MEEIA Cycle III PY2: Residential & Demand Response Measurement, and Verification Report

Missouri Metro and Missouri West: Main Report

Prepared for:

Evergy, Inc.

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1 Introduction

This report presents an evaluation of the performance of the Residential energy efficiency, and Demand Response programs offered by Evergy, Inc. for MEEIA Cycle 3, Program Year 2 (PY2). ADM Associates, Inc. is submitting this report to fulfill the requirements outlined by the Missouri Code of State Regulations 20 CSR 4240-22.070 (8) (Missouri regulations).

Evergy contracted with ADM to perform comprehensive program evaluation, measurement, and verification (EM&V) for the Residential and Demand Response programs. ADM's impact evaluation approaches are provided in Chapter 3 of this report. The tactics for ADM's process evaluation are presented in Chapter 4. Chapter 5 outlines the Cost Effectiveness Tests that were utilized, as well as the source of Cost Effectiveness input data for ADM's Cost-Effectiveness approach. Evaluation findings and results are provided in Section 2 of this report, while the evaluation methodologies by program can be found in Section 6.

1.1 Reporting Period

MEEIA Cycle 3 refers to programs implemented in the timeframe of program years 2020 - 2022 (PY1 - PY3). Program Year 2 (PY2) refers to the 2021 program year.

1.2 How to Use This Report

The report is comprised of four elements:

- Main Report: This document—which provides the summary of our evaluation, measurement, and verification (EM&V) analyses and findings by program.
- Appendices A-N:
  - Program Specific NTG Methodology
  - Program Specific Methodology and Results
  - Process Evaluation Results
  - Survey instruments
- Master Results Table File (Appendix O)
- Cost Effectiveness Results (Appendix P)

1.3 Document Structure

As agreed with Stakeholders and discussed during the Evergy Missouri Metro-West DSMAG EM&V Planning Meeting December 7, 2020, the ADM team is providing a

condensed EM&V report that presents key impact evaluation findings and recommendations for both Missouri Metro and Missouri West jurisdictions.

Additionally, this report provides a summary of the MEEIA Cycle 3 PY2 process evaluation findings that address the five required questions per the Missouri Code of State Regulations 20 CSR 4240-22.070 (8) (Missouri regulations). ADM divided the document into the following sections:

- **Portfolio Findings and Evaluation Results:** This section 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.
- **Cost Effectiveness Approach:** Provides a summary of the evaluation approaches for the cost effectiveness calculations, including methodology, inputs, and sources.
- **Process Evaluation Approach:** Provides a summary of the evaluation approaches for the process evaluation and data collection activities.
- **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.

Several appendices accompany this document, including:

- **Appendix A. NTG Approaches by Program:** Includes program level specifics of how each program determines NTG savings.
- **Appendix B. Missouri Requirements for Impact Evaluation:** Provides an overview of MO regulation requirements for conducting an impact evaluation.
- **Appendix C – L. Program-Specific Methodologies:** Details program-specific methodologies
- **Appendix M. Survey Instruments:** Provides detailed survey guides for participants and trade-allies.
- **Appendix N. Deemed Savings and Algorithms:** Details the gross energy savings and demand impacts algorithms as listed in the IL TRM.
- **Appendix O. Excel Databook – CONFIDENTIAL:** Provides additional analytical data and figures for each program in addition to summary results tables for the portfolio.

- **Appendix P. Cost-Effectiveness Data – CONFIDENTIAL**: An Excel Databook containing the following:
  - All measure-specific input assumptions.
  - Program-level administrative costs incurred by the program administrator.
  - Detailed benefit and cost breakdowns by cost test and program/portfolio.

1.4 Report Definitions

1.4.1 Savings Types

Gross Reported Savings

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

Gross Verified Savings

Savings verified through ADM's impact evaluation methods prior to NTG adjustments.

Gross Realization Rates

The ratio of gross verified savings to gross reported savings.

Net Verified Savings

Savings verified through ADM's impact evaluation methods and inclusive of NTG adjustments.

Missouri Energy Efficiency Investment Act (MEEIA)

Three-Year savings target approved by the Missouri Public Service Commission for a given program cycle.

Percentage of MEEIA Target Achieved

The ratio of net verified savings to the MEEIA target for the program cycle; reflects Missouri Metro & Missouri West's overall achievement toward the MEEIA target for the program cycle.

1.4.2 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 when a program participant—as a result of the program's influence—installs energy-efficiency measures or practices outside the efficiency program after having participated.

Non-participant Spillover (NPSO)

The additional energy savings achieved when a non-participant implements energy efficiency measures or practices because of the program's influence (e.g., through exposure to the program) but is not accounted for in program's gross verified savings.

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 non-participant comparison groups), and billing analysis to model participant net savings.

2 Portfolio Findings and Evaluation Results

In PY2, Evergy offered customers five residential programs and four products and services incubator programs. Evergy also offered customers three demand response programs, one residential and two commercial/industrial.

2.1 Gross and Net Savings Results Summary: Combined Territories

This section summarizes the gross and net savings achievements for the Evergy Metro & Missouri West service jurisdiction combined and presents the percent of MEEIA Cycle 3 PY2 program targets.

2.1.1 Summary of Annual Energy Savings: Combined Territories

Evergy's Residential and Demand Response programs reported gross annual energy savings (kWh) across both jurisdictions for the program year of 112,557,432 kWh. Total gross verified annual energy savings were 106,741,821 kWh, resulting in a realization rate for gross energy savings of 95 percent.

The Net-to-Gross (NTG) ratio indicates the percentage of gross savings directly attributable to program influences. The residential and demand response program level net annual energy savings were 84,653,742 kWh, with a portfolio-level kWh net-to-gross ratio of 79 percent.

Table 2-1 summarizes the energy impacts of Evergy's energy efficiency and demand response programs for the program year.

Table 2-1: Combined Territories Energy Savings at the Customer Meter – PY2

Sector	Program	Gross			Net		
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	MEEIA3 PY2 Target (kWh)	Verified Savings (kWh)	% Of MEEIA3 PY2 Target Achieved
Residential EE Programs	Heating, Cooling and Home Comfort	10,591,013	9,699,732	92%	12,582,480	7,412,935	59%
	Energy Saving Products	55,384,812	52,855,535	95%	20,139,568	33,054,253	164%
	Income-Eligible Multi-Family	2,449,466	2,278,225	93%	2,342,925	2,278,225	97%
	Residential EE Programs Subtotal	**68,425,291**	**64,833,492**	**95%**	**35,064,973**	**42,745,413**	**122%**
Educational Programs	Home Energy Report	40,958,652	37,828,015	92%	29,934,375	37,828,015	126%
	Income-Eligible Home Energy Report	496,111	1,481,796	299%	2,928,146	1,481,796	51%
	Online Home Energy Audit	Online Energy Audit programs are not part of MEEIA targets for energy savings or demand reductions.					
	Educational Programs Subtotal	**41,454,763**	**39,309,811**	**95%**	**32,862,521**	**39,309,811**	**120%**
Pilot Programs	Pay As You Save	17,199	17,199	100%	311,709	17,199	6%
	Energy-Saving Trees	186,388	178,419	96%	3,616,465	178,419	20%
	Quality Install	5,399	5,268	98%		5,268	
	Energy-Efficiency Non-Profit	550,400	550,400	100%		550,400	
	Pilot Programs Subtotal	**759,386**	**751,286**	**99%**	**3,928,174**	**751,286**	**19%**
DR Programs	Business Demand Response	The Business Demand Response Program did not claim any energy savings.					
	Residential Demand Response	1,875,637	1,763,715	94%	2,731,904	1,763,715	65%
	Business Smart Thermostat	42,355	83,517	197%	115,048	83,517	73%
	DR Programs Subtotal	**1,917,992**	**1,847,232**	**96%**	**2,846,952**	**1,847,232**	**65%**
Portfolio Total (Without Pilot Programs)		**111,798,046**	**105,990,535**	**95%**	**70,774,446**	**83,902,456**	**119%**
Portfolio Total		**112,557,432**	**106,741,821**	**95%**	**74,702,620**	**84,653,742**	**113%**

2.1.2 Summary of Peak Demand Impacts: Combined Territories

Evergy's Residential and Demand Response programs reported peak demand reduction (kW) across both jurisdictions of 110,117.01 kW. Total gross verified peak demand reduction was 106,908.64 kW. The realization rate for peak demand reduction was 97 percent.

The Net-to-Gross (NTG) ratio indicates the percentage of gross demand reduction directly attributable to program influences. The residential and demand response program level net annual peak demand reduction was 102,464.13 kW, with a portfolio-level kW net-to-gross ratio of 96 percent.

Table 2-2 summarizes the peak demand impacts of Evergy's energy efficiency and demand response programs during the program year.

Table 2-2: Combined Territories Peak Demand Reduction at the Customer Meter – PY2

Sector	Program	Gross			Net		
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	MEEIA3 PY2 Target (kW)	Verified Demand Reduction (kW)	% Of MEEIA3 PY2 Target Achieved
Residential EE Programs	Heating, Cooling and Home Comfort	7,022.35	6,833.51	97%	5,617.19	4,915.19	88%
	Energy Saving Products	7,132.64	6,736.33	94%	1,480.66	4,210.14	284%
	Income-Eligible Multi-Family	374.62	307.14	82%	450.37	307.14	68%
	Residential EE Programs Subtotal	**14,529.61**	**13,876.98**	**96%**	**7,548.22**	**9,432.47**	**125%**
Educational Programs	Home Energy Report	8,225.05	6,355.51	77%	3,750.00	6,355.51	169%
	Income-Eligible Home Energy Report	172.13	248.96	145%	366.02	248.96	68%
	Online Home Energy Audit	Online Energy Audit Program are not part of MEEIA targets for energy savings or demand reductions.					
	Educational Programs Subtotal	**8,397.18**	**6,604.47**	**79%**	**4,116.02**	**6,604.47**	**160%**
Pilot Programs	Pay As You Save	3.86	3.86	100%	35.00	3.86	11%
	Energy-Saving Trees	The Energy-Saving Trees Program did not claim any demand reductions.					
	Quality Install	6.20	5.75	93%	554.50	5.75	21%
	Energy-Efficiency Non-Profit	110.16	110.16	100%		110.16	
	Pilot Programs Subtotal	**120.22**	**119.77**	**100%**	**589.50**	**119.77**	**20%**
DR Programs	Business Demand Response	73,600.60	73,618.76	100%	67,092.00	73,618.76	110%
	Residential Demand Response	13,141.80	12,468.74	95%	20,566.32	12,468.74	61%
	Business Smart Thermostat	327.60	219.92	67%	840.96	219.92	26%
	DR Programs Subtotal	**87,070.00**	**86,307.42**	**99%**	**88,499.28**	**86,307.42**	**98%**
Portfolio Total (Without Pilot Programs)		**109,996.79**	**106,788.87**	**97%**	**100,163.52**	**102,344.36**	**102%**
Portfolio Total		**110,117.01**	**106,908.64**	**97%**	**100,753.02**	**102,464.13**	**102%**

Table 2-3 provides a summary of the final free-ridership, spillover, and NTG ratios by program for both jurisdictions combined. Program-specific NTG methodologies are provided in Appendix A.

Table 2-3: Combined Territories NTG Components by Program

Program Name	Free Ridership	Participant Spillover	Non-Participant Spillover	NTGR
Heating, Cooling and Home Comfort	40.0%	2.0%	14.0%	76.0%
Energy Saving Products	43.1%	7.0%	0.0%	63.0%
Income-Eligible Multi-Family	ADM assumed a net-to-gross (NTG) value of 1.0 for the IEMF program			
Home Energy Report	Program is designed as a randomized control trial, net-to-gross score of 1.0			
Products & Incubator Programs	ADM assumed a net-to-gross (NTG) value of 1.0 for the pilot programs			
Business Demand Response	ADM assumed a net-to-gross (NTG) value of 1.0 for the Demand Response programs			
Residential Demand Response				
Business Smart Thermostats				

*Net to Gross calculation for Energy Saving Products contains an additional 1.35 percent reduction due to program leakage.

2.2 Gross and Net Savings Results Summary: Missouri West

2.2.1 Summary of Annual Energy Savings: Missouri West

Evergy's Residential and Demand Response programs reported annual energy savings (kWh) for the Missouri West jurisdiction of 63,246,503 kWh. Total gross verified annual energy savings were 60,552,750 kWh, resulting in a realization rate for gross energy savings of 96 percent.

The Net-to-Gross (NTG) ratio indicates the percentage of gross savings directly attributable to program influences. The residential and demand response program level net annual energy savings were 48,600,151 kWh, with a portfolio-level kWh net-to-gross ratio of 80 percent.

Table 2-4 summarizes the energy impacts of Evergy's energy-efficiency and demand response programs in the Missouri West jurisdiction during the program year.

Table 2-4: Missouri West Energy Savings at the Customer Meter – PY2

Sector	Program	Gross			Net		
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	MEEIA3 PY2 Target (kWh)	Verified Savings (kWh)	% Of MEEIA3 PY2 Target Achieved
Residential EE Programs	Heating, Cooling and Home Comfort	6,796,548	6,140,260	90%	7,767,640	4,612,617	59%
	Energy Saving Products	30,519,963	29,168,216	96%	10,416,978	18,743,260	180%
	Income-Eligible Multi-Family	1,429,036	1,316,934	92%	1,181,931	1,316,934	111%
	Residential EE Programs Subtotal	**38,745,547**	**36,625,410**	**95%**	**19,366,549**	**24,672,811**	**127%**
Educational Programs	Home Energy Report	23,194,337	22,654,916	98%	20,355,375	22,654,916	111%
	Income-Eligible Home Energy Report	The Income-Eligible Home Energy Report Program did not claim any energy savings in Missouri West.					
	Online Home Energy Audit	Online Energy Audit Program are not part of MEEIA targets for energy savings or demand reductions.					
	Educational Programs Subtotal	**23,194,337**	**22,654,916**	**98%**	**20,355,375**	**22,654,916**	**111%**
Pilot Programs	Pay As You Save	7,179	7,179	100%	155,855	7,179	5%
	Energy-Saving Trees	The Energy-Saving Trees Program did not claim any energy savings.					
	Quality Install	1,952	1,724	88%	1,860,665	1,724	18%
	Energy-Efficiency Non-Profit	329,824	329,824	100%		329,824	
	Pilot Programs Subtotal	**338,955**	**338,727**	**100%**	**2,016,520**	**338,727**	**17%**
DR Programs	Business Demand Response	The Business Demand Response Program did not claim any energy savings.					
	Residential Demand Response	944,615	888,248	94%	1,402,388	888,248	63%
	Business Smart Thermostat	23,049	45,449	197%	56,736	45,449	80%
	DR Programs Subtotal	**967,664**	**933,697**	**96%**	**1,459,124**	**933,697**	**64%**
MO West Total (Without Pilot Programs)		**62,907,548**	**60,214,023**	**96%**	**41,181,048**	**48,261,424**	**117%**
MO West Total		**63,246,503**	**60,552,750**	**96%**	**43,197,568**	**48,600,151**	**113%**

2.2.2 Summary of Peak Demand Impacts: Missouri West

The Residential and Demand Response programs reported peak demand reduction (kW) across the Missouri West jurisdiction of 70,180.53 kW. Total gross verified peak demand reduction was 69,627.31 kW. The realization rate for peak demand reduction was 99 percent.

