



Opinion **Dynamics**

Boston | Headquarters

617 492 1400 tel  
617 497 7944 fax  
800 966 1254 toll free

1000 Winter St  
Waltham, MA 02451



# Ameren Missouri Program Year 2021 Annual EM&V Report Volume 1: Portfolio Impact Summary

June 10, 2022



## Table of Contents

1. Introduction .....	1
2. Program Year 2021 Impact Results .....	3
2.1 Overall Impacts .....	3
2.2 Low-Income Portfolio .....	4
2.3 Residential Portfolio .....	7
2.4 Business Portfolio.....	10
2.5 Demand Response Portfolio .....	13
3. Earnings Opportunities .....	17
4. Cost-Effectiveness Results .....	19

## Table of Tables

Table 1. Ameren Missouri 2019–2021 Energy Efficiency and Demand Response Programs .....	1
Table 2. PY2021 Combined Portfolio First Year Impact Summary .....	3
Table 3. PY2021 Combined Portfolio Last Year Demand Impact Summary .....	4
Table 4. PY2021 Low-Income Portfolio Impact Summary .....	5
Table 5. PY2021 Low-Income Portfolio First Year Impact Summary by Program .....	6
Table 6. PY2021 Low-Income Portfolio Last Year Demand Impact Summary by Program .....	6
Table 7. PY2021 Residential Portfolio Impact Summary .....	8
Table 8. PY2021 Residential Portfolio First Year Impact Summary.....	9
Table 9. PY2021 Residential Portfolio Last Year Demand Impact Summary.....	9
Table 10. PY2021 Business Portfolio Savings Summary .....	11
Table 11. PY2021 Business Portfolio First Year Savings Summary by Program .....	12
Table 12. PY2021 Business Portfolio Last Year Demand Savings Summary by Program .....	13
Table 13. PY2021 Event Season Performance Summary .....	14
Table 14. DR Portfolio Performance Against MEEIA III .....	15
Table 15. DR Portfolio Summary of Cumulative DR Capability Estimated Impacts by Program .....	16
Table 16. Evaluated Earnings Opportunity Metrics .....	18
Table 17. Summary of PY2021 Low-Income, Residential, and Business Program Cost-Effectiveness.....	20
Table 18. Summary of TRC Cost and Benefits (2019 Dollars).....	21

## Table of Figures

Figure 1. DR Portfolio Performance Against MEEIA III Cumulative Goals ..... 15

# 1. Introduction

This document presents a summary of impact evaluation and cost-effectiveness results for Program Year 2021 (PY2021)<sup>1</sup> 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 PY2021 Annual Evaluation, Measurement, and Verification (EM&V) Report.

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 goals and targets,<sup>2</sup> modify program design and operations, inform strategies to achieve deeper program savings, and ensure customer satisfaction and cost-effectiveness.

Ameren Missouri's MEEIA Cycle III 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 (see Table 1). Each portfolio includes multiple programs that target specific market segments and/or equipment types. The overall portfolio includes 18 programs, including 6 that were newly offered in PY2019 and one, the Pay As You Save (PAYS) Program, that launched in PY2021.<sup>3</sup>

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

Low-Income Programs	Residential Programs	Business Programs	Demand Response
<ul style="list-style-type: none"> <li>▪ Residential Single Family Income Eligible <sup>A</sup></li> <li>▪ Residential Multifamily Income Eligible</li> <li>▪ Business Social Services <sup>A</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Lighting</li> <li>▪ Residential Efficient Products</li> <li>▪ HVAC</li> <li>▪ Residential Appliance Recycling <sup>A</sup></li> <li>▪ Energy Efficiency Kits</li> <li>▪ Home Energy Report</li> <li>▪ Multifamily Market Rate <sup>A</sup></li> <li>▪ Pay As You Save <sup>B</sup></li> </ul>	<ul style="list-style-type: none"> <li>▪ Standard</li> <li>▪ Custom</li> <li>▪ Retro-Commissioning</li> <li>▪ New Construction</li> <li>▪ Small Business Direct Install</li> </ul>	<ul style="list-style-type: none"> <li>▪ Residential Demand Response <sup>A</sup></li> <li>▪ Business Demand Response <sup>A</sup></li> </ul>

<sup>A</sup> New program in MEEIA Cycle III.

