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Ameren Missouri Program Year 2019 Annual EM&V Report

Volume 1: Portfolio Impact Summary

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Opinion Dynamics

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1. Introduction

This document presents a summary of impact evaluation and cost-effectiveness results for Program Year 2019 (PY2019) of Ameren Missouri's 2019-2021 portfolio of energy efficiency and demand response programs, approved under the third cycle of the Missouri Energy Efficiency Investment Act (MEEIA). This is the first of four volumes that comprise the PY2019 Annual Evaluation, Measurement, and Verification (EM&V) Report.

Opinion Dynamics, along with its subcontractors Guidehouse, ADM Associates, Pammer Research, Sustainable Design & Behavior, Morgan Marketing Partners, and Washington University in St. Louis (collectively referred to as "the evaluation team"), was contracted by Ameren Missouri to provide independent evaluation of its 2019-2021 electric energy efficiency and demand response programs.

The overall goal of this evaluation effort was to determine the electric energy and demand savings from Ameren Missouri's program offerings and to identify opportunities to optimize program performance from either a savings or customer satisfaction and engagement perspective. Findings from the evaluation may be used by Ameren Missouri and relevant stakeholders to demonstrate progress against savings targets, modify program design and operations, inform strategies to achieve deeper program savings, and ensure customer satisfaction and cost-effectiveness.

Ameren Missouri's MEEIA Cycle 3[1] portfolio of energy efficiency and demand response programs consists of four sector-level portfolios, the Low-Income Portfolio, the Residential Portfolio, the Business Portfolio, and the Demand Response Portfolio. Each portfolio includes multiple programs that target specific market segments and/or equipment types. The overall portfolio includes 17 programs, including 6 that were newly offered in PY2019.[2]

Table 1-1. Ameren Missouri 2019-2021 Energy Efficiency and Demand Response Programs

Low-Income Programs	Residential Programs	Business Programs	Demand Response
▪ Residential Single Family Low-Income* ▪ Residential Multifamily Low-Income ▪ Business Social Services*	▪ Lighting ▪ Efficient Products ▪ HVAC ▪ Appliance Recycling* ▪ Energy Efficient Kits ▪ Home Energy Report ▪ Multifamily Market Rate*	▪ Standard ▪ Custom ▪ Retro-Commissioning ▪ New Construction ▪ Small Business Direct Install	▪ Residential Demand Response* ▪ Business Demand Response*

* New program in 2019-21 cycle.

This document (Volume 1) provides a high-level summary of the evaluation's impact and cost-effectiveness findings. The other three volumes, and associated technical appendices, provide more-detailed information on evaluation methodologies and results, including impact, process, and cost-effectiveness analyses. The remainder of the EM&V Report is organized as follows:

- Volume 2: Residential Portfolio Evaluation Report

[1] PY2019 was implemented from March 1, 2019 to December 31, 2019.
[2] In addition, the 2019-21 MEEIA Energy Efficiency Plan includes new residential and business education programs. This evaluation did not address these programs since Ameren Missouri does not directly claim savings for them.

- Volume 3: Business Portfolio Evaluation Report
- Volume 4: Demand Response Portfolio Evaluation Report

2. Program Year 2019 Impact Results

This section summarizes PY2019 gross and net impact evaluation results. The first subsection summarizes results at the overall portfolio level; the following subsections provide results for the four sector-level portfolios.

2.1 Overall Impacts

The combined portfolio of PY2019 Ameren Missouri energy efficiency and demand response programs exceeded both first year energy and demand savings goals. The Business Portfolio also exceeded both first year energy and demand savings goals, while the Residential Portfolio achieved first year energy goals but not first year demand goals. While the Demand Response Portfolio did not achieve energy goals, performance was strong on the demand side where it achieved 183% of its 36.5 MW goal.[3]

The Low-Income, Residential, and Business Portfolios all achieved strong first year gross realization rates (Gross RR) of 93% or above. Net impact evaluation results were more variable, with savings-weighted average net-to-gross ratios (NTGR) of 68% for the Residential Portfolio and 85% for the Business Portfolio.[4] Table 2-1 summarizes portfolio first year energy and demand performance relative to goal.

Table 2-1. PY2019 Combined Portfolio First Year Impact Summary

Program	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
First Year Energy Savings (MWh)							
Low-Income	4,710	93.0%	4,382	100.0%	4,382	10,443	42%
Residential [A]	141,729	106.8%	151,405	68.3%	118,579	111,693	106%
Business	103,457	94.6%	97,865	85.2%	83,364	78,197	107%
Demand Response	n/a	n/a	n/a	n/a	500	1,630	31%
Portfolio Total	**249,895**		**253,652**		**206,824**	**201,963**	**102%**
Portfolio Total (EO Eligible)	**245,185**		**249,270**		**186,702**	**154,640**	**121%**
First Year Demand Savings (MW)							
Low-Income	1.04	97.4%	1.01	100.0%	1,01	2.42	42%
Residential	38.62	108.7%	41.98	69.0%	36.05	45.91	79%
Business	25.91	97.5%	25.27	86.1%	21.76	19.37	112%
Demand Response	n/a		n/a		66.79	36.50	183%
Portfolio Total	**65.57**		**68.26**		**125.60**	**104.20**	**121%**

[A] Note that the Home Energy Reports Program is not included in gross impacts and the NTGR but is included in net impacts. As such ex post net savings are greater than the product of ex post gross savings and the NTGR.

[3] Throughout this volume, we refer to "goals" and "targets." Ameren Missouri's 2019-21 MEEIA Energy Efficiency Plan sets annual first year energy and demand savings **goals**. In addition, Ameren Missouri developed impact **targets** that are used to determine Earnings Opportunities.

[4] Consistent with industry standards, this evaluation assumes a NTGR of 1.0 for low-income programs.

The evaluation team also estimated PY2019 last year ex post demand savings. Last year savings represent the savings expected to be generated by energy efficiency measures during the last year of a measure's effective useful life (EUL). Last year demand savings were estimated for the following three EUL categories: Less than 10 Year EUL, 10 – 14 Year EUL, and 15+ Year EUL.

At the portfolio level, Ameren Missouri achieved 140% of its net target in the <10 Year EUL category, 99% in the 10-14 Year EUL category, and 95% in the 15+ Year EUL category.