The Net-to-Gross (NTG) ratio indicates the percentage of gross savings directly attributable to program influences. The residential program and demand program net annual peak demand reduction was 67,115.68 kW, with a portfolio-level kW net-to-gross ratio of 96 percent.

Table 2-5 summarizes the peak demand impacts of Evergy's energy efficiency and demand response programs in the Missouri West jurisdiction during the program year.

Table 2-5: Missouri West Peak Demand Reduction at the Customer Meter – PY2

Sector	Program	Gross			Net		
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	MEEIA3 PY2 Target (kW)	Verified Demand Reduction (kW)	% Of MEEIA3 PY2 Target Achieved
Residential EE Programs	Heating, Cooling and Home Comfort	4,361.07	4,193.47	96%	3,392.19	3,000.57	88%
	Energy Saving Products	3,928.17	3,690.37	94%	755.85	2,371.64	314%
	Income-Eligible Multi-Family	251.68	194.51	77%	222.82	194.51	87%
	Residential EE Programs Subtotal	**8,540.92**	**8,078.35**	**95%**	**4,370.86**	**5,566.72**	**127%**
Educational Programs	Home Energy Report	4,302.65	3,806.27	88%	2,550.00	3,806.27	149%
	Income-Eligible Home Energy Report	The Income-Eligible Home Energy Report Program did not claim any peak demand reductions in Missouri West.					
	Online Home Energy Audit	Online Energy Audit Program is not part of MEEIA targets for energy savings or demand reductions.					
	Educational Programs Subtotal	**4,302.65**	**3,806.27**	**88%**	**2,550.00**	**3,806.27**	**149%**
Pilot Programs	Pay As You Save	2.31	2.31	100%	17.50	2.31	13%
	Energy-Saving Trees	The Energy-Saving Trees Program did not claim any demand reductions.					
	Quality Install	2.24	1.79	80%	290.70	1.79	22%
	Energy-Efficiency Non-Profit	61.11	61.11	100%		61.11	
	Pilot Programs Subtotal	**65.66**	**65.21**	**99%**	**308.20**	**65.21**	**21%**
	Business Demand Response	50,387.50	51,094.86	101%	52,092.30	51,094.86	98%
	Residential Demand Response	6,717.20	6,489.81	97%	10,609.20	6,489.81	61%
	Business Smart Thermostat	166.60	92.81	56%	414.72	92.81	22%
	DR Programs Subtotal	**57,271.30**	**57,677.48**	**101%**	**63,116.22**	**57,677.48**	**91%**
MO West Total (Without Pilot Programs)		**70,114.87**	**69,562.10**	**99%**	**70,037.08**	**67,050.47**	**96%**
MO West Total		**70,180.53**	**69,627.31**	**99%**	**70,345.28**	**67,115.68**	**95%**

Table 2-6 provides a summary of the final free-ridership, spillover, and NTG ratios by program in the Missouri West jurisdiction. Program specific NTG methodologies are provided in Appendix A.

Table 2-6: Missouri West NTG Components by Program

Program Name*	Free Ridership	Participant Spillover	Non-Participant Spillover	NTGR
Heating, Cooling and Home Comfort	41.0%	2.0%	14.0%	75.0%
Energy Saving Products	43.3%	7.0%	0.0%	64.3%
Income-Eligible Multi-Family	ADM assumed a net-to-gross (NTG) value of 1.0 for the IEMF program			
Home Energy Report	Program is designed as a randomized control, net-to-gross score of 1.0			
Products & Incubator Programs	ADM assumed a net-to-gross (NTG) value of 1.0 for the pilot programs			
Business Demand Response	ADM assumed a net-to-gross (NTG) value of 1.0 for the Demand Response programs			
Residential Demand Response				
Business Smart Thermostats				

*Net-to-gross calculations for Energy Saving Products contains an additional 1.35 percent reduction due to program leakage.

2.3 Gross and Net Savings Results Summary: Missouri Metro

2.3.1 Summary of Annual Energy Savings: Missouri Metro

The Residential & Demand Response programs reported annual energy savings (kWh) across the Missouri Metro jurisdiction for the program year of 49,310,929 kWh. Total gross verified annual energy savings were 46,189,072 kWh, resulting in a realization rate for gross energy savings of 94 percent.

The Net-to-Gross (NTG) ratio indicates the percentage of gross savings directly attributable to program influences. The residential and demand response net annual peak demand reduction was 36,053,592 kWh, with a portfolio-level kWh net-to-gross ratio of 78 percent.

Table 2-7 summarizes the energy impacts of Evergy's energy efficiency and demand response programs in the Missouri Metro jurisdiction for the program year.

Table 2-7: Missouri Metro Energy Savings at the Customer Meter – PY2

Sector	Program	Gross			Net		
		Reported Savings (kWh)	Verified Savings (kWh)	Realization Rate (%)	MEEIA3 PY2 Target (kWh)	Verified Savings (kWh)	% Of MEEIA3 PY2 Target Achieved
Residential EE Programs	Heating, Cooling and Home Comfort	3,794,464	3,559,472	94%	4,814,841	2,800,318	58%
	Energy Saving Products	24,864,849	23,687,319	95%	9,722,590	14,310,993	147%
	Income-Eligible Multi-Family	1,020,431	961,292	94%	1,160,994	961,292	83%
	Residential EE Programs Subtotal	**29,679,744**	**28,208,083**	**95%**	**15,698,425**	**18,072,603**	**115%**
Educational Programs	Home Energy Report	17,764,315	15,173,099	91%	9,579,000	15,173,099	158%
	Income-Eligible Home Energy Report	496,111	1,481,796	299%	2,928,146	1,481,796	51%
	Online Home Energy Audit	Online Energy Audit programs are not part of MEEIA targets for energy savings or demand reductions.					
	Educational Programs Subtotal	**18,260,426**	**16,654,895**	**91%**	**12,507,146**	**16,654,895**	**133%**
Pilot Programs	Pay As You Save	10,020	10,020	100%	155,855	10,020	6%
	Energy-Saving Trees	186,388	178,419	96%	1,755,800	178,419	23%
	Quality Install	3,447	3,545	103%		3,545	
	Energy-Efficiency Non-Profit	220,576	220,576	100%		220,576	
	Pilot Programs Subtotal	**420,431**	**412,560**	**98%**	**1,911,655**	**412,560**	**22%**
DR Programs	Business Demand Response	The Business Demand Response Program did not claim any energy savings.					
	Residential Demand Response	931,022	875,466	94%	1,329,516	875,466	66%
	Business Smart Thermostat	19,306	38,068	197%	58,312	38,068	65%
	DR Programs Subtotal	**950,328**	**913,534**	**96%**	**1,387,828**	**913,534**	**66%**
MO Metro Total (Without Pilot Programs)		**48,890,498**	**45,776,512**	**94%**	**29,593,399**	**35,641,032**	**120%**
MO Metro Total		**49,310,929**	**46,189,072**	**94%**	**31,505,054**	**36,053,592**	**114%**

2.3.2 Summary of Peak Demand Impacts: Missouri Metro

The Residential and Demand Response programs reported peak demand reduction (kW) across the Missouri West jurisdiction of 39,936.48 kW. Total gross verified peak demand reduction was 37,281.35 kW. The realization rate for peak demand reduction was 93 percent.

The Net-to-Gross (NTG) ratio indicates the percentage of gross savings directly attributable to program influences. The residential and demand response program level net annual peak demand reduction was 35,348.46 kW, with a portfolio-level kW net-to-gross ratio of 95 percent.

Table 2-8 summarizes the peak demand impacts of Evergy's energy efficiency and demand response programs in the Missouri Metro jurisdiction during the program year.

Table 2-8: Missouri Metro Peak Demand Reduction at the Customer Meter – PY2

Sector	Program	Gross			Net		
		Reported Demand Reduction (kW)	Verified Demand Reduction (kW)	Realization Rate (%)	MEEIA3 PY2 Target (kW)	Verified Demand Reduction (kW)	% Of MEEIA3 PY2 Target Achieved
Residential EE Programs	Heating, Cooling and Home Comfort	2,661.28	2,640.05	99%	2,225.00	1,914.62	86%
	Energy Saving Products	3,204.47	3,045.96	95%	724.81	1,838.50	254%
	Income-Eligible Multi-Family	122.93	112.63	92%	227.55	112.63	49%
	Residential EE Programs Subtotal	**5,988.68**	**5,798.64**	**97%**	**3,177.37**	**3,865.75**	**122%**
Educational Programs	Home Energy Report	3,922.40	2,549.24	65%	1,200.00	2,549.24	212%
	Income-Eligible Home Energy Report	172.13	248.96	145%	366.02	248.96	68%
	Online Home Energy Audit	Online Energy Audit programs are not part of MEEIA targets for energy savings or demand reductions.					
	Educational Programs Subtotal	**4,094.53**	**2,798.20**	**68%**	**1,566.02**	**2,798.20**	**179%**
Pilot Programs	Pay As You Save	1.56	1.56	100%	17.50	1.56	9%
	Energy-Saving Trees	The Energy-Saving Trees Program did not claim any demand reductions.					
	Quality Install	3.96	3.96	100%	263.80	3.96	20%
	Energy-Efficiency Non-Profit	49.05	49.05	100%		49.05	
	Pilot Programs Subtotal	**54.57**	**54.57**	**100%**	**281.30**	**54.57**	**19%**
	Business Demand Response	23,213.10	22,523.90	97%	15,000.00	22,523.90	150%
	Residential Demand Response	6,424.60	5,978.93	93%	9,957.12	5,978.93	60%
	Business Smart Thermostat	161.00	127.11	79%	426.24	127.11	30%
	DR Programs Subtotal	**29,798.70**	**28,629.94**	**96%**	**25,383.36**	**28,629.94**	**113%**
MO Metro Total (Without Pilot Programs)		**39,881.91**	**37,226.78**	**93%**	**30,126.74**	**35,293.89**	**117%**
MO Metro Total		**39,936.48**	**37,281.35**	**93%**	**30,408.04**	**35,348.46**	**116%**

Table 2-9 provides a summary of the final Free-ridership, spillover, and NTG ratios in the Missouri Metro jurisdiction by program. Program specific NTG methodologies are provided in Appendix A of the appendix report.

Table 2-9: Missouri Metro NTG Components by Program

Program Name*	Free Ridership	Participant Spillover	Non-Participant Spillover	NTGR
Heating, Cooling and Home Comfort	37.0%	2.0%	14.0%	79.0%
Energy Saving Products	46.3%	7.0%	0.0%	60.4%
Income-Eligible Multi-Family	ADM assumed a net-to-gross (NTG) value of 1.0 for the IEMF program			
Home Energy Report	Program is designed as a randomized control, net-to-gross score of 1			
Products & Incubator Programs	ADM assumed a net-to-gross (NTG) value of 1.0 for the pilot programs			
Business Demand Response	ADM assumed a net-to-gross (NTG) value of 1.0 for the Demand Response programs			
Residential Demand Response				
Business Smart Thermostats				

*Net-to-Gross calculations for Energy Saving Products contains an additional 1.35 percent reduction due to program leakage.

2.4 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 as shown in Appendix P of the appendix report. The total residential and demand response program spending was $19,448,712.07. The methods used to calculate cost-effectiveness were informed by the California Standard Practice Manual.[1]

The specific tests used to evaluate cost-effectiveness for the Missouri Public Service Commission is the Total Resource Cost Test (TRC). The benefit-cost ratios for those tests as well as the Utility Cost Test (UCT), Rate Payer Impact test (RIM), Societal Cost Test

[1] 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

(SCT), and the Participant Cost Test (PCT) are presented in Table 2-10 through Table 2-12. In addition, total portfolio costs and benefits for the programs evaluated are shown in Table 2-13. Detailed cost-effectiveness assumptions and findings are presented in Appendix P.

Table 2-10: Benefit-Cost Ratios by Program and Cost Test for Missouri Metro and Missouri West Jurisdictions – PY2

Sector	Program	TRC	UCT	RIM	SCT	PCT
EE Programs	Energy Saving Products	3.31	1.94	0.36	3.63	11.21
	Heating, Cooling and Home Comfort	1.03	1.45	0.43	1.27	2.21
	Income-Eligible Multi-Family	0.46	0.47	0.27	0.53	2.98
	Home Energy Report	1.42	1.42	0.27	1.42	N/A
	Income-Eligible Home Energy Report	0.48	0.48	0.19	0.48	N/A
EE Overall		**1.65**	**1.48**	**0.36**	**1.86**	**5.75**
DR Programs	Business Demand Response	2.28	1.16	1.16	2.28	N/A
	Business Smart Thermostat	0.98	1.09	0.80	1.14	2.51
	Residential Demand Response	1.39	1.47	1.05	1.61	2.79
DR Overall		**1.64**	**1.32**	**1.09**	**1.80**	**5.24**
Residential and DR Total		**1.65**	**1.40**	**0.52**	**1.83**	**5.69**

Table 2-11: Benefit-Cost Ratios by Program and Cost Test for Missouri West Jurisdiction – PY2

Sector	Program	TRC	UCT	RIM	SCT	PCT
EE Programs	Energy Saving Products	3.11	1.85	0.35	3.40	11.27
	Heating, Cooling and Home Comfort	1.02	1.47	0.45	1.26	2.02
	Income-Eligible Multi-Family	0.45	0.50	0.28	0.51	2.49
	Home Energy Report	1.35	1.35	0.29	1.35	N/A
EE Overall		**1.60**	**1.47**	**0.37**	**1.8**	**5.27**
DR Programs	Business Demand Response	2.45	1.21	1.21	2.45	N/A
	Business Smart Thermostat	0.85	0.95	0.68	0.99	2.60
	Residential Demand Response	1.39	1.45	1.08	1.61	2.60
DR Overall		**1.75**	**1.32**	**1.14**	**1.89**	**5.91**
Residential and DR Total		**1.66**	**1.40**	**0.53**	**1.83**	**5.33**

Table 2-12: Benefit-Cost Ratios by Program and Cost Test for Missouri Metro Jurisdiction – PY2

Sector	Program	TRC	UCT	RIM	SCT	PCT
EE Programs	Energy Saving Products	3.62	2.06	0.37	3.96	11.12
	Heating, Cooling and Home Comfort	1.04	1.40	0.40	1.28	2.53
	Income-Eligible Multi-Family	0.47	0.43	0.26	0.54	4.16
	Home Energy Report	1.54	1.54	0.25	1.54	N/A
	Income-Eligible Home Energy Report	0.48	0.48	0.19	0.48	N/A
EE Overall		**1.73**	**1.49**	**0.35**	**1.94**	**6.52**
DR Programs	Business Demand Response	1.97	1.07	1.07	1.97	N/A
	Business Smart Thermostat	1.12	1.24	0.94	1.30	2.41
	Residential Demand Response	1.39	1.49	1.02	1.61	2.99
DR Overall		**1.52**	**1.32**	**1.03**	**1.69**	**4.55**
Residential and DR Total		**1.64**	**1.41**	**0.50**	**1.83**	**6.23**

Table 2-13: Program Costs and Benefits – PY2

Jurisdiction	Incentives	All Other Costs	Total TRC Costs	Total TRC Benefits	TRC Score
MO West	$4,177,460	$7,166,415	$10,558,968	$17,477,616	1.66
MO Metro	$2,578,461	$5,526,377	$7,714,761	$12,644,576	1.64
Total	**$6,755,920**	**$12,692,792**	**$18,273,729**	**$30,122,192**	**1.65**

***** Portfolio costs and benefits reported in this table do not include costs or benefits from Products & Services Incubator programs.

