.
- Determined days that will serve as proxy days for testing the suitability of the baseline approach. Proxy days represent days like demand response event days in terms of load shape and temperature profiles.
- Estimated bias (uncertainty) and error on proxy days for each model to assess baseline performance. Bias is assessed by examining the Mean Percent Error (MPE) of the baseline predictions relative to the actual usage on proxy days. In a similar manner, error is assessed through various metrics such as Root Mean Squared Error (RRMSE) using baseline predictions and actual usage on proxy days.⁸⁹
- Selected the baseline model with the lowest absolute bias (MPE) and/or error (RRMSE).

The demand reduction the HDR Program is calculated as the maximum hourly load shed (in kW) on the event date that corresponds to Evergy's system peak day for the jurisdiction (out of all eligible DR event dates).

⁸⁹ Bias and error are defined using ASHRAE Guideline 14-2014. Measurement of Energy, Demand, and Water Savings.

F.3.1.2 Regression Model

ADM utilized a Linear Fixed Effect Regression (LFER) model to estimate kW reductions. The model uses customers' 15-minute AMI data on non-event baseline days and extrapolates the model to event days to estimate the impact on energy demand. The LFER model specifies energy demand as a function of temperature and other variables that influence usage. ADM identified non-event baseline days during the same month as demand response events whose weather pattern most closely matches the weather pattern on event days, and these days served as the counterfactual baseline. ADM defined baseline days as those with a maximum daily temperature greater than or equal to the minimum observed maximum temperature during all demand response events.

When fitting regression models, ADM tested correlations between explanatory variables, statistical significance of variables, and the impact of each variable on model fit. The final form of the model is shown below.

Equation 8-15: Linear Fixed Effects Regression Model

$$\begin{aligned}
 Usage(kWh)_{it} &= \alpha_0 + \sum_{m=1}^{12} \alpha_m Month_{it} + \sum_{w=1}^7 \alpha_w DOW_{it} + \beta_3 CDH_{it} + \beta_4 MA24CDH_{it} \\
 &+ \sum_{h=1}^{24} \alpha_h Hour_{it,h} * \sum_{i=1}^n \alpha_i Customer_{it} + \epsilon_{it}
 \end{aligned}$$

Where:

α_0	= intercept term
m	= index for month m
w	= index for day of the week w
t	= time interval
i	= index for customer i
n	= number of sampled smart thermostat households
$Usage(kWh)$	= average usage during the time interval for customer i
$\beta_k, \alpha_m, \alpha_w, \alpha_h, \alpha_i$	= vectors of coefficients
$Month$	= vector of dummy variables for each month m
DOW	= vector of dummy variables for each day of the week w
CDH	= cooling degree hours
$MA24CDH$	= moving average of the last 24 hours CDH

<i>Hour</i>	= vector of dummy variables for each hour of the day
<i>Customer</i>	= vector of dummy variables for each customer <i>i</i>
ϵ	= error term

ADM estimated savings rates kW/unit separately for both Missouri Metro and Missouri West.

Prior to running the model, ADM removed devices that failed to meet certain criteria, including:

- Missing zip code for a device/customer (due to inability to map to correct weather data)
- Incomplete or missing data during the DR season (<1 percent of households)
- Average usage of 0 during the DR season (<1 percent of households)
- Devices that were returned or removed before the end of the DR season.

F.3.1.3 Prior-Day Averaging Customer Baselines (CBL)

ADM utilized the following 16 CBL models for the HDR program, as shown in Table F-5. Terms in the table are defined below. All residential CBLs with load adjustments utilized a 2-hour offset prior to the DR event.

The following terms are used for describing Evergy and ADM estimates and are referenced in the tables in the sections below.

Lookback Window – Days prior to the event day that are eligible for inclusion in the CBL. The quantity of days and type of day included are determined by Day Type and Days in Lookback Window which are described below.

Day Type – One of the eligibility requirements for a day to be included in the Lookback Window for the CBL.

Any Weekday – CBLs use any non-holiday, non-event weekdays.

Days in Lookback Window – Number of days in the lookback window. These days will be ranked by usage during the hours determined by Hours Used to Determine Baseline Day Selection.

Hours Used to Determine Baseline Day Selection – The hours that are selected for averaging usage and ranking days in the lookback window.

Days Selected from Lookback Window – Number of days selected from the lookback window. The highest ranked are selected.

Unadjusted Baseline – Once the days are selected from the lookback window, they are averaged across hours to create the Unadjusted Baseline.

Load Adjustment – The Unadjusted Baseline can be adjusted to account for weather or usage prior to the event.

Usage based – Multiplicative – If the load prior to event notification on the event day is different than the unadjusted baseline, the unadjusted baseline is multiplied by event day usage / unadjusted baseline usage.

Usage based – Additive – If the load prior to event notification on the event day is different than the unadjusted baseline, the sum of the difference between the event day usage and the unadjusted baseline is added to the unadjusted baseline.

Load Adjustment Min – This is the lower bound for the Load Adjustment. A downward adjustment is capped at the Load Adjustment Min multiplied by the unadjusted baseline.

Load Adjustment Max – This is the upper bound for the Load Adjustment. An upward adjustment is capped at the Load Adjustment Max multiplied by the unadjusted baseline.

Table F-5: CBL Baseline Models for Residential DR Programs

Days in Lookback Window	Days Selected from Lookback Window	Day Type	Hours Used to Determine Baseline Day Selection	Load Adjustment	Load Adjustment Min	Load Adjustment Max
5	5	Any weekday	Actual Event Hours	None	-	-
5	5	Any weekday	Actual Event Hours	Usage based - Multiplicative	-	-
5	5	Any weekday	Actual Event Hours	Usage based - Additive	-	-
5	5	Any weekday	Actual Event Hours	Weather based	-	-
5	5	Any weekday	Actual Event Hours	Usage based - Additive	0.8	1.2
5	5	Any weekday	Actual Event Hours	Usage based - Additive	0.7	1.3
5	5	Any weekday	Actual Event Hours	Usage based - Multiplicative	0.8	1.2
5	5	Any weekday	Actual Event Hours	Usage based - Multiplicative	0.7	1.3
10	10	Any weekday	Actual Event Hours	None	-	-
10	10	Any weekday	Actual Event Hours	Usage based - Multiplicative	-	-
10	10	Any weekday	Actual Event Hours	Usage based - Additive	-	-
10	10	Any weekday	Actual Event Hours	Weather based	-	-
10	10	Any weekday	Actual Event Hours	Usage based - Additive	0.8	1.2
10	10	Any weekday	Actual Event Hours	Usage based - Additive	0.7	1.3
10	10	Any weekday	Actual Event Hours	Usage based - Multiplicative	0.8	1.2
10	10	Any weekday	Actual Event Hours	Usage based - Multiplicative	0.7	1.3

F.3.1.4 Classification of Non-Contributing Devices Using AMI Billing Data

ADM identified non-contributing households to inform and track program performance over time. For example, calling more demand response events in a season may have an impact on the opt-out rates (a subset of non-contributing devices). ADM measures non-contributing devices rates each year, in addition to opt-out rates when they are available, to assess how non-contributing device rates change each program year. Example reasons why a household may be a non-contributor include:

- Non-responding devices (NRDs) are devices that are not responsive to the curtailment signal.
- Opt-outs are customers who opt-out of a DR event.
- Customers that are not running their AC (i.e., they are away on vacation or at work during the event).

A device is considered a “non-responding device” if it is not responsive to the curtailment signal. This would indicate that the switch communications were not working.

Switch communications may be interrupted for a variety of reasons: the AC unit may not be powered on, the switch may become disconnected or defective, or the participant’s household wiring may prevent communication. In some cases, it may be difficult for utilities to determine the reason the switch is not communicating.

Opt-outs are different than NRDs, though the resulting observations are similar. Opt-outs occur when a customer chooses not to participate in the curtailment event. In most cases, when a customer chooses to opt-out, the customer is declining to participate in all subsequent events, rather than a single event. Opt-outs are similar to NRDs in that household AMI meter data displays no demand reductions during the curtailment event. However, opt-outs can be categorized as opt-outs using customer communication records, or program tracking of opt-out customers.

Customers who are not running their AC unit during the DR event will have a load shape similar to NRD and opt-out customers and appear to not have a demand reduction. For instance, the customer may be on vacation, away at work, or have an AC unit problem.

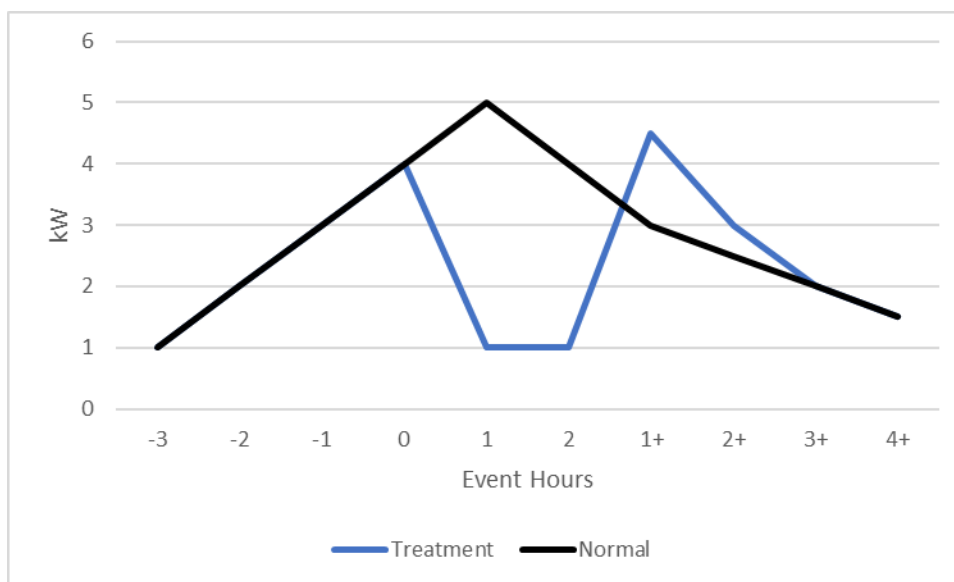
ADM attempted to quantify a separate opt-out rate for the program; however, information on customer opt-outs was not available for the program. As such, a rate that includes all non-contributing households was calculated.

ADM identified non-contributing households using a combination of two algorithms:

1. A cumulative sum (CSUM) change in slope analysis
2. A linear 10 percent decrease in load detection

When a DR event is called, each device is sent curtailment instructions that result in a significant load drop over the duration of the event. This drop is illustrated in Figure F-1 which provides an example event and an example of a typical or “baseline” usage curve.

Figure F-1: Example of Site-Level Load Shapes During Event Hours⁹⁰



ADM defines the methodology applied for each algorithm in the following sections.

CSUM Analysis:

The CSUM smoothing technique is a rolling sum defined as:

$$x = (a, b, c, \dots, z) \text{ CSUM}(x) = (a, a + b, a + b + c, \dots, a + \dots + z)$$

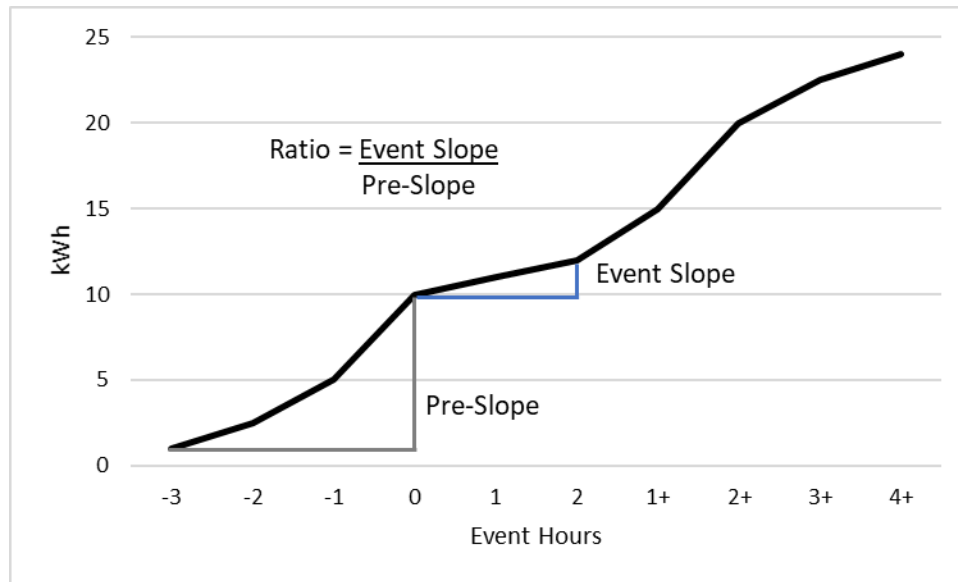
Where:

x = a vector of kWh measures taken at increasing one-hour intervals during the event day

A smoothed, increasing curve is created by taking the CSUM of each treatment site during the demand response period. Figure F-2 provides an example of site-level CSUM slope changes. The slopes of this curve for the three hours prior to the start of the event and the hours during the event are calculated. The ratio of the event period slope divided by the pre-period slope was calculated to test if there is a significant change in the slope due to the demand response event. A contributing device is detected by a decrease in the line slope. Therefore, the ratio is less than one. Using this test, ADM defined sites with a slope less than one to be a contributing device, which indicates a decrease in demand during the demand response event.

⁹⁰ The figure is illustrative only and does not show an actual event for the program.

Figure F-2: Example of Site-Level CSUM Slope Changes During Event Hours⁹¹



Linear 10 Percent Decrease Analysis:

In parallel with the CSUM analysis, a linear test for 10 percent reduction in consumption during the demand response event is also employed. For each unique device, the consumption for the hour prior to the event is compared to the consumption during the first hour of the event to detect a reduction in demand greater than 10 percent with the following equation:

Equation 8-16: Non-Contributing Device for 10 Percent Decrease Analysis

$$\text{Non – Contributing Device} = T1_{kWh} \leq T2_{kWh}$$

Where:

$$T1_{kWh} = \text{PriorHr}_{kWh} - \text{EventHr}_{kWh}$$

$$T2_{kWh} = \text{PriorHr}_{kWh} * 10\%$$

$$\text{PriorHr}_{kWh} = \text{Demand displayed during the hour prior to the demand response event}$$

$$\text{EventHr}_{kWh} = \text{Demand displayed during the first hour of the demand response event}$$

By taking advantage of the processing speed of vectorized programming in the R-Studio environment, every individual site in the program is tested per event.

⁹¹ The figure is illustrative only and does not show an actual event for the program.

F.3.1.5 Annual Energy Savings Methodology

Annual energy savings for smart thermostat customers were estimated using a weather-adjusted Post Period Regression (PPR) ordinary least-squares (OLS) model. A matched comparison group was created using a Propensity Score Matching (PSM) approach. With the PSM approach, a propensity score is estimated for treatment customers (i.e., those who received program services) and a group of customers who did not receive program services using a logit model. Customers in the treatment and control groups are matched based on seasonal pre-period usage (e.g., summer, spring, fall, and winter) and zip code (or other factors such as rate code). In addition, demand response event days are removed from the data to avoid creating bias.

Control group customers were selected from customers who have not participated in any demand response or energy efficiency programs. In addition, the PPR model utilized post period data only. Data for control customers was restricted to the post period timeframe for their matched participant (to ensure the same number of observations in the post period). After creating a matched comparison group, the program impacts were estimated with the following regression. The final form of the model is shown below.

Equation 8-17: HDR Final Model

$$Usage (kWh)_{it} = \alpha_0 + \sum_{m=1}^{12} \alpha_m Month_{m,t} * \sum_{p=1}^4 \alpha_p Pre - Period Usage_{p,it} + \beta_1 * Treatment_{it} + \beta_2 * HDH_{it} + \beta_3 * CDH_{it} + \beta_4 * Treatment_{it} * HDH_{it} + \beta_5 * Treatment_{it} * CDH_{it} + \epsilon_{it}$$

Where:

α_0	= intercept term
t	= index for the time interval
i	= index for the customer i
m	= index for month of the year
p	= index for season of the year (spring, summer, fall, winter)
$Month$	= dummy variable for month of the year
$Pre-Period Usage$	= average pre-period usage for season p (spring, summer, fall, winter) for customer i
$Treatment$	= dummy variable = 1 if in the treatment group, and 0 otherwise
HDH_{it}	= average heating degree hours for time interval t

CDH_{it}	= average cooling degree hours for time interval t
ϵ_{it}	= error term
α, β	= parameters to be estimated by the model. β_1, β_4 , and β_5 are the parameters of interest for estimating the reduction in kWh usage

The total annual energy savings for the program is calculated by taking the estimated kWh savings/unit and multiplying by the number of thermostat units considered part of the program in 2024.