<sup>B</sup> New program in PY2021.

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:

<sup>1</sup> PY2021 was implemented from January 1, 2021, to December 31, 2021.

<sup>2</sup> 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.

<sup>3</sup> 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 2: Residential Portfolio Evaluation Report
- Volume 3: Business Portfolio Evaluation Report
- Volume 4: Demand Response Portfolio Evaluation Report

## 2. Program Year 2021 Impact Results

This section summarizes PY2021 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 PY2021 Ameren Missouri energy efficiency programs fell slightly short of its first year net energy and net demand savings goals (92% and 96%, respectively). The Residential Portfolio exceeded its goals (132% for net energy and 110% for net demand savings) while both the Low-Income and Business Portfolios fell short of their first year net energy and demand goals.<sup>4</sup> The PY2021 Residential Portfolio accounted for the largest share of first year ex post net energy savings (50%) and demand savings (53%), excluding Demand Response.

All three portfolios achieved strong first year gross energy and demand savings realization rates of 97% or above. Net impact evaluation results varied, with savings-weighted average net-to-gross ratios (NTGRs) of 75% for the Residential Portfolio and 83% for the Business Portfolio.<sup>5</sup> Table 2 summarizes portfolio first year energy and demand performance relative to goal.

Table 2. PY2021 Combined Portfolio First Year Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
<b>First Year Energy Savings (MWh)</b>							
Low-Income	10,050	98.9%	9,939	100.0%	9,939	15,202	65%
Residential <sup>A</sup>	179,950	113.4%	204,070	75.1%	153,321	116,246	132%
Business	179,123	97.5%	174,583	83.1%	145,141	204,544	71%
<b>Portfolio Total</b>	<b>369,123</b>		<b>388,592</b>		<b>308,402</b>	<b>335,992</b>	<b>92%</b>
<b>Portfolio Total (EO Eligible)</b>	<b>345,326</b>		<b>340,690</b>		<b>260,499</b>	<b>285,540</b>	<b>91%</b>
<b>First Year Demand Savings (MW)</b>							
Low-Income	1.93	106.9%	2.06	100.0%	2.06	4.06	51%
Residential <sup>A</sup>	60.92	116.4%	70.93	76.6%	54.37	49.40	110%
Business	55.72	98.8%	55.07	82.7%	45.55	52.39	87%
<b>Portfolio Total</b>	<b>118.57</b>		<b>128.07</b>		<b>101.98</b>	<b>105.85</b>	<b>96%</b>

<sup>A</sup> The 2019-21 MEEIA Energy Efficiency Plan does not include incremental MWh or MW goals for the PY2021 Home Energy Reports (HER) Program. For comparison purposes, this table includes PY2021 goals for HER that are equivalent to PY2019 goals.

The evaluation team also estimated PY2021 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

<sup>4</sup> These summaries exclude: (1) The Demand Response Portfolio because we do not estimate incremental impacts for these programs, as discussed in more detail in Volume 3. (2) The PAYS Program because it is not included in Residential Portfolio targets and does not contribute to portfolio earnings opportunities for PY2021.

<sup>5</sup> Consistent with industry standards, this evaluation assumes a NTGR of 1.0 for low-income programs.

effective useful life (EUL). Last year demand savings were estimated for the following three EUL categories: <10 Year EUL, 10–14 Year EUL, and 15+ Year EUL.

At the portfolio level, Ameren Missouri achieved 104% of its net target in the <10 Year EUL category, 55% in the 10–14 Year EUL category, and 95% in the 15+ Year EUL category, excluding Demand Response. The Business Portfolio is the largest contributor to last year demand savings in the 15+ Year EUL category, accounting for 73% of achieved savings in this category.