2.5 Process Evaluation Results Summary

This section provides an overview of the Residential & Demand Response PY2 process evaluation findings. Section 2.6 provides a summary of the five Missouri Process Evaluation Questions and the overarching themes across Evergy Metro's portfolio of DSM programs. These findings are intended to provide the reader with a broad understanding of the portfolio and the progress made throughout the second program year of the cycle. For specific program findings, please refer to Appendix C through Appendix L in the appendix report.

2.6 Regulatory Research Questions

1. What are the primary market imperfections that are common to the target market segment?

We interpret "market imperfections" as used here to mean any factors that pose barriers to program participation. Historically, the primary barriers to program participation have been low awareness of program offerings, low motivation to reduce energy consumption, lack of understanding of value of efficient equipment (including the non-energy benefits) and of the technologies themselves, and the up-front cost of installing energy-saving equipment. Programs attempt to address these barriers through marketing and other educational activities to improve program awareness and to increase motivation and the understanding and through monetary incentives to reduce the financial barriers. As indicated below, however, other barriers may exist for specific customer subsectors.

Residential Energy-Efficiency Programs

Evergy achieved the MEEIA overall target for residential energy-efficiency programs and for the residential educational programs but not for the demand response programs. This suggests, at a minimum, that the energy efficiency and educational programs, taken together, are doing at least as well as expected. However, there was wide variation in how well individual programs performed. Among the energy efficiency programs, Energy Saving Products exceeded goals while Heating, Cooling and Home Comfort (HCHC) and

Income-Eligible Multi-Family (IEMF) both fell short of goals, IEMF fell slightly below target at 97 percent. As a single program should not be expected always to outperform expectations, therefore, it is important to identify the factors that prevented HCHC and IEMF from achieving their respective savings targets.

The COVID-19 pandemic is part of the reason that HCHC did not achieve savings goals, especially in the first part of 2021, as customer unwillingness to allow contractors in their home to perform air sealing and insulation reduced participation in that program component. Our evaluation did not find evidence of other substantial barriers, such as poor program awareness, resistance to energy reduction in general, or ineffectiveness of program incentives.

IEMF staff identified four challenges faced by the program. First, limited financing for affordable housing projects continues to be an issue. Second, there are a limited number of affordable housing properties in the Missouri West jurisdiction reducing the number of properties that are eligible for the program. Third, labor shortages that resulted from the COVID pandemic plagued both trade allies that were contracted to work on program projects and housing property staffs; both shortages obstructed project progress. And finally, supply chain issues stalled progress on projects when partially finished projects languished while contractors waited for building materials or appliances.

Although the ESP program met savings goals, program staff reported that customer education and market saturation are challenges for the program. ADM's evaluation found that about half of surveyed customers who reported buying LEDs at participating stores through ESP were aware of the Evergy discount, which compares well to awareness rates we have identified in similar programs in other states. Given that the program met goals, this may be adequate, but given program staff's concerns, increasing customer awareness of the discounts and that Evergy provided them may help improve the proper assignment of attribution of the savings resulting from the purchases.

Educational Programs

The Home Energy Reports (HER) program is the only of the two educational programs that claims energy savings. It well exceeded its MEEIA energy savings goals. As an educational program, there is no issue of up-front cost. As an opt-out program, there is no issue of awareness of the program itself. The primary potential barriers to program effectiveness would appear to be lack of customer motivation to save energy, lack of understanding of how to save energy, and differences among customer sub-segments in either of those two items. In this light, the primary barriers that our evaluation identified are that: 1) the rate with which report recipients review the reports in detail could be higher; 2) a small minority (~5%) of recipients may misunderstand the basis on which the report compares their home to that of other homes, which may lead to frustration and failure to accept the report's suggestions; 3) report recipients were no more familiar with

some other Evergy program offerings – specifically, with rebates for smart thermostats, heating and cooling, and insulation and air sealing – than were the matched controls.

Although the Online Home Energy Analyzer (OHEA) program does not have specific energy saving goals, it has a general purpose of educating Evergy customers to be more knowledgeable about saving energy, including by taking advantage of Evergy energy efficiency programs. As with the HER program, there is no up-front cost. There is a potential concern about awareness of the OHEA tools. In last year's evaluation, program staff contacts noted that the biggest challenge for the program was customer awareness and education, and fewer than 10% of customers have accessed the tools. (We did not conduct staff interviews this year as no substantive changes had been made to the program.) This year's findings did not identify other barriers. However, across the board, respondents were more likely to say they like Evergy outreach efforts and tools and found the information useful than to say those efforts motivated them to save energy. This pointed to a recommendation to consider doing additional research to assess what increases motivation or intent to engage in recommended behaviors and to use that information to increase the effectiveness of the various outreach efforts and tools.

Demand Response Programs

The Residential Demand Response (RDR) program and the Business Smart Thermostat (BST) program both fell short of their MEEIA savings goals, and so, therefore, did the demand response programs in general. The Business Demand Response (BDR) program did not claim energy savings. In terms of demand savings, all programs fell short of goals, although the BDR program, with by far the highest demand goals, exceeded its demand savings goals.

Feedback from program staff identified two factors that contributed to RDR and BST not meeting goals. First, marketing did not have the desired results despite Evergy using "every marketing tactic available". Second, market saturation may be a contributing factor in declining enrollments. As the program manager explained, this program has been offering free thermostats since 2016, and the program offering is now quite mature and well-known. Therefore, enrolling new participants has been more challenging during this program cycle.

In addition, the program continued to be affected negatively by the pandemic. Although some technicians could install the thermostats in residences or small businesses, they had to follow the CDC guidelines and had more days sick due to the virus. In addition, many customers did not want a technician in their home performing installations due to the virus which impacted direct installs.

2. Is the target market segment appropriately defined, or should it be further subdivided or merged with other market segments?

The Evergy residential programs cover most subsegments of the residential market. The HCHC, ESP, HER, and RDR all serve homeowners and renters, and IEMF serves lower- and middle-income customers. ADM's evaluation did not identify clear evidence that any specific program fails to serve any specific part of its target audience. We do note that the HCHC participant survey respondents were highly skewed toward homeowners, small households (one to two occupants), and were highly educated (Bachelor's degree or higher). Similarly, the HER and OHEA participant survey respondents skewed older, more educated, and more likely to be homeowners than the Evergy general population. However, we cannot be certain that either of these reflects a bias in program participation or in survey response.

Based on the above, we cannot conclude that there is any need for any changes in how Evergy targets the residential market. There are several ways we can examine whether program participation represents the Evergy customer population, but each has its limitations. One approach would be to compare participation in income-qualified programs as a percentage of total residential participation (in terms of number of participants and/or energy savings) to the low-income share of the customer population. The limitation here is that some low-income customers may also participate in non-income-qualified programs. We also can compare the demographics of participant survey respondents to the demographics of the customer population. The limitation here is that lack of a good comparison could mean either that participation is biased or that survey response is biased. Finally, since program tracking data usually includes the address of program participants, we can use the demographics of the Census tracts or block groups where participants live as a proxy for the participant demographics. Other program administrators have done this.[2,3,4] The limitation here is that, as ADM recently found in research for another client, Census data on income may provide an acceptable proxy for participation differences between higher- and lower-income households but not for

[2] DNV-GL 2020. Final Report: Residential Nonparticipant Customer Profile Study. Prepared for the Massachusetts Program Administrators and Energy Efficiency Advisory Council Consultants, February 6, 2020. Available at: https://ma-eeac.org/wp-content/uploads/MA19X06-B-RESNONPART_Report_FINAL_v20200228.pdf.

[3] Energy Trust of Oregon 2018. "2018 Diversity, Equity and Inclusion Data and Baseline Analysis." Published December 26, 2018. Available at: https://www.energytrust.org/documents/energy-trust-of-oregon-2018-racial-diversity-equity-and-inclusion-data-and-baseline-analysis/.

[4] Wirtshafter, Robert M., Susan L. Radke, Robert Bodner, Virginia Kreitler, and Shahana Samiullah 2001. "Using Geographic Information Systems to Establish Who Is Hard to Reach." 2001 International Energy Program Evaluation Conference, Salt Lake City, 2001.

participation differences between people of color and white households.[5] We will explore the above types of analyses, noting the limitations of the findings.

3. **Does the mix of end-use measures included in the program appropriately reflect the diversity of end-use energy service needs and existing end-use technologies within the target market segment?**

Of the various programs covered in our evaluation, only HCHC, IEMF, and ESP provide incentives for the installation of energy-saving measures or provide direct-install measures. Between these three programs, Evergy offers a wide range of residential measures. However, limited uptake of some measure types may hamper program savings.

HCHC offers energy saving measures through three program components: 1) an Energy Savings Kit with an assortment of low-cost measures (LED lightbulbs, faucet aerators, low-flow showerheads, pipe insulation, and advanced power strips); 2) insulation and air sealing measures; and 3) HVAC measures. HCHC participants and trade allies were generally satisfied with the program, and over two-thirds of trade allies were satisfied with the equipment that the program offers, the rebate/discount payment process, the program paperwork, and Evergy's website. The primary substantive suggestion that trade allies made regarding the program offerings was to push higher SEER (>17) HVAC equipment, as well as an increase in the incentives offered for higher-efficiency HVAC models.

IEMF provides a wide range of measure types, various direct-install measures (low-flow showerheads, kitchen faucet aerators, and smart power strips); prescriptive rebates for LED lighting, appliances (dishwashers, washing machines, dryers), HVAC (air conditioners, heat pumps), bathroom fans, and refrigerator replacement; and custom rebates are comprised of common area lighting, some truly custom measures as well as measures that are also included in direct install and prescriptive projects. LED lighting and direct-install measures make up a substantial proportion of program savings. Program staff believes that direct install measures will decrease in importance as deeper energy savings are found in higher impact prescriptive and custom measures.

ESP provides upstream discounts for energy efficient products, which currently are limited to a selection of LED lighting measures.

[5] ADM Associates 2021. Final Report: 2020 Customer Insights Study. Published July 12, 2021. Available at: https://energytrust.org/wp-content/uploads/2021/04/Energy-Trust-CIS-Final-Report-wSR.pdf.

4. **Are the communication channels and delivery mechanisms appropriate for the target market segment?**

Our evaluation found that Evergy and its program implementers use a variety of methods to communicate about the programs to customers and trade allies. Some findings pointed to potential shortcomings of some aspects of the program communication channels and delivery mechanisms.

Our evaluation found that HCHC has consistent structures in place with rebate distribution, a well-developed internal marketing team, and continued trade ally support. HCHC participants and trade allies were satisfied with program processes and interactions. However, some trade allies reported that the application process/paperwork can be complicated, and additional program training would be helpful.

IEMF participants were satisfied with the program processes. Most IEMF participants (property managers) learned about the program via outreach from program staff.

ESP participants also were satisfied with the program. Our evaluation found that about half of surveyed customers who reported buying LEDs at participating stores through ESP were aware of the Evergy discount, which compares well to awareness rates we have identified in similar programs in other states. Given that the program met goals, this may be adequate, but program staff indicated concerns about market saturation, and so increasing customer awareness of the discounts and that Evergy provided them may help improve the proper assignment of attribution of the savings resulting from the purchases.

The primary finding from the demand response programs is that participants in both the RDR and BST indicated they would like more advance notice of events. The program is approaching maturity, so finding ways to keep customers participating in the program will be a challenge. Offering free thermostats did lead to increased program enrollments; however, this offer was most successful when coupled with an email activation campaign.

5. **What can be done to more effectively overcome the identified market imperfections and to increase the rate of customer acceptance and implementation of each end-use measure included in the program?**

<u>Heating, Cooling and Home Comfort Recommendations</u>

- Monitor installation rates on an ongoing basis for the Energy Savings Kit sub-program. The sub-program currently performs both direct install (~70 percent) and virtual install (~30 percent), and this comes with trade-offs of lower administration costs but greater risk of non-installation or measure removal. If the Energy Savings Kit sub-program is going to continue to perform virtual installs, additional customer resources, such as educational materials or a direct customer service line, may be needed to keep installation rates high.

- Periodically review the incentive structure for higher-efficiency HVAC systems in the program. When examining the benefit-cost ratios for higher-efficiency HVAC systems, Evergy can assess if incentives can be or need to be revised. Metrics for this may assessment include:
    - Percent of incremental cost covered by incentives. If incremental cost coverage is below 50 percent, Evergy can consider increasing incentives while remaining within boundaries of industry norms for this measure group.
    - Develop a simplified and more automated application process to reduce the load on trade allies. As it is, some trade allies reported that the application process has many required components that can be easily overlooked. Drop-down options with pre-programmed equipment and AHRI numbers could be utilized to reduce the time it takes for trade allies to look up the information themselves and would reduce input error.
- Encourage the outreach team to set up in-person trainings for trade allies. Trying to engage trade allies virtually can be much more challenging than in-person meetings where the focus of the trade ally is undivided. All trade allies that had trainings in 2021 described them as being helpful. Creating multiple in-person trainings may increase further trade ally support.
- Add additional data collection requirements to the reporting fields for the program tracking data. The air sealing and attic insulation measures calculate energy savings based on the heating fuel type for each home. Savings are calculated differently based on whether a home is gas heated or electric heated. However, the heating fuel type is currently not being collected in the tracking data for all air sealing and attic insulation projects in the program, which causes the reported savings calculations to use a default assumption of an electric-heated home. Using the actual heating fuel type for each project would more accurately reflect the energy savings per home and would coincide with the verified savings calculations.
- Consider adding additional measures to the Evergy TRM based on the current mix of measure in the program tracking data. Currently, there are measures in the 2021 program tracking data that are not specifically outlined in the Evergy TRM. This includes measures with multiple baselines as stipulated in the IL TRM. For example, a measure for an air sealing project in a gas heated home or a measure for a ground source heat pump project replacing an existing central AC are not currently included in the Evergy TRM. Adding additional measures to the Evergy TRM based on the program tracking data could help better align the reported and verified savings calculations.