F.3.2 Program Activity

F.3.2.1 Peak Demand Reduction from Demand Response Events

The following sections provide the peak demand reductions for the Home Demand Response Program.

The following definitions are referenced in the tables below:

- **Jurisdiction** – This column describes which service area the results cover.
- **Event Date** – This column contains the date of each DR event.
- **Percent Non-Contributing Devices** – This column contains the percentage of non-contributing devices on DR event days.
- **Reported Peak Demand Reduction per Unit** – This column contains the expected DR event peak demand reductions per unit.
- **Verified Peak Demand Reduction per Unit** – This column contains the verified average DR event peak demand reductions per unit.
- **Reported kWh/Unit Savings** – This column contains the expected annual kWh/Unit savings.
- **Verified kWh/Unit Savings** – This column contains the verified annual kWh/Unit savings.
- **Percent Non-Contributing Households** – This column contains the percentage of households with non-contributing devices.

- **Eligible Units** – This column contains the number of devices eligible for savings. For kWh savings, a device is deemed eligible if the measure type is Do-it-Yourself (DIY) or Professional (PRO); Bring-Your-Own-Thermostat (BYOT) is ineligible for annual kWh savings as the assumption is that these customers would have installed the device in the absence of the program. In addition, to be eligible, the device must have been installed in PY1 and not returned or removed. For kWh eligible units, devices must have been installed but do not have to be available for DR events. For kW devices, the device must be enrolled in the DR program during the program year and be available for curtailment events.
 - **Reported Peak Demand Reductions** – This column contains the total reported DR peak demand reductions which is equal to the reported peak demand reduction per unit multiplied by the eligible units.
 - **Verified Peak Demand Reductions** – This column contains the total DR peak demand reductions which is equal to the verified peak demand reduction per unit multiplied by the eligible units.
 - **Reported kWh Savings** – This column contains the total expected annual kWh savings which equals the reported kWh per unit multiplied by the eligible units.
 - **Verified kWh Savings** – This column contains the total verified annual kWh savings which equals the verified kWh per unit multiplied by the eligible units.

F.3.2.2 Demand Response Event Dates

As shown in Table F-6, there was one demand response event called in 2024 for smart thermostat devices. Curtailment was called between the hours of 4 p.m. through 6 p.m. CDT. Only EcoBee devices received a curtailment signal in PY1.

Table F-6: Demand Response Events in 2024, Smart Thermostats

Device Type	Event Date	Hours Called	Jurisdiction
Smart Thermostat: EcoBee	9/19/2024	4-6 PM	KS Metro/KS Central

Table F-7 lists the demand response events called in 2024 for Legacy Honeywell devices.

Table F-7: DR Events in 2024, Legacy

Device Type	Event Date	Hours Called	Jurisdiction
Legacy: Honeywell	6/13/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	6/24/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	6/25/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	7/2/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	7/15/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	7/16/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	7/31/2024	3-5 PM	KS Metro/KS Central
Legacy: Honeywell	8/5/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	8/26/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	8/27/2024	4-6 PM	KS Metro/KS Central
Legacy: Honeywell	9/19/2024	4-6 PM	KS Metro/KS Central

F.3.2.3 Smart Thermostat Devices

Table F-8 reports the smart thermostat devices that were included in the program during the evaluation period. These devices only include participants that signed up for the HDR program in PY1 and were eligible for kW or kWh savings.

Table F-8: Smart Thermostat Device Types

Jurisdiction	Device Type	Measure	Number of Devices
KS Central	EcoBee	DIY	1,097
KS Central	EcoBee	BYOT	947
KS Central	Google	DIY	1,118
KS Central	Google	BYOT	2,477
KS Metro	EcoBee	DIY	268
KS Metro	EcoBee	BYOT	408
KS Metro	Google	DIY	308
KS Metro	Google	BYOT	1,670
Total			8,293

Table F-9 provides the number of Smart Thermostat units installed and the number of customers for each measure type. Bring-Your-Own-Thermostat (BYOT) were the most frequent measure type for the HDR program and accounted for 66 percent of installations in PY1. In addition, do-it-yourself (DIY) installations accounted for 34 percent of device installations.

Table F-9: Smart Thermostat Devices by Measure Type

Jurisdiction	Measure Type	# of Devices
KS Central	DIY	2,215
KS Central	BYOT	3,424
KS Metro	DIY	576
KS Metro	BYOT	2,078

F.3.2.4 Baseline and Proxy Day Development

ADM defined proxy days as the top eight non-event, non-holiday, non-weekend days with the highest loads across all summer months. In addition, proxy days must display a maximum temperature of greater than or equal to the minimum temperature observed during normal curtailment hours during the events. ADM used these defined proxy days to determine the ability of CBL and regression models to predict actual usage for each customer.

F.3.2.5 Non-Contributing Devices

Table F-10 summarizes the non-contributing device rate on the DR event date for smart thermostats and Legacy devices. The high non-contributing device rate for Ecobee smart thermostats indicate a potential curtailment signal issue during the September 19 event. As mentioned previously, Google devices were not curtailed on September 19. For Legacy devices, the high average non-contributing device rate is mainly due to the devices reaching their end of life.

Table F-10: Non-Contributing Device Rate

Device Type	Event Date	% Non-Contributing Devices
Smart Thermostat: EcoBee	9/19/2024	47.95%
Legacy: Honeywell	Average	66.47%

F.3.2.6 Load Shapes and Model Performance

Figure F-3 shows event load shapes for smart thermostat EcoBee devices for all jurisdictions on the DR event day (September 19, 2024). Only a small load drop is evident on the event day, indicating a potential curtailment signal issue affected many smart thermostat EcoBee devices.

Figure F-3: Event Load Shape, EcoBee

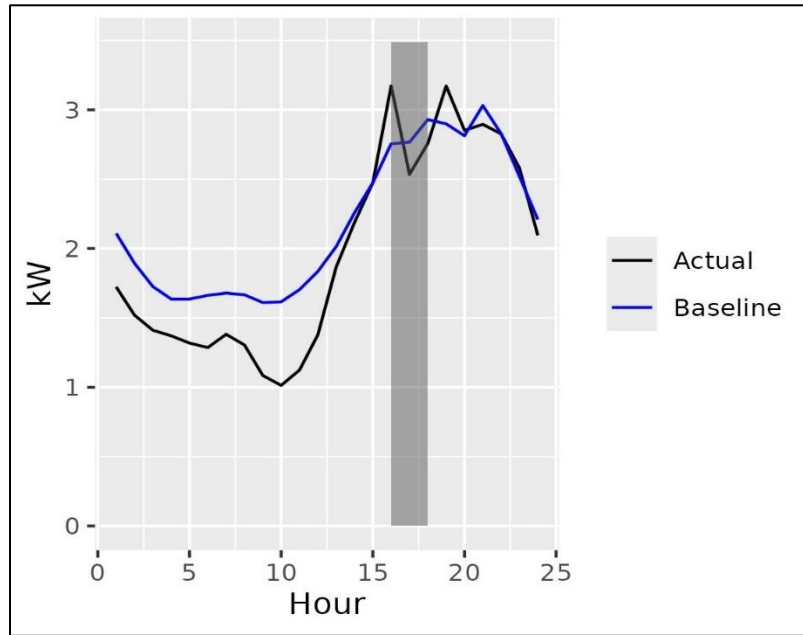


Figure F-4 event load shapes for Legacy Honeywell devices on the event day that corresponded to Evergy's system peak for the jurisdiction (June 24, 2024).

Figure F-4: Event Load Shape, Legacy Honeywell

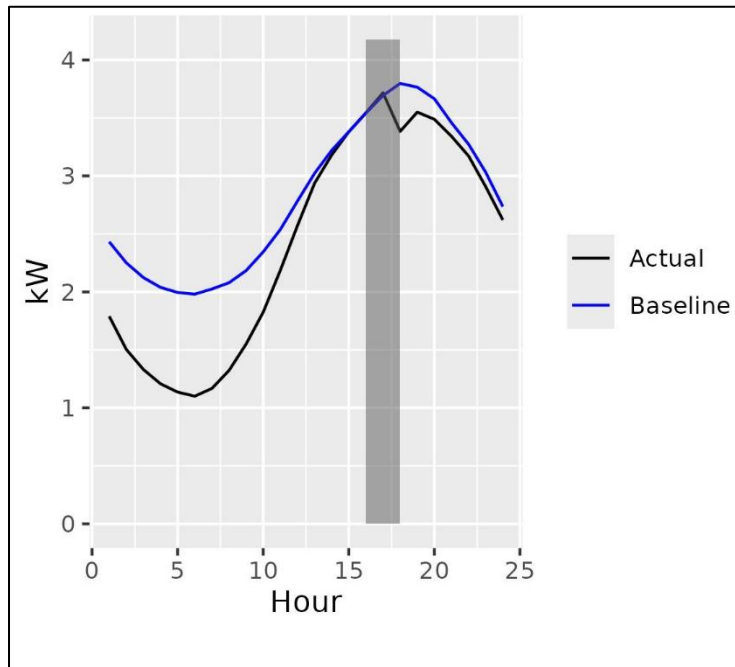


Table F-11 provides the selected baseline model and model performance for each device type.

Table F-11: Selected Baseline Model

Device Type	Best Fit Model	Model Error (RRMSE)	Model Bias
Smart Thermostat: EcoBee	10-of-10 Additive 2-hour Offset CBL	0.042	1.03%
Legacy: Honeywell	10-of-10 Additive 2-hour Offset CBL	0.053	-0.21%

F.3.2.7 Peak Demand Reduction

Table F-12 provides impact results and weather for each HDR demand response event called in 2024 for smart thermostats. In PY1, the verified peak demand reduction (kW) per unit is an estimate that includes both curtailed and non-curtailed devices and is, therefore, applied to all eligible devices.

Table F-12: Peak Demand Reduction (kW), Smart Thermostat

Device Type	Date	Verified Peak Demand Reduction per Unit (kW)	Average Temperature (F) During Event Hours	Max Temperature (F) During Event Hours
Smart Thermostat: EcoBee	9/19/2024	0.22	77.8	90.0
Average		0.22	77.8	90.0

Table F-13 provides impact results and weather for Legacy Honeywell devices on the event date that corresponded to Evergy's system peak.

Table F-13: Peak Demand Reduction (kW), Legacy

Device Type	Date	Verified Peak Demand Reduction per Unit (kW)	Average Temperature (F) During Event Hours	Max Temperature (F) During Event Hours
Legacy: Honeywell	6/24/2024	0.29	88.7	100.9
Average		0.29	88.7	100.9

F.3.3 Annual Energy Savings

F.3.3.1 Residential

Annual energy savings per unit for smart thermostats of 185 kWh were derived from the Missouri RDR Program PY2 analysis, which utilized Propensity Score Matching (PSM) to create a matched cohort. The results of the PY2 analysis are provided below for reference.

ADM was successful in creating a matched cohort and the results of PSM and the annual consumption estimate for HDR are summarized below. ADM used nearest neighbor, 2 to

1 ratio matching with replacement for control customers and had a considerable pool of control customers to draw upon, as shown in Table F-14. Customers were matched on their average monthly pre-period usage. Prior to matching, customers were required to have at least 6 months of post-period data. In addition, demand response event days were removed from the post-period to avoid creating bias.

Table F-14: PSM Customer Matches

Status	Control	Treated
All	6,752	881
Matched	1,463	878
Unmatched	5,289	3

Table F-15 presents the propensity score covariate summary of pre-period usage for treatment and control customers before and after matching.⁹² The standardized mean difference prior to matching is often over 0.1 for many covariates; however, after matching the absolute value of the standardized mean difference is less than 0.1, which is an ideal outcome.

⁹² PSM covariate summary results for each Rate code and 3-digit Zip code have been omitted for the sake of brevity.

Table F-15: PSM Covariate Summary

Variable	Before Matching			After Matching		
	Mean Treated	Mean Control	Standardized Mean Difference	Mean Treated	Mean Control	Standardized Mean Difference
Distance	0.132	0.113	0.289	0.129	0.129	0.000
Pre-period Jan	34.578	34.335	0.008	34.501	33.355	0.039
Pre-period Feb	31.840	32.092	-0.010	31.782	30.813	0.038
Pre-period Mar	25.979	25.073	0.057	25.995	25.627	0.023
Pre-period Apr	25.627	23.954	0.105	25.661	25.725	-0.004
Pre-period May	27.352	24.060	0.192	27.420	27.534	-0.007
Pre-period June	51.604	44.468	0.310	51.693	51.703	0.000
Pre-period July	51.646	45.946	0.252	51.737	52.054	-0.014
Pre-period Aug	44.286	39.248	0.246	44.364	44.695	-0.016
Pre-period Sept	42.765	37.773	0.248	42.846	43.089	-0.012
Pre-period Oct	24.900	23.571	0.092	24.926	24.631	0.020
Pre-period Nov	29.097	28.670	0.020	29.080	28.399	0.033
Pre-period Dec	32.886	32.275	0.025	32.853	31.995	0.036

Table F-16 provides results for a T-test which helps determine the success of matching. The test measures whether there are statistically significant differences in average daily consumption used between the treatment and comparison groups in the pre-period by month. Statistically significant differences are defined as a p-value of less than 0.05 at the 95 percent significance level. As shown below, the p-value is greater than 0.05 for each month tested. This result further indicates propensity score matching performed well because the differences between the treatment and comparison groups are not statistically significant.

Table F-16: Post-Matching T-Test of Difference in Pre-Period Usage by Month

Month	Average Daily kWh Control	Average Daily kWh Treatment	T Stat	Std Error	P-Value	Reject Null?
Jan	33.489	34.501	-0.805	1.257	0.421	No
Feb	30.955	31.782	-0.744	1.113	0.457	No
Mar	25.451	25.995	-0.759	0.715	0.448	No
Apr	25.336	25.661	-0.471	0.691	0.637	No
May	26.911	27.420	-0.696	0.731	0.486	No
June	50.735	51.693	-0.933	1.027	0.351	No
July	51.120	51.737	-0.604	1.022	0.546	No
Aug	43.783	44.364	-0.630	0.921	0.529	No
Sept	42.240	42.846	-0.676	0.896	0.499	No
Oct	24.381	24.926	-0.863	0.632	0.388	No
Nov	28.362	29.080	-0.797	0.900	0.425	No
Dec	32.037	32.853	-0.772	1.056	0.440	No

Figure F-5 displays the density of seasonal pre-period usage, before conducting matching. Figure F-6 displays the density of seasonal pre-period usage, after conducting matching.