Table 2-2. PY2019 Combined Portfolio Last Year Demand Impact Summary

Program	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
<10 Year EUL							
Low-income	0.41	53.9%	0.22	100.0%	0.22	0.36	61%
Residential [A]	0.28	1,042.9%	2.92	71.7%	9.20	16.92	54%
Business	0.00	n/a	0.00	n/a	0.00	0.57	0%
Demand Response	n/a	n/a	n/a	n/a	66.79	36.50	183%
Portfolio Total	**0.68**		**3.14**		**76.21**	**54.34**	**140%**
10 - 14 Year EUL							
Low-income	0.13	120.4%	0.16	100.0%	0.16	0.17	95%
Residential	3.28	94.9%	3.11	105.2%	3.27	3.02	108%
Business	6.25	94.2%	5.89	85.4%	5.03	5.34	94%
Demand Response	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Portfolio Total	**9.66**		**9.16**		**8.46**	**8.52**	**99%**
Portfolio Total (EO Eligible)	**9.53**		**9.00**		**8.30**	**8.36**	**99%**
15+ Year EUL							
Low-income	0.40	105.6%	0.46	100.0%	0.46	1.85	25%
Residential	22.65	89.6%	20.28	67.1%	13.61	17.11	80%
Business	19.66	98.6%	19.38	86.3%	16.72	13.45	124%
Demand Response	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Portfolio Total	**42.70**		**40.13**		**30.80**	**32.42**	**95%**
Portfolio Total (EO Eligible)	**42.31**		**39.67**		**30.34**	**30.57**	**99%**

[A] Note that the Home Energy Reports Program is not included in gross impacts and the NTGR but is included in net impacts. As such ex post net savings are greater than the product of ex post gross savings and the NTGR.

2.2 Low-income Portfolio

Ameren Missouri's 2019-21 MEEIA Energy Efficiency Plan incorporated a significant investment increase in energy efficiency programs targeting low-income customers. The PY2019 Low-Income Portfolio included three programs designed to achieve savings in three distinct market segments:

- **Single Family Low-Income Program:** The Residential Single Family Low-Income Program was a new program in PY2019. It is designed to provide whole-home energy efficiency upgrades that result in long-term energy savings and bill reduction opportunities to Ameren Missouri low-income customers

living in single family properties, including mobile homes and duplexes. The program leverages three participation channels: (1) the single family neighborhoods channel; (2) the mobile home park channel; and (3) the Low-Income Efficiency Housing Grant channel.

- **Multifamily Low-Income Program**: Ameren Missouri has been offering energy efficiency programs for multifamily low-income properties since 2015. In PY2019, Ameren Missouri launched a revised program, designed to offer a one-stop-shop approach to assist owners and operators of multifamily low-income properties to overcome barriers to completing comprehensive retrofits. The program serves multifamily properties that have three or more tenant units, receive electric service from Ameren Missouri, and meet one of several income eligibility criteria.
- **Business Social Services Program:** The Business Social Services (BSS) Program was a new program for Ameren Missouri in PY2019. The target market consists of commercial, nonprofit, and tax-exempt business customers that provide social services to the low-income public in federally designated opportunity zones. The BSS Program offers no-cost LED interior lighting equipment and low cost equipment of other enduses. Service Providers supply and install measures, finalize paperwork for eligible participants, and identify additional energy efficiency opportunities not covered under the BSS Program.

The two residential low-income programs are implemented by Ameren Missouri's new residential program implementer, while the BSS Program is implemented by the business program implementer who continues to implement the various business program from the previous MEEIA cycle.

At the portfolio level, the low-income programs achieved 42% of first year net energy savings goals and 42% of first year net demand savings goals (see Table 2-3). This shortfall was mostly due to lower than expected participation as gross RRs were strong at 93% for energy savings and 97% for demand savings. Achieved last year demand savings ranged from 25% to 95% of target, depending on the EUL category.

Table 2-3. PY2019 Low-income Portfolio Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
First Year Savings							
Energy Savings (MWh)	4,710	93.0%	4,382	100.0%	4,382	10,443	42%
Demand Savings (MW)	1.04	97.4%	1.01	100.0%	1.01	2.42	42%
Last Year Demand Savings							
< 10 EUL (MW)	0.41	53.9%	0.22	100.0%	0.22	0.36	61%
10-14 EUL (MW)	0.13	120.4%	0.16	100.0%	0.16	0.17	95%
15+ EUL (MW)	0.40	116.3%	0.46	100.0%	0.46	1.85	25%

Results at the program level (see Table 2-4) show that the shortfalls in savings relative to target are largely driven by the Single Family Low-Income Program: While the largest in the portfolio, it only achieved 26% and 31%, respectively, of first year net energy and demand savings goals. Ex ante gross savings of this program are significantly short of net savings goals, suggesting that participation was much lower than planned. While the Multifamily Low-Income Program exceeded its first year energy savings goal, it fell short of its first year demand goal. The implementation team also struggled to achieve savings from measures with longer lifetimes across both programs, as illustrated by the percentage of 15+ EUL last year demand savings

targets achieved. That said, both programs performed well against the average percent of energy savings per property metric established for this MEEIA cycle. In particular, the Single Family Low-Income Program achieved an average of 22% savings per property while the Multifamily Low-Income Program achieved an average of 17% savings per property.

The BSS Program performed well in PY2019, achieving 112% of planned first year net energy savings and 113% of planned first year net demand savings.

Table 2-4. PY2019 Low-income Portfolio First Year Impact Summary by Program

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
First Year Energy Savings (MWh)							
Single Family Low-income	2,272	97.8%	2,222	100%	2,095	8,556	26%
Multifamily Low-income	1,366	77.1%	1,053	100%	1,053	900	117%
BSS	1,072	103.2%	1,106	100%	1,106	987	112%
Total Low-income	**4,710**	**93.0%**	**4,382**	**100%**	**4,382**	**10,443**	**42%**
First Year Demand Savings (MW)							
Single Family Low-income	0.57	100.2%	0.58	100%	0.58	1.83	31%
Multifamily Low-income	0.26	85.1%	0.22	100%	0.22	0.40	54%
BSS	0.21	105.0%	0.22	100%	0.22	0.19	113%
Total Low-income	**1.04**	**97.4%**	**1.01**	**100%**	**1.01**	**2.42**	**42%**

Table 2-5. PY2019 Low-income Portfolio Last Year Demand Impact Summary by Program