Energy Saving Products Recommendations

- Provide additional customer education and cross-promotion of programs. Customer awareness of the ESP Program remains somewhat low. Additional educational materials in stores (as permitted by the retailers), as well as promotion through social media, bill inserts, and emails could improve the program performance and customer engagement.
- Continue to develop an online marketplace. Program staff indicated that the online marketplace was successful in PY1 and are exploring additional avenues for marketing the availability of the online marketplace and opportunities to add measures for purchase. The online marketplace provides an avenue to reach hard-to-reach customers and expand to additional measures.

Income-Eligible Multi-Family Recommendations

- Consider including a data element to program tracking data that identifies a project property across all measure types (direct install, prescriptive and custom). This may reduce errors in aggregating project level analysis and evaluation. ICF reports that a data element that ties all project applications associated with a premise has been added to the tracking data.
- Using primary key measure identifier for custom measures wherever possible could increase consistency of savings calculations and reduce the calculation burden for direct install or prescriptive measures installed under a custom project application as a custom measure.
- Consider expanding the Evergy TRM to include measures that more accurately reflect measure models that are installed through the program, such as auto-defrost refrigerators.
- Additional data entry controls to verify that unit savings are reported consistently could prevent reduced or inflated claimed savings and improve realization rates. For example, ensuring that LED bulb savings are reported by bulb rather than by fixture, could increase accuracy of reported savings.

Home Energy Report Recommendations

- Evergy and Oracle should assess whether changes made late in the current program year resulted in more thorough review by recipients and, if they did not have this effect, should consider carrying out additional research to determine what drives the thoroughness of report review and how to get customers to read them more thoroughly. Evergy and Oracle can determine whether the changes had the desired effect by continuing to assess customer readership and understanding of, as well as reactions to, the reports.

- Evergy should consider doing additional research to assess what increases motivation or intent to engage in the recommended behaviors and use that information to increase the effectiveness of its various outreach efforts and tools.
- If it has not yet done so, Oracle may also consider discontinuing the practice of telling recipients (and Energy Analyzer users) they are being compared to their "neighbors." A one-mile radius encompasses far more homes than many individuals may consider to be a neighbor. This practice may reinforce an inaccurate interpretation of how the comparison is actually made.

Online Home Energy Audit Recommendations

- Evergy should consider doing additional research to assess what increases motivation or intent to engage in the recommended behaviors and use that information to increase the effectiveness of its various outreach efforts and tools.

Business Demand Response Recommendations

- Evergy staff should continue to work with both the DERMS database provider and the implementation contractor to improve the accuracy of capturing participant performance promptly. After each DR event, providing participant reports of savings will reinforce the program's value to these customers and perhaps encourage greater kW savings efforts.
- The program implementer should continue to look for creative ways to market this program to smaller commercial and industrial customers by scaling the kW enrollment targets. This approach may be especially effective at reaching smaller customers in the more rural Missouri West jurisdiction.

Residential Demand Response Recommendations

- Evergy staff should continue to reinforce customer messaging regarding program enrollment as there seems to be some lack of customer understanding about the timing of these events.
- Evergy should continue to offer free smart thermostats to entice new customers into the program.
- The program implementation staff should continue to monitor activation rates through the multiple email strategy, which has led to noticeable increases in new enrollments.

Business Smart Thermostat Recommendations

- See the recommendations in the "Residential Demand Response Recommendations" section above.

Pay As You Save Recommendations

- Evergy and its third-party implementer should continue using "workarounds" regarding data collection, including deploying the data collection app to accelerate program enrollment.
- The program implementer should continue hiring and training qualified data collectors to augment the data collection process further. ADM can support improvements to the program tracking data by recompleting quarterly data reviews and providing feedback to program staff.
- Every program staff should work with the program implementer to fine-tune marketing activities to focus on "high" energy users as that will likely lead to more qualified participants.
- ADM should complete a follow-up evaluation to review the energy savings of PY2 projects as part of PY3 M&V activities. Such an evaluation would utilize monthly billing data and a regression model to confirm measure savings as originally proposed in the M&V Plan.

Energy-Saving Trees Recommendations

- Send follow-up emails to monitor the tree delivery and follow-up care to ensure that all trees remain healthy and are planted promptly.
- Consider having the Bridging the Gap volunteers assist homeowners in planting the trees, assuming that an appropriate liability release could be developed.
- Continue to offer driveway drop-offs to ensure that the trees are delivered to the program participants.
- Explore strategies to increase program participation among low and moderate-income residents living in these urban areas. These approaches could include allowing tenants to plant trees or working with the landlords to plant trees in the areas managed by these multifamily buildings.
- Conduct additional surveying efforts to better understand where participants are planting their trees and the reasons some trees are not planted or die after planting.

Energy Efficiency Nonprofits Recommendations

- Evergy should consider revising its current smart thermostat installations requirements to include those living in short-term rental properties. The building owner can sign the installation agreement to ensure that the smart thermostats are installed in these premises and remain in place. This modification will provide additional value to both the organizations and Evergy.
- Evergy should follow up with program participants in six months after measure installation. This follow-up will help remind these participants of the available

energy savings opportunities, particularly the recommendations identified through the energy audit. Checking in with these past program participants will also provide additional information needed to help them replace aging HVAC equipment before equipment failure.

HVAC Quality Install Recommendations

- Evergy should consider treating the QI pilot program like a traditional "Tune-Up" program rather than a Commissioning program. Trade allies expressed interest in wanting this change for future program years if the pilot persists.
- Targeting HVAC technicians rather than the HVAC contractor may be beneficial in order to boost participation in performing QI HVAC projects in the future. HVAC technicians are more likely to have invested in the MeasureQuick technology and may be more willing to participate in the program.

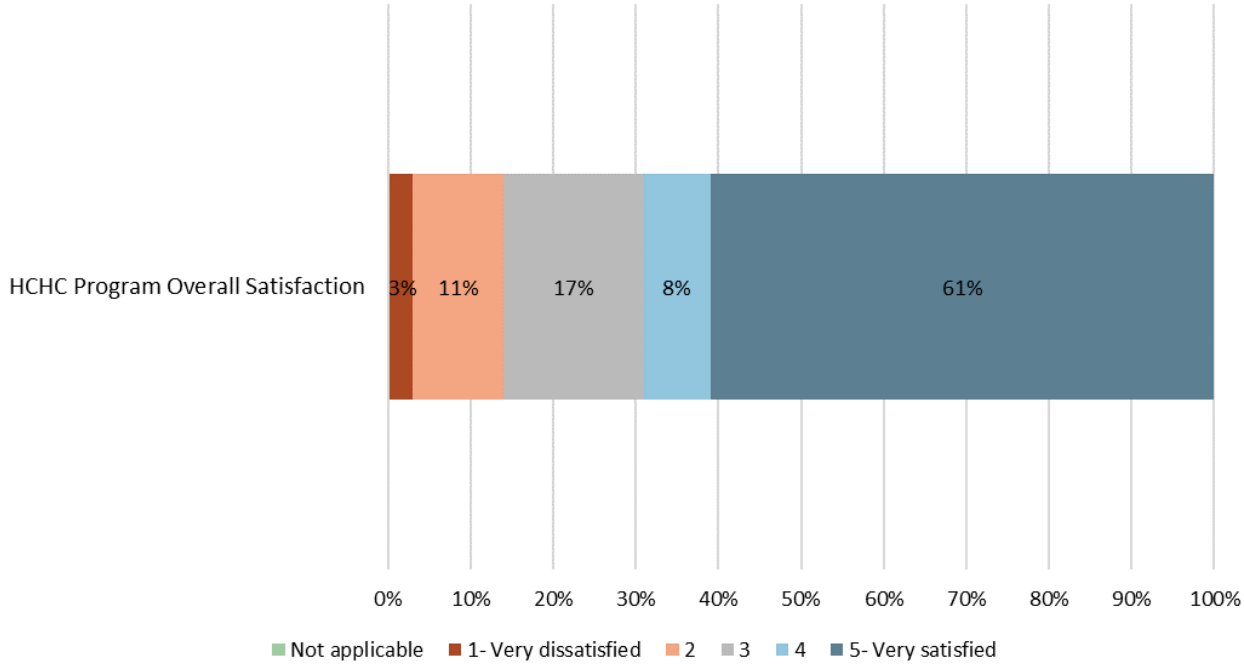
2.6.1 Program Satisfaction

Table 2-14 and Figure 2-1 below summarize customer and trade ally program satisfaction analyzed over the MEEIA Cycle 3 PY2. Customers and trade allies were asked to rank their satisfaction with the respective programs in which they participated. Sixty-nine percent of all trade-allies surveyed in the HCHC program were highly satisfied. The consistently high satisfaction scores among program participants and trade allies are indicative of Evergy's leadership and Product Managers focus on addressing their specific market needs, removing barriers to participation, offering an extensive and comprehensive array of measures and broadening means of communicating with customers and key market players.

Table 2-14: Overall Program Satisfaction Reported by Program Participants

Program Name	Overall Program Satisfaction
Heating, Cooling and Home Comfort	97%
Income-Eligible Multi-Family	90%
Home Energy Report	75%
Online Home Energy Audit	77%
Business Demand Response	65%
Residential Demand Response	67%
Business Smart Thermostats	75%
Pay As You Save	79%
Energy-Saving Trees	81%
Energy Efficiency Nonprofits	100%

Figure 2-1: Overall Program Satisfaction Reported by Trade Allies



3 Impact Evaluation Approaches

This report section describes the impact evaluation activities that ADM performed for Evergy's MEEIA Cycle III Residential and Demand Response Programs

In accordance with the Missouri Energy Efficiency Investment Act (MEEIA) Rules and the Stipulation and Agreement, Evergy Services, Inc. (ESI) (hereafter referred to as Evergy) on behalf of its affiliates Evergy MO West and Evergy Metro, has contracted with ADM Associates to evaluate, measure, and verify the information tracked by Evergy MO West and Evergy Metro for its portfolio of five residential programs, three demand response programs, and four products and services incubator programs for the 3-year program cycle beginning January 1, 2020 through December 31, 2022. Specific Evergy programs covered by this evaluation include:

Residential Programs:

- Heating Cooling & Home Comfort
- Energy Savings Products
- Income-Eligible Multi-Family
- Home Energy Report
    - Income-Eligible Home Energy Report: Metro Only
- Online Home Energy Audit

Demand Response Programs:

- Business Demand Response
- Residential Demand Response
- Business Smart Thermostats

Products & Services Incubator Programs:

- Pay As You Save
- Energy-Saving Trees
- Energy Efficiency Nonprofits
- HVAC Quality Install

In accordance with the Missouri Code of State Regulations 20 CSR 4240-22.070 (8) (Missouri regulations), Evergy is required to complete an impact evaluation for each program using one or both methods detailed below.

Impact evaluation methods 1: *At a minimum, comparisons of one (1) or both of the following types shall be used to measure program and rate impacts in a manner that is based on sound statistical principles:*

a. *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; and*

b. *Comparisons between program and demand-side rate participants' loads and those of an appropriate control group over the same period.*

Load impact measurement protocols 2: *The* evaluator *shall develop load-impact measurement protocols that are designed to make the most cost-effective use of the following types of measurements, either individually or in combination:*

a. *Monthly billing data, hourly load data, load research data, end-use load metered data, building and equipment simulation models, and survey responses; or*

b. *Audit and survey data on appliance and equipment type, size and efficiency levels, household characteristics, or energy-related building characteristics.*

Table 3-1 presents ADM's methods and protocols for the impact evaluation with the associated Missouri requirement.

Table 3-1: Missouri Regulations Impact Evaluation Methods and Protocols

Sector	Program	Impact Evaluation Method	Impact Evaluation Protocol
Residential	Heating Cooling & Home Comfort	1A	2B
	Energy Saving Products	1A	2B
	Income-Eligible Multi-Family	1A	2B
	Home Energy Report	1B	2A
	Online Home Energy Audit	N/A	N/A
Demand Response	Business Demand Response	1A	2A
	Residential Demand Response	1B	2A
	Business Smart Thermostats	1B	2A
Products & Services Incubator	Pay As You Save	1A	2A
	Energy-Saving Trees	1A	2A
	Energy Efficiency Nonprofits	1A	2A
	HVAC Quality Install	1A	2A

3.1 Data Collection and Measure Verification

ADM reviewed data tracking systems associated with the program to ensure that the data provides sufficient information to calculate energy and demand impacts. The data review included an assessment of whether savings reported in the tracking system comply with energy savings calculations and guidelines set by the Evergy Technical Reference Manual (Evergy TRM). Data sources used for the evaluation of programs for which ADM calculated kWh and kW impacts are reported in Table 3-2 below.

Table 3-2: Data Sources Used for Residential and Demand Response Program Evaluation

Data Sources Used	Heating Cooling and Home Comfort	Energy Savings Products	Income Eligible Multi-Family	Home Energy Report	Business Demand Response	Residential Demand Response	Smart Thermostats	PAYS	Pilots
Program tracking data from Nexant's Energy Data tracking system	X	X	X	X	-	X	X	X	X
Program tracking data from Evergy's Distributed Energy Management Resource System (DERMS).	-	-	-	-	X	-	-		
Unit savings algorithms from the Evergy Technical Reference Manual	X	X	X-	-	-	-	-	X	X
Program applications and supporting documentation;	X	-	-	-	-	-	-	-	-
Participant survey data collected through online survey	X	-	-	X	-	-	-	-	X
Property manager survey data	-	-	X	-	-	-	-	-	-
General population survey data from Evergy customers obtained via online survey	X	X	-	X	-	-	-	-	-
Secondary data from ENERGY STAR databased of Certified Products and/or AHRI	X	X	X	-	-	-	-	-	-
Geospatial map (shapefile) of Evergy Missouri West and Evergy Missouri Metro service territories	-	X	-	-	-	-	-	-	-

Data Sources Used	Heating Cooling and Home Comfort	Energy Savings Products	Income Eligible Multi-Family	Home Energy Report	Business Demand Response	Residential Demand Response	Smart Thermostats	PAYS	Pilots
Billing Consumption Data (Monthly)	-	-	-	X	-	-	-	-	-
Billing Consumption Data (15 Minute Interval)	-	-	-	X	X	-	-	-	-
Schedule of Program Events	-	-	-	-	X	X	X	-	-
National Oceanographic and Atmospheric Administration (NOAA) Weather Data	-	-	-	X	X	X	X	-	-

Table 3-3 below summarizes the data collection activities and corresponding impact evaluation research objectives.