Figure F-5: Seasonal Pre-Period Usage Before Matching

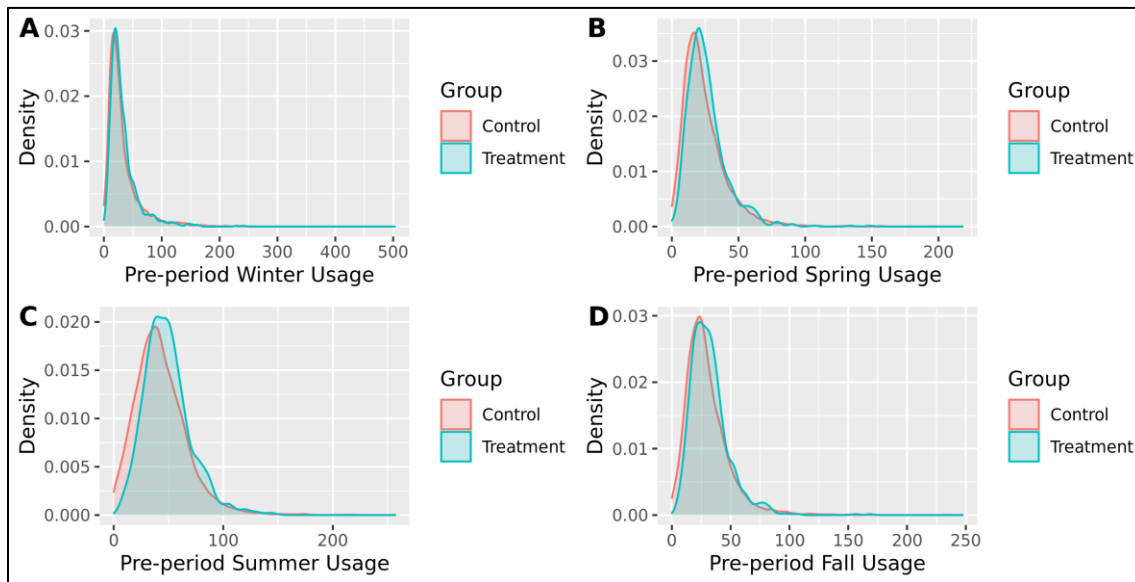
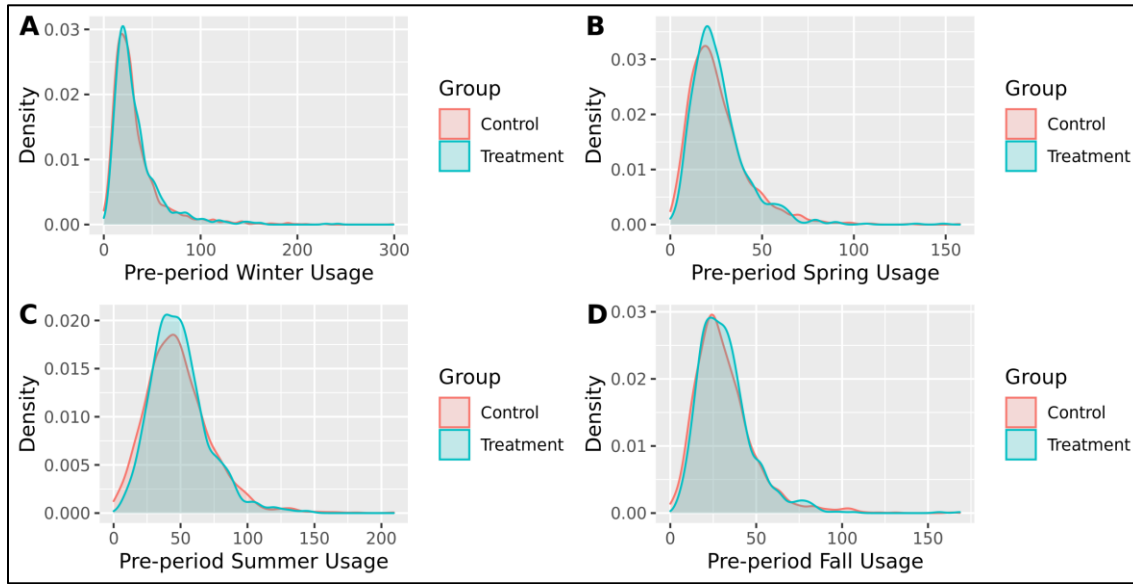


Figure F-6 Seasonal Pre-Period Usage After Matching



Lastly, the joint chi-square test for covariate balance had a p-value of 1.00, meaning ADM failed to reject the null hypothesis of covariate imbalance (i.e., the treatment and comparison group are similar).

Table F-17 provides regression results for annual energy savings post matching. Interaction variables between pre-period usage and month have been omitted for the sake of brevity.

Table F-17: Annual Energy Savings (kWh) Regression Results

Variable	Estimate	Std Error	T Statistic	P Value	95% CI Lower	95% CI Upper
(Intercept)	-10.312	6.351	-1.624	0.104	-20.760	0.135
Pre-Period Usage Fall	0.490	0.046	10.642	0.000	0.414	0.566
Pre-Period Usage Winter	-0.034	0.019	-1.821	0.069	-0.065	-0.003
Pre-Period Usage Summer	0.255	0.022	11.509	0.000	0.219	0.292
June	-11.641	11.123	-1.047	0.295	-29.937	6.655
July	-12.261	12.673	-0.967	0.333	-33.108	8.586
Aug	-12.973	13.778	-0.942	0.346	-35.637	9.691
Sept	-4.664	6.244	-0.747	0.455	-14.935	5.607
Oct	2.344	2.818	0.832	0.406	-2.292	6.980
Nov	-1.982	11.732	-0.169	0.866	-21.280	17.316
Dec	-5.265	15.206	-0.346	0.729	-30.278	19.748
Treatment	-0.338	0.570	-0.592	0.554	-1.276	0.600
CDD	2.045	1.340	1.526	0.127	-0.159	4.248
HDD	0.823	0.903	0.912	0.362	-0.662	2.309
Treatment*CDD	-0.090	0.052	-1.735	0.083	-0.176	-0.005
Treatment*HDD	0.011	0.035	0.306	0.760	-0.046	0.068
Adjusted R2 = 0.79, Sample Size = 878						

The energy savings were derived using the following equation:

Equation 8-18: Energy Savings (kWh) for HDR Program

Annual kWh Savings

$$= \text{Treatment} * 365.25 + \text{Treatment: CDH} * 1,461 + \text{Treatment: HDH} * 5,581$$

Where:

Treatment = dummy variable

= 1 if in the treatment group, and 0 otherwise

HDH_{it} = average heating degree hours for time interval *t*

CDH_{it} = average cooling degree hours for time interval *t*

The kWh savings estimate for HDR is statistically significant at the 99 percent level and the PPR model provided a good fit for the data (adjusted R2 = 0.79).

Annual kWh savings per thermostat are equal to the annual kWh savings estimate (196.22) divided by the average number of thermostat units per customer (1.059), as shown in the equation below.

Equation 8-19: Per-Unit Energy Savings (kWh) for HDR Program

Annual kWh Savings per Unit

$$= ((-0.338 * 365.25) + (-0.090 * 1,461) + (0.011 * 5,581))/1.059$$

F.3.3.2 Gross Energy Savings and Demand Reduction

Peak demand reduction was determined as the maximum hourly difference between event hours and a counterfactual non-event period on the system peak day for the jurisdiction. The method used to determine the counterfactual baseline is described in the methodology section of this chapter (Section F.3.1).

The tables below summarize the verified energy and peak demand reduction for the HDR Program. The overall realization rate for peak demand reductions for smart thermostats is 6 percent and the realization rate for energy savings is 125 percent.

The realization rate for peak demand reductions differs from 100 percent due to the following factors:

- Google devices, which accounted for 67 percent of smart thermostat devices, were not sent a curtailment signal on the event date and did not contribute to the peak demand reduction.
- EcoBee smart thermostat devices had a high non-contributing device rate, indicating a possible curtailment signal issue.

Based on the impact evaluation results, the total verified energy savings for smart thermostats are 646,020 kWh, and the total verified peak demand reductions are 694.72 kW.

Table F-18: Gross Energy Savings (kWh), Smart Thermostats

Jurisdiction	RP at 90% CL	Reported Energy Savings (kWh) per Unit	Verified Energy Savings (kWh) per Unit	Verified Demand Reduction per Participant (Lower)	Verified Demand Reduction per Participant (Upper)	Eligible Units	Reported Energy Savings (kWh)	Verified Energy Savings (kWh)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kWh)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	13%	148	185	161.02	208.98	2,666	395,091	493,210	429,268.20	557,151.80	125%	109%	141%
KS Metro	13%	148	185	161.02	208.98	826	122,114	152,810	132,999.08	172,620.92	125%	109%	141%
Total	10%					3,492	517,204	646,020	579,079.53	712,960.47	125%	112%	138%

Table F-19: Gross Peak Demand Reduction (kW), Smart Thermostats

Jurisdiction	RP at 90% CL	Reported Demand Reduction (kW) per Unit	Verified Demand Reduction (kW) per Unit	Verified Demand Reduction per Participant (Lower)	Verified Demand Reduction per Participant (Upper)	Eligible Units	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	13%	1.20	0.22	0.19	0.25	2,301	7,503.60	505.39	439.87	570.91	7%	6%	8%
KS Metro	13%	1.20	0.22	0.19	0.25	862	3,826.80	189.33	164.78	213.88	5%	4%	6%
Total	10%					3,163	11,330.40	694.72	624.75	764.69	6%	5%	7%

Table F-20 provides verified demand reduction (kW) for Legacy devices in PY1. The total verified peak demand reductions for Legacy devices are 18,213.27 kW.

The realization rate for peak demand reductions differs from 100 percent because the following reported demand reduction (kW) per device is based on previous estimates for Legacy devices provided by Evergy, while the verified demand reduction (kW) per device is based on estimates from PY1.

Table F-20: Gross Peak Demand Reduction (kW), Legacy

Jurisdiction	RP at 90% CL	Reported Demand Reduction (kW) per Participant	Verified Demand Reduction per Participant (kW)	Verified Demand Reduction per Participant (Lower)	Verified Demand Reduction per Participant (Upper)	Number of Devices	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	3%	0.38	0.35	0	0	49,622	18,856.00	17,316.44	16,809.79	17,823.09	92%	89%	95%
KS Metro	3%	0.38	0.06	0	0	14,263	5,420.00	896.83	870.59	923.07	17%	17%	17%
Total	3%	0.38	0.29	0	0	63,885	24,276.25	18,213.27	17,705.94	18,720.60	75%	73%	77%

Legacy devices were impacted in 2024 by paging network issues that increased the non-response rates of participants. After the paging network issue was discovered at the end of the season, Evergy took steps to improve the paging network by installing new transmitters and working with the implementer to improve the asset's performance. To estimate the potential kW impact of the corrected paging network issues, when estimating average kW reductions for the Legacy devices, ADM applied the kW reduction estimates for responding devices in 2024 to the prior year (2023) non-response device rates. The potential kW estimate assumes that non-responding device rates will return to 2023 levels at a minimum. Table F-21 provides verified kW reduction, incremental potential kW reduction for Legacy devices, and potential kW reduction for Legacy devices by jurisdiction. Table F-22 shows the lifetime energy savings for the smart thermostats and Legacy devices.

Table F-21: Incremental Potential kW for Legacy Devices

Utility Territory	RP at 90% CL	Verified kW Reduction	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Incremental Potential kW Reduction (Legacy)	Incremental Potential kW Reduction - Legacy (Lower)	Incremental Potential kW Reduction - Legacy (Upper)	Potential kW Reduction (Verified + Incremental Potential)	Potential kW Reduction - Verified + Incremental Potential (Lower)	Potential kW Reduction - Verified + Incremental Potential (Upper)
KS Central	3%	17,316.44	16,809.79	17,823.09	7,733.00	7,506.74	7,959.26	25,049.44	24,316.53	25,782.35
KS Metro	3%	896.83	870.59	923.07	127	123.28	130.72	1,023.83	993.87	1,053.79
Total	3%	18,213.27	17,705.94	18,720.60	7,860.00	7,641.06	8,078.94	26,073.27	25,346.99	26,799.55

Table F-22: Lifetime Energy Savings (kWh)

Measure Name	RP at 90% CL	Energy Savings (kWh)	EUL	Lifetime Energy Savings (kWh)	Lifetime Energy Savings (Upper)	Lifetime Energy Savings (Lower)
Smart Thermostats	10%	646,020	11	7,106,220	6,390,528	7,821,912
Legacy Devices	3%	0	1	0	0	0
Total	3%	646,020	-	7,106,220	6,913,743	7,298,697

F.4 Ongoing Activities to Mitigate Realization Rate Issues

In PY1, the Home Demand Response program produced inconsistent realization rates, as described above. To mitigate this in PY2, Evergy will work with the implementor to ensure all smart thermostat device types participate in DR events and are receiving curtailment signals. In addition, Evergy is working to identify and resolve paging network issues affecting Legacy device performance. Other issues affecting realization rates cannot be mitigated due to the following factors: 1) energy savings (kWh) estimates for smart thermostats in PY2 will be based on a billing analysis which may produce very different estimates compared to expected savings values, and 2) Legacy device demand savings (kW) in PY2 may differ from expected demand savings due to a variety of factors that combined to affect DR event performance (e.g., weather, day of the week, paging network performance, etc.).

F.5 Net Savings Methodology

In demand response programs, for kW reductions, it is typically assumed that there are neither spillover nor free-ridership effects (customers are not expected to curtail without participating). Furthermore, participants are compensated only if they reduce their load during the peak demand window, the primary program goal.

For kWh savings, it was assumed that any free ridership for customers that received a smart thermostat through the program was offset by control group customers who installed smart thermostats. As such, the net-to-gross ratio for this program is 1.0.

As an exploratory analysis ADM investigated participant free ridership for customers that received a smart thermostat through the program. The methodology for that analysis is detailed here and results are presented below. These findings are only for informational purposes and were not incorporated into impact analysis results.

F.5.1 Intention Score

The tables below summarize intention free ridership scoring for customers that received a thermostat through the Home Demand Response program. When scoring intentions, ADM began with a score of 100 percent and applied adjustments based on the responses as shown in the table. All intention scores ranged between 0 percent (no free ridership) and 100 percent (full free ridership).

Table F-23: Thermostat Incentive Intention Score

Before you heard about the Thermostat program, had you already planned to purchase a smart thermostat?	Would you most likely have purchased the same thermostat without the Evergy Thermostat program?	Would you most likely have purchased a different thermostat if you had not received it through the Evergy Program or would you have decided not to purchase it?	Without the Evergy Thermostat Program, what kind of thermostat would you most likely have purchased?	Thinking about timing, about timing, without the Evergy Thermostat Program, when would you most likely have purchased the thermostat?
Yes [-0%]	Yes [-0%]	I would have purchased a different [equipment] [-0%]	At the same time [-0%]	At the same time [- 0%]
No [-50%]	No [-25%]	I would have decided not to purchase it [-100%]	Later, but within the same year [-50%]	Later, but within the same year [- 50%]
Don't know [-0%]	Don't know [-0%]	Don't know [-0%]	One to two years out [-100%]	One to two years out [-100%]
			More than two years out or Never [-100%]	More than two years out or never [-100%]
			Don't know [-0%]	Don't Know [-0%]

F.5.2 Influence Score

The program influence score was based on ratings of the importance of a series of program factors. Respondents were asked to rate how important each of the factors was in their decision to request the smart thermostat through the program. The highest score possible was a '5' and represents the influence part of the free ridership score for the program. High program influence and free ridership have an inverse relationship – the greater the program influence, the lower the free ridership score. The list of factors that respondents rated were:

- The Evergy offer to receive the no-cost thermostat

- Recommendation from program staff or program implementor
- Information about energy efficiency that program provided
- Information or recommendation from contractor (if applicable)
- Previous participation in an Evergy energy efficiency program

Free ridership influence score assignments are described in Table F-24.

Table F-24: Home Demand Response Free Ridership Influence Scores

Response	Influence Score
1 (Not at all important)	100%
2	75%
3	50%
4	25%
5 (Extremely important)	0%

F.5.3 Spillover

Participant spillover addresses situations where the participant reports activities, purchases, and/or installations of high-efficiency equipment that is not funded through the program but was influenced by the customer's participation in the program. ADM will collect data using questions that ask program participants if the program prompted a decision to install other energy efficient measures or to make other energy efficient improvements beyond what was specifically rebated through the program.

The Home Demand Response participant survey included questions similar to the following:

Since requesting the smart thermostat through the program, have you made any energy-efficiency improvements or installed any other energy-efficiency products or made any improvements that you did NOT receive for free or a program incentive for from Evergy or another organization?

[If yes] Please select the energy-efficient products or improvements that you purchased (and installed, if applicable) since participating in the program. Select all that apply.

The survey then asked respondents about the level of influence the program participation had on their decision to install the added measures, using a question similar to the following:

On a scale from 1 to 5, with 1 meaning not at all important and 5 meaning extremely important, please rate how important your experience with the Evergy program was in your decision to install this/these energy-efficient products(s) or make these improvements.

Additional measure purchases associated with an “extremely important” program rating were considered for spillover attribution to the program.