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
< 10 EUL							
Single Family Low-income	0.33	48%	0.16	100%	0.16	0.34	47%
Multifamily Low-income	0.07	84%	0.06	100%	0.06	0.00	n/a
BSS	-	n/a	-	n/a	-	0.02	0%
Total Low-income	**0.41**	**54%**	**0.22**	**100%**	**0.22**	**0.36**	**61%**
10-14 EUL							
Single Family Low-income	0.09	113%	0.10	100%	0.10	0.06	169%
Multifamily Low-income	0.02	173%	0.03	100%	0.03	0.00	n/a
BSS	0.02	105%	0.02	100%	0.02	0.11	22%
Total Low-income	**0.13**	**120%**	**0.16**	**100%**	**0.16**	**0.17**	**95%**
15+ EUL							
Single Family Low-income	0.15	96%	0.14	100%	0.14	1.39	10%
Multifamily Low-income	0.06	198%	0.12	100%	0.12	0.40	31%
BSS	0.18	105%	0.19	100%	0.19	0.06	322%
Total Low-income	**0.40**	**116%**	**0.46**	**100%**	**0.46**	**1.85**	**25%**

2.3 Residential Portfolio

The PY2019 Residential Portfolio included the following seven energy efficiency programs:

- **Residential Lighting Program:** The Ameren Missouri Residential Lighting Program is designed to increase sales and awareness of ENERGY STAR® qualified LED lighting products. Ameren Missouri delivers the Lighting Program through two channels: (1) upstream, through retail partners, and (2) through the Ameren Missouri Online Store. Through its upstream channel, the program provides incentives to retail partners to reduce costs and increase sales of qualified LED lighting products. Though the incentives are paid to the retailers, they translate into immediate point-of-purchase (POP) discounts for customers when they purchase program-qualified LEDs. The Online Store offers Ameren Missouri customers a select assortment of efficient LED lighting products that customers can purchase directly from the site.
- **HVAC Program:** The Heating, Ventilation, and Air Conditioning (HVAC) Program obtains energy and demand savings through improvements in the operating performance of existing residential cooling units or replacement of central air conditioning (CAC) units and heat pumps. A key source of program savings is early replacement/early retirement (ER) of CACs and heat pumps. The HVAC Program improves the efficiency of CAC systems, air-source heat pumps (ASHPs), ground source heat pumps (GSHPs), and ductless mini-split heat pumps (DMSHPs) by providing incentives for new high-efficiency systems. Trade allies play a critical role in delivering the Ameren Missouri HVAC Program to the target market.
- **Home Energy Reports Program:** Ameren Missouri designed the Home Energy Reports (HER) Program to promote changes in energy consumption behaviors that result in reduced electricity usage. This program is deployed as a randomized controlled trial (RCT), where customers are randomly assigned to a treatment or control group. Home Energy Reports provide the treatment customers with a comparison of their energy usage to the usage of similar homes based on home size and location. At the same time, the implementer identifies and maintains a control group of non-participation customers.
- **Energy Efficient Products Program:** The Residential Efficient Products (REP) Program is designed to raise customer awareness of the benefits of high-efficiency products, educate residential customers about energy use in their homes, and offer information, products, and services to residential customers to achieve cost-effective energy savings. The target market consists of all residential customers within the Ameren Missouri service territory. The REP Program is designed to be an umbrella program, incorporating various program partners, products, and program delivery strategies.
- **Energy Efficiency Kits Program:** The Energy Efficient Kits (EEK) Program provides energy efficiency kits and education materials to customers through an educational channel that targets, but is not limited to, sixth-grade students. The program combines a set of classroom activities with projects in the home to install energy-efficient products. The EEK Program includes a range of small energy-efficient products, such as LED light bulbs, hot water pipe wrap, low-flow showerheads, and faucet aerators.
- **Multifamily Market Rate Program:** Ameren Missouri introduced the Multifamily Market Rate (MFMR) Program in PY2019 as a new offering designed to provide a one-stop-shop approach to assist owners and operators of multifamily market rate properties to overcome barriers to completing

comprehensive retrofits. The program serves multifamily properties that have three or more tenant units and receive electric service from Ameren Missouri.

- **Appliance Recycling Program:** The primary goal of the Residential Appliance Recycling (RAR) Program is to promote the retirement and recycling of inefficient refrigerators, freezers, dehumidifiers, and room air conditioners from households by offering turn-in incentives, free pickup of working equipment, and information on the operating costs of inefficient units. The program also provides participants with energy efficiency kits.

At the portfolio level, the PY2019 Ameren Missouri residential programs achieved their first year energy savings goal, but fell short of their first year demand savings goal, achieving 118,579 MWh and 36.05 MW respectively. Performance related to last year demand savings was mixed with the portfolio achieving the target for 10-14 EUL, but not meeting the less than 10 or 15+ EUL targets.

Table 2-6. PY2019 Residential Portfolio Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
First Year Savings							
Energy Savings (MWh)	141,729	107%	151,405	68%	118,579	111,693	106%
Demand Savings (MW)	38.62	109%	41.98	69%	36.05	45.91	79%
Last Year Demand Savings							
< 10 EUL (MW)	0.28	1,048%	2.92	72%	9.20	16.92	54%
10-14 EUL (MW)	3.28	95%	3.11	105%	3.27	3.02	108%
15+ EUL (MW)	22.64	90%	20.28	67%	13.61	17.11	80%

Portfolio performance was largely driven by the Residential Lighting, HVAC and Home Energy Report (HER) programs, which collectively contribute approximately 90% of Ameren Missouri's first year residential savings. As shown in Table 2-7, the Lighting Program far exceeded first year energy and demand savings goals while the HVAC and HER programs performed at lower levels than anticipated.

Table 2-7. PY2019 Residential Portfolio First Year Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
First Year Energy Savings (MWh)							
Lighting	86,553	114%	98,634	64%	62,818	12,659	496%
HVAC	39,647	97%	38,531	76%	29,275	44,361	66%
Home Energy Report	NA	NA	NA	NA	15,241	35,250	43%
Efficient Products	4,981	100%	4,922	85%	4,170	8,222	51%
Energy Efficient Kits	6,280	88%	5,512	78%	4,274	6,551	65%
Multifamily Market Rate	2,240	77%	1,731	90%	1,558	2,292	68%
Appliance Recycling	2,028	102%	2,074	60%	1,242	2,358	53%
Total Residential	**141,729**	**107%**	**151,405**	**68%**	**118,579**	**111,693**	**106%**

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
First Year Demand Savings (MW)							
Lighting	13.02	117%	15.30	64%	9.74	1.89	515%
HVAC	22.15	106%	23.54	71%	16.75	23.28	72%
Home Energy Report	NA	NA	NA	NA	7.10	16.43	43%
Efficient Products	1.57	100%	1.57	80%	1.25	2.14	58%
Energy Efficient Kits	1.22	84%	1.03	79%	0.82	1.16	70%
Multifamily Market Rate	0.34	76%	0.26	90%	0.23	0.67	34%
Appliance Recycling	0.32	90%	0.29	54%	0.16	0.34	46%
Total Residential	**38.62**	**109%**	**41.98**	**69%**	**36.05**	**45.91**	**79%**