Table 3-3: Summary of Approaches and Data Collection

Data Collection Activity	Impact Evaluation Research Objectives
Program Tracking Data Review and Audit: Nexant IEnergy & DERMS	Verify that the tracking data provides sufficient information to calculate energy and demand impacts
	Verify proper application of unit energy savings estimates and algorithms
	Audit data to insure there are no duplicate or erroneous entries
Online Participant Survey	Verify measure installation
	Assess customer purchasing and decision-making processes; estimate net-to-gross ratio
	Assess customer satisfaction with measures and overall program
General Population Email Survey	Verify upstream measure installation
	Assess customer purchasing and decision-making processes; estimate net-to-gross ratio
	Assess customer satisfaction with recent purchases of program promoted measures
	Determine drive times for leakage analysis
Program applications and supporting documentation	Verify tracking data inputs
Property manager survey data	Determine installation rates for Income-Eligible Multi-Family Program
Secondary data from ENERGY STAR databased of Certified Products and or AHRI	Verify claimed wattage and HVAC SEER
Geospatial map (shapefile) of Evergy Missouri West and Evergy Missouri Metro service territories	Used for leakage analysis of upstream products
Billing Consumption Data	Inputs in regression models
Schedule of Program Events	
National Oceanographic and Atmospheric Administration (NOAA) Weather Data	

Table 3-4 below summarizes sample sizes for each evaluated program.

Table 3-4: Sample Size by Program

Program	Measure	Sample Size
Heating Cooling & Home Comfort	DI Kit Measures	Census of participants
	Home Envelope and Weatherization Measures	
	Energy-Efficient HVAC Equipment	
Energy Savings Products	LED lighting measures	Sample of 994 customers
Income Eligible Multi-Family	Direct install, prescriptive and custom measures	Sample of 10 of 17 property decision-makers
Home Energy Report	Home Energy Reports	Census of participants
Business Demand Response	Commercial Customer Incentive	Census of participants
Smart Thermostats	Business Smart Thermostats and Residential Demand Response	Census of participants

3.1.1 Estimating Net Savings

Net-to-Gross Ratio

Program implementation is designed to minimize free-ridership and maximize net-to-gross ratios, while ensuring the program does the following: appropriately influences customer decisions, accurately tracks and verifies equipment and its installation, and drives market transformation.

ADM used self-reported data collected as part of program participant, general population, and trade ally surveys, to assess free ridership. A separate free ridership estimate was developed for each category of measures by program. ADM assessed spillover at the program level as described below.

Self-report approaches were used for both free ridership and spillover assessment. Self-report free ridership assessment relied upon responses from program participants. Program participants were identified from the tracking data.

Free Ridership

The free ridership self-report uses participant and trade ally surveys to develop an estimate of savings that would have occurred absent the program. Data was collected on contextual factors that influence customers' decisions in addition to customers' perceptions of program influence to estimate free ridership. Customers were asked questions about the circumstances around the decision to implement measure. The surveys focused on factors that limit energy efficiency investments that the program may directly address. For example,

- Would the customer still have installed the measure or allocated the money for the efficiency improvement without the program incentive?
- Did the customer already have plans to install the equipment before learning of the program or is the program effectively reaching customers who would otherwise not be engaged in making the efficiency improvement?
- Did the customer have previous experience with similar efficiency measures that demonstrate a familiarity with them? Were they aware that they could save on energy costs before exposure to program informational supports such as energy audits?

The participant surveys included questions that directly ask customers to estimate the influence of the program and/or their likelihood of taking the same action if the program was not available. The responses to the questions about the decision-making context provide more information to help make decisions about program design and implementation than responses to rating scale questions.

For some projects, there may be program influences that are not directly observable by program participants. In such cases the participant's response creates an incomplete picture of the program's influence. For example, a contractor's recommendation may have influenced a customer's decision and that contractor's recommendation may have in turn been influenced by the program. In the case of the HCHC program, the ADM evaluation team used enhanced self-report methodologies that incorporated self-reports from other market actors in addition to participant self-reports.

Survey respondents were asked a series of questions to elicit feedback regarding influences on their decision to participate in the program. Each respondent was assigned a free ridership score based on a consistent free ridership scoring algorithm. The participant surveys, trade ally surveys, and a flow chart showing the free ridership scoring algorithm from the survey are provided in the accompanying appendices.

Participant and Non-Participant 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 non-participants. Among participants, the program influence typically is understood to be the program participation itself. Among non-participants, the program influence could result from program marketing or outreach, including engagement with program representatives or trade allies. “Like spillover” refers to program-induced actions participants make outside the program that are of the same type as those made through the program, while “non-like spillover” refers to program-induced actions participants make outside the program that are of a different type as those made through the program.

Like and non-like spillover was assessed by asking survey respondents (participants and non-participants) if they have implemented any efficient equipment in the service territory without receiving a program incentive. Respondents that indicate that they did implement such equipment were asked a series of follow-up questions to facilitate estimation of the energy savings associated with the equipment and to assess the program’s influence on the equipment implementation.

4 Process Evaluation Approach

This chapter describes the process evaluation activities that ADM performed for Evergy's Residential & Demand Response programs.

The process evaluations included the following activities:

- Annual reviews of the program database and materials and in-depth interviews with Evergy and implementer staff
- Participant surveys
- Trade ally surveys
- Feedback from surveys and/or interviews with program contractors and installers

4.1 Program Tracking Review

The first critical task was to review the program databases that complemented the impact evaluation review of the program databases. Specifically, this review determined that the program databases are capturing all critical information. The database review included summaries of the essential program metrics such as:

- Number of measures installed by program and program delivery channel
- Number of unique participants by program and by utility relative to program participation estimates
- Review of unit level savings assumptions

4.2 Program Staff and Implementer Review

ADM conducted interviews with both the program staff and implementer staff. ADM conducted interviews with the utility program staff responsible for deploying the programs. The in-depth interviews were conducted though video conferences. These interviews discussed the respondent's roles and responsibilities for the program, the effectiveness of current program design, assessed overall program operations, outreach and marketing approaches, customer and contractor satisfaction, barriers to participation and areas for program improvement.

ADM also conducted interviews with appropriate staff from the various implementation contractors involved in program operations. The in-depth interviews were conducted via video conference. Discussions covered the same process evaluation topics to ensure consistency across interview guides.

4.3 Trade Ally Surveys and Interviews

ADM conducted trade ally surveys and interviews to provide additional information regarding specific downstream and midstream program activities, as well as to provide inputs for ADM's improved spillover estimation method. The annual online survey of trade allies for the HCHC Program included questions addressing program awareness, contractor satisfaction, barriers to program participation, and current installation rates and market trends.

4.4 Property Manager Interviews

As a part of ADM's process evaluation for the IEMF Program, ADM surveyed property owners or managers who participated in the program. The survey gathered data on participant knowledge and awareness of the program, business practices, satisfaction, reasons for participating, decision-making process, as well as general attitudes and behaviors regarding energy efficiency, the IEMF Program, and Evergy as their utility.

4.5 Participant Surveys

ADM conducted an email survey of a sample of 2021 participants for the HCHC Program. These online surveys assessed satisfaction and customer decision-making, including free ridership and spillover questions, and to identify areas for program improvement. A customer engagement tracking survey was also deployed in partnership with the implementor to determine household demographics, customer satisfaction, and control group vs. treatment group comparisons for the Home Energy Report program.

4.6 General Population Survey

ADM conducted an online general population survey in the residential sector for PY2 MEEIA 3 program cycle. The purpose of this survey was to:

1) Provide insights regarding overall awareness of Evergy's Program offerings among program participants and non-participants
2) Assess the influence of programs and trade allies (contractors and distributors) on equipment purchases to assess spillover rates

Evergy customer records were used to develop the sample frame for the general population survey. The sample and programed survey link was developed by ADM and provided to the Evergy customer engagement team to send out. This approach allowed Evergy to operate within the customer email contact guideline while allowing ADM to independently collect the data necessary for the evaluation effort. The survey was deployed twice during the calendar year.

5 Cost-Effectiveness Approach

5.1 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 PY2 TRM. A table listing cost effectiveness calculation inputs is provided in Section 5.3.

5.2 Cost Tests Utilized

ADM performed the Participant Cost Test (PCT), Ratepayer Impact Measure (RIM), Utility Cost Test (UCT), Total Resource Cost test (TRC), and Societal Cost Test (SCT) for PY2. These tests help to provide a wholistic perspective on the program's annual cost effectiveness.

MEEIA Cycle 3 uses the Total Resource Cost (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 and accurate and is intended to answer a distinct set of questions. The questions to be addressed by each cost test[6] are shown in Table 5-1.

[6] 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 5-1: Questions Addressed by the Various Cost Tests

Cost Test	Questions Addressed
Total Resource Cost Test (TRC)	■ What is the regional benefit of the energy efficiency project including the net costs and benefits to the utility and its customers? ■ Are 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 (UCT – also referred to as the Program Administrator Cost Test or PACT)	■ Do total utility costs increase or decrease? ■ What is the change in total customer bills required to keep the utility whole?
Ratepayer Impact Measure (RIM)	■ What is the impact of the energy efficiency project on the utility's operating margin? ■ Would the project require an increase in rates to reach the same operating margin?
Societal Cost Test (SCT)	■ 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 (PCT)	■ 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 non-participant perspectives, respectively. The scope of the benefit and cost components included in each test ADM performed are summarized in Table 5-2.

Table 5-2: 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 service territory)	■ 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 service territory, 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

5.3 Source of Cost Effectiveness Input Data

Table 5-3: 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	
EUL	Evergy TRM (2021-01-01) and IL TRM
Equipment Costs	
Energy and peak demand savings	ADM program evaluations
NTG	
Program Incentives	Program Tracking Data

6 Evaluation Methodology by Program

6.1 Heating, Cooling and Home Comfort

The Heating, Cooling, and Home Comfort Program provides educational and financial incentives to residential customers by increasing awareness and incorporation of energy efficiency into their homes, while also generating cost-effective energy and demand savings for Evergy. The program encourages home improvements that increase operational energy efficiency and home comfort. It consists of three primary components: 1) Energy Savings Kit, 2) Insulation and Air Sealing, and 3) HVAC.

The program seeks to provide financial incentives on a variety of categorically applicable measures and drive market adoption of energy efficient measures and practices through the education of customers and the community of local contractors. This program is eligible to customers that own or rent a residence or are building a new residence. HVAC contractors are also eligible for participation as trade allies for the program. In PY2, customers could receive the following eligible equipment upgrades:

Table 6-1: Program Equipment Offered

Program Component	Measure
Energy Savings Kit*	LED Lightbulbs
	Faucet Aerators
	Low Flow Showerheads
	Pipe Insulation
	Advanced Power Strips
Insulation and Air Sealing	Attic/Ceiling Insulation
	Air Sealing
HVAC	Central AC
	Air Source Heat Pump
	Ground Source Heat Pump
	Ductless Mini-Split Heat Pump

*There were a small number of furnace filter alarms included in the Energy Savings Kit Program in 2021.

Performance metrics for 2021 are summarized in Table 6-2. Overall, gross verified energy savings were close to the targeted value, while the gross verified peak demand savings exceeded the targeted value.

Table 6-2: Heating, Cooling, and Home Comfort Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro
Number of Participants*	5415		
Energy Savings (kWh)			
Targeted Energy Savings	12,582,480	7,767,640	4,814,841
Reported Energy Savings	10,591,013	6,796,548	3,794,464
Gross Verified Energy Savings	9,699,732	6,140,260	3,559,472
Net Verified Energy Savings	7,412,935	4,612,617	2,800,318
Peak Demand Reduction (kW)			
Targeted Peak Demand Savings	5,617.19	3,392.19	2,225.00
Reported Peak Demand Savings	7,022.35	4,361.07	2,661.28
Gross Verified Peak Demand Savings	6,833.51	4,193.47	2,640.05
Net Verified Peak Demand Savings	4,915.19	3,000.57	1,914.62
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.03	1.02	1.04

*Represents the number of unique account numbers in the program.

6.1.1 Gross Impact Methodologies

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

- Program tracking data census. The tracking data was reviewed for a census of homes and measures. The data was verified for duplicate participation within the program and to ensure there were no discrepancies within the tracking data.
- Measure installation verification. In-service rates (ISR) were calculated by measure for a sample of program participants using data from the participant survey.
- HVAC efficiency verification. The AHRI data from a sample of approximately 150 HVAC units (70 central ACs, 40 air source heat pumps, 20 ground source heat pumps, and 20 ductless mini-split heat pumps) and from the program were pulled. The efficient SEER and EER values reported in the tracking data were then verified using the AHRI database for each unit.
- Reported savings review. 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 impacts primarily relied on energy savings calculations and algorithms from the Evergy TRM. The data collected from the participant survey, along with

program tracking data were used as inputs to the savings algorithms as listed in the Illinois Technical Reference Manual (IL TRM) as outlined in the Evergy TRM.

6.1.2 Net-to-Gross (NTG) Estimation

The net to gross estimation for the program includes calculation of measure-level free ridership score, project-level free ridership score, and spillover score. The participant survey included questions aimed at estimating program attribution and identifying spillover measures. Survey respondents were asked a series of questions aimed at determining the program influence on the purchase and installation decisions for each installed measure. Each respondent was assigned a free ridership score (ranging from 0 for no free ridership to 1 for complete free ridership) based on their responses for each measure they installed. The measure-level free ridership of each survey participant was then weighted by the measure energy savings and averaged to determine the project-level free ridership score. This score was applied to the other measures where a survey response was not obtained.

6.1.3 Impact Evaluation Summarized Findings

Table 6-3 through Table 6-5 summarize the verified gross and net energy and demand savings for the Heating, Cooling, and Home Comfort Program.

Table 6-3: Program Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reductions (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reductions (kW)	RR_{kWh}	RR_{kW}
MO West	6,796,548	4,361.07	6,140,260	4,193.47	90%	96%
MO Metro	3,794,464	2,661.28	3,559,472	2,640.05	94%	99%
Total	**10,591,013**	**7,022.35**	**9,699,732**	**6,833.51**	**92%**	**97%**

Table 6-4: Verified Gross and Net Annual Energy Savings (kWh)

Jurisdiction	Spillover (Participant)	Spillover (Non-Participant)	Free Ridership	NTG Ratio	Gross Verified Energy Savings (kWh)	Net Energy Savings (kWh)
MO West	2%	14%	40%	75%	6,140,260	4,612,617
MO Metro	2%	14%	37%	79%	3,559,472	2,800,318
Total			**40%**	**76%**	**9,699,732**	**7,412,935**

Table 6-5: Verified Gross and Net Peak Demand Reduction (kW)

Jurisdiction	Spillover (Participant)	Spillover (Non-Participant)	Free Ridership	NTG Ratio	Gross Verified Demand Reductions (kW)	Net Demand Reductions (kW)
MO West	2%	14%	44%	72%	4,193.47	3,000.57
MO Metro	2%	14%	43%	73%	2,640.05	1,914.62
Total			**44%**	**72%**	**6,833.51**	**4,915.19**

6.2 Energy Saving Products

The Energy Saving Products (ESP) program focuses on promoting, cultivating, and facilitating the adoption of energy efficient products in residential settings. The program has been designed with two key focuses:

- *Education* – the expansion of both residential customer and sales associate knowledge of and familiarity with the advantages of various energy efficient products available; and
- *Efficient Product Adoption* – market transformation resulting from increased awareness of the benefits of energy efficient technology and is supported through financial, point-of-sale incentives for the purchase of products that meet high efficiency standards.