Residential participants were asked an open-ended question about how they knew the additional non-incentivized measures they purchased were high efficiency. ADM included an open-ended question in the survey that asked why customers did not apply for an Evergy program incentive if the additional measure was like one rebated through an Evergy program. Additionally, the year of purchase was confirmed with a follow-up survey question.

Following data collection, ADM reviewed program tracking data to ensure customers who report spillover measures did not receive a rebate or incentive for that measure through the program. Once program influence and lack of incentive are confirmed, ADM reviewed reported information about the spillover measure (e.g., efficiency rating, amount). If insufficient data was collected about the spillover measure, average or deemed savings values from the Kansas TRM and/or program analysis were assigned for each measure.

In general, the steps to estimating participant spillover were as follows:

Calculate total spillover savings for each participant as the product of measure savings and number of units associated with “extremely important” program influence ratings.

$$\text{Measure Spillover} = \text{Measure Savings} \times \text{Number of Units}$$

Total the savings associated with each program participant, to give the overall participant spillover savings.

$$\text{Participant Spillover} = \text{Sum of Measure Spillover}$$

Multiply the mean participant spillover savings for the participant sample by the total number of participants to yield an estimated total participant spillover savings for the program.

$$\text{Total Participant Spillover Savings} = \text{Sum of Participant Spillover} \div \text{Sample } n \times \text{Population } N$$

Divide that total participant spillover savings by the total gross program savings to yield a participant spillover ratio to be included in the calculation of the NTG ratio.

$$\text{Participant Spillover Ratio} = \text{Total Participant Spillover} \div \text{Total Gross Program Savings} \times 100\%$$

F.5.4 Consistency Check

The survey included a question to describe what impact, if any, the program had on customers' decision to implement or install energy efficient equipment:

- In your own words, can you please describe how important the incentive and information or education from Everygy was on your decision to purchase and install the high efficiency [MEASURE]?

If a respondent was determined to be a non-free rider (0 percent) or pure free rider (100 percent) and their response to the open-ended consistency question contradicted the determination of non-free rider or pure free rider, an adjustment to their free ridership score was considered (for example customers' intention free ridership score and/or influence free ridership score may have been adjusted to 50 percent).

F.5.5 Final Free Ridership Score

The final free ridership value for the program (and measure categories) was calculated as the arithmetic mean of the verified gross savings weighted intention (maximum score 100 percent) and verified gross savings weighted influence (maximum score 100 percent) free ridership components, resulting in a value between 0 percent and 100 percent, as shown in this equation:

Equation 8-20: Free Ridership Score

$$\text{Final Free Ridership Ratio} = \frac{\text{Intention Score} + \text{Influence Score}}{2}$$

F.6 Net Savings Results

The net savings equaled the gross savings for the Home Demand Response Program.

F.7 Process Evaluation Methodology

The process evaluation was designed to explore the RDR Program's design, barriers to participation, implementation, and outcomes. To investigate these areas, ADM reviewed program documents, held a facilitated discussion with program and implementation staff, and surveyed a sample of participating customers.

ADM explored general research questions about the RDR Program, as well as questions that are specific to the energy savings event held in PY1. Process evaluation activities sought to answer the following research questions and offer specific recommendations to support program improvements.

F.7.1 Program Design and Implementation

ADM used the following questions to guide the design and implementation of the process evaluation documents, interviews, and surveys:

- How well did the program staff and implementation staff work together? Are there data tracking and communication efficiencies that can be gained?
- Is there cross-participation between the distribution channels or between the Thermostat Program and other programs offered by Evergy?
- Are there underlying assumptions about the program design and operation that impact how effective the program is?
- How important is the program in influencing customers to install smart thermostats? Would participants be installing smart thermostats without the program?
- How are customers learning about the program? Are the marketing efforts effective and useful or are customers finding out about the program in other ways?
- Were participants satisfied with the enrollment, installation, and event participation process? What are the causes of dissatisfaction?
- What are the most common sources of program awareness?

F.7.2 Implementation and Barriers to Participation

ADM used its interviews with program and implementation staff as well as its participant survey to explore their roles in marketing, administering, and implementing the program. ADM asked respondents to describe their participation in the program with questions such as:

- Did eligible participants decide to participate in any events?
- When participants choose not to participate in events, what are the reasons?
- Did eligible participants recall receiving notifications for events? Did any other member of their household receive notifications?
- What are the obstacles to getting participants customers involved with the program? Are there ways that those obstacles could be mitigated?

F.7.3 Outcomes

To understand program outcomes, the RDR participant survey asked customers if they were satisfied with the program and their utility service in general. These questions were used to answer research questions such as:

- Were participants satisfied with their experience? What are the causes of dissatisfaction?
- Is the program adequately serving different types of customers (e.g., based on homeownership, income level, education level, geographic area, ethnicity)?
- Looking forward, what are key impediments and drivers to program success?

F.8 Process Evaluation Results

The process-related data collection activities for the RDR Program evaluation included a survey of RDR participants. The surveys explored customers' purchase/participation process, their decision-making, and overall experience.

F.8.1 Summary of Process Evaluation Activities

ADM held two in-depth interviews in January 2025. The calls were held with Evergy and CLEAResult staff. The purpose of the calls was to investigate program design, implementation, barriers to success, and future plans for the program.

ADM conducted an email survey of Home Demand Response Program participants in December 2024. For this effort ADM targeted participants that received a thermostat through the program. ADM sought to investigate these participants to understand their decision to install smart thermostats and their experience with RDR events. There were a total of 3,829 unique email addresses in the program through November 2024 and 273 of these participants received an EcoBee thermostat through the program. ADM emailed the survey to 210 of the 273 customers that received an EcoBee thermostat through the program at no cost. Sixty-nine customers that participated in the program completed the survey (33 percent response rate). Two percent of survey invites bounced or were otherwise undeliverable. ADM offered selected customers a \$10 incentive to take the survey. Only EcoBee thermostat participants received event notifications in PY1. Of the 69 responses, 26 received an EcoBee thermostat through the program (38 percent).

F.8.2 Participant Survey Respondent Characteristics

The majority of respondents were homeowners who reported living in older, small-to-moderate sized single-family homes with gas home and water heating. Roughly sixty-five percent of respondents reported living with no more than three other people. Table F-25 summarizes respondents' home characteristics.

Table F-25: Participant Respondent Home Characteristics

Question	Response	Percent (n=69)
Do you own or rent your home?	Rent	12%
	Own	88%
Which of the following best describes your home type?	Single-family detached	83%
	Duplex	7%
	Apartment/condo in a 5+ unit building	6%
	Single family townhouse or row house	3%
	Mobile home	1%
When was your home built?	Before 1960	32%
	1960 to 1979	28%
	1980 to 1999	17%
	2000 to 2009	7%
	2010 or later	13%
	Don't know	3%
Including yourself, how many people currently live in your household?	1	28%
	2	29%
	3	9%
	4	19%
	5	9%
	6 or more	4%
	Prefer not to answer	3%
About how many square feet is your home?	Less than 1,000 square feet	17%
	1,000-1,999 square feet	39%
	2,000-2,999 square feet	36%
	3,000-3,999 square feet	3%
	4,000-4,999 square feet	1%
	Don't know	4%

Question	Response	Percent (n=69)
What is the main fuel used to heat your home? ⁹³	Electricity	26%
	Natural Gas	74%
	Don't know	1%
What is the main fuel used to heat your water?	Electricity	20%
	Natural Gas	78%
	Don't know	1%

Most survey respondents identified as white, primarily spoke English in their home, and had achieved some form of higher education. ADM also asked respondents to provide demographic information, summarized in Table F-26 below. Three-quarters of respondents identified as White and most said that English was the primary language spoken in their home. Survey respondents were fairly evenly spread across different age groups. Twenty-nine percent of respondents reported that their income was below 200 percent of the Federal Poverty Level (FPL), 17 percent said it was between 200 percent and 300 percent of the FPL, and 35 percent said their income was more than 300 percent of the FPL.⁹⁴ In comparison, using Census Bureau data, ADM estimates that about 29 percent of households served by Evergy have incomes under 200 percent of FPL.⁹⁵ About two-thirds of respondents indicated they had earned a four year degree or graduate degree.

Most respondents indicated that they or a family member had installed the thermostat between July and September 2024. Eighty percent of respondents reported self-installation of the smart thermostat (either installed themselves or by a family member). Twenty percent noted it was installed by a contractor. Sixty-two percent of respondents said they signed up between July and September 2024. Four percent said they signed up before July 2024. The remaining respondents said they signed up after September 30, 2024 (23 percent) or could not recall when they signed up (10 percent).

⁹³ Total is greater than 100 percent because one respondent indicated using both electricity and natural gas for space heating.

⁹⁴ Nineteen percent of respondents preferred not to state their household income.

⁹⁵ U.S. Census Bureau 2022 American Community Survey (ACS) Five Year Estimates Public Use Microdata Sample (PUMS)

Table F-26: RDR Participant Respondent Demographics

Question	Response	Percent (n=69)
What age are you?	25 to 34 years	20%
	35 to 44 years	20%
	45 to 54 years	13%
	55 to 64 years	20%
	65 or older	25%
	Prefer not to answer	1%
Which of the following best describes the race or ethnic background you identify with? ⁹⁶	Black or African American	4%
	Hispanic or Latino/Latina	10%
	American Indian and Alaska Native	6%
	Asian	6%
	White	75%
	Prefer not to answer	6%
What is the primary language spoken in your home?	English	88%
	Spanish	4%
	Hindi	1%
	Gujarati	1%
	Russian	1%
	Khmer (write-in)	1%
	Prefer not to answer	1%
Which of the following best describes your household annual income?	Under 200% Federal Poverty Line	29%
	Between 200% and 300% of the FPL	17%
	More than 300% of FPL	35%
	Prefer not to say	19%
What is your highest level of education?	High School Graduate/GED	10%
	Associate's degree, Vocation/Technical School, or some college	22%
	Four-year college degree	39%
	Graduate or professional degree	28%
	Prefer not to say	1%

⁹⁶ The total percentage equals to higher than 100 percent because respondents could select more than one answer.

F.8.3 Program Design

The program met its enrollment goals. Program and implementation staff noted that the program would meet its goal of enrolling 8,000 customers in the program by January 31, 2025. The implementor noted that most enrollments were BYOD customers (about 70 percent), while the rest had ordered thermostats for no-cost through the Evergy website.

Database data coordination challenges hindered program sign-ups. Both contacts noted that a subset of customers who had signed up to participate in the program had not been enrolled because of a rate code classification issue that was first discovered in November 2024. The issue caused about 800 Nest and 450 EcoBee BYOD customers that had attempted to enroll in the program beginning in July 2024 to remain in “pending” status. Implementation staff noted the issue related to an OATI API integration issue with EcoBee devices into the DERMS.⁹⁷ At the time of the in-depth interviews with program and implementation staff, the issue was in progress of being addressed.

Evergy staff noted that the performance of EcoBee thermostats was not on par with other thermostats in similar programs. Evergy staff stated that kW reduction measured for the event called for EcoBee customers was less than the Evergy Missouri program. At the time of the interview, they noted the issue was under investigation but stated that this issue may relate to small sample size for the KEEIA event. ADM noted that the sample size was 676, well over the number needed for 90/10 precision. This issue related to an unidentified dispatch problem (i.e., participants did not have the opportunity to curtail because EcoBee smart thermostats were not notified to participate in the event).

About one-third of customers that have requested thermostats through the program have not activated them. Implementation staff highlighted a phone call campaign to promote thermostat activation in July and August 2024.

The program will change contractors and shift responsibilities for implementation in PY2. Implementation and Evergy staff detailed changes the roles and responsibilities for the program that were set to take effect in spring and summer of PY2. Evergy staff indicated that the program would have the same design and offerings (no-cost thermostats and phone and in-person installation assistance support as needed). Evergy staff indicated the transition may be a challenge; however, they observed that the transition occurred for a similar offering for Evergy Missouri and that experience would help inform the change in Kansas.

⁹⁷ Open Access Technology International, Inc. (OATI) is a program that allows utilities to manage the temperature of participating customers' homes during peak demand hours.

The Online Marketplace will be linked to the Thermostat Program in PY2. Evergy staff noted that once the Online Marketplace became available, customers would be able to request thermostats through it. They noted that the Thermostat Program landing page would direct customers to the Online Marketplace.

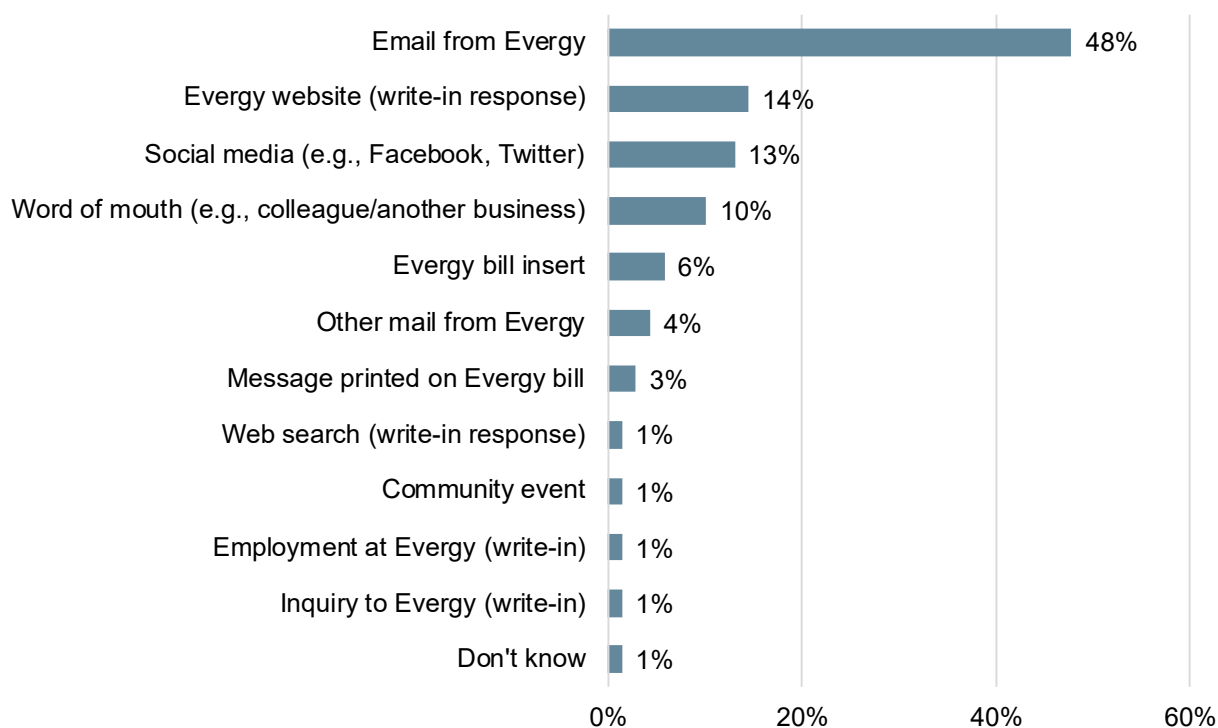
Nonparticipants may be called on to engage in events in PY2. EcoBee Grid Resiliency may be used on an emergency basis starting in summer 2025 to call nonparticipants to engage with events. Evergy staff noted that this was a product that would be available for use through their contract with Uplight.

F.8.4 Awareness

The program is marketed through manufacturer pushes to customers with smart thermostats as well as Evergy emails and direct mail. Implementation staff noted that Evergy had led marketing and outreach for the program. Manufacturer pushes drove sign-ups for the program; they are sent when a customer first installs their thermostat and app and then quarterly. Evergy staff indicated program promotion was continuous throughout the program year, with increased effort during the Black Friday time period. Implementation staff noted that they averaged around 300 orders for thermostats each month and in October they had about 800 orders.

Customers noted Evergy emails, information on the Evergy website, as well as social media as the primary sources of information for the program. Figure F-7 displays how customers learned about the Evergy Thermostat Program.