Table 3. PY2021 Combined Portfolio Last Year Demand Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
<b>&lt; 10 Year EUL (MW)</b>							
Low-Income	0.28	159.4%	0.44	100.0%	0.44	0.60	73%
Residential	0.24	1238.8%	3.00	76.1%	2.28	0.77	296%
Business	0.12	104.6%	0.13	87.1%	0.11	1.34	8%
<b>Portfolio Total</b>	<b>0.64</b>		<b>3.57</b>		<b>2.84</b>	<b>2.72</b>	<b>104%</b>
<b>10–14 Year EUL (MW)</b>							
Low-Income	0.49	100.8%	0.49	100.0%	0.49	0.27	182%
Residential	5.65	87.4%	4.94	104.6%	5.17	3.53	146%
Business	4.51	106.7%	4.81	87.4%	4.20	14.12	30%
<b>Portfolio Total</b>	<b>10.64</b>		<b>10.23</b>		<b>9.86</b>	<b>17.92</b>	<b>55%</b>
<b>Portfolio Total (EO Eligible)</b>	<b>10.16</b>		<b>9.74</b>		<b>9.37</b>	<b>17.65</b>	<b>53%</b>
<b>15+ Year EUL (MW)</b>							
Low-Income	0.79	92.8%	0.73	100.0%	0.73	3.18	23%
Residential	24.30	88.7%	21.56	67.6%	14.65	19.19	76%
Business	51.09	98.1%	50.13	82.3%	41.24	36.92	112%
<b>Portfolio Total</b>	<b>76.18</b>		<b>72.42</b>		<b>56.62</b>	<b>59.38</b>	<b>95%</b>
<b>Portfolio Total (EO Eligible)</b>	<b>75.39</b>		<b>71.69</b>		<b>55.89</b>	<b>56.19</b>	<b>99%</b>

## 2.2 Low-Income Portfolio

Ameren Missouri’s 2019–2021 MEEIA Energy Efficiency Plan incorporated a significant investment increase in energy efficiency programs targeting low-income customers. The PY2021 Low-Income Portfolio included three programs designed to achieve savings in three distinct market segments:

- **Single Family Income Eligible (SFIE) Program:** The Residential SFIE Program was a new program for Ameren Missouri in PY2019. The program 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 two participation channels: (1) the Single Family channel and (2) the Grant channel.
- **Multifamily Income Eligible (MFIE) Program:** Ameren Missouri has been offering energy efficiency programs for multifamily income eligible properties since 2015. In PY2021, Ameren Missouri



continued to deliver the MFIE Program; designed to offer a one-stop-shop approach that assists owners and operators of multifamily properties where residents meet certain income-related requirements. The ultimate goal of the program is to overcome barriers to completing comprehensive retrofits in multifamily buildings and deliver long-term energy savings and bill reductions opportunities to Ameren Missouri customers.

- Business Social Services (BSS) Program:** The 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 programs from the previous MEEIA cycle.

At the portfolio level, the low-income programs achieved 65% of first year net energy savings goals and 51% of first year net demand savings goals (Table 4). This shortfall was due to lower than expected participation as gross savings realization rates were strong at 99% for energy savings and 107% for demand savings. Achieved last year demand savings ranged from 23% to 182% of target, depending on the EUL category.

Table 4. PY2021 Low-Income Portfolio Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
<b>First Year Energy Savings</b>							
Energy Savings (MWh)	10,050	98.9%	9,939	100.0%	9,939	15,202	65%
Demand Savings (MW)	1.93	106.9%	2.06	100.0%	2.06	4.06	51%
<b>Last Year Demand Savings</b>							
< 10 EUL (MW)	0.28	159.4%	0.44	100.0%	0.44	0.60	73%
10–14 EUL (MW)	0.49	100.8%	0.49	100.0%	0.49	0.27	182%
15+ EUL (MW)	0.79	92.8%	0.73	100.0%	0.73	3.18	23%

At the program level, performance against savings goals was mixed. While the MFIE Program achieved over double its first year energy savings goals, the SFIE and BSS programs fell short of their respective goals, achieving 31% and 28% of their respective first year net energy savings goals. Conversely, no program met their first year net demand savings goals (Table 5). The SFIE Program also performed strongly against last year demand targets in the < 10 Year and in the 10–14 Year EUL categories, while all three programs fell short of target in the 15+ Year EUL category (Table 6).