Through the ESP program, customers can receive instant discounts for a variety of efficient measures. In 2020 and 2021 these included a selection of LED lighting measures, including standard, specialty, and smart bulbs. In future years, the program may be expanded to include other measures such as room air conditioners, advanced power strips, smart thermostats.

Table 6-6: Measures and Quantities

Jurisdiction	Measure Type	Package Quantity	Bulb Quantity	Reported kWh	Reported kW
MO West	Standard LED	108,905	400,729	14,473,610	1,763.21
	Specialty LED	71,871	232,461	10,391,239	1,441.26
MO West	Standard LED	134,958	500,233	18,067,516	2,201.03
	Specialty LED	90,714	278,572	12,452,447	1,727.15
Total		**406,448**	**1,411,995**	**55,384,812**	**7,132.64**

Table 6-7 provides program performance metrics for the ESP Program.

Table 6-7: Energy Savings Products Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro
Number of Rebated Packages	406,448	225,672	180,776
Energy Impacts (kWh)			
Targeted Energy Savings	20,139,568	10,416,978	9,722,590
Reported Energy Savings	55,384,812	30,519,963	24,864,849
Gross Verified Energy Savings	52,855,535	29,168,216	23,687,319
Net Verified Energy Savings	33,054,253	18,743,260	14,310,993
Peak Demand Impacts (kW)			
Targeted Peak Demand Reduction	1,480.66	755.85	724.81
Reported Peak Demand Reduction	7,132.64	3,928.17	3,204.47
Gross Verified Peak Demand Reduction	6,736.33	3,690.37	3,045.96
Net Verified Peak Demand Reduction	4,210.14	2,371.64	1,838.50
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	3.31	3.11	3.62

6.2.1 Data Sources

Several primary and secondary data sources were used for the evaluation. Tracking data and supporting documentation for the program was obtained from the program implementor. This tracking data was used as the basis for quantifying participation and assessing program impacts. A general population survey was sent to a randomly selected, representative sample of Evergy's residential customers. ADM also conducted

in-depth interviews with program staff at Evergy and the implementation contractor to gain a better understanding of ESP's program design, operations, challenges, and future opportunities.

6.2.2 Gross Impact Methodologies

Reported energy and peak demand impacts for the program were calculated using savings algorithms from the Evergy TRM. ADM's evaluation consisted of: (1) reviewing the assumptions and inputs associated with the energy savings values, (2) calculating verified per-unit impacts and (3) making appropriate adjustments for in-service rates and cross sector sales based on survey responses.

6.2.3 Net-to-Gross (NTG) Estimation

The program Net-to-Gross ratio was calculated using responses from the online survey of participants to determine the free-ridership rate for standard and specialty bulbs in each jurisdiction. Program spillover was estimated based on a review of spillover rates for similar programs in other states. Additional details regarding the program net-to-gross ratio estimation are available in Appendix A of the Appendices Report.

6.2.4 Impact Evaluation Summarized Findings

Table 6-8 through Table 6-10 summarize the verified gross and net energy savings and demand reduction.

Table 6-8: Program Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reduction (kW)	RR_{kWh}	RR_{kW}
MO West	30,519,963	3,928.17	29,168,216	3,690.37	96%	94%
MO Metro	24,864,849	3,204.47	23,687,319	3,045.96	95%	95%
Total	**55,384,812**	**7,132.64**	**52,855,535**	**6,736.33**	**95%**	**94%**

Table 6-9: Verified Gross and Net Energy Savings (kWh)

Jurisdiction	Spillover		Free Ridership	Leakage	NTG Ratio	Gross Verified Energy Savings (kWh)	Net Energy Savings (kWh)
	Participant	Non-Participant					
MO West	7.0%	0.0%	41%	1.4%	64%	29,168,216	18,743,260
MO Metro	7.0%	0.0%	45%	1.4%	60%	23,687,319	14,310,993
Total					**63%**	**52,855,535**	**33,054,253**

Table 6-10: Verified Gross and Net Peak Demand Reduction (kW)

Jurisdiction	Spillover		Free Ridership	Leakage	NTG Ratio	Gross Verified Demand Reduction (kW)	Net Energy Savings (kW)
	Participant	Non-Participant					
MO West	7.0%	0.0%	41%	1.4%	64%	3,690.37	2,371.64
MO Metro	7.0%	0.0%	45%	1.4%	60%	3,045.96	1,838.50
Total					**62%**	**6,736.33**	**4,210.14**

6.3 Income-Eligible Multi-Family

The IEMF program provides qualifying, income-eligible properties with assistance through energy assessments, program applications, technical support, and upgrade incentives. Evergy has contracted with ICF International Inc. to manage and implement the program. The program consists of three components: direct install, prescriptive, and custom measures. During 2021, the direct install measures included low-flow faucet aerators and showerheads, advanced power strips and LEDs that the implementation contractor installed in apartment units. Prescriptive measures were installed during building renovations; measures include air source heat pumps, bathroom exhaust fans, programable thermostats, and energy efficient appliances. Custom projects included the installation of in-unit and common area measures including LED lighting, water saving measures, heat pumps, thermostats and large equipment replacements (an elevator motor and a whole building chiller). Residents and property managers benefitted from the measures by increasing the value of the property, reducing utility bills, and making the property more comfortable, healthier, and safer. Table 6-11 shows the quantities of all measures in the program.

Table 6-11: Program Equipment Installed in PY2

Measure		Quantity
Direct Install	Faucet Aerator	1,569
	Smart Power Strip	4
	Lighting	21,887
	Showerhead	775
Prescriptive	Air Source Heat Pump	98
	Bathroom Fan	125
	Dishwasher	88
	Refrigerator	52
	Programmable Thermostat	143
	Washing Machine	1
Custom	Aerator	74
	Air Source Heat Pump	50
	Chiller	1
	Elevator	1
	Common Area Exterior LED	284
	Common Area Interior LED	1,175
	In Unit LED	1,800
	Refrigerator	36
	Showerhead	48
	Smart Thermostat	6
Total		**28,217**

Table 6-12 provides a summary of program metrics for the PY2. Reported annual energy savings exceeded program projections. Gross verified energy savings (kWh) had a 96 percent realization rate and a peak demand reduction (kW) had a realization rate of 87 percent. Program targets and PY2 savings are shown in Table 6-12.

Table 6-12: Income-Eligible Multi-Family Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro
Number of Sites	21	9	12
Energy Impacts (kWh)			
Targeted Energy Savings	2,342,925	1,181,931	1,160,994
Reported Energy Savings	2,449,466	1,429,036	1,020,431
Gross Verified Energy Savings	2,278,225	1,316,934	961,292
Net Verified Energy Savings	2,278,225	1,316,934	961,292
Peak Demand Impacts (kW)			
Targeted Peak Demand Reduction	450.37	222.82	227.55
Reported Peak Demand Reduction	374.62	251.68	122.93
Gross Verified Peak Demand Reduction	307.14	194.51	112.63
Net Verified Peak Demand Reduction	307.14	194.51	112.63
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	0.46	0.45	0.47

6.3.1 Data Sources

Data collection IEMF program activities consisted of program materials, surveys, and interviews program staff. Evergy uses Sightline project tracking database in conjunction with Nexant reporting services as its central tracking and reporting system. Property decisionmaker surveys provided self-reported data for the impact analysis and process evaluation. Ten property decision-makers (58 percent) completed the survey. The process evaluation gained additional perspective from in-depth interviews with Evergy and ICF program staff.

6.3.2 Gross Impact Methodologies

ADM used the following steps to evaluate IEMF program gross energy savings and peak demand reduction.

- Reviewed the program tracking data to determine the scope of the program and to ensure there were no duplicate or erroneous project entries.
- Attempted a survey of a census of properties, first with emailed surveys, followed by direct calls to property contacts at each of the 21 properties in the program. A

survey of tenants was not attempted. ADM has found that tenant survey in low-income multifamily residences yield low responses and unreliable data.

- Reviewed all available data for each site including invoices, equipment cut sheets, pre- and post-inspection reports, and estimated savings calculators. This review process informed ADM's evaluation by identifying potential uncertainties and missing data, as well as providing model specifications and other measure characteristics.
- Calculated verified gross savings. The sources for energy savings algorithms are the 2021 Evergy Technical Reference Manual ("TRM") and Illinois TRM (version numbers are specified by measure).

6.3.3 Net-to-Gross (NTG) Estimation

The Net-To-Gross Ratio (NTGR) for the IEMF program is stipulated at 1.00, due to (1) the specific targeting of the low-income sector; and (2) the small contributions of the program to the overall portfolio saving, which do not justify the cost of conducting primary research needed to adjust the NTGR from stipulated values.

6.3.4 Impact Evaluation Summarized Findings

Table 6-13, Table 6-14 and Table 6-15 summarize the verified energy and demand savings for the IEMF program.

Table 6-13: Program Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reduction (kW)	RR_{kWh}	RR_{kW}
MO West	1,429,036	251.68	1,316,934	194.51	92%	77%
MO Metro	1,020,431	122.93	961,292	112.63	94%	92%
Total	**2,449,466**	**374.62**	**2,278,225**	**307.14**	**93%**	**82%**

Table 6-14: Verified Gross and Net Annual Energy Savings (kWh)

Jurisdiction	NTG Ratio	Gross Verified Energy Savings (kWh)	Net Energy Savings (kWh)
MO West	100%	1,316,934	1,316,934
MO Metro	100%	961,292	961,292
Total	**100%**	**2,278,225**	**2,278,225**

Table 6-15: Verified Gross and Net Peak Demand Reduction (kW)

Jurisdiction	NTG Ratio	Gross Verified Demand Reduction (kW)	Net Demand Reduction (kW)
MO West	100%	194.51	194.51
MO Metro	100%	112.63	112.63
Total	**100%**	**307.14**	**307.14**

6.3.5 Program Metrics

MEEIA Cycle 3 specifies two program metrics to be used in evaluating the performance of the Income-Eligible Multi-Family program.

- Average Percent Energy Savings per Project: "The Average Percent Energy Savings Per Project performance element will be calculated using a pre-project property energy benchmarking tool to identify each project's energy usage and the TRM's energy savings calculations. Each Program Year, the total number of projects will be divided by the total number of kWh's saved for a project average."[7]
- Spend of at least 85% of Budget: "The Spend of at least 85 percent of Budget performance element will create a threshold criterion that ensures at least 85 percent of the Commission-approved annual budget (administrative cost, plus customer incentive cost) for the program year is spent. The actual spend will be reported directly out of the Company's accounting system and included in the EM&V report. The Company will also provide a list of 'lock-in projects' and their locked-in date for inclusion for the program year spend."[8]

[7] MEEIA 3 (2019 – 2022) filing, Nov 29, 2018. pg 59
[8] MEEIA 3 (2019 – 2022) filing, Nov 29, 2018. pg 59

Average Percent Energy Savings per Project

ADM reviewed the total site consumption for each project reported in the program tracking data and calculated reported savings as a percentage of total site consumption prior to project completion. The average percent energy savings per project was 15 percent. One new construction project was excluded from the calculation as no pre-treatment consumption existed. Average percent savings by jurisdiction is reported in Table 6-16.

Table 6-16: Average Percent Energy Savings by Jurisdiction

Jurisdiction	Total Energy Use	Verified Total kWh	% Savings
MO West	5,066,223	1,151,951	23%
MO Metro	8,698,245	961,292	11%
Total	**13,764,468**	**2,113,243**	**15%**

Spend of at least 85 Percent of Budget

The total 2021 program expenditures were 89 percent of the annual budget, exceeding the 85 percent spending requirement (see Table 6-17). Long lead projects are projects that are approved in one year but not completed until the following year; long lead projects are included in the expenditure calculation of the year the expense is approved. As such, 2021 long lead time projects were added to this year's expenditures and 2020 long lead projects that were included in the 2020 calculation of percentage of budget spent were removed from the 2021 calculation.

Table 6-17: Program Budget and Spending in 2021

Jurisdiction	2021 Program Budget	2021 Program Spending	2021 Long Lead Spending	2020 Long Lead Spending	Adjusted 2021 Spending	Percentage of Budget Spend
MO West	$891,255	$819,532	$99,321	$181,781	$737,071	83%
MO Metro	$781,827	$670,433	$343,909	$155,818[9]	$858,524	110%
Total	**$1,673,082**	**$1,489,965**	**$443,229**	**$337,599**	**$1,595,595**	**95%**

[9] The 2020 IEMF evaluation include long lead expenditures of $175,959 for Missouri Metro. The 2020 long lead expenses were later revised to $155,818. With this revision, the total 2020 spending was 96 percent of the budget, exceeding the 85 percent threshold requirement for PY1.

6.4 Home Energy Report

The Home Energy Report Program is designed to provide information to residential customers and intended to educate and influence customer's behavior to lower energy usage. The Home Energy Report is delivered in paper and/or email format and contains several informative modules designed to help customers understand and manage their home energy consumption. The households receive personalized information about their own energy consumption as well as comparisons of their usage to household energy usage by similar customers, called "neighbors" in the reports. These reports also include information on other Evergy energy-efficiency programs to encourage further home improvements towards reduced energy usage. This normative information on electric usage and targeted tips on energy saving behaviors is aimed to reduce participant households' energy consumption.

Table 6-18: Summary of Evergy Home Energy Report Program Participation

Jurisdiction	Cohort	Treatment Start Date	Number of Treatment Group Customers	Number of Control Group Customers
MO West	201309_e_gmo	September 2013	29,341	14,924
	201503_e_gmo	March 2015	8,164	5,961
	201604_e_gmo	April 2016	44,617	5,614
	201706_e_gmo	June 2017	14,132	6,622
	201904_e_gmo	April 2019	37,889	14,958
	202002_e_gmo	March 2020	22,136	8,818
MO Metro	201407_e_high_users	April 2014	49,889	6,678
	201503_e_kmo	May 2015	3,229	2,561
	201607_e_kmo	June 2016	7,011	4,542
	202002_e_kmo	July 2020	30,325	15,392
MO Metro: Low-Income	201407_e_low_income	August 2014	8,525	5,213
Total			**255,258**	**91,283**

PY2 performance metrics are summarized in Table 6-19.

Table 6-19: Home Energy Report Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro	MO Metro Low-Income
Number of Participants*	255,258	156,279	90,454	8,525
Energy Savings (kWh)				
Targeted Energy Savings	32,862,521	20,355,375	9,579,000	2,928,146
Reported Energy Savings	41,454,763	23,194,337	17,764,315	496,111
Gross Verified Energy Savings	39,309,811	22,654,916	15,173,099	1,481,796
Net Verified Energy Savings	39,309,811	22,654,916	15,173,099	1,481,796
Peak Demand Reduction (kW)				
Targeted Peak Demand Savings	4,116.02	2,550.00	1,200.00	366.02
Reported Peak Demand Savings	8,397.18	4,302.65	3,922.40	172.13
Gross Verified Peak Demand Savings	6,604.47	3,806.27	2,549.24	248.96
Net Verified Peak Demand Savings	6,604.47	3,806.27	2,549.24	248.96
Benefit / Cost Ratios				
Total Resource Cost Test Ratio	1.42	1.35	1.54	-
Total Resource Cost Test (Income-Eligible HER)	0.48	-	0.48	-

*Represents the number of unique account numbers in the program

6.4.1 Data Sources

Data for this analysis included tracking data for participant and nonparticipant accounts. This tracking data included account active and inactive dates, program participation start and end dates, and reported kWh savings.