Figure F-7: Sources of Information for Evergy Thermostat Program⁹⁸

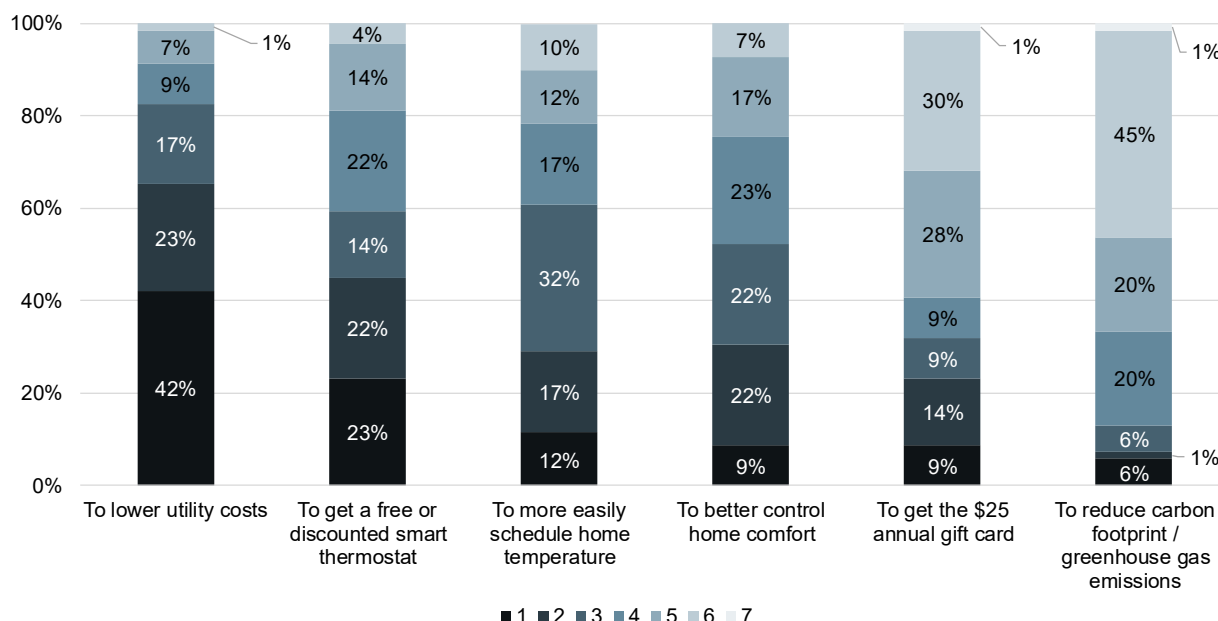


Participants ranked lowering utility costs and getting a free thermostat as the most important reasons for signing up for the program. Survey respondents were asked to rank the importance of up to seven reasons in their decision to sign up for the program. Over half ranked lowering utility costs as the most (42 percent) or second most (23 percent) important reason they signed up for the program. Figure F-8 below displays respondents' rankings of importance of certain factors.⁹⁹ Receiving a free or discounted smart thermostat ranked highly in importance as well; with over half of respondents saying it was the most or second most important reason they signed up. Reducing carbon footprint or greenhouse gas emissions was ranked as the least important factor by nearly half of respondents. About one-third of respondents ranked receiving the annual \$25 gift card as the least important factor.

⁹⁸ The total percentage equals to higher than 100 percent because respondents could select more than one answer.

⁹⁹ Most respondents (97 percent) were only given 6 factors to rank, as only two respondents (3 percent) brought their own thermostat and received the \$100 enrollment incentive. Neither of these respondents ranked the enrollment incentive as important (one ranked this factor as the 6th and the other respondent ranked it 5th of 7 potential reasons for signing up).

Figure F-8: Importance of Certain Factors in Enrolling in Program



F.8.5 Program Implementation and Participation Experience

Event dispatch did not go as planned and there was limited time to remedy issues in PY1. Event calling capability was established for by September 2024. One event was called during PY1 and Google thermostats did not receive notifications for the event. Implementation and Evergy staff identified that the Google thermostats experienced compatibility issues with OATI and were not recognized as active in the system. Due to the timing of capability deployment, there was no further opportunity to call a second event and verify notification delivery to all participants in PY1.

Implementation staff reported low opt out rates. Participants can opt out of receiving event notifications when they are called. They noted that opt-out rates for similar programs are typically around 20 percent, but for Kansas Central and Kansas Metro EcoBee thermostat participants, the rates were 6 percent and 2 percent, respectively.

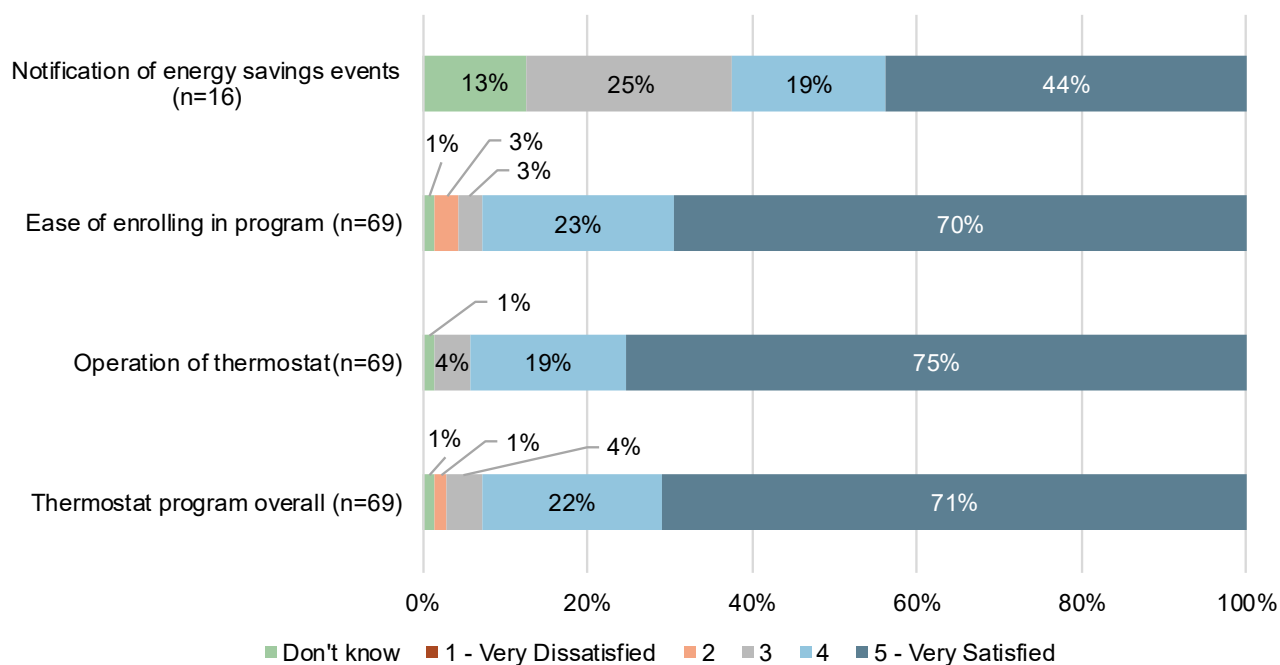
Most EcoBee thermostat program participants recalled receiving notification of events, though a significant portion did not. Only EcoBee thermostat participants received event notifications in PY1. Fifty-eight percent of EcoBee thermostat survey respondents recalled receiving a notification; 42 percent did not (n=26). About 88 percent of respondents said that no one else in the household received notifications about thermostat events via text message or the Evergy website. One respondent (4 percent) reported that they did not receive notifications but someone else in their household did.

Most EcoBee thermostat program participants that were able to participate in an event in PY1 opted not to participate or did not recall if they did (n=26). Four percent said they

participated in the event held on September 19, 2024. Half of EcoBee survey respondents said they did not recall if they had participated in the PY1 savings events. Forty-six percent said they did not participate. Eleven of the 12 respondents that said they did not participate said they did not know about the event (or did not recall why they had not participated); the other respondent said they were too busy to participate.

Thermostat program participants were satisfied with the program overall and their experience with Evergy as their electric provider. All respondents indicated they plan to continue participating in the program. Figure F-9 displays respondent satisfaction with the program. Four percent of respondents noted dissatisfaction with some aspect of their participation with the program. These respondents noted challenges verifying they had signed up for the program, issues with adjusting their thermostat, and desiring additional thermostat features. Eighty-eight percent were satisfied with Evergy as their electricity provider.¹⁰⁰ One percent clarified their dissatisfaction with Evergy as their utility and shared dissatisfaction with tree maintenance around power lines and transformers in their neighborhood.

Figure F-9: Respondent Satisfaction with Thermostat Program



¹⁰⁰ Rated their satisfaction a 4 or 5 on a scale from 1 (very dissatisfied) to 5 (very satisfied).

F.9 Conclusions and Recommendations

The following summarizes the key findings of the evaluation for the HDR Program:

- **Conclusion:** Across both jurisdictions, the HDR program achieved a 125 percent realization rate for kWh savings, and a 6 percent realization rate for kW reductions.
- **Conclusion:** ADM determined that all the relevant data fields were included in the tracking data and savings reported in the tracking system complied with energy savings calculations and guidelines set by the Evergy TRM.
- **Conclusion:** Google devices, which accounted for 67 percent of program devices, were not sent a curtailment signal on the event date and did not contribute to the peak demand reduction. ADM is unsure why Google devices were not curtailed, but this was the first year the program was implemented.
- **Conclusion:** EcoBee devices had a high non-contributing device rate, indicating a possible curtailment signal issue.
- **Conclusion:** All survey respondents indicated that they would continue participating in the Thermostat program. Most were satisfied with the program and their experience with Evergy as their electric provider.
- **Conclusion:** Most Thermostat program participants indicated they would not have purchased a smart thermostat if they had not received one through the program. Survey findings suggest that the program is a key driver in the adoption of smart thermostats among participants.
- **Conclusion:** The majority of respondents were homeowners living in older, small-to-moderate sized single-family homes with gas heating. Most respondents identified as white, primarily spoke English, and had achieved some form of higher education.
- **Conclusion:** Most respondents did not receive or were not aware if they received notifications for the Energy Savings Events. Only EcoBee thermostat participants received event notifications in PY1. Forty-two percent of EcoBee thermostat survey respondents did not recall receiving a notification.
- **Conclusion:** Database coordination challenges resulted in approximately 1,250 customers remaining in pending enrollment status for longer than expected. This issue affected both Nest and EcoBee BYOD customers who attempted to enroll beginning in July 2024.
- **Conclusion:** About one-third of customers who received thermostats through the program have not activated them. This may indicate missed opportunities for program impact.

The following recommendations are offered for continued improvement of the HDR Program:¹⁰¹

- **Recommendation: The Program implementer should investigate whether curtailment signals are reaching all customers.** Participation summary data should be utilized to investigate rates for opt-outs, non-responding devices, and offline devices on event dates.
- **Recommendation: Explore methods to engage renters and those living in multi-family housing to expand the program's reach.** Renters are eligible to participate in the program, though there is a requirement for landlord consent.
- **Recommendation: Investigate ways to improve the notification system for energy savings events to increase participation.** A lack of awareness of event notifications and low reported engagement in the one PY1 event suggest opportunities to provide participants with more information either when they sign up for the program or through the program's notification system prior to events. The sign-up process should ensure participants receive an explanation of how notifications will be sent and what they will need to do to participate in events. The notification system may need to be reviewed to ensure that the notifications are understandable and being transmitted to all participants.
- **Recommendation: Implement automated verification systems to identify enrollment issues earlier.** Develop a process to regularly audit the enrollment status of customers and flag those who have been in pending status for an extended period. Consider implementing an automated notification system to alert staff when customers remain in pending status beyond a certain threshold (e.g., 30 days or longer).
- **Recommendation: Enhance post-purchase support and follow-up processes.** Program staff may consider implementing automated emails to guide customers through the activation process and/or expanding the phone call campaign that showed success in July and August 2024.
- **Recommendation: Identify participants that have not activated their smart thermostat devices in the program tracking data.** Devices that have not been activated are not eligible for kW savings and should be identified for exclusion from peak demand reduction estimates. Including these devices in the peak demand reduction estimates will artificially inflate the non-curtailment device rate and will make it more difficult to assess poor event performance and dispatch issues.

¹⁰¹ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

Appendix G Business Demand Response Program-Specific Methodologies and Results

This appendix describes the evaluation activities that were performed by ADM to evaluate the Business Demand Response (BDR) Program.

G.1 Program Overview

The BDR Program is designed to reduce participant load during peak periods to improve system reliability, offset forecasted system peaks that could result in future generation capacity additions, and/or provide a more economical option to generation or purchasing of energy in the wholesale market. The program can call events from June 1 to September 30 and within designated curtailment hours of 12:00 p.m. to 8:00 p.m., Monday through Friday, excluding holidays.

The BDR Program provides an incentive for those commercial customers who reduce their electrical load during events.

The incentive for customers enrolled in the program for one year is calculated as:

Equation 8-21: BDR Customer Incentives (One Year)

$$Incentive = \$28.00 \times kW \text{ Enrolled} \times Percentage \text{ of Enrolled } kW \text{ Achieved}$$

The incentive for customers enrolled in the program for multiple years is calculated as:

Equation 8-22: BDR Customer Incentives (Multiple Years)

$$Incentive = \$30.00 \times kW \text{ Enrolled} \times Percentage \text{ of Enrolled } kW \text{ Achieved}$$

For both incentive calculations, incentives are capped at 110 percent of enrolled kW and less than 40 percent performance receives no payment. To remain eligible for the multi-year agreement bonus, participants must meet 90 percent performance. Evergy allowed for 15 events in 2024. There were nine BDR events called in 2024. The curtailment events began at 2:00 p.m. CDT and ended at 6:00 p.m. CDT.

Table G-1 below provides a summary of program metrics for PY1. Gross peak demand reduction achieved 125 percent of the reported peak demand reduction for the total BDR Program in PY1. Kansas Metro achieved a realization rate of 107 percent while Kansas Central achieved a realization rate of 133 percent for peak demand reduction.

Table G-1: Performance Metrics – Business Demand Response Program

Metric	PY1 Total	KS Central	KS Metro
Number of Participants*	28	19	9
Energy Impacts (kWh)			
Reported Energy Savings	0	0	0
Gross Verified Energy Savings	0	0	0
Net Verified Energy Savings	0	0	0
Peak Demand Impacts (kW)			
Nominated Peak Demand Reduction**	9,303.70	4,594.70	4,709.00
Reported Peak Demand Reduction	14,423.79	11,022.57	3,401.22
Gross Verified Peak Demand Reduction	14,423.79	10,888.15	3,535.64
Net Verified Peak Demand Reductions	14,423.79	10,888.15	3,535.64
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.02	1.10	0.83

* Represents the number of unique account numbers in the program.

** Evergy reports based on the kW enrolled at the beginning of the season.

G.2 EM&V Methodology

In evaluating the BDR Program in 2024, ADM implemented a variety of impact evaluation practices that include estimates of gross peak demand reductions as framed by the following research questions:

- How many Evergy customers participated in the program?
- What are the demand savings achieved by participants, according to the reported energy savings customer baselines (CBLs)?
- Can the reported CBL estimates, and incentive payments be independently reproduced?
- Which baseline estimation technique produces the least error and bias in estimating loads during non-event days?
- What is the peak demand reduction (kW) during event hours compared to the baseline for all demand response events in 2024?
- What is the peak demand reduction (kW) during the maximum curtailment hour compared to the baseline on the system peak event day in 2024?

G.2.1 Data Collection

Data used for this evaluation includes the following:

- Program tracking data. This data identifies which customers participated in the program and contains data fields such as contract curtailment amount, hourly usage, hourly baseline estimate used to calculate the incentive, CBL method used to make baseline estimate, and other relevant data fields.
- 15-minute interval meter data (AMI) for each customer participating in the BDR Program.
- A full schedule of BDR Program events, including the time of the event.
- Weather Data: ADM collected recorded weather data from the National Oceanographic and Atmospheric Administration (NOAA) to estimate the impact of weather on usage and for use in weather adjustments for a portion of CBLs tested on each site. Data was collected from the Kansas City International Airport.
- ADM reviewed the data tracking systems associated with the program to ensure that the data provided sufficient information to calculate energy and demand impacts. ADM determined that all the relevant data fields were included in the tracking data.

G.2.2 Sampling Plan

ADM evaluated a census of participants for the impact evaluation.