Table 2-8. PY2019 Residential Portfolio Last Year Demand Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
< 10 EUL							
Lighting	0.00	NA	2.69	64%	1.71	-	NA
HVAC	0.00	NA	0.00	NA	0.25	-	NA
Home Energy Report	NA	NA	NA	NA	7.10	16.43	43%
Efficient Products	0.00	NA	0.00	NA	0.02	0.03	55%
Energy Efficient Kits	0.00	NA	0.00	NA	0.01	-	NA
Multifamily Market Rate	0.06	5%	0.00	90%	0.00	0.11	2%
Appliance Recycling	0.22	108%	0.23	44%	0.10	0.34	30%
Total Residential	**0.28**	**1,061%**	**2.92**	**72%**	**9.20**	**16.92**	**54%**
10-14 EUL							
Lighting	0.00	NA	0.00	NA	0.00	-	NA
HVAC	0.57	100%	0.56	211%	1.19	-	NA
Home Energy Report	NA	NA	NA	NA	0.00	-	NA
Efficient Products	1.57	100%	1.57	76%	1.19	2.11	56%
Energy Efficient Kits	0.87	86%	0.75	90%	0.67	0.76	88%
Multifamily Market Rate	0.20	104%	0.21	90%	0.18	0.15	125%
Appliance Recycling	0.08	29%	0.02	128%	0.03	0.00	NA
Total Residential	**3.28**	**95%**	**3.11**	**105%**	**3.27**	**3.02**	**108%**

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
15+ EUL							
Lighting	13.02	97%	12.61	64%	8.03	1.89	425%
HVAC	9.15	80%	7.31	73%	5.34	14.51	37%
Home Energy Report	NA	NA	NA	NA	0.00	0.00	NA
Efficient Products	0.00	NA	0.00	NA	0.04	-	NA
Energy Efficient Kits	0.36	80%	0.28	46%	0.13	0.40	33%
Multifamily Market Rate	0.08	60%	0.05	90%	0.04	0.32	14%
Appliance Recycling	0.03	106%	0.03	81%	0.03	0.00	NA
Total Residential	**22.65**	**90%**	**20.28**	**67%**	**13.61**	**17.11**	**80%**

Among the residential programs in the Low-Income Portfolio, performance against savings goals was also mixed. While the Multifamily Low-Income Program exceeded its first year energy savings goals, the Single Family Low-Income Program did not, and neither achieved first year demand savings goals. The implementation team also struggled to achieve savings from measures with longer lifetimes across both programs as illustrated by the percentage of 15+ EUL last year demand savings targets achieved. That said, both programs performed well against the average percent of energy savings per property metric established for this MEEIA cycle. In particular, the Single Family Low-Income Program achieved an average of 22% savings per property while the Multifamily Low-Income Program achieved an average of 17% savings per property.

Table 2-9. PY2019 Single Family Low-Income Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
First Year Savings							
Energy Savings (MWh)	2,272	98%	2,222	100%	2,222	8,556	26%
Demand Savings (MW)	0.57	100%	0.58	100%	0.58	1.83	31%
Last Year Demand Savings							
< 10 EUL (MW)	0.33	48%	0.16	100%	0.16	0.34	47%
10-14 EUL (MW)	0.09	113%	0.10	100%	0.10	0.06	167%
15+ EUL (MW)	0.15	96%	0.14	100%	0.14	1.39	10%

Table 2-10. PY2019 Multifamily Low-Income Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
First Year Savings							
Energy Savings (MWh)	1,366	77%	1,053	100%	1,053	900	117%
Demand Savings (MW)	0.26	85%	0.22	100%	0.22	0.40	54%
Last Year Demand Savings							
< 10 EUL (MW)	0.07	84%	0.06	100%	0.06	-	NA
10-14 EUL (MW)	0.02	173%	0.03	100%	0.03	-	NA
15+ EUL (MW)	0.06	198%	0.12	100%	0.12	0.40	31%

Across all of the residential programs, the following factors were particularly influential in the ex post net energy and demand savings results from the PY2019 evaluation:

- In the first year of Ameren Missouri's new MEEIA cycle, the utility worked with a range of new partners and focused on establishing relationships and processes to support the effective and successful execution of the residential portfolio. The first step in this process involved establishing the residential programs within target markets and developing an integrated program data-tracking system to monitor performance and support evaluation. Delays in these areas affected both the implementation and evaluation of the residential programs (i.e., limited participation in some offerings, lack of centralized data tracking etc.) in PY2019. As evidenced in the program-specific chapters of this report volume, while the implementation and evaluation teams coordinated extensively on the data fields to be tracked by program through several iterations and data requests, the actual data received at the close of the program year was not sufficient to determine the ex ante savings assumptions used by the implementation partners in all cases. As such, the implementation and evaluation teams must continue to work together to establish data needs, QC processes and data flows. The launch of Franklin Energy's integrated data-tracking system in PY2020, should greatly aid in this process.
- The evaluation team updated parameters used to calculate ex post energy savings to better reflect current market conditions, which led to differences between ex ante and ex post results. Specifically, as part of the program-specific evaluation efforts, we updated In-Service Rates (ISRs), TRM assumptions, and Net-to-Gross-Ratios (NTGRs) among other parameters, which drove the ex post results for individual programs.

2.4 Business Portfolio

The PY2019 Business Portfolio included five energy efficiency programs, all of which were offered in the previous MEEIA cycle:

- **Standard Incentive Program:** The Standard Incentive Program is designed to promote the installation of energy-efficient technologies by providing prescriptive incentives for a range of deemed measures. The program employs simple and streamlined program processes and leverages a network of trade allies to assist with project implementation and raising customer awareness. The PY2019 program was heavily focused on LED interior lighting equipment.

- **Custom Incentive Program:** The Custom Incentive Program applies to processes, technologies, and energy efficiency measures that are not deemed and therefore do not fall under the Standard Program. Custom projects are sometimes complex and always unique, requiring customer-specific incentive applications and calculations of estimated energy savings. The Custom Program also relies on a network of trade allies. HVAC equipment was the predominant enduse in PY2019, but the program also incented compressed air, lighting, and other measures.
- **Small Business Direct Install Program:** The SBDI Program is designed to promote the installation of energy-efficient technologies in small businesses. The PY2019 program provided prescriptive incentives for a range of deemed interior lighting measures and smart thermostats at incentive levels higher than the Standard Program. A group of SBDI Program Service Providers delivers the energy-efficient measures at low-cost to small business customers.
- **New Construction Program:** The New Construction Program is designed to promote cost-effective, energy efficient design in nonresidential new construction and major renovation projects in the Ameren MO service territory. In addition to interior lighting incentives, New Construction Program participants are eligible for custom incentives and a whole building performance incentive for completing a whole building energy model
- **Retro Commissioning Program:** The RCx Program is designed to help customers retro-commission existing facilities. Program activities include conducting a retro-commissioning study, benchmarking existing building system performance levels, identifying operating system performance optimization improvements, and, where applicable, providing financial incentives to support implementation of program recommendations. The program relies on qualified Retro-Commissioning Service Providers to deliver measurable energy savings.