Notably, both residential low-income programs performed well against the average percent of energy savings per property metric established for this MEEIA cycle (i.e., achieving at least 10% savings per property): The SFIE Program achieved an average of 14% savings per property while the MFIE Program achieved an average of 21% savings per property (Section 3).

Table 5. PY2021 Low-Income Portfolio First Year Impact Summary by Program

Program	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
<b>First Year Energy Savings (MWh)</b>							
SFIE	3,574	93.3%	3,335	100.0%	3,335	10,822	31%
MFIE	6,012	102.0%	6,132	100.0%	6,132	2,680	229%
BSS	463	101.8%	472	100.0%	472	1,700	28%
<b>Total Low-Income</b>	<b>10,050</b>	<b>98.9%</b>	<b>9,939</b>	<b>100.0%</b>	<b>9,939</b>	<b>15,202</b>	<b>65%</b>
<b>First Year Demand Savings (MW)</b>							
SFIE	1.05	97.8%	1.03	100.0%	1.03	2.47	42%
MFIE	0.79	119.5%	0.95	100.0%	0.95	1.20	79%
BSS	0.09	102.0%	0.09	100.0%	0.09	0.39	23%
<b>Total Low-Income</b>	<b>1.93</b>	<b>106.9%</b>	<b>2.06</b>	<b>100.0%</b>	<b>2.06</b>	<b>4.06</b>	<b>51%</b>

Table 6. PY2021 Low-Income Portfolio Last Year Demand Impact Summary by Program

Program	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
<b>&lt; 10 Year EUL (MW)</b>							
SFIE	0.17	142.5%	0.24	100.0%	0.24	0.57	43%
MFIE	0.10	191.4%	0.19	100.0%	0.19	-	-
BSS	<0.01	101.1%	<0.01	100.0%	<0.01	0.03	16%
<b>Total Low-Income</b>	<b>0.28</b>	<b>159.4%</b>	<b>0.44</b>	<b>100.0%</b>	<b>0.44</b>	<b>0.60</b>	<b>73%</b>
<b>10-14 Year EUL (MW)</b>							
SFIE	0.30	100.6%	0.31	100.0%	0.31	0.09	341%
MFIE	0.18	101.3%	0.18	100.0%	0.18	-	-
BSS	<0.01	101.5%	<0.01	100.0%	<0.01	0.18	3%
<b>Total Low-Income</b>	<b>0.49</b>	<b>100.8%</b>	<b>0.49</b>	<b>100.0%</b>	<b>0.49</b>	<b>0.27</b>	<b>182%</b>
<b>15+ Year EUL (MW)</b>							
SFIE	0.39	77.3%	0.30	100.0%	0.30	1.81	17%
MFIE	0.32	109.1%	0.35	100.0%	0.35	1.19	29%
BSS	0.08	102.1%	0.08	100.0%	0.08	0.18	44%
<b>Total Low-Income</b>	<b>0.79</b>	<b>92.8%</b>	<b>0.73</b>	<b>100.0%</b>	<b>0.73</b>	<b>3.18</b>	<b>23%</b>

## 2.3 Residential Portfolio

The PY2021 Residential Portfolio included the following eight 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.<sup>6</sup> Ameren Missouri delivers the Lighting Program through two channels: (1) upstream, through retail partners, which accounts for the vast majority of program savings; 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.
- **Home Energy Report (HER) Program:** Ameren Missouri designed the HER Program to promote changes in energy consumption behaviors that result in reduced electricity usage. This program is deployed as a randomized controlled trial, 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.
- **Heating, Ventilation, and Air Conditioning (HVAC) Program:** The 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. The program offers measures through two channels: A Downstream channel focused on encouraging customers to improve the efficiency of their HVAC systems at the point of installation and a new Midstream channel, introduced in PY2020, that focuses on making super-efficient HVAC systems more broadly available to Ameren Missouri customers. 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 both channels, while HVAC distributors are key to delivering the new Midstream channel.
- **Residential Efficient Products (REP) Program:** The 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 (EEK) Program:** The EEK Program provides energy efficiency kits and education materials to customers through an educational channel that targets middle and high school students attending schools within Ameren Missouri's service territory. The program combines a set of classroom activities with projects in the home to install energy-efficient products. The EEK Program includes a

---

<sup>6</sup> All product or company names that may be mentioned in this publication are tradenames, trademarks, or registered trademarks of their respective owners.

range of small energy-efficient products, such as LED light bulbs, hot water pipe wrap, low-flow showerheads, and faucet aerators.