G.2.3 Gross Evaluation Methodology

This section describes the impact evaluation activities and methodology that ADM performed for the BDR Program. Based on Kansas regulations, ADM used method 1a and protocol 2a to evaluate the BDR Program (see Appendix B for more information). Evergy does not claim energy savings for demand response initiative (DRI); thus, the evaluation team did not calculate energy savings. ADM assumes energy loads to be mostly shifted to times outside of the event period. The methodology in the following sections describes ADM's approach for the calculation of demand reduction.

G.3 Impact Evaluation Methodology and Results

This section details the level of program activity for the BDR Program in PY1, which includes the gross demand reduction that resulted from that activity.

G.3.1 Program Activity

As shown in Table G-2, there were nine BDR events called in 2024. The curtailment events began at 2PM and ended at 6PM.

Table G-2: DR Events in 2024

Event Date	Time
6/13/2024	2-6 PM
6/24/2024	2-6 PM
7/2/2024 ¹⁰²	2-6 PM
7/15/2024	2-6 PM
7/16/2024	2-6 PM
7/31/2024	2-6 PM
8/1/2024	2-6 PM
8/26/2024	2-6 PM
8/27/2024	2-6 PM

In PY1, sites were contracted to commit to 4, 6, or 8 events. Table G-3 provides dispatch information on each event date for each commit type (4, 6, or 8). Event dates with all commit types fully “Committed” to curtail included June 24, July 15, and August 26. For the other event dates listed, some sites were not dispatched due to their commit type, or the sites could curtail voluntarily and were notified of the event. ADM determined that event dates where all sites were committed were eligible event dates for estimating verified kW reductions.

¹⁰² According to the implementer TRC, sites in Kansas were not dispatched on 7/2, while sites for BDR in Missouri were dispatched on this date. Therefore, the event on 7/2 is not an eligible event date.

Table G-3: Contract Dispatch Information

Event Date	Start Time	End Time	Jurisdiction	Commit 4	Commit 6	Commit 8
6/13/2024	14:00	18:00	KS Central	Committed	Committed	Committed
6/13/2024	14:00	18:00	KS Metro	Not Dispatched	Not Dispatched	Not Dispatched
6/24/2024	14:00	18:00	KS Central	Committed	Committed	Committed
6/24/2024	14:00	18:00	KS Metro	Committed	Committed	Committed
7/2/2024	14:00	18:00	KS Central	Not Dispatched	Not Dispatched	Not Dispatched
7/2/2024	14:00	18:00	KS Metro	Not Dispatched	Not Dispatched	Not Dispatched
7/15/2024	14:00	18:00	KS Central	Committed	Committed	Committed
7/15/2024	14:00	18:00	KS Metro	Committed	Committed	Committed
7/16/2024	14:00	18:00	KS Central	Not Dispatched	Committed	Committed
7/16/2024	14:00	18:00	KS Metro	Not Dispatched	Committed	Committed
7/31/2024	14:00	18:00	KS Central	Not Dispatched	Not Dispatched	Committed
7/31/2024	14:00	18:00	KS Metro	Not Dispatched	Not Dispatched	Committed
8/1/2024	14:00	18:00	KS Central	Committed	Committed	Committed
8/1/2024	14:00	18:00	KS Metro	Committed	Committed	Committed
8/26/2024	14:00	18:00	KS Central	Voluntary	Committed	Committed
8/26/2024	14:00	18:00	KS Metro	Committed	Committed	Committed
8/27/2024	14:00	18:00	KS Central	Voluntary	Voluntary	Committed
8/27/2024	14:00	18:00	KS Metro	Voluntary	Committed	Committed

Table G-4 provides a count of service point IDs for Everygy jurisdictions. Many participants had several service point IDs enrolled in the program.

Table G-4: Participation by Jurisdiction

Jurisdiction	Number of Service Point IDs	Number of Participants
KS Central	111	19
KS Metro	75	9
Total	186	28

G.3.2 Estimating Evaluation Impacts

G.3.2.1 Customer Baseline Determination

In the evaluation of demand response programs, peak demand reductions are estimated by comparing a participant's load shape during a demand response event with a baseline load shape. This baseline load is assumed to be a good estimate of the counterfactual load—that is, the load that would have manifested had there not been an event called that day.

In general, determining this baseline is a non-trivial task, especially in the context of commercial and industrial customers whose energy usage could theoretically be a function of the weather, the number of orders received, shift schedules, economic trends, and any number of variables that cannot always be explicitly modeled. Due to the intractability of modeling energy usage at this level of detail, baselines are typically estimated using heuristic rules applied to historical usage data. For example, if an event were called for Tuesday afternoon, a very simple heuristic would be to use Monday afternoon's load profile as the Tuesday event's baseline.

While the above baseline rule seems overly simplistic, it could perform adequately for a certain kind of business, such as one whose energy needs do not change from day to day. However, for most businesses, these assumptions do not hold, and this simple baseline rule would not be adequate. Both Evergy and ADM employed more sophisticated techniques to estimate counterfactual baseline usage.

The following terms are used for describing Evergy and ADM estimates and are referenced in the tables in the sections below.

- **Lookback Window** – Days prior to the event day that are eligible for inclusion in the CBL. The quantity of days and type of day included are determined by Day Type and Days in Lookback Window which are described below.
- **Day Type** – One of the eligibility requirements for a day to be included in the Lookback Window for the CBL.
- **Any Weekday** – CBLs use any non-holiday, non-event weekdays.
- **Similar Day of Week** – CBLs use any non-holiday, non-event days that are a similar day to the event. For Evergy and ADM CBLs, Monday and Friday are defined as similar. Tuesday, Wednesday, and Thursday are also defined as similar days.
- **Same Day of Week** – CBLs use any non-holiday, non-event days that are the same day of the week as the event.

- **Days in Lookback Window** – Number of days in the lookback window. These days will be ranked by usage during the hours determined by Hours Used to Determine Baseline Day Selection.
- **Hours Used to Determine Baseline Day Selection** – The hours that are selected for averaging usage and ranking days in the lookback window.
- **Days Selected from Lookback Window** – Number of days selected from the lookback window. The highest ranked are selected.
- **Unadjusted Baseline** – Once the days are selected from the lookback window, they are averaged across hours to create the Unadjusted Baseline.
- **Load Adjustment** – The Unadjusted Baseline can be adjusted to account for weather or usage prior to the event.
- **Weather-based** – A weather adjustment is made by comparing historic customer usage and weather data. For example, ADM uses a linear correction term with facility demand as the dependent variable and the dry bulb temperature as the independent variable.
- **Usage based – Multiplicative** – If the load prior to event notification on the event day is different than the unadjusted baseline, the unadjusted baseline is multiplied by event day usage / unadjusted baseline usage.
- **Usage based – Additive** – If the load prior to event notification on the event day is different than the unadjusted baseline, the sum of the difference between the event day usage and the unadjusted baseline is added to the unadjusted baseline.
- **Load Adjustment Min** – This is the lower bound for the Load Adjustment. A downward adjustment is capped at the Load Adjustment Min multiplied by the unadjusted baseline.
- **Load Adjustment Max** – This is the upper bound for the Load Adjustment. An upward adjustment is capped at the Load Adjustment Max multiplied by the unadjusted baseline.

Proxy Event Day – The highest system usage non-holiday weekdays where no event was called. CBLs are tested against these days as they serve as a good proxy for actual event days.

G.3.2.2 Customer Baseline Selection

Evergy selected one of the CBL scenarios in Table G-5 to apply to each of the participants in the BDR Program.¹⁰³ ADM provided a list of 10 CBLs to Evergy. The CBL results were used for calculating “Percentage of Enrolled kW Achieved” for the incentive calculation and for reported kW.

Table G-5: Baselines

Days in Lookback Window	Days Selected from Lookback Window	Day Type	Hours Used to Determine Baseline Day Selection	Load Adjustment	Load Adjustment Min	Load Adjustment Max
5	3	Any weekday	Unknown	Usage based - Additive	>=1.0	-

G.3.2.3 Evaluation of Customer Baseline Selection

In the case of evaluating demand reduction impacts associated with the BDR Program, CBLs should represent what participants’ usage would have been if the event had not occurred. ADM tested multiple baseline models and selected the best fitting models (i.e., models that produced load profiles which best represented participant’s usage in absence of the program as determined by a statistical test) for each customer. The list of CBLs can be found in Table G-6.

Table G-6: BDR Savings Summary

Days in Lookback Window	Days Selected from Lookback Window	Day Type	Hours Used to Determine Baseline Day Selection	Load Adjustment	Load Adjustment Min	Load Adjustment Max
5	5	Any weekday	2-6pm	None	-	-
5	5	Any weekday	2-6pm	Usage based - Multiplicative	0.8	1.2
5	5	Any weekday	2-6pm	Usage based - Multiplicative	0.7	1.3
5	5	Any weekday	2-6pm	Usage based - Multiplicative	-	-

¹⁰³ In PY1, ADM assigned a CBL to each site; however, the DERMS system could not be utilized for baseline calculations.

Days in Lookback Window	Days Selected from Lookback Window	Day Type	Hours Used to Determine Baseline Day Selection	Load Adjustment	Load Adjustment Min	Load Adjustment Max
5	5	Any weekday	2-6pm	Usage based - Additive	0.8	1.2
5	5	Any weekday	2-6pm	Usage based - Additive	0.7	1.3
5	5	Any weekday	2-6pm	Usage based - Additive	-	-
5	5	Any weekday	2-6pm	Weather Based	-	-
10	10	Any weekday	2-6pm	None	-	-
10	10	Any weekday	2-6pm	Usage based - Multiplicative	0.8	1.2
10	10	Any weekday	2-6pm	Usage based - Multiplicative	0.7	1.3
10	10	Any weekday	2-6pm	Usage based - Multiplicative	-	-
10	10	Any weekday	2-6pm	Usage based - Additive	0.8	1.2
10	10	Any weekday	2-6pm	Usage based - Additive	0.7	1.3
10	10	Any weekday	2-6pm	Usage based - Additive	-	-
10	10	Any weekday	2-6pm	Weather Based	-	-
5	5	Similar day of week	2-6pm	None	-	-
5	5	Similar day of week	2-6pm	Usage based - Multiplicative	0.8	1.2
5	5	Similar day of week	2-6pm	Usage based - Multiplicative	0.7	1.3
5	5	Similar day of week	2-6pm	Usage based - Multiplicative	-	-
5	5	Similar day of week	2-6pm	Usage based - Additive	0.8	1.2

Days in Lookback Window	Days Selected from Lookback Window	Day Type	Hours Used to Determine Baseline Day Selection	Load Adjustment	Load Adjustment Min	Load Adjustment Max
5	5	Similar day of week	2-6pm	Usage based - Additive	0.7	1.3
5	5	Similar day of week	2-6pm	Usage based - Additive	-	-
5	5	Similar day of week	2-6pm	Weather Based	-	-
10	10	Similar day of week	2-6pm	None	-	-
10	10	Similar day of week	2-6pm	Usage based - Multiplicative	0.8	1.2
10	10	Similar day of week	2-6pm	Usage based - Multiplicative	0.7	1.3
10	10	Similar day of week	2-6pm	Usage based - Multiplicative	-	-
10	10	Similar day of week	2-6pm	Usage based - Additive	0.8	1.2
10	10	Similar day of week	2-6pm	Usage based - Additive	0.7	1.3
10	10	Similar day of week	2-6pm	Usage based - Additive	-	-
10	10	Similar day of week	2-6pm	Weather Based	-	-
5	5	Same day of week	2-6pm	None	-	-
5	5	Same day of week	2-6pm	Usage based - Multiplicative	0.8	1.2
5	5	Same day of week	2-6pm	Usage based - Multiplicative	0.7	1.3
5	5	Same day of week	2-6pm	Usage based - Multiplicative	-	-
5	5	Same day of week	2-6pm	Usage based - Additive	0.8	1.2
5	5	Same day of week	2-6pm	Usage based - Additive	0.7	1.3

Days in Lookback Window	Days Selected from Lookback Window	Day Type	Hours Used to Determine Baseline Day Selection	Load Adjustment	Load Adjustment Min	Load Adjustment Max
5	5	Same day of week	2-6pm	Usage based - Additive	-	-
5	5	Same day of week	2-6pm	Weather Based	-	-
10	10	Same day of week	2-6pm	None	-	-
10	10	Same day of week	2-6pm	Usage based - Multiplicative	0.8	1.2
10	10	Same day of week	2-6pm	Usage based - Multiplicative	0.7	1.3
10	10	Same day of week	2-6pm	Usage based - Multiplicative	-	-
10	10	Same day of week	2-6pm	Usage based - Additive	0.8	1.2
10	10	Same day of week	2-6pm	Usage based - Additive	0.7	1.3
10	10	Same day of week	2-6pm	Usage based - Additive	-	-
10	10	Same day of week	2-6pm	Weather Based	-	-

The selection for appropriate CBL for each participant was made using a four-step process:

1. Select proxy event days (e.g., the top 12 highest load, non-event, non-holiday, weekdays for each month during the DR season (June – September).
2. Calculate all CBLs above for each customer on the proxy event days.
3. Screen for bias. Any model which underpredicts load on proxy event days greater than 70 percent of the time, or less than 30 percent of the time is eliminated.
4. Rank-order remaining models for accuracy by Root Mean Squared Error (RRMSE) and choose the top three best performing models (lowest RRMSE) and calculate a weighted baseline with the weight being each model's RRMSE.

ADM identified CBL “best fits” for each customer using residual root mean squared error (RRMSE) scores from the event window (12-8PM) during test days. These days serve as

a good proxy for event days as they were days when an event was close to being called and will be referred to as “proxy event days.”

It has been ADM’s experience that CBL construction methods often produce generally consistent results, but in some cases CBLs may produce divergent results. To minimize calculation bias, ADM employed the bias screen described in step 3 above. In addition, ADM combined results as a weighted average of the best three models for each customer. The weights were the inverse squares of the model RRMSEs. For example, of three models having RRMSEs of 5 percent, 11 percent, and 52 percent respectively, their relative weights will be 82 percent, 17 percent, and 1 percent, respectively.

G.3.2.4 Estimating Gross Peak Demand Reductions

The peak demand reduction from the BDR Program events is estimated on a customer-by-customer basis. The customer demand reduction is calculated as the maximum hourly load shed (in kW) on the event date that corresponds to Evergy’s system peak day for the jurisdiction (out of all eligible DR event dates). In PY1, the system peak occurred on June 24; however, customer enrollment was not complete until just before the July 15 event. The June 24 event was ineligible to be used for the program due to the incomplete enrollment. Therefore, the July 15 event was utilized for verified kW reductions as it was the next highest system peak day for all jurisdictions. The program peak demand reduction is equal to the sum of each customer’s demand reduction. Hourly load shed is calculated by subtracting hourly usage from the CBL baseline calculated for each customer for each event.

G.3.3 Peak Demand Reduction from Demand Response Events

Peak demand reduction was determined as the maximum hourly difference between event hours and a counterfactual non-event period on the system peak day for the jurisdiction. The method used to determine the counterfactual baseline is described in the methodology section of this chapter (Section G.3.2).

The figures below provide the aggregate load shapes on DR event days for each Evergy jurisdiction. A significant reduction in consumption is present during the event periods, although it should be noted that on some days, depending on the jurisdiction, no dispatch occurred or curtailment was voluntary due to the site's commit status (4, 6, or 8). As discussed previously, the 7/2 DR event was dispatched for the Missouri BDR program but not for the Kansas BDR program, and a load drop is not evident on this date as would be expected. In addition, for the 8/27 event, curtailment was voluntary for most sites due to their commit status.