The PY2019 Business Portfolio achieved 83,364 MWh of first year net energy savings and 21.76 MW of first year net demand savings, exceeding its goals, as outlined in Ameren Missouri's 2019-21 MEEIA Energy Efficiency Plan, by 7% and 12%, respectively. The portfolio also exceeded its target for last year demand savings in the 15+ Year effective useful life (EUL) category (124% of target) but fell slightly short of target in the 10-14 Year EUL category (94% of target).

Savings-weighted portfolio-level gross realization rates (RR) ranged from 94% for last year demand savings in the 10-14 Year EUL category to 99% for last year demand savings in the 15+ Year EUL category, while savings-weighted net-to-gross ratios (NTGR) ranged from 85% to 86%.

Table 2-11 summarizes first year and last year annual gross and net savings for the Business Portfolio in PY2019.

Table 2-11. PY2019 Business Portfolio Savings Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
First Year Savings							
Energy Savings (MWh)	103,457	94.6%	97,865	85.2%	83,364	78,196	107%
Demand Savings (MW)	25.91	97.5%	25.27	86.1%	21.76	19.37	112%
Last Year Demand Savings							
<10 EUL (MW)	-	n/a	-	n/a	-	0.57	0%
10-14 EUL (MW)	6.25	94.2%	5.89	85.4%	5.03	5.34	94%
15+ EUL (MW)	19.66	98.6%	19.38	86.3%	16.72	13.45	124%

The Standard Program was the largest program in Ameren Missouri's Business Portfolio in PY2019, contributing 73% of first year ex post net energy savings and 56% of first year ex post net demand savings. The Standard Program was instrumental in exceeding portfolio goals as it achieved 207% of its first year net energy goal and 198% of its first year net demand goal. All other programs fell short of first year net impact energy and demand goals.

Portfolio-wide, the primary driver of low program-specific performance relative to net savings goals was lack of participation. For all programs other than Standard, even gross ex ante savings are below net goals (in some cases significantly), indicating that the shortfall was not primarily a result of low RRs or NTGRs.

Table 2-12 summarizes first year annual gross and net savings for all programs in the PY2019 Business Portfolio.

Table 2-12. PY2019 Business Portfolio First Year Savings Summary by Program

Program	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
First Year Energy Savings (MWh)							
Standard	76,553	94.0%	71,972	84.2%	60,622	29,220	207%
Custom	16,807	97.7%	16,427	87.9%	14,441	34,247	42%
SBDI	6,385	96.8%	6,181	87.8%	5,427	8,702	62%
New Construction	2,626	74.6%	1,959	79.0%	1,549	3,349	46%
Retro-Commissioning	1,086	122.0%	1,324	100.0%	1,324	2,679	49%
Total Business	**103,457**	**94.6%**	**97,865**	**85.2%**	**83,364**	**78,197**	**107%**
First Year Demand Savings (MW)							
Standard	14.69	97.7%	14.36	84.2%	12.10	6.10	198%
Custom	8.71	95.7%	8.34	87.9%	7.33	9.89	74%
SBDI	1.21	100.5%	1.22	87.8%	1.07	1.51	71%
New Construction	0.63	82.0%	0.51	81.2%	0.42	0.89	47%
Retro-Commissioning	0.67	125.1%	0.84	100.0%	0.84	0.98	86%
Total Business	**25.91**	**97.5%**	**25.27**	**86.1%**	**21.76**	**19.37**	**112%**

Program performance relative to target net demand savings by EUL category varied widely, but overall, the Business Portfolio achieved 94% of target last year net demand savings in the 10-14 Year EUL category and 124% of target last year net demand savings in the 15+ Year EUL category. The Standard Program was again the primary driver of portfolio success, achieving 126% of target last year net demand savings in the 10-14 Year EUL category and 306% of target last year net demand savings in the 15+ Year EUL category.

While the Custom Program accounted for only 17% of the Business Portfolio's ex post net energy savings it significantly contributed to the portfolio's ex post last year demand savings, particularly in the 15+ Year EUL category (5.97 MW or 36% of the total Business Portfolio).

Table 2-13 summarizes last year annual gross and net savings for all programs in the PY2019 Business Portfolio.

Table 2-13. PY2019 Business Portfolio Last Year Demand Savings Summary by Program

Program	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
< 10 Year EUL (MW)							
Standard	-	n/a	-	n/a	-	0.55	-
Custom	-	n/a	-	n/a	-	-	n/a
SBDI	-	n/a	-	n/a	-	0.01	-
New Construction	-	n/a	-	n/a	-	-	n/a
Retro-Commissioning	-	n/a	-	n/a	-	-	n/a
Total Business	**-**	**n/a**	**-**	**n/a**	**-**	**0.57**	**0%**
10-14 Year EUL (MW)							
Standard	4.28	94.4%	4.04	84.2%	3.40	2.70	126%
Custom	1.58	97.7%	1.55	87.9%	1.36	1.38	99%
SBDI	0.19	100.4%	0.19	87.8%	0.16	0.62	26%
New Construction	0.18	52.9%	0.09	86.8%	0.08	0.08	101%
Retro-Commissioning	0.02	100.0%	0.02	100%	0.02	0.55	4%
Total Business	**6.25**	**94.2%**	**5.89**	**85.4%**	**5.03**	**5.34**	**94%**
15+ Year EUL (MW)							
Standard	10.41	99.1%	10.32	84.2%	8.69	2.84	306%
Custom	7.12	95.3%	6.79	87.9%	5.97	8.51	70%
SBDI	1.03	100.5%	1.03	87.8%	0.91	0.87	104%
New Construction	0.45	93.7%	0.42	79.9%	0.33	0.81	41%
Retro-Commissioning	0.65	126.0%	0.82	100.0%	0.82	0.43	191%
Total Business	**19.66**	**98.6%**	**19.38**	**86.3%**	**16.72**	**13.45**	**124%**

As noted above, this volume also includes the results of the BSS Program evaluation. The BSS Program performed well in PY2019, achieving 112% of its first year net energy savings goals and 113% of its first year net demand savings goals. Table 2-14 summarizes first year and last year annual gross and net savings for the BSS Program in PY2019.