6.4.2 Gross impact methodologies

The work effort 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 annually billed consumption differences between treatment and control groups via regression modeling;
4. Estimation and removal of cross-participant savings from other programs (cross-participation);
5. Estimation of demand savings; and

6. Estimation of program attrition.

ADM used difference-in-differences panel linear regression models to estimate energy savings for the treatment group of each cohort. The explored methods required monthly billing data for the program participants and similar data for a comparable counterfactual group. All groups passed equivalency tests and therefore did not require the evaluators to create any ad-hoc control groups. All final regressions used for reported savings were independently applied from the panel regression models.

6.4.3 Net-to-Gross (NTG) Estimation

Because the HERs program is designed as a randomized control trial, ADM uses a net-to-gross score of 1.

6.4.4 Impact Evaluation Summarized Findings

The Home Energy Report Program verified savings were found to be 39,309,811 kWh with an average annual household savings value of 175.49 kWh. A summary of gross and net verified energy and demand savings is shown in Table 6-19.

Table 6-20 Reported Gross Energy and Demand Savings

Jurisdiction	Reported Energy (kWh)	Reported Demand (kW)	Gross Verified Energy (kWh)	Gross Verified Demand (kW)	RR_{kWh}	RR_{kW}
MO West	23,194,337	4,302.65	22,654,916	3,806.27	97.67%	88.46%
MO Metro	17,764,315	3,922.40	15,173,099	2,549.24	85.41%	64.99%
MO Metro Low-Income	496,111	172.13	1,481,796	248.96	298.68%	144.63%
Total	**41,454,763**	**8,397.18**	**39,309,811**	**6,604.47**	**94.83%**	**78.65%**

Table 6-21: Home Energy Report Program Impact Evaluation Results

Cohort	Reported kWh Savings (kWh)	Reported Demand Savings (kW)	Verified kWh Savings (kWh)	Verified Demand Savings (kW)	Verified kWh Realization Rate	Verified kW Realization Rate
kcpl_201309_e_gmo	5,922,946	318.29	5,883,888	988.56	99.34%	310.58%
kcpl_201503_e_gmo	2,656,010	624.15	2,375,501	399.11	89.44%	63.94%
kcpl_201604_e_gmo	6,814,757	1,411.53	6,573,844	1,104.48	96.46%	78.25%
kcpl_her_201706_e_gmo	1,665,300	391.61	1,831,177	307.66	109.96%	78.56%
kcpl_her_201904_e_gmo	5,651,102	1,546.56	4,167,894	700.25	73.75%	45.28%
kcpl_her_202002_e_gmo	484,222	10.51	1,822,613	306.22	376.40%	2913.61%
kcpl_201407_e_high_users	14,798,248	3,412.53	12,302,853	2,067.01	83.14%	60.57%
kcpl_201503_e_kmo	607,544	56.75	0	0.00	0.00%	0.00%
kcpl_201607_e_kmo	1,161,158	252.87	1,714,241	288.01	147.63%	113.90%
kcpl_her_202002_e_kmo	1,197,365	200.25	1,156,005	194.22	96.55%	96.99%
kcpl_201407_e_low_income	496,111	172.13	1,481,796	248.96	298.68%	144.63%
Total	**41,454,763**	**8,397.18**	**39,309,811**	**6,604.47**	**94.83%**	**78.65%**

6.5 Business Demand Response

The Business Demand Response (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 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 6-1: One Year Incentive Calculation

$$Incentive = \$28.00 \times kW\ Enrolled \times Percentage\ of\ Enrolled\ kW\ Achieved$$

For incentive purposes, “kW Enrolled” refers to the electrical load that participants with assistance from Evergy have identified that can be eliminated or shifted (curtailed) during demand response events. After events, Evergy estimates what the electric load would have been if an event had not taken place and subtracts the actual energy usage to

determine the kW achieved during events. This “kW achieved” is then divided by the “kW enrolled” to calculate the “Percentage of Enrolled kW Achieved.”

The incentive for customers enrolled in the program for multiple years is calculated as:

Equation 6-2: Multi-Year Incentive Calculation

$$Incentive = \$30.00 \times kW\ Enrolled \times Percentage\ of\ Enrolled\ kW\ Achieved$$

There were four BDR events called in 2021: on June 17, July 29, August 11, and August 25. The curtailment events began at 1400 CDT and ended at 1800 CDT.

PY2 performance metrics are summarized in Table 6-22.

Table 6-22: Business Demand Response Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro
Number of Participants*	160	142	18
Energy Savings (kWh)			
Targeted Energy Savings	0	0	0
Reported Energy Savings	0	0	0
Gross Verified Energy Savings	0	0	0
Net Verified Energy Savings	0	0	0
Peak Demand Reduction (kW)			
Targeted Peak Demand Savings	67,092.00	52,092.00	15,000.00
Reported Peak Demand Savings	73,600.60	50,387.50	23,213.10
Gross Verified Peak Demand Savings	73,618.76	51,094.86	22,523.90
Net Verified Peak Demand Savings	73,618.76	51,094.86	22,523.90
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	2.28	2.45	1.97

*Represents the number of unique account numbers in the program

6.5.1 Data Sources

Data used for this evaluation include program tracking data that identifies which customers participated in the program and contains data fields such as contract curtailment amount, hourly usage, hourly baseline estimates, 15-minute interval meter data (AMI) for each customer participating in the BDR program, and a full schedule of BDR program events, including the time of the event. ADM also collected recorded

weather data from the National Oceanographic and Atmospheric Administration (NOAA) to estimate the impact of weather on usage.

6.5.2 Gross Impact Methodologies

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.

6.5.3 Net-to-Gross (NTG) Estimation.

In demand response programs, it is typically assumed that there are neither spillover effects (customers are not expected to curtail without participating), nor free ridership. Although customers can find workarounds to make up for lost productivity due to demand response events, they 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 is assumed to be 100%.

6.5.4 Impact Evaluation Summarized Findings

Table 6-23 summarizes the verified peak demand reduction for the Business Demand Response Program. The average kW for Metro participants during the DR season was 1,251 while Missouri West participants averaged 360 kW. Evergy does not claim energy savings for DR; thus, the evaluation team did not calculate energy savings.

Table 6-23: Peak Demand Reduction (kW)

Jurisdiction	# of Customer	# of Service Point IDs	Expected kW	Realized kW	Realization Rate
MO West	142	404	50,387.50	51,094.86	101%
MO Metro	18	105	23,213.10	22,523.90	97%
Total	**160**	**509**	**73,600.60**	**73,618.76**	**100%**

6.6 Residential Demand Response

The Residential Demand Response (RDR) Program uses smart thermostat, automatic event call technology to reduce energy use during peak demand periods. Participating customers receive an incentive to participate in curtailment events. Prior to an event, customers receive a notification on their smart device application, and the smart thermostat pre-cools the home. During the event, the smart thermostat increases a

customer's setpoint from between 2- and 5-degrees Fahrenheit. The program includes both customer-installed and professional-installed options.

There were eight DR events in 2021 as shown in Table 6-24 and each ran from 4 p.m. through 6 p.m. CDT.

Table 6-24: DR Event Dates

Year	Event Date
2021	6/10/2021
	6/17/2021
	6/18/2021
	7/28/2021
	7/29/2021
	8/11/2021
	8/25/2021
	9/13/2021

Table 6-25 reports the smart thermostat devices that were included in the program during the evaluation period.

Table 6-25: Device Types by Service Area

Jurisdiction	Device Type	Number of Devices
MO West	ecobee	3,419
MO West	Google Nest	591
MO Metro	ecobee	3,031
MO Metro	Google Nest	694

PY2 performance metrics are summarized in Table 6-26.

Table 6-26: Residential Demand Response Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro
Number of Participants	7,437	3,870	3,567
Energy Savings (kWh)			
Targeted Energy Savings	2,731,904	1,402,388	1,329,516
Reported Energy Savings	1,875,637	944,615	931,022
Gross Verified Energy Savings	1,763,715	888,248	875,466
Net Verified Energy Savings	1,763,715	888,248	875,466
Peak Demand Reduction (kW)			
Targeted Peak Demand Savings	20,566.32	10,609.20	9,957.12
Reported Peak Demand Savings	13,141.80	6,717.20	6,424.60
Gross Verified Peak Demand Savings	12,468.74	6,489.81	5,978.93
Net Verified Peak Demand Savings	12,468.74	6,489.81	5,978.93
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	1.39	1.39	1.39

*Represents the number of unique account numbers in the program

6.6.1 Data Sources

Program data used for this evaluation include:

- Program tracking data for 2021. This data identifies which customers participated in the program and contains data fields such as thermostat installation date, number of devices installed, thermostat device type, measure type, and other relevant data fields.
- 15-minute interval meter data (AMI) for each customer participating in the RDR program, and,
- A full schedule of RDR 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 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 the energy savings calculations and guidelines set by the Evergy TRM.

6.6.2 Gross Impact Methodologies

Demand savings (kW) for the demand response portion of the program was estimated using a weather-adjusted Linear Fixed Effects Regression (LFER) model.

Annual energy savings for smart thermostat customers were estimated using a weather-adjusted Post Period Regression (PPR) ordinary least-squares (OLS) regression model. A matched comparison group was created using a propensity score matching (PSM) approach.

6.6.3 Net-to-Gross (NTG) Estimation

In demand response programs, it is typically assumed that there are neither spillover effects nor free ridership (only participating customers are expected to curtail usage). As such, the net-to-gross ratio for this program is assumed to be 100%

6.6.4 Impact Evaluation Summarized Findings

Total program impact is presented in Table 6-27 and Table 6-28. Definitions for Eligible and Responding Units are provided in Appendix I in the M&V Appendix report.

Table 6-27: Residential Annual Energy Savings (kWh)

Jurisdiction	Expected kWh/Unit Savings	Realized kWh/Unit Savings	Eligible Units	Expected kWh Savings	Realized kWh Savings	RR
MO West	197	185	4,795	944,615	888,248	94%
MO Metro	197	185	4,726	931,022	875,466	94%
Total			**9,521**	**1,875,637**	**1,763,715**	**94%**

Table 6-28: Residential Demand Response Peak Reduction (kW)

Jurisdiction	Expected kW/Unit Savings	Realized kW/Unit Savings	Eligible Units	Expected kW Savings	Realized kW Savings	RR
MO West	1.40	1.35	4,798	6,717.20	6,489.81	97%
MO Metro	1.40	1.30	4,589	6,424.60	5,978.93	93%
Total			**9,387**	**13,141.80**	**12,468.74**	**95%**

6.7 Business Smart Thermostat

The Business Smart Thermostat Program uses automatic event call technology to reduce energy use during peak demand periods. Participating customers receive an incentive to participate in curtailment events. Prior to an event, customers receive a notification on

their smart device application, and the smart thermostat pre-cools the home. During the event, the smart thermostat increases a customer's setpoint between 2 to 5 degrees Fahrenheit.

Depending upon the thermostat type, customers could choose to receive a $50.00 incentive if they installed their own thermostat (BYOT) or to purchase a qualifying thermostat at a discounted price via Evergy's new online customer portal. Customers could also schedule and pay for the installation of the qualifying thermostat through Evergy's customer center or online Portal.

There were eight DR events in 2021, as shown in Table 6-29 and each ran from 4 p.m. through 6 p.m. CDT.

Table 6-29 DR Event Dates

Year	Event Date
2021	6/10/2021
	6/17/2021
	6/18/2021
	7/28/2021
	7/29/2021
	8/11/2021
	8/25/2021
	9/13/2021

Table 6-30: Device Types by Service Area

Jurisdiction	Device Type	# of Devices
MO West	ecobee	79
MO West	Google Nest	7
MO Metro	ecobee	80
MO Metro	Google Nest	5

PY2 performance metrics are summarized in the following table.

Table 6-31: Business Smart Thermostats Program Performance Metrics

Metric	PY2 Total	MO West	MO Metro
Number of Participants*	91	54	37
Energy Savings (kWh)			
Targeted Energy Savings	115,048	56,736	58,312
Reported Energy Savings	42,355	23,049	19,306
Gross Verified Energy Savings	83,517	45,449	38,068
Net Verified Energy Savings	83,517	45,449	38,068
Peak Demand Reduction (kW)			
Targeted Peak Demand Savings	840.96	414.72	426.24
Reported Peak Demand Savings	327.60	166.60	161.00
Gross Verified Peak Demand Savings	219.92	92.81	127.11
Net Verified Peak Demand Savings	219.92	92.81	127.11
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	0.98	0.85	1.12

*Represents the number of unique account numbers in the program. Benefit/Cost Ratios for Business Smart Thermostats are included with Residential Demand Response.

6.7.1 Data Sources

Program data used for this evaluation include program tracking data for 2021. This data identifies which customers participated in the program and contains data fields such as thermostat installation date, number of devices installed, thermostat device type, measure type, and other relevant data fields. Additional data included: 15-minute interval meter data (AMI) for each customer participating in the RDR program, a full schedule of RDR program events, including the time of the events; and ADM collected recorded weather data from the National Oceanographic and Atmospheric Administration (NOAA) to estimate the impact of weather on usage.

6.7.2 Gross Impact Methodologies

Demand savings (kW) for the demand response portion of the program was estimated using a weather-adjusted Linear Fixed Effects Regression (LFER) model.

Annual energy savings for smart thermostat customers were estimated using a weather-adjusted Post Period Regression (PPR) ordinary least-squares (OLS) regression model. A matched comparison group was created using a propensity score matching (PSM) approach.

6.7.3 Net-to-Gross (NTG) Estimation

In demand response programs, it is typically assumed that there are neither spillover effects nor free ridership (only participating customers are expected to curtail usage). As such, the net-to-gross ratio for this program is assumed to be 100%.

6.7.4 Impact Evaluation Summarized Findings

Total program impact is presented in Table 6-32 and Table 6-33. Definitions for Eligible and Responding Units are provided in Appendix J.

Table 6-32: BST Annual Energy Savings (kWh)

Jurisdiction	Expected kWh/Unit Savings	Realized kWh/Unit Savings	Eligible Units	Expected kWh Savings	Realized kWh Savings	RR
MO West	197	388	117	23,049	45,449	197%
MO Metro	197	388	98	19,306	38,068	197%
Total			**215**	**42,355**	**83,517**	**197%**

Table 6-33: BST Peak Reduction (kW)

Jurisdiction	Expected kW/Unit Savings	Realized kW/Unit Savings	Eligible Units	Expected kW Savings	Realized kW Savings	RR
MO West	1.40	0.78	119	166.60	92.81	56%
MO Metro	1.40	1.11	115	161.00	127.11	79%
Total			**234**	**327.60**	**219.92**	**67%**

6.8 Pay As You Save

The Pay As You Save (PAYS) pilot program supports the adoption of energy efficient equipment in residential homes by offsetting the upfront cost associated with major home improvements and upgrades. Through the PAYS program, customers can reduce their monthly electric bills while also making their home more energy efficient. Each project approved through the program is designed to be a cost-effective bundle of upgrades, meaning that the estimated savings on customer's monthly bills from the installation of the upgrades must be more than the cost to install the measures. Customers finance the upgrades through a fixed monthly PAYS charge added to their monthly bills.