Figure G-1: BDR Load Shapes, Kansas Metro

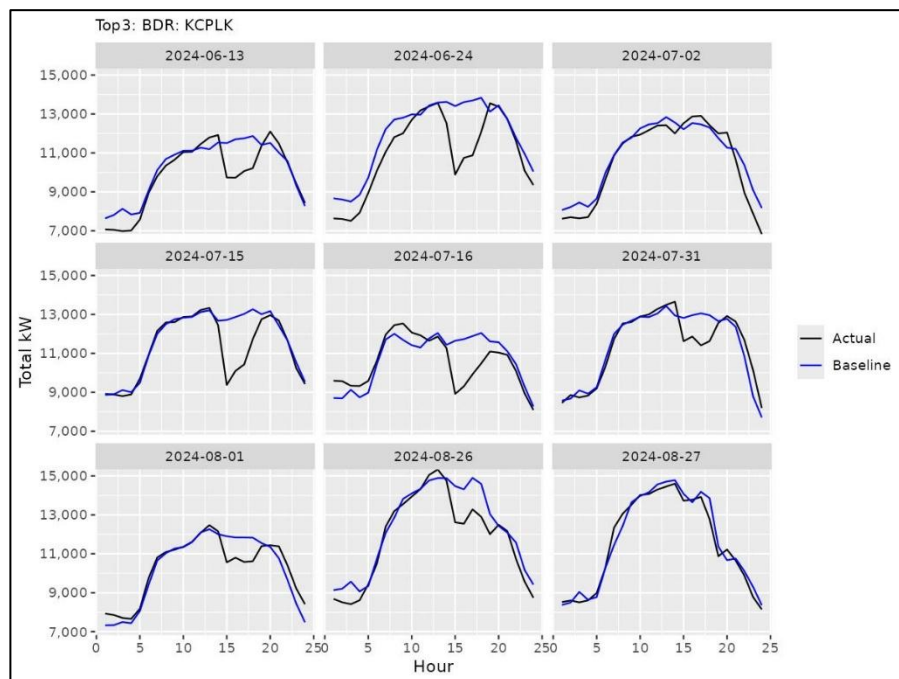


Figure G-2: BDR Load Shapes, Kansas Central (WSTRC)

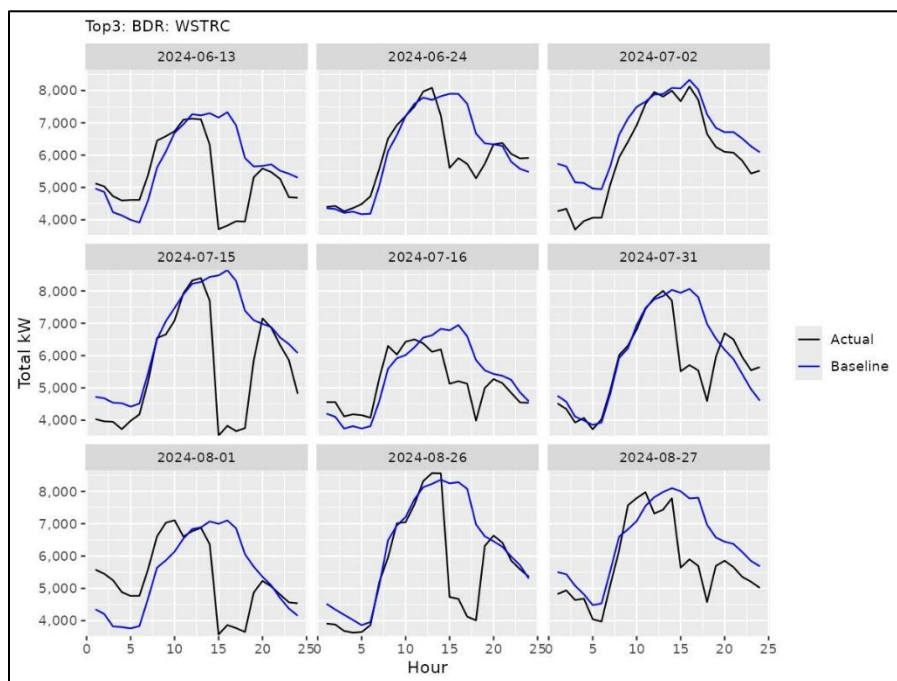
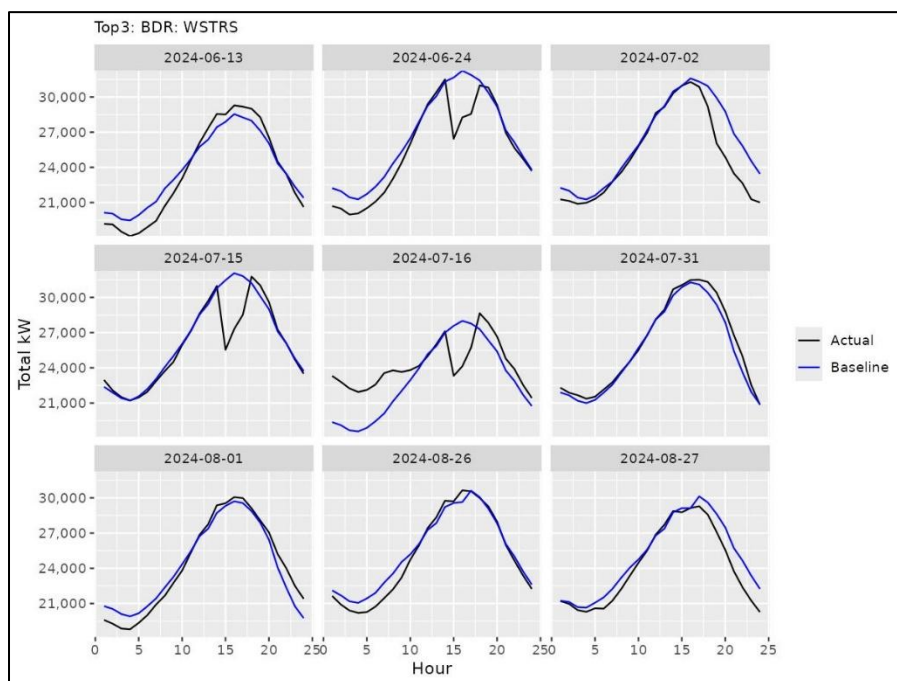


Figure 8-3: BDR Load Shapes, Kansas Central (WSTRS)



G.3.4 Gross Demand Reduction

Table G-7 provides impact results for all BDR events called in PY1. The average kW reduction for Kansas Metro participants during the DR season was 393, while Kansas Central participants averaged 573 kW. The realization rate is 100 percent across both jurisdictions.

Table G-7: BDR Savings Summary by Jurisdiction

Jurisdiction	# of Customers	# of Service Point IDs	RP at 90% CL	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Central	19	111	12%	11,022.57	10,888.15	9,624.80	12,151.50	99%	88%	110%
KS Metro	9	75	12%	3,401.22	3,535.64	3,125.40	3,945.88	104%	92%	116%
Total	28	186	9%	14,423.79	14,423.79	13,095.51	15,752.07	100%	91%	109%

Table G-8 provides DR event savings versus weather during event hours.

Table G-8: DR Event Savings vs. Weather

Jurisdiction	Event Date	Verified Demand Reduction (kW)	Avg. Temp (°F) Event Hours
KS Central	6/13/2024	3,321.90	91.5
KS Central	6/24/2024	5,241.84	96.8
KS Central	7/2/2024	1,118.94	91.8
KS Central	7/15/2024	7,867.46	93.0
KS Central	7/16/2024	4,044.84	80.2
KS Central	7/31/2024	2,661.59	92.5
KS Central	8/1/2024	3,317.74	88.7
KS Central	8/26/2024	3,934.29	97.3
KS Central	8/27/2024	3,194.73	94.1
KS Metro	6/13/2024	1,995.13	91.5
KS Metro	6/24/2024	2,775.24	96.8
KS Metro	7/2/2024	349.51	91.8
KS Metro	7/15/2024	2,671.86	93.0
KS Metro	7/16/2024	2,299.53	80.2
KS Metro	7/31/2024	1,510.67	92.5
KS Metro	8/1/2024	1,691.43	88.7
KS Metro	8/26/2024	1,755.22	97.3
KS Metro	8/27/2024	1,026.35	94.1

G.3.5 Impact Evaluation Savings Tables

Table G-9 summarizes the verified peak demand reduction for the BDR Program. Evergy does not claim energy savings for demand response; thus, the evaluation team did not calculate energy savings.

Table G-9: Gross Peak Demand Reduction (kW)

Jurisdiction	# of Customers	# of Service Point IDs	RP at 90% CL	Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Verified Demand Reduction (Lower)	Verified Demand Reduction (Upper)	Realization Rate (kW)	RR kW - CI at 90% (Lower)	RR kW - CI at 90% (Upper)
KS Metro	9	75	12%	3,401.22	3,535.64	3,125.40	3,945.88	104%	92%	116%
KS Central	19	111	12%	11,022.57	10,888.15	9,624.80	12,151.50	99%	88%	110%
Total	28	186	9%	14,423.79	14,423.79	13,085.35	15,762.23	100%	91%	109%

G.4 Ongoing Activities to Mitigate Realization Rate Issues

In PY1, the Business Demand Response program produced realization rates close to 100 percent. The minor differences are due to a single CBL model being utilized by the implementer for all participants, while ADM utilized a larger number of CBL models. To mitigate this in PY2, ADM recommends the implementer utilize the individual assigned CBL model (out of ten possible CBL models) that ADM selects for each participant at the start of the DR season

G.5 Net Savings Methodology

In demand response programs, it is typically assumed that there are neither spillover nor free-ridership effects (customers are not expected to curtail without participating). Furthermore, participants are compensated only if they reduce their load during the peak demand window, the primary program goal. As such, the net-to-gross ratio for this program was 1.0.

G.6 Net Savings Results

The net savings equaled the gross savings for the Business Demand Response Program.

G.7 Process Evaluation Methodology

The process evaluation was designed to explore the BDR Program's design, barriers to participation, implementation, and outcomes. To investigate these areas, ADM reviewed program documents, held a facilitated discussion with program and implementation staff, and surveyed a sample of participating customers.

G.7.1 Marketing and Customer Awareness

- How effective were the marketing efforts in driving awareness and enrollment in BDR? Which marketing channels and strategies were most successful in reaching eligible customers?
- Is the BDR program reaching customers across Evergy's entire jurisdiction?
- How do participants learn about the program? What percentage were directly contacted by Evergy or implementation staff versus learning about the program through alternative channels?

G.7.2 Program Design and Implementation

ADM used the following questions to guide the design and implementation of the process evaluation documents, interviews, and surveys:

- How effectively did program staff and implementation staff coordinate program activities? Are there opportunities to improve communication, data tracking, and overall program administration?
- Did BDR implementation align with its intended design? Were there any unforeseen challenges or assumptions that impacted program execution? What improvements could enhance program design or implementation?
- To what extent are participating businesses reducing demand during events as expected? What factors contribute to variation in demand response?
- How effectively did staff and implementation collaborate?
- Were there any significant changes, challenges, or unexpected obstacles in the 2025 program year? How were they addressed?

G.7.3 Program Enhancements and Barriers to Success

- Looking ahead, what are the primary barriers to and drivers of BDR's success within Evergy's market? How can the program ensure long-term business participation and continued engagement after the initial enrollment period?
- What challenges or market trends could impact the future success of the program? What drivers could enhance participation and savings?

G.8 Process Evaluation Results

G.8.1 Summary of Process Evaluation Activities

A facilitated discussion was held with Evergy and implementor program staff in January 2025. The call was held with Evergy and TRC staff. The purpose of the call was to investigate program design, implementation, barriers to success, and future plans for the program.

ADM conducted an email survey of Business Demand Response (BDR) Program participants in December 2024. Evergy staff requested ADM only contact Tier 2 respondents and that larger, Tier 1 respondents be invited to take the survey by account managers. ADM emailed a survey invitation to twelve of the 20 participants and eight were invited by Evergy account managers. ADM sent one reminder to all Tier 2 non-respondents. One of the four Tier 1 nonrespondents was sent a reminder by Evergy staff; three did not receive a reminder. Twelve BDR participants responded to the survey. Most

Business Demand Response survey respondents worked for a company that owned and occupied their facility. Half said that their company has a policy to always obtain quotes for high-efficiency equipment. Table G-10 summarizes Business Demand Response survey respondents' company firmographics.

Table G-10: BDR Program Respondents' Company Firmographics

Question	Response	Count (n=12)
Which of the following best describes your company/business' ownership of this facility?	Your company owns and occupies this facility	11
	Don't know	1
Does your organization have a policy to always obtain quotes for high-efficiency equipment when purchasing new equipment?	Yes	6
	No	3
	Don't know	3
Approximately how many full-time and part-time employees work at this location most of the year?	Less than 100	4
	100-1000	3
	Greater than 1000	2
	Don't know	3

G.8.2 Program Design and Operations

Program enrollment goals were not met in PY1. Budget constraints led to a conservative enrollment approach and limited pursuit of customer sign-ups. Implementation staff stated that two large industrial customers indicated interest in the program early in the program year but were unable to be enrolled. They noted that these two customers had internal challenges (e.g., legal, administrative, logistical) that prohibited them from signing up, though they initially indicated interest and thus led the implementation staff to curtail recruitment efforts for other participants.

Different sign-up options and event notification methods are provided to cater to customer preferences. The enrollment process for the Business Demand Response program is designed to be flexible. An online form and print PDF option are available. The sign-up form provides customers the ability to list multiple contacts to receive event notifications using their preferred notification methods. Though all customers receive notifications via email, customers are also able to opt in to receive texts and calls. The program also offers additional notifications or special treatment if requested.

Process changes were made to improve outreach and enrollment tracking. Implementation staff noted the addition of a record type to their system called "project lead." They indicated lead tracking and probability updates had been added to

the program with the intention of increasing confidence in likelihood of each customer sign-up and ensuring enrollment goals are met.

An emergency pathway with customized participation parameters was introduced. Evergy and implementation staff noted that this option had been introduced for larger customers in Kansas to provide more customized options. These customers must have a peak demand of at least 750 kW and sign up for a maximum of 20 hours of curtailment a year. Implementation staff stated that emergency pathway customers are expected to complete a test each season or be called on during grid emergencies (though requirements do not specify classification of emergencies, e.g., EEA Level 2).

Manual data management was required to supplement the distributed energy resource management system (DERMS) in PY1. Evergy and implementation staff noted that a software platform or DERMS was being used to manage the program's participants. Implementation staff noted that they had encountered challenges with setup or initial usage of the DERMS and had to manually address issues. Implementation staff noted one issue where their meters had been replaced or were not reading properly, which led to a need to verify results and minor delays in customer follow-up post event.

Large customer communication requirements were a barrier to recruitment. Communication with Tier 1 customers is required to be conducted through Evergy's Customer Solutions Managers (CSMs); implementation staff noted this as a barrier to recruiting Tier 1 customers. They observed that CSMs are motivated to ensure customers are satisfied and may view the BDR program as a potential area for customer dissatisfaction and thus may have reservations about promoting the program.

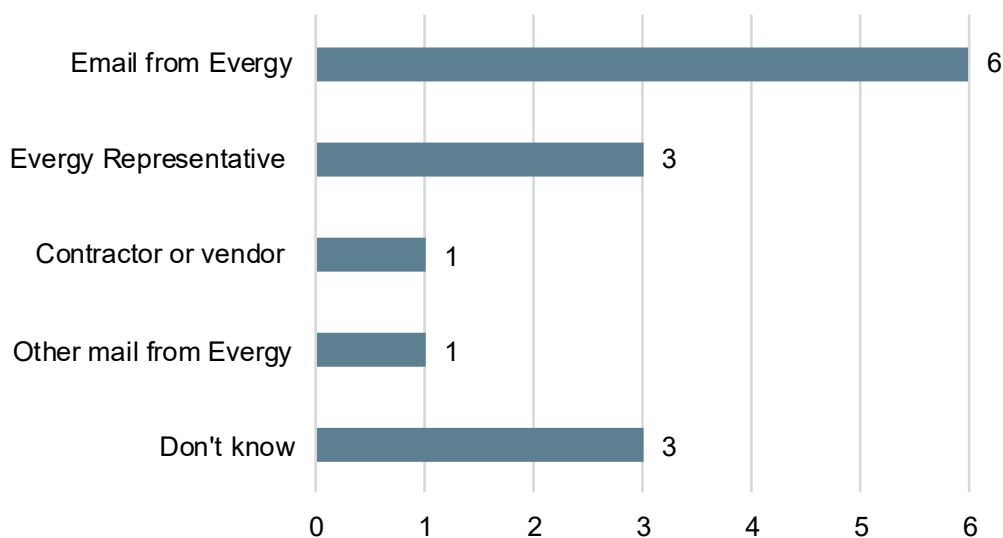
Implementation staff estimated that 79 percent of eligible customers that are not enrolled in the program yet are Tier 1 customers and 21 percent are Tier 2. To be eligible, customers must have more than 2 MW of peak demand. Implementation staff noted that 81 percent of their leads for enrollment in PY2 are Tier 1 customers and 19 percent are Tier 2. They estimated that the average likelihood of Tier 2 pipeline customer enrollment was 60 percent and the Tier 1 average is 56 percent.