Table 2-14. PY2019 BSS Program Savings Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
First Year Savings							
Energy Savings (MWh)	1,072	103.2%	1,106	100.0%	1,106	987	112%
Demand Savings (MW)	0.21	105.0%	0.22	100.0%	0.22	0.19	113%
Last Year Demand Savings							
<10 EUL (MW)	-	n/a	-	n/a	-	0.02	0%
10-14 EUL (MW)	0.02	105.0%	0.02	100.0%	0.02	0.11	22%
15+ EUL (MW)	0.18	105.0%	0.19	100.0%	0.19	0.06	322%

2.5 Demand Response Portfolio

The PY2019 Demand Response Portfolio included two programs, one for residential customers and one for business customers, both new in MEEIA Cycle 3:

- **Residential Demand Response**: Ameren Missouri launched an innovative 'intentionally' integrated Demand Response (DR) and Energy Efficiency (EE) Peak Time Savings (PTS) thermostat program. A relatively new program design, Ameren Missouri worked with a team of partners to capture the co-benefits of both energy efficiency and demand response. The Residential DR Program is designed to control cooling load with the help of smart thermostats to achieve peak demand savings and energy savings. Eligible customers include Ameren Missouri electric customers with central air conditioning systems, including heat pumps, and a program-qualifying smart thermostat (including ecobee®, Nest®, and Emerson™ devices).
- **Business Demand Response:** The Business Demand Response Program is designed to reduce load during periods of peak demand. The program aggregator is responsible for recruiting and enrolling customers, developing customized load reduction nominations and load curtailment strategies, dispatching demand response events, and maintaining customer relationships with participating businesses. Eligible business customers can participate in DR events through a variety of strategies, including direct load control and manual response. Each enrolled facility receives a customized load curtailment strategy, focusing on a variety of energy loads such as lighting, HVAC, chillers, motors, and processing equipment.

At the end of the PY2019 season, the demand response portfolio achieved 32.82 MW in average load reduction as well as 499.89 MWh in energy savings. Milder than normal temperatures during the PY2019 event season resulted in dispatching only test events and were one of the driving factors behind the savings. For the Business DR Program specifically, there was a high degree of variability in facility-level impacts for Business DR Program participants.

Table 2-15. 2019 Event Season Performance Summary

Program	Participants	Event Season MW Performance	Event Season MWH Performance
Residential DR Program	9,276	10.43	405.75
Business DR Program	53	22.39	94.14
Total DR Portfolio	**9,329**	**32.82**	**499.89**

To compare the DR portfolio performance against the MEEIA III MW goals, Opinion Dynamics calculated weather normalized resource capability estimates. Resource capability reflects total demand under control by the programs at program year-end and available to be called under conditions consistent with Ameren Missouri's peak forecasting weather assumption.**Error! Reference source not found.** Figure 2-1 summarizes portfolio performance toward MEEIA III cumulative goals, for both demand and energy. As can be seen in the figure, the programs exceeded the demand goal of 36.53 MW by 30.26 MW for a total of 66.79 MW, achieving 183% of the goal, but fell short of the energy savings goals, achieving 499.89 MWH of the 1,630 MWH (31%).

Figure 2-1. DR Portfolio Performance Against MEEIA III Cumulative Goals

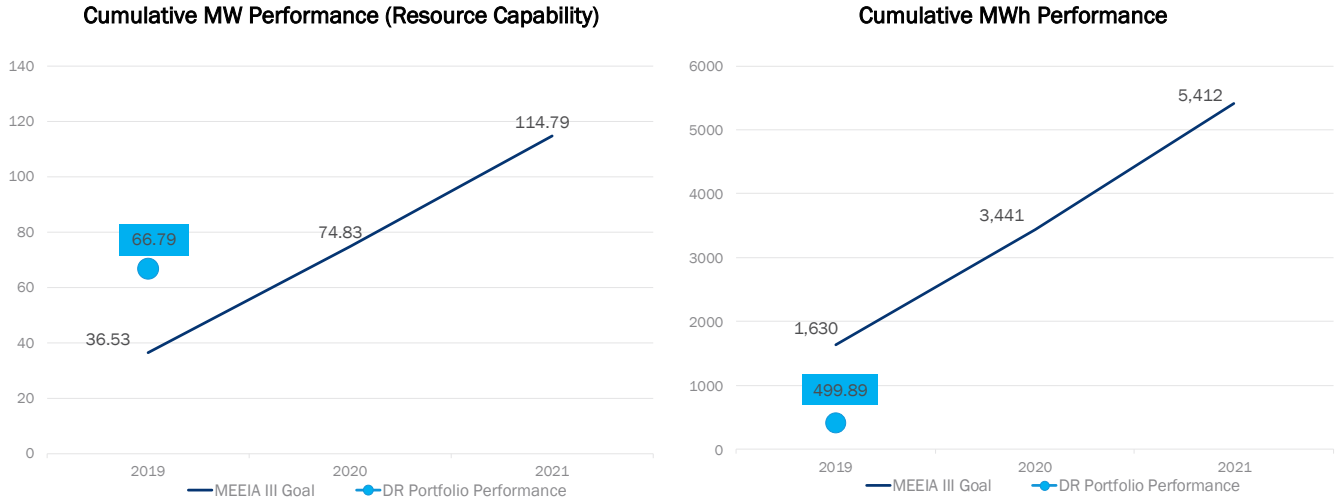

Table 2-16 provides a detailed summary of each program's performance against MEEIA III goals, including participation goals. As can be seen in the table, both programs exceeded goals in terms of customer enrollment. As of the end of PY2019, the Residential DR Program achieved 183% of its enrollment goal, while the Business DR program achieved 298% of the enrollment goal. From a resource capability perspective, both programs had a strong performance, which positions them well for the years ahead. More specifically, the Residential DR Program achieved 16.86 MW and 147% of its goal, while the Business DR Program achieved 49.99 MW and 200% of its goal. Both programs underperformed against the energy savings goal (36% and 19% for the Residential and Business DR programs, respectively). Energy savings for both programs are calculated based on event day impacts. In addition, energy savings for the Residential DR Program include energy optimization savings during the cooling season. Across the portfolio, lower than

planned energy savings are due to fewer than expected events dispatched in PY2019 due to milder than normal weather. For the Residential DR Program, the late start of the energy optimization component for most of the enrolled devices (Nest's) was another factor driving the energy savings results.