- **Multifamily Market Rate (MFMR) Program:** The MFMR program is 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.
- **Residential Appliance Recycling (RAR) Program:** The primary goal of the 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 that include LEDs, domestic hot water measures, and dirty HVAC filter alarms. Additionally, in PY2021, the RAR program team introduced a limited-time Holiday Kits offering to provide the same energy efficiency kits to two large employers located in Ameren Missouri’s service territory.
- **Pay As You Save Program:** The PAYS program is a tariff on-bill financing offering that launched in PY2021. The program provides packages of energy efficiency measures — among them LEDs, domestic hot water, insulation, air sealing, and HVAC — to residential customers. The on-bill financing incentive design allows participating customers to pay back the cost of energy efficiency projects incrementally through their utility bill in the form of a tariff charge, which means that the cost of the project and the pay back remains with the premise rather than the customer. That is, if the customer moves out of the treated home prior to paying back the cost of the project, the new occupant will pay the remaining balance of the project’s cost through their utility bill.

At the portfolio level, the PY2021 Ameren Missouri residential programs (excluding PAYS) exceeded their first year net energy savings and their first year net demand savings goals, achieving 153,321 MWh and 54.37 MW, respectively (Table 7). Performance related to last year demand savings was mixed with the portfolio exceeding the targets for the <10 Year and the 10–14 Year EUL categories, but not meeting the 15+ Year EUL target.

Table 7. PY2021 Residential Portfolio Impact Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
<b>First Year Energy Savings</b>							
Energy Savings (MWh)	179,950	113%	204,070	75%	153,321	116,246	132%
Demand Savings (MW)	60.92	116%	70.93	77%	54.37	49.40	110%
<b>Last Year Demand Savings</b>							
< 10 EUL (MW)	0.24	1,239%	3.00	76%	2.28	0.77	296%
10–14 EUL (MW)	5.65	87%	4.94	106%	5.17	3.53	146%
15+ EUL (MW)	24.30	89%	21.56	68%	14.65	19.19	76%

Portfolio performance was largely driven by the Residential Lighting, HER, and HVAC programs, which collectively contribute approximately 90% of Ameren Missouri’s first year residential savings. As shown in Table

8, the Lighting and HER programs exceeded first year energy and demand savings goals, while the HVAC Program did not.

Table 9 shows last year demand savings across the portfolio by EUL category. Notably, the Lighting Program drove the high realization rate (1,239%) and strong performance against net savings goals (296%) across the portfolio for the less than 10 EUL category. This was due to a small portion of LEDs sold through the Upstream channel (i.e., sold through brick and mortar retailers) that were installed in business applications with a TRM EUL of six years, which is lower when compared to the TRM EUL of 19 years for similar LEDs installed in residential spaces.

**Table 8. PY2021 Residential Portfolio First Year Impact Summary**

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal Net	% of Goal
<b>First Year Energy Savings (MWh)</b>							
Lighting	97,062	103%	99,891	64%	63,740	11,238	567%
HER <sup>A</sup>	13,747	n/a	37,963	n/a	37,963	35,250	108%
HVAC	49,744	94%	46,823	76%	35,534	48,350	73%
REP	8,246	108.8%	8,972	86%	7,724	9,800	79%
EEK	5,437	81%	4,420	78%	3,466	4,199	83%
MFMR	3,763	100%	3,934	94%	3,553	4,064	87%
RAR	1,952	114%	2,220	60%	1,341	3,345	40%
<b>Total Residential</b>	<b>179,950</b>	<b>113%</b>	<b>204,070</b>	<b>75%</b>	<b>152,321</b>	<b>116,246</b>	<b>132%</b>
<b>First Year Demand Savings (MW)</b>							
Lighting	15.05	103%	15.49	64%	9.88	1.70	581%
HER	6.41	n/a	17.69	n/a	17.69	16.43	108%
HVAC	33.62	97%	32.47	69%	22.50	26.07	86%
REP	3.60	88%	3.18	81%	2.56	2.60	99%
EEK	1.02	84%	0.85	80%	0.68	0.81	84%
MFMR	0.93	101%	0.93	94%	0.88	1.30	67%
RAR	0.30	106%	0.32	55%	0.18	0.48	36%
<b>Total Residential</b>	<b>60.92</b>	<b>116%</b>	<b>70.93</b>	<b>77%</b>	<b>54.37</b>	<b>49.37</b>	<b>110%</b>