In 2021, the PAYS program facilitated the installation of energy efficient air conditioners, smart thermostats, ceiling insulation, and air sealing measures. Program participants also received energy saving kit measures at no-cost that included a variety of light-emitting

diode (LED) light bulbs, power strips, pipe insulation, faucet aerators, and low-flow shower heads.

Table 6-34 provides a summary of program metrics for the 2021 program year. Actual savings for 2021 fell below program expectations as a late launch of the program lead to only 7% of intended projects being completed.

Table 6-34: Performance Metrics – Pay As You Save Program

Metric	PY2 Total	MO West	MO Metro
Number of Projects Completed	5	2	3
Energy Savings (kWh)			
Targeted Energy Savings	311,709	155,855	155,855
Reported Energy Savings	17,199	7,179	10,020
Gross Verified Energy Savings	17,199	7,179	10,020
Net Verified Energy Savings	17,199	7,179	10,020
Peak Demand Reduction (kW)			
Targeted Peak Demand Savings	35.00	17.50	17.50
Reported Peak Demand Savings	3.86	2.31	1.56
Gross Verified Peak Demand Savings	3.86	2.31	1.56
Net Verified Peak Demand Savings	3.86	2.31	1.56
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	-	-	-

6.8.1 Data Sources

For 2021, the primary data resource used for M&V review was program tracking data obtained from EEtility. 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 which were used for verification

6.8.2 Gross Impact Methodologies

Since PAYS participants did not begin receiving program measures until September 2021, estimating energy savings via regression modeling was not yet feasible. Instead, ADM compared savings attributed to the retrofit measures installed through the PAYS program by validating savings according to the relevant unit energy savings methodology from the Evergy TRM.

6.8.3 Net-to-Gross (NTG) Estimation

For 2021, ADM applied a designated NTG value of 1.0. Though the late launch of the program significantly limited customer surveying activities, this deemed value is supported by staff interviews and program design. For example, during conversations with program staff as a part of the program's process evaluation, staff reported that many of the customers who initially expressed interest in the program were ultimately not eligible to participate, as they had already installed cost-effective measures. This finding supports the program design strategy, which seeks to enroll customers who have a financial barrier to energy efficient product adoption and are therefore not typical early adopters (i.e., free riders). This design strategy coupled with the challenge of finding eligible customers supports a low level of free ridership in the program during 2021, therefore ADM chose to use a free ridership score of 0 (and correspondingly a NTG ratio of 1.0).

6.8.4 Impact Evaluation Summarized Findings

Based on the impact evaluation results, the total verified gross energy savings for the PAYS Program are 17,199 kWh, and the total verified gross peak demand savings are 3.86 kW. Table 6-35 summarizes the verified gross energy and demand savings for the PAYS Program.

Table 6-35: PAYS Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reduction (kW)	RR_{kWh}	RR_{kW}
MO West	7,179	2.31	7,179	2.31	100%	100%
MO Metro	10,020	1.56	10,020	1.56	100%	100%
Total	**17,199**	**3.86**	**17,199**	**3.86**	**100%**	**100%**

Table 6-36 and Table 6-37 summarize the verified net impacts of the PAYS program.

Table 6-36: PAYS Verified Gross and Net Annual Energy Savings (kWh)

Jurisdiction	Free Ridership	NTG Ratio	Gross Verified Energy Savings (kWh)	Net Energy Savings (kWh)
MO West	0%	100%	7,179	7,179
MO Metro	0%	100%	10,020	10,020
Total	**0%**	**100%**	**17,199**	**17,199**

Table 6-37: PAYS Verified Gross and Net Peak Demand Reduction (kW)

Jurisdiction	Free Ridership	NTG Ratio	Gross Verified Energy Savings (kW)	Net Energy Savings (kW)
MO West	0%	100%	2.31	2.31
MO Metro	0%	100%	1.56	1.56
Total	**0%**	**100%**	**3.86**	**3.86**

6.9 Products & Services Incubator

Energy-Saving Trees

The Energy-Saving Trees (EST or Trees) Program, started in 2019, is part of Evergy's Research and Pilot Incubator programs. The program is a collaboration between Evergy, The Arbor Day Foundation, and Bridging the Gap, and works to provide customers in the Missouri Metro jurisdiction with shade trees at no cost.

The goal of the program is to increase the overall tree canopy in the "urban core," reducing the heat island effect in urban areas and customer's energy usage. To accomplish these goals, Evergy provides eligible residential customers with trees to be planted in their yards, or at multi-family properties.

From 2019 to 2021, the Energy-Saving Trees Program provided 1,584 trees to customers in the Kansas City area, with reported savings of 186,388 kWh. Table 6-38 shows the performance metrics for the Energy-Saving Trees Program in 2021.

Table 6-38: Performance Metrics – Energy-Saving Trees Pilot Program

Metric	PY2 Total	MO West	MO Metro
Number of Trees Provided	1,584	0	1,584
Energy Impacts (kWh)			
Targeted Energy Savings	-	-	-
Reported Energy Savings	186,388	0	186,388
Gross Verified Energy Savings	178,419	0	178,419
Net Verified Energy Savings	178,419	0	178,419
Peak Demand Impacts (kW)			
Targeted Peak Demand Savings	0	0	0
Reported Peak Demand Savings	0	0	0
Gross Verified Peak Demand Savings	0	0	0
Net Verified Peak Demand Savings	0	0	0
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	-	-	-

Data Sources

For the 2021 evaluation, ADM used two primary data resource used for M&V review.

1. Program data provided by The Arbor Day Foundation, containing the quantity, species, and expected planting location of the trees provided through the program, as well as the annual and cumulative savings expected from the trees after 5, 10, 15, and 20 years. These future savings, calculated using iTree design methods, "use growth rates to estimate the changing size of the tree" when calculating the savings for future years[10].
2. Program survey to a representative sample of program participants to understand their perceptions of the program, whether participants planted the trees they received, the current health of the trees, and the final location where the trees were planted.

[10] i-Tree Design Methods, September 23, 2014, available here: https://www.itreetools.org/documents/11/iTree_Design_methods.pdf

Gross Impact Methodologies

Reported energy savings for the program were based on program averages calculated by The Arbor Day Foundation using the iTree Software.[11] ADM's evaluation consisted of: (1) reviewing savings estimates for a sample of trees to ensure that the reported savings did not differ dramatically from expected savings, (2) analyzing program survey results to determine that program attrition (trees that were not planted or did not survive), and (3) verifying that the final planting location for the trees aligned with the location that participants reported when they ordered their trees.

Net-to-Gross (NTG) Estimation

For 2021, ADM applied a designated NTG value of 1.0. The designation as pilot program and the small overall size of the Energy-Saving Trees Program did not justify the cost for development of a net-to-gross ratio for this program.

Impact Evaluation Summarized Findings

Based on the impact evaluation results, the total verified gross energy savings for the Trees Program are 178,419 kWh. There are no demand savings claimed for the Trees program. Table 6-39 below summarizes the verified gross energy and demand savings for the Energy-Saving Trees Program.

Table 6-39: Program Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reduction (kW)	RR_{kWh}	RR_{kW}
MO West	-	-	-	-	-	-
MO Metro	186,388	0	178,419	0	96%	-
Total	**186,388**	**0**	**178,419**	**0**	**96%**	**-**

Table 6-40 summarizes the verified net impacts of the Energy-Saving Trees Program.

[11] www.itreetools.org, accessed 3/19/2022

Table 6-40: Verified Gross and Net Annual Energy Savings (kWh)

Jurisdiction	Free Ridership	NTG Ratio	Gross Verified Energy Savings (kWh)	Net Energy Savings (kWh)
MO West	-	-	-	-
MO Metro	0%	100%	178,419	178,419
Total	**0%**	**100%**	**178,419**	**178,419**

Energy Efficiency Nonprofits

As part of the Stipulation Order from the Missouri Public Service Commission, Evergy identified and launched its Energy Efficiency Nonprofits Program (EENP). This pilot program targets organizations that provide transitional housing and emergency services to residential customers living in Evergy's service territory.

The Energy Efficiency Nonprofits Program (EENP) offered by Evergy targeted 501(c)(3) to organizations that provide lodging and social services to low-income, homeless, or at-risk populations in the Evergy Missouri service territory, so they can better serve these individuals and families. Lodging must be the facility's primary function. Satellite facilities associated with the headquarters organization are also eligible (EENP Application).

The program offers these organizations low- and no-cost energy efficiency measures and incentives and includes an energy audit and recommendations for energy efficiency improvements. Eligible measures include interior and exterior lighting upgrades, HVAC tune-ups, water conservation measures and power strips. In addition, the organizations may also qualify for additional rebates or incentives based on the results of the energy audit (EENP Application).

Initially, the pilot program targeted five to nine buildings in Evergy's service territory. Evergy exceeded this participation goal by serving 16 buildings, some of which were satellite facilities owned by the social service agency. Evergy allocated and spent its budget of $200,000 in providing the audit services and measure installations and rebates to these program participants.

Table 6-41 provides a summary of program metrics for the PY2.

Table 6-41: Performance Metrics – Energy Efficiency Nonprofits Pilot Program

Metric	PY2 Total	MO West	MO Metro
Number of Businesses	16		
Energy Impacts (kWh)			
Targeted Energy Savings	-	-	-
Reported Energy Savings	550,400	329,824	220,576
Gross Verified Energy Savings	550,400	329,824	220,576
Net Verified Energy Savings	550,400	329,824	220,576
Peak Demand Impacts (kW)			
Targeted Peak Demand Savings	-	-	-
Reported Peak Demand Savings	110.16	61.11	49.05
Gross Verified Peak Demand Savings	110.16	61.11	49.05
Net Verified Peak Demand Savings	110.16	61.11	49.05
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	-	-	-

Gross Impact Methodologies

The EENP program provided low-flow faucet aerators, showerheads, AC tune-ups, HVAC measures, and lighting measures. Most program savings (87%) from the program came from custom lighting projects completed at property common areas.

ADM compared savings attributed to the measures installed through the EENP program by validating savings according to the relevant unit energy savings methodology from the Evergy Technical Reference Manual (Evergy TRM).

Impact Evaluation Summarized Findings

The total verified gross energy savings for the Energy Efficiency Nonprofits Program are 549,750 kWh and the demand savings are 110.14 kW. Table 6-42 below summarizes the verified gross energy and demand savings for the EENP.

Table 6-42: Program Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reduction (kW)	RR_{kWh}	RR_{kW}
MO West	329,824	61.11	329,824	61.11	100%	100%
MO Metro	220,576	49.05	220,576	49.05	100%	100%
Total	**550,400**	**110.16**	**550,400**	**110.16**	**100%**	**100%**

HVAC Quality Install

This report summarizes the impact analysis of the Quality Installation (QI) pilot program. The QI Program aimed to test HVAC contractor acceptance of using a wireless HVAC testing tool as part of the Quality Assurance/Quality Control (QA/QC) of HVAC installations.

The Quality Install (QI) pilot program operated for one year, and all savings were claimed in 2021. The program was designed to help HVAC contractors perform additional QA/QC tests to ensure that the equipment was correctly installed.

The pilot did not claim the energy savings from past Heating, Cooling, and Home Comfort Program projects. A requirement of the pilot is that systems that receive a QI must have a qualifying Heating, Cooling, and Home Comfort Program project from within the last year. It was important to note that there was one QI project that had a matching Heating, Cooling, and Home Comfort Program project from 2019 (MEEIA 2). Although this falls outside of the eligibility of the pilot, it was approved to be included in the final savings.

Table 6-43 provides a summary of program metrics for the PY2.

Table 6-43: Performance Metrics – Quality Install Pilot Program

Metric	PY2 Total	MO West	MO Metro
Number of Projects	28	10	18
Energy Impacts (kWh)			
Targeted Energy Savings	-	-	-
Reported Energy Savings	5,398.50	1,952.00	3,446.50
Gross Verified Energy Savings	5,268.18	1,723.61	3,544.57
Net Verified Energy Savings	5,268.18	1,723.61	3,544.57
Peak Demand Impacts (kW)			
Targeted Peak Demand Savings	-	-	-
Reported Peak Demand Savings	6.20	2.24	3.96
Gross Verified Peak Demand Savings	5.75	1.79	3.96
Net Verified Peak Demand Savings	5.75	1.79	3.96
Benefit / Cost Ratios			
Total Resource Cost Test Ratio	-	-	-

Gross Impact Methodologies

For the Quality Install Program, sources of data to inform the impact evaluation were a census of program tracking data from the program implementor's tracking and reporting system. Program tracking data included customer contact information and descriptions of the HVAC units installed.

There were a total of 28 QI projects in the Quality Install Program with reported savings. The HVAC units in the program were either a SEER 16 or SEER 17 central air conditioner (early replacement). See Table 6-44 for a breakdown of the quantity and type of units in the program per jurisdiction.

Table 6-44: Quality Install Measure Quantities

Jurisdiction	Unit SEER	Quantity
MO West	16	4
	17	6
MO Metro	16	11
	17	7
Total	**-**	**28**

Verified savings were calculated based on the efficiency and size of each unit. The energy and demand savings for each project were compared to the corresponding project in the Heating, Cooling, and Home Comfort Program. To ensure savings for the Quality Install Program were not being double-counted, the energy and demand savings for each corresponding Heating, Cooling, and Home Comfort Program project were subtracted from each QI project. The difference in savings were then totaled to get final verified gross savings for the Quality Install Program.

Impact Evaluation Summarized Findings

Based on the impact evaluation results, the total verified gross savings for the Quality Install Program are 5,268.50 kWh, which resulted in a realization rate of 98 percent and 5.75 kW, which resulted in a realization rate of 93 percent. Table 6-45 below summarizes the verified gross energy and demand savings for the QI Program.

Table 6-45: Program Gross Energy Savings (kWh) and Peak Demand Reduction (kW)

Jurisdiction	Reported Energy Savings (kWh)	Reported Demand Reduction (kW)	Gross Verified Energy Savings (kWh)	Gross Verified Demand Reduction (kW)	RR_{kWh}	RR_{kW}
MO West	1,952.00	2.24	1,723.61	1.79	88%	80%
MO Metro	3,446.50	3.96	3,544.57	3.96	103%	100%
Total	**5,398.50**	**6.20**	**5,268.18**	**5.75**	**98%**	**93%**

6.10 Program with Process Evaluation Only

The following program did not report kWh and kW savings. A process evaluation was performed and can be found in the following appendix.

- Online Home Energy Audit: Appendix G in the M&V Appendix report.