Table 2-16. DR Portfolio Performance Against MEEIA III

Program	2019 MEEIA III Goal	PY2019 Performance	Goal Achieved (%)
Participation as of the End of PY2019 (Participants)			
Residential DR Program	6,533	11,977	183%
Business DR Program	50	149	298%
Total DR Portfolio	**6,583**	**12,126**	**184%**
Resource Capability (MW)			
Residential DR Program	11.50	16.86	147%
Business DR Program	25.00	49.99	200%
Total DR Portfolio	**36.50**	**66.79**	**183%**
Energy Savings (MWH)			
Residential DR Program	1,130.00	405.75	36%
Business DR Program	500.00	94.14	19%
Total DR Portfolio	**1,630.00**	**499.89**	**31%**

In addition to the event season performance and resource capability performance, we also calculated cumulative DR capability. Cumulative DR capability is calculated to support the earnings opportunity metric for Ameren Missouri's DR programs. For the Residential DR Program, the cumulative DR capability mirrors the resource capability, whereas for the Business DR Program, per the MEEIA III Plan,[5] the cumulative DR capability is based on the performance of only tested participants, as opposed to all participants enrolled in the program at year-end.[6] Cumulative DR capability estimates for the two programs were considerably higher than the target, reaching 49.96 MW and representing 137% of the target.

Table 2-17. DR Portfolio Summary of Resource Capability Estimate Impacts by Program

Program	Target (MW)	PY2019 Performance (MW)	% of Target Achieved
Residential DR Program	11.50	16.86	147%
Business DR Program	25.00	33.10	132%
Total DR Portfolio	**36.50**	**49.96**	**137%**

[5] Ameren Missouri 2019-21 MEEIA Energy Efficiency Plan.
https://efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=936195031

[6] Including event season DR or Test events as well as winter Test event.

3. Earnings Opportunities

This section provides the evaluated inputs necessary for calculating Ameren Missouri's PY2019 achieved Earnings Opportunities (EO). Ameren Missouri included seven EO metrics in its 2019-21 Energy Efficiency Plan. Those metrics are:

1. Average Percent Energy Savings per Property for the Multifamily Low-Income Program;
2. Average Percent Energy Savings per Property for the Single Family Low Income Program (Excluding Efficiency Home Grants);
3. Energy Savings of the HER Program;
4. Subtotaled Portfolio Energy Savings for energy efficiency programs (excluding HER, Low Income programs, Business Social Services, and DR programs);
5. Subtotaled Coincident Peak Demand Savings from Measures with a 10-14 Year Useful Life (excluding HER, Low Income programs, Business Social Services, and DR programs);
6. Subtotaled Coincident Peak Demand Savings from Measures with a ≥15 Year Useful Life (excluding HER, Low Income programs, Business Social Services, and DR programs); and
7. Cumulative Demand Response Capability for the Demand Response Programs.

We have included the relevant inputs, equations, earnings opportunity targets, and final calculated payouts from the Earnings Opportunity Calculator[7] along with the evaluated results in Table 3-1 below. The source column provides a reference to where each evaluated value can be found in the PY2019 Evaluation Report. Each EO metric also has a performance target and maximum performance cap built into the Earnings Opportunity Calculator.

[7] Ameren Missouri 2019-21 MEEIA Energy Efficiency Plan, Appendix N

Table 3-1. Evaluated Earnings Opportunity Metrics

EO Metric	Unit of Evaluated Value	Evaluated Value	EO Target	EO Cap Multiplier	EO Maximum	EO Eligible Performance	Payout Amount per Unit	EO Payout Amount	Source of Evaluated Value
		a	b	c	d = b*c	e = min of (a or d)	f	g = e * f	
1	% of Baseline Usage	*Not applicable for PY2019; EO Target was 0%*							
2[a]	% of Baseline Usage	21.76%	10%	125%	12.50%	12.50%	$33,333	$416,667	Vol 2. Table 10-7
3	MWh	15,241	35,250	105%	37,013	15,241	$4.73	$72,061	Vol 1. Table 2-7
4	MWh	186,702	154,639	115%	177,835	177,835	$7.65	$1,359,865	Vol 1. Table 2-1
5	MW	8.30	8.36	125%	10.45	8.30	$87,086	$722,817	Vol 1. Table 2-2
6	MW	30.34	30.57	125%	38.21	30.34	$108,897	$3,303,943	Vol 1. Table 2-2
7	MW	49.96	36.50	125%	45.62	45.62	$19,902	$907,901	Vol 1. Table 2-17

[a] A threshold criterion that at least 85% of the Commission-approved annual budget (administrative cost plus customer incentive cost less the cost of Low Income Efficiency Housing Grants) for the program year in question is spent. If Ameren does not meet this criterion the EO Eligible performance is 0%.

4. Cost-Effectiveness Results

Cost-effectiveness analysis compares the benefits of an energy efficiency or demand response program with the cost of delivering it, expressed as the ratio of the net present value (NPV) of lifetime benefits to the costs. A cost-effectiveness ratio of greater than 1.0 means that the benefits generated by the program exceeded its costs. Cost-effectiveness can be assessed from several different "perspectives," using different tests, with each test including a slightly different set of benefits and costs.

The evaluation team assessed the cost-effectiveness of all 17 Ameren Missouri energy efficiency and demand response programs as well as three sector-level portfolios (low-income, residential, and business) and the overall combined portfolio of programs. We assessed cost-effectiveness using all five costs-effectiveness tests recommended by the California Standard Practice Manual[8] and used in prior evaluations:

- **Total Resource Cost (TRC) Test:** Perspective of all utility customers (participants and nonparticipants) in the utility service territory;
- **Utility Cost Test (UCT):** Perspective of utility, government agency, or third-party program implementer;
- **Ratepayer Impact Measure (RIM) Test:** Impact of efficiency measure on nonparticipating ratepayers overall;
- **Participant Cost Test (PCT):** Perspective of the customers installing the measures; and
- **Societal Cost Test (SCT):** Perspective of all utility customers (participants and nonparticipants) in the utility service territory.[9]

The TRC test is the primary test of cost-effectiveness, per Ameren Missouri's 2019-21 Energy Efficiency Plan. It compares all program benefits (in terms of avoided energy production, transmission and distribution, and capacity) against the utility administrative costs and any out-of-pocket costs incurred by participating customers. Because incentives are both a cost to the utility and a benefit to participants, they are excluded from calculations using the TRC test.

The PY2019 cost-effectiveness analysis was completed by Morgan Marketing Partners using DSMore software. DSMore is a financial analysis tool designed to evaluate the costs, benefits, and risks of energy efficiency programs and measures. Developed and licensed by Integral Analytics based in Cincinnati, Ohio, DSMore estimates the value of an energy efficiency measure at an hourly level across distributions of weather and/or energy costs or prices. The software references over 30 years of historic weather variability to appropriately model weather variances.