<sup>A</sup> The 2019–21 MEEIA Energy Efficiency Plan does not include incremental MWh or MW goals for the PY2021 HER Program, but we include goals here based on PY2019 for purposes of comparison.

**Table 9. PY2021 Residential Portfolio Last Year Demand Impact Summary**

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
<b>&lt; 10 EUL (MW)</b>							
Lighting	0.00	n/a	2.69	64%	1.71	0.00	n/a
HER	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HVAC	0.00	n/a	0.00	n/a	0.36	0.00	n/a
REP	0.00	n/a	0.00	n/a	0.04	0.04	82%
EEK	0.00	n/a	0.00	n/a	0.01	0.00	n/a

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Target Net	% of Target
MFMR	0.06	1.14	0.07	94%	0.06	0.25	25%
RAR	0.18	1.33	0.25	44%	0.11	0.48	22%
<b>Total Residential</b>	<b>0.24</b>	<b>1,239%</b>	<b>3.00</b>	<b>76%</b>	<b>2.28</b>	<b>0.77</b>	<b>296%</b>
<b>10-14 EUL (MW)</b>							
Lighting	0.00	0%	0.00	n/a	0.00	0.00	n/a
HER	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HVAC	0.98	87%	0.85	222%	1.87	0.00	n/a
REP	3.60	88%	3.18	77%	2.44	2.49	98%
EEK	0.74	85%	0.63	90%	0.57	0.76	74%
MFMR	0.26	100%	0.26	94%	0.24	0.28	86%
RAR	0.06	28%	0.02	151%	0.03	0.00	n/a
<b>Total Residential</b>	<b>5.65</b>	<b>87%</b>	<b>4.94</b>	<b>105%</b>	<b>5.17</b>	<b>3.53</b>	<b>146%</b>
<b>15+ EUL (MW)</b>							
Lighting	15.05	85%	12.79	64%	8.17	1.70	481%
HER	n/a	n/a	n/a	n/a	n/a	n/a	n/a
HVAC	8.31	95%	7.90	72%	5.69	16.71	34%
REP	0.00	n/a	0.00	n/a	0.08	0.00	n/a
EEK	0.28	80%	0.22	46%	0.10	0.05	218%
MFMR	0.61	98%	0.59	94%	0.56	0.73	76%
RAR	0.05	107%	0.05	75%	0.04	0.00	n/a
<b>Total Residential</b>	<b>24.30</b>	<b>89%</b>	<b>21.56</b>	<b>68%</b>	<b>14.65</b>	<b>19.19</b>	<b>76%</b>

## 2.4 Business Portfolio

The PY2021 Business Portfolio included five energy efficiency programs, all of which were offered in the previous MEEIA cycle:

- 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 PY2021, but the program also incented lighting, compressed air, and other measures.
- Standard Incentive Program:** The Standard Incentive Program is designed to promote the installation of energy-efficient technologies by providing incentives for a range of prescriptive 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 PY2021 program was heavily focused on LED interior lighting equipment.



- Small Business Direct Install (SBDI) Program:** The SBDI Program encourages small business customer participation through a simple, immediate, and streamlined program process. A group of SBDI Program Service Providers delivers the energy-efficient measures at low-cost to small business customers. These Service Providers supply, install, and finalize paperwork for eligible participants, and are tasked with identifying additional energy efficiency opportunities not covered under the SBDI Program.
- 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 Missouri 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. This program experienced significant growth in PY2021, driven by indoor agriculture projects, which comprise 82% of New Construction Program savings in PY2021. The program now constitutes a substantial portion of the overall Business portfolio savings.
- Retro-Commissioning (RCx) 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 PY2021 Business Portfolio achieved 145,141 MWh of first year net energy savings and 45.55 MW of first year net demand savings, achieving 71% and 87%, respectively, of its goals, as outlined in Ameren Missouri’s 2019–2021 MEEIA Energy Efficiency Plan. The portfolio exceeded its target for last year demand savings in the 15+ Year effective useful life (EUL) category (112% of target) but fell short of target in the 10–14 Year EUL category (30% of target) and the <10 Year EUL category (8% of target).