G.8.3 Program Awareness

Both general and targeted outreach efforts were used to recruit participants to the Business Demand Response program in its first year. Implementation staff confirmed that the BDR program had been promoted alongside other Evergy offerings at in-person events as well as in direct mailers, emails, and LinkedIn posts. However, implementation staff noted that those marketing efforts were relied on to a lesser extent compared to more targeted strategies. They noted leveraging their company's business development representatives, Evergy's CSMs, and the Whole Business Efficiency and Hard-to-Reach Businesses Program trade allies to focus recruitment on Tier 1 customers.

Survey findings indicate emails from Evergy as the primary source of awareness for the Business Demand Response Program. Other sources of awareness included Evergy customer service representatives or managers, a contractor or vendor, and mail from Evergy. Figure G-4 displays respondents' sources of program awareness. Two of the 5 Tier 1 customers indicated they had learned about the program from an Evergy representative.

Figure G-4: Sources of Program Awareness¹⁰⁴



Reasons for signing up for the Business Demand Response program varied; however, all respondents cited payment as an important reason for signing up. Nearly all cited the low-risk nature of the program and two-thirds noted support from program staff as important reasons for signing up. Table G-11 displays respondents' reasons for participating in the program.

¹⁰⁴ Respondents could select more than one source of awareness.

Table G-11: BDR Participants' Reasons for Participating¹⁰⁵

Reason	Count (n=12)
Payment: Evergy pays for load reduced.	12
Low risk: No financial penalties.	11
Support: Program staff are available for technical assistance and event success.	8
Insight: Insight into actual electrical usage.	7
Awareness: Customers and employees gain awareness into organization's efforts to lower impact on the local environment.	7
Utility Bill Savings: Reduced energy costs.	7
Customization: Evergy offers a customized, site-specific curtailment plan	7
Environmental reasons: Organization has carbon or greenhouse emission reduction goals or is interested in lessening environmental impact.	7

G.8.4 Curtailment Events

All respondents indicated that the number of curtailment events was about right for their company's needs though not all indicated participating in all committed events. All survey respondents committed to participating in curtailment events in 2024. Seven respondents said they had worked with Evergy to develop curtailment plans tailored to their organizations. Three respondents said they had not participated in all events (two respondents) or did not know (one respondent) if their organization had participated in all events. Of the two that said they did not participate in all events, one noted that they could not participate fully in late summer curtailments due to students and staff being in school and the other said that a customer had required them to keep a line running and this had prohibited them from participating in a committed event.

The program reminds customers of events; some participants may require additional reminders. All respondents recalled receiving at least one form of notification prior to the events (email, text, or phone call). Eleven respondents reported receiving an email, nine received a text message, and four were notified by a phone call about the event. Implementation staff noted that some participants were reminded of the events and agreed to participate, but failed to do so because the reminder came too early in the day

¹⁰⁵ Respondents rated reasons for signing up using a scale from 0 (not at all important) to 10 (very important). Table displays count of respondents that rated each reason a 7 or higher.

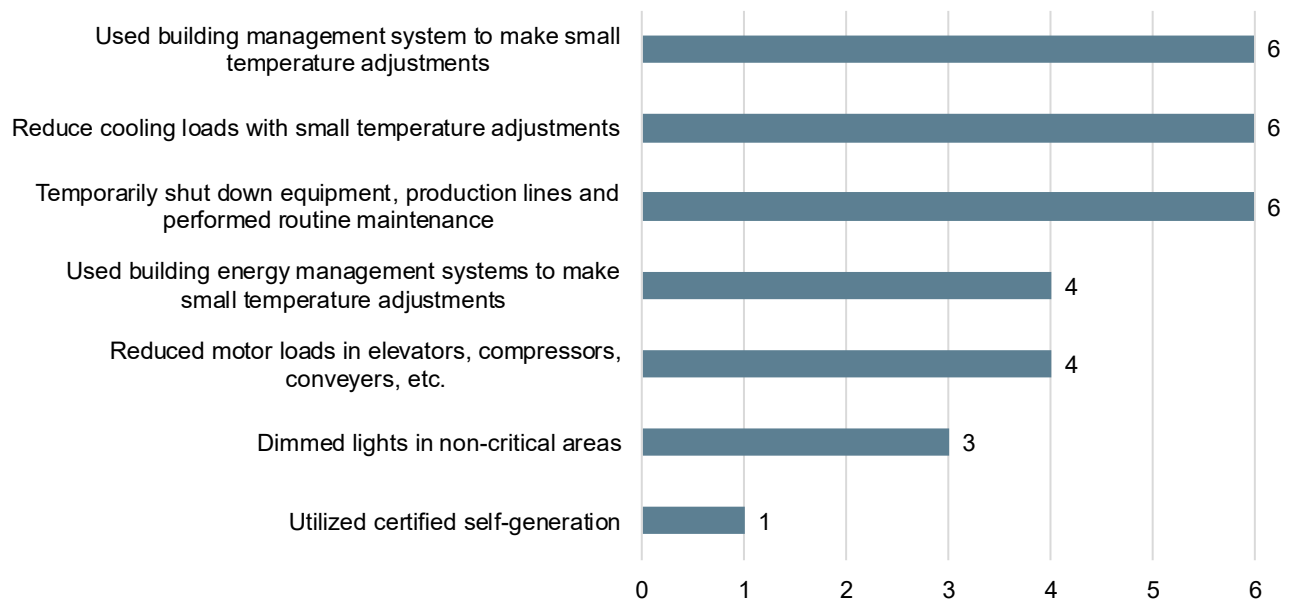
and did not remember to participate later in the day. Implementation staff mentioned that some schools would fail to participate hours after being reminded.

Evergy Kansas was required to provide participating customers with an option to sign up for 4, 6, or 8 events in PY1 because Evergy's similar program in Missouri had this requirement. Eight curtailment events were called in PY1. Evergy and implementation staff observed that the number and timing of events may have led to customer fatigue, particularly with multiple events held in August and "back-to-back" Monday events. Evergy staff said that three events had been called on Mondays in PY1 and observed that this may be a particularly challenging day for participants to curtail their usage.

Post-event follow-up was noted as a challenge in PY1 and opportunity for improvement in PY2. Post-event follow-up communication is used to deliver feedback to improve performance on subsequent events. Both Tier 1 and Tier 2 customers were noted as having underperformed in some PY1 events. Implementation staff noted that although CSMs provided strong pre-event and during-event support for Tier 1 customers, the CSMs did not adequately follow up with their assigned Tier 1 customers to discuss opportunities for improvement. Evergy CSMs provided permission for implementation staff to directly contact Tier 1 customers in the future if CSMs were nonresponsive after "a couple of days." Implementation staff also stated that Tier 2 customers could receive improved follow-up communication; implementation staff would work to shorten post-event follow-up timelines and improve post-event communication for all participants in PY2.

Various methods are employed to curtail usage during events. The most common types of curtailment methods cited in the participant survey were manually making small temperature adjustments and temporarily shutting down equipment and production lines while performing maintenance. Figure G-5 displays survey respondents' reported curtailment methods.

Figure G-5: Business Demand Survey Respondents' Curtailment Methods¹⁰⁶



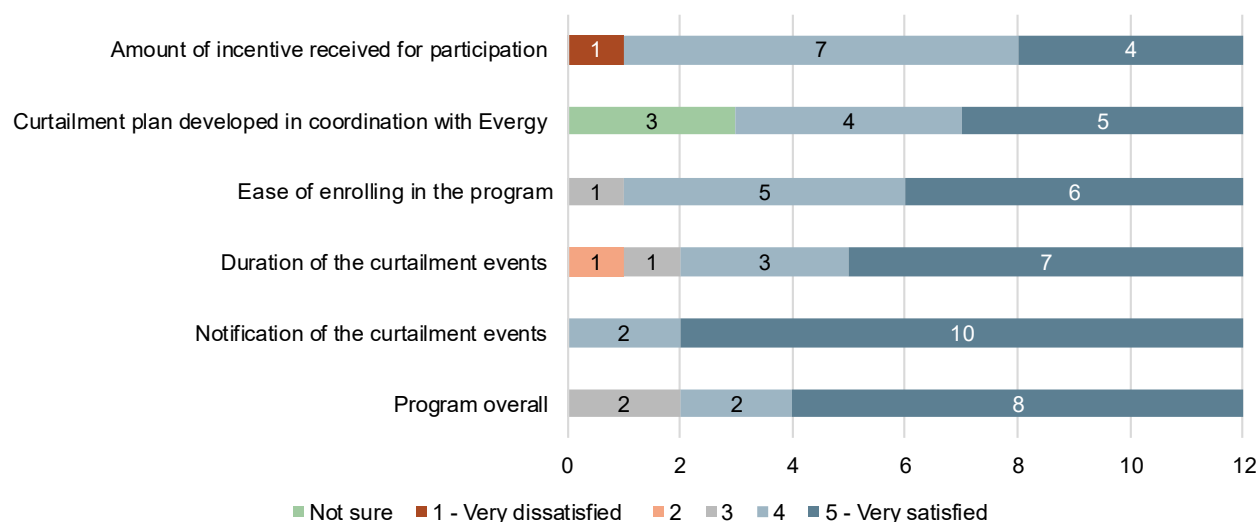
Curtailment events have minimal impact on building comfort. Five respondents said the events had no effect on comfort. Six said it made their building a little uncomfortable and one said it made the building moderately uncomfortable. Ten respondents said the events lasted about the right amount of time; two said they lasted somewhat too long.

G.8.5 Satisfaction with Program

Most survey respondents are satisfied with the Business Demand Response program and plan to continue to participate. Respondent satisfaction is displayed in Figure G-6. Ten respondents indicated that their organization would continue to participate in Evergy's Business Demand Response program after this year; two indicated that their organization would disenroll. One stated that a change in "management philosophy" and a desire to avoid impacting customer and associate comfort had led to their decision to disenroll. The other said that resources to manage the program are constrained and needed for higher priority projects and responsibilities; further, they stated that the financial incentive offered by the program was not sufficient to justify the internal resources required to participate.

¹⁰⁶ Respondents could select more than one action taken.

Figure G-6: Business Demand Response Participant Satisfaction



Survey findings suggested there were some opportunities to improve participant experiences with the program. Suggestions included faster communication after curtailment events, more curtailment options, and more conveniently located award ceremonies. Of the ten respondents that indicated they plan to continue to participate, two offered suggestions or noted opportunities to improve their experience with the program. One respondent suggested that the results from the curtailment event be sent to companies sooner while another suggested providing more options for curtailment time windows. One also voiced interest in an award ceremony in the Wichita area as Kansas City was too far for them to attend.

G.9 Conclusions and Recommendations

The following summarizes the key findings of the evaluation of the BDR Program:

- **Conclusion: The BDR program achieved 125 percent of the reported peak demand reduction for the total BDR Program in PY1.** Kansas Metro achieved a realization rate of 107 percent while Kansas Central achieved a realization rate of 133 percent for peak demand reduction.
- **Conclusion: Program enrollment goals were not met in PY1; changes have been implemented to better track potential sign-ups.** Implementation staff indicated lead tracking and probability updates had been added to the program with the intention of increasing confidence in likelihood of each customer sign-up and ensuring enrollment goals are met.

- **Conclusion: Large customer communication requirements was a barrier to recruitment.** Communication with Tier 1 customers is required to be conducted through Evergy's CSMs; implementation staff noted this as a barrier to recruiting Tier 1 customers. They observed that CSMs are motivated to ensure customers are satisfied and may view the BDR program as a potential area for customer dissatisfaction and thus may have reservations about promoting the program.
- **Conclusion: Evergy emails are driving awareness of the program.** Half of the twelve participants became aware of the program through emails, while two of the participants learned of the program through an Evergy representative. Three of the participants were not sure how they learned of the program.
- **Conclusion: Participants cited the lack of financial penalties and being paid as key factors in the decision to participate.** Participant survey responses also suggested that other factors such as support from program staff, an option for curtailment customization, insight into electrical usage, and reduced energy costs motivated their organization's signing up for the program.
- **Conclusion: Survey findings suggest the program is effectively reminding customers of events, though some participants may require additional reminders.** All respondents recalled receiving at least one form of notification prior to the events (email, text, or phone call). Eleven respondents reported receiving an email, nine received a text message, and four were notified by a phone call about the event. Implementation staff noted that some participants were reminded of the events and agreed to participate, but failed to do so because the reminder came too early in the day and did not remember to participate later in the day. Implementation staff mentioned that some schools would fail to participate hours after being reminded.
- **Conclusion: The number of events and their schedule may have hindered customer participation.** Eight curtailment events were called in PY1. Evergy and implementation staff observed that the number and timing of events may have led to customer fatigue, particularly with multiple events held in August and "back-to-back" Monday events. Evergy staff said that three events had been called on Mondays in PY1 and observed that this may be a particularly challenging day for participants to curtail their usage.
- **Conclusion: About half of survey respondents stated that they had worked with Evergy to develop curtailment plans tailored to their organization.** Seven participant survey respondents said they worked with Evergy to customize their curtailment plans; five did not.

- **Conclusion: Participants are satisfied with the Business Demand Response Program overall, though a portion of survey respondents noted opportunities to improve the program.** All respondents indicated that the number of curtailment events was about right and most said they were the right amount of time. Most respondents were satisfied with how they were notified about curtailment events and the ease of enrolling in the program.

The following recommendations are offered for continued improvement of the BDR Program:¹⁰⁷

- **Recommendation: The program implementer should work to utilize DERMS CBL models that ADM provides to Evergy for estimating reported demand reductions.** Utilizing only one CBL model is not recommended for determining demand reductions due to the heterogeneity of participant loads for a Large C&I DR program.
- **Recommendation: Continued email outreach with tailored messaging to highlight important program benefits may be an effective and low cost method to increase enrollment.** Survey findings suggest participants are enrolling after learning about the program from marketing emails; sending additional emails that highlight the program payment, potential for customization, and support from program staff may be an effective method to draw in additional participants.
- **Recommendation: Continue to work with participants to create individualized curtailment plans with catered reminders.** Working to align customer availability with enrollment plans may help ensure greater participation when events are called. Additional more catered reminders may help organizations with unique needs or schedules to remember to curtail when events are called.
- **Recommendation: The program implementer should attempt to complete program enrollment before the start of the demand response season.** Enrolling additional sites after DR events have been called limits the number of DR events that can be used for estimating verified kW reductions (or will require utilizing multiple events to estimate program impacts). Ideally, the program's verified demand reduction can be calculated for the entire jurisdiction on the same event day, and preferably, multiple eligible event dates can be selected from when determining the system peak loads for each jurisdiction.

¹⁰⁷ Specific findings that informed the program recommendations and the priority and applicability of each recommendation are categorized in Table 1-11.

- *Recommendation:* **ADM recommends calling between 4 to 6 events to avoid customer fatigue.** Back-to-back Monday events should be avoided and the schedule of and sequencing of events should be considered to avoid participant dissatisfaction. Program underperformance indicates the number of events may be too many for some participants, CSMs, implementation teams, and/or other support staff.
- *Recommendation:* **Program staff should continue to work with participants to understand and consider responding to participating organizations' needs.** Three respondents that indicated having tailored plans offered suggestions or noted opportunities to improve their experience. Two of these participants indicated they would continue participating in the program; the other indicated the program payment was not sufficient and would be disenrolling. Of the two respondents that indicated they plan to continue to participate, one respondent suggested that the results from the curtailment event be sent to companies sooner while another suggested providing more options for curtailment time windows. One also voiced interest in an award ceremony in the Wichita area as Kansas City was too far for them to attend.