In order to maintain consistency with Ameren Missouri's planning assumptions the evaluation team relied on the same DSMore planning tools used to develop Ameren Missouri's planning values. It was important to ensure difference in cost-effectiveness results compared to planning values were driven by deviations between planned and realized costs and benefits of delivering energy efficiency programs as opposed to differences in the underlying financial assumptions within in the DSMore model itself.

[8] California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects. October 2001.
[9] Although we developed SCT results as a part of our evaluation, this section does not show the results because they are equivalent to TRC results due to two factors: (1) Ameren Missouri does not include non-energy impacts in cost-effectiveness testing, and (2) Ameren Missouri uses the same planning assumptions for both tests, including the discount rate.

A number of overall and sector-level costs are reflected in the program-level cost-effectiveness analysis. These overarching costs include those for EM&V, education and outreach, portfolio administration, and data tracking. These costs were allocated by each program's share of the portfolio's avoided cost benefits. All results shown in the tables below account for portfolio and indirect costs allocated to each program on this basis.

Overall, the Ameren Missouri combined portfolio of energy efficiency and demand response programs was cost-effective as delivered in PY2019, according to every test except the RIM test. The combined portfolio achieved a TRC score of 2.58 and a UCT score of 2.63. According to the TRC test, each sector-level portfolio was also cost-effective except for the low-income portfolio, which achieved a TRC score of 0.62.[10]

Table 4-1 summarizes the cost-effectiveness results for all programs in the Low-income, Residential, and Business portfolios.

Table 4-1. Summary of PY2019 Low-income, Residential, and Business Program Cost Effectiveness

Program	TRC	UCT	RIM	PCT
Low-Income Portfolio				
Single Family	0.54	0.44	0.27	3.62
Multifamily	0.42	0.32	0.21	5.34
Business Social Services	2.42	1.04	0.44	8.11
Low-Income Total	**0.62**	**0.47**	**0.28**	**4.55**
Residential Portfolio				
Lighting	15.57	5.52	0.55	n/a
Efficient Products	0.96	1.37	0.46	2.80
HVAC	1.76	1.78	0.57	4.63
Appliance Recycling	0.79	0.73	0.30	26.06
Energy Efficiency Kits	2.62	2.60	0.50	8.24
Home Energy Reports	0.44	0.44	0.26	n/a
Multifamily Market Rate	1.12	0.86	0.33	8.23
Residential Demand Response [A]	1.11	1.11	0.98	n/a
Residential Total	**2.57**	**2.27**	**0.57**	**13.52**
Business Portfolio				
Standard	2.92	3.92	0.64	5.90
Custom	1.92	3.49	1.05	2.02
Retro-commissioning	5.74	6.78	1.45	5.63
New Construction	1.43	2.56	0.71	2.16
Small Business Direct Install	2.79	2.94	0.61	5.57
Business Demand Response [A]	3.34	3.34	3.25	n/a
Business Total	**2.84**	**3.56**	**1.07**	**4.42**
Portfolio Total	**2.58**	**2.63**	**0.74**	**7.94**

[A] Includes the lifetime costs and benefits of Demand Response programs over a 10-year effective useful life.

[10] MEEIA and the Revised Statues of Missouri (RSMo) acknowledge low-income programs as a special circumstance and do not require the programs to be cost-effective as implemented. Results are shown for comparative and planning purposes.

Overall, Ameren Missouri's combined portfolio of energy efficiency programs generated $174 million dollars in lifetime benefits at a cost of $68 million, resulting in $107 million dollar in net benefits (based on the TRC tests). The UTC test results in a similar total net benefits ($108 million). The Business Portfolio generated just under $61 million dollars of TRC-lifetime benefits while the Residential Portfolio generated $47 million dollars of TRC-lifetime benefits. Table 4-2 provides a summary of the total cost and benefits associated with each program in the Low-income, Residential, and Business portfolios under the TRC test and UCT tests.

Table 4-2. Summary of TRC Cost and Benefits (2019 Dollars)

Program	Lifetime Benefits	TRC Test		UCT Test	
		Program Costs	Net Benefits	Program Costs	Net Benefits
Low-Income Portfolio					
Single family	$1,373,448	$2,547,146	-$1,173,698	$3,094,349	-$1,720,901
Multifamily	$623,764	$1,483,425	-$859,661	$1,978,300	-$1,354,537
Business Social Services	$671,155	$277,320	$393,835	$644,055	$27,100
Low-Income Total	**$2,668,367**	**$4,307,892**	**-$1,639,525**	**$5,716,704**	**-$3,048,337**
Residential Portfolio					
Lighting	$39,239,626	$2,520,479	$36,719,147	$7,108, 342	$32,131,284
Efficient Products	$2,139,181	$2,234,241	-$95,060	$1,566,597	$572,584
HVAC	$22,109,465	$12,537,757	$9,571,708	$12,404,479	$9,704,986
Appliance Recycling	$445,029	$560,654	-$115,626	$609,406	-$164,377
Energy Efficiency Kits	$2,263,937	$865,470	$1,398,467	$869,143	$1,394,794
Home Energy Reports	$828,398	$1,862,615	-$1,034,217	$1,862,615	-$1,034,217
Multifamily Market Rate	$729,241	$649,033	$80,208	$850,099	-$120,858
Residential Demand Response [A]	$9,904,305	$8,956,821	$947,483	$8,956,821	$947,483
Residential Total	**$77,659,182**	**$30,187,072**	**$47,472,110**	**$34,227,503**	**$43,431,679**
Business Portfolio					
Standard	$34,964,958	$11,991,257	$22,973,701	$8,925,949	$26,039,009
Custom	$13,544,174	$7,048,317	$6,495,856	$3,876,033	$9,668,141
Retro-commissioning	$1,443,100	$251,311	$1,191,789	$212,702	$1,230,398
New Construction	$978,133	$683,671	$294,462	$382,064	$596,069
Small Business Direct Install	$3,247,102	$1,165,565	$2,081,537	$1,103,434	$2,143,668
Business Demand Response [A]	$39,795,371	$11,923,531	$27,871,840	$11,923,531	$27,871,840
Business Total	**$93,972,838**	**$33,063,652**	**$60,909,186**	**$26,423,713**	**$67,549,125**
Portfolio Total	**$174,300,387**	**$67,558,616**	**$106,741,771**	**$66,367,920**	**$107,932,467**

[A] Includes the lifetime costs and benefits of Demand Response programs over a 10-year effective useful life.

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