Savings-weighted portfolio-level gross realization rates (RR) ranged from 97.5% for energy savings to 106.7% for last year demand savings in the 10–14 Year EUL category, while savings-weighted net-to-gross ratios (NTGR) ranged from 82.2% to 87.4%.

Table 10 summarizes first year and last year annual gross and net savings for the Business Portfolio in PY2021.

Table 10. PY2021 Business Portfolio Savings Summary

	Ex Ante Gross	Gross RR	Ex Post Gross	NTGR	Ex Post Net	Goal/Target Net	% of Goal/Target
<b>First Year Savings</b>							
Energy Savings (MWh)	179,123	97.5%	174,583	83.1%	145,141	204,544	71%
Demand Savings (MW)	55.72	98.8%	55.07	82.7%	45.55	52.39	87%
<b>Last Year Demand Savings</b>							
<10 EUL (MW)	0.12	104.6%	0.13	87.1%	0.11	1.34	8%
10–14 EUL (MW)	4.51	106.7%	4.81	87.4%	4.20	14.12	30%
15+ EUL (MW)	51.09	98.1%	50.13	82.2%	41.24	36.92	112%

The Standard Program was the largest program in Ameren Missouri’s Business Portfolio in PY2021, contributing 49% of first year ex post net energy savings and 40% of first year ex post net demand savings.

The Standard Program and the New Construction Program both exceeded their first year net impact energy and demand savings goals. The New Construction Program was by far the most successful program relative to goal, achieving 307% of its first year net energy savings goal. All other programs fell short of first year net 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 and New Construction, even gross ex ante savings are below net goals (in some cases significantly), indicating that the shortfall was not primarily a result of low realization rates or NTGRs.

Table 11 summarizes first year annual gross and net savings for all programs in the PY2021 Business Portfolio.

**Table 11. PY2021 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
<b>First Year Energy Savings (MWh)</b>							
Standard	82,335	100.1%	82,396	87.1%	71,730	68,607	105%
Custom	31,884	95.8%	30,532	82.0%	25,026	100,445	25%
SBDI	5,658	98.1%	5,552	87.8%	4,875	11,340	43%
New Construction	52,293	94.0%	49,175	75.4%	37,082	12,076	307%
Retro-Commissioning	6,953	99.6%	6,928	92.8%	6,429	12,076	53%
<b>Total Business</b>	<b>179,123</b>	<b>97.5%</b>	<b>174,583</b>	<b>83.1%</b>	<b>145,141</b>	<b>204,544</b>	<b>71%</b>
<b>First Year Demand Savings (MW)</b>							
Standard	19.74	105.0%	20.72	87.1%	18.03	13.59	133%
Custom	14.65	94.2%	13.80	82.0%	11.31	29.20	39%
SBDI	1.07	101.6%	1.09	87.8%	0.96	1.97	49%
New Construction	16.88	95.7%	16.16	75.4%	12.19	3.20	380%
Retro-Commissioning	3.37	97.8%	3.30	92.8%	3.06	4.43	69%
<b>Total Business</b>	<b>55.72</b>	<b>98.8%</b>	<b>55.07</b>	<b>82.7%</b>	<b>45.55</b>	<b>52.39</b>	<b>87%</b>

Program performance relative to target net demand savings by EUL category varied widely, but overall, the Business Portfolio achieved 8% of target last year net demand savings in the <10 Year EUL category, 30% of target last year net demand savings in the 10–14 Year EUL category, and 112% of target last year net demand savings in the 15+ Year EUL category. All programs had their strongest performance relative to targets in the 15+ Year EUL category, but only the Standard Program, New Construction Program, and RCx Program surpassed their targets (achieving 250%, 417%, and 125% of target last year demand savings, respectively).

Table 12 summarizes last year annual gross and net savings for all programs in the PY2021 Business Portfolio.



Table 12. PY2021 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
<b>&lt; 10 Year EUL (MW)</b>							
Standard	0.12	104.0%	0.12	87.1%	0.11	1.33	8%
Custom	-	n/a	-	n/a	-	-	n/a
SBDI	<0.01	119.2%	0.01	87.8%	<0.01	0.02	31%
New Construction	-	n/a	-	n/a	-	-	n/a
Retro-Commissioning	-	n/a	-	n/a	-	-	n/a
<b>Total Business</b>	<b>0.12</b>	<b>104.6%</b>	<b>0.13</b>	<b>87.1%</b>	<b>0.11</b>	<b>1.34</b>	<b>8%</b>
<b>10-14 Year EUL (MW)</b>							
Standard	3.35	109.5%	3.67	87.1%	3.19	6.37	50%
Custom	0.35	97.8%	0.34	82.0%	0.28	4.16	7%
SBDI	0.05	101.7%	0.05	87.8%	0.05	0.81	6%
New Construction	0.04	114.1%	0.05	74.6%	0.04	0.29	12%
Retro-Commissioning	0.71	97.8%	0.69	92.8%	0.64	2.49	26%
<b>Total Business</b>	<b>4.51</b>	<b>106.7%</b>	<b>4.81</b>	<b>87.4%</b>	<b>4.20</b>	<b>14.12</b>	<b>30%</b>
<b>15+ Year EUL (MW)</b>							
Standard	16.27	104.0%	16.92	87.1%	14.73	5.89	250%
Custom	14.30	94.1%	13.46	82.0%	11.03	25.04	44%
SBDI	1.02	101.5%	1.03	87.8%	0.91	1.14	79%
New Construction	16.84	95.7%	16.12	75.4%	12.15	2.91	417%
Retro-Commissioning	2.66	97.8%	2.60	92.8%	2.42	1.94	125%
<b>Total Business</b>	<b>51.09</b>	<b>98.1%</b>	<b>50.13</b>	<b>82.2%</b>	<b>41.24</b>	<b>36.92</b>	<b>112%</b>

## 2.5 Demand Response Portfolio

The PY2021 Demand Response Portfolio included two programs, one for residential customers and one for business customers, both new in MEEIA Cycle III:

- Residential Demand Response Program:** Ameren Missouri continued to work with a team of partners to capture demand and energy benefits. The Residential DR Program was 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 CAC systems, including heat pumps, and a program-qualifying smart thermostat. Qualifying smart thermostats in PY2021 include ecobee®, Nest®, and Emerson™ devices. Customers either enroll existing devices (the bring-your-own-thermostat or BYOT channel) or purchase and install qualifying devices through the Ameren Missouri Online Store. Franklin Energy administered the program and Uplight delivered the program. While the program was originally designed as an integrated program aiming to deliver energy savings using optimization strategies alongside demand reductions, the program’s pursuit of energy optimization savings in PY2021 was limited to just Emerson devices.

- Business Demand Response Program:** The Business Demand Response Program is designed to reduce load during periods of peak demand. Enel X is the program aggregator, 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 PY2021 event season, the demand response portfolio achieved 111.3 MW in average load reduction as well as 1,131 MWh in energy savings (Table 13). A limited number of events were dispatched across both the Residential and Business DR programs over the course of the season. Notably, evaluation limitations for the Residential DR Program resulted in likely under-estimates of demand and energy savings for two high-temperature events, thus likely driving down the total impacts reported in the table below and elsewhere in this report.

Table 13. PY2021 Event Season Performance Summary

Program	Participants <sup>A</sup>	Event Season MW Performance	Event Season MWh Performance <sup>B</sup>
Residential DR Program	31,684	33.38	229.34
Business DR Program	601	77.94	901.89
<b>Total DR Portfolio</b>	<b>32,285</b>	<b>111.31</b>	<b>1,131.23</b>

<sup>A</sup> Participant count for the Residential DR program represents the average number of participants among whom events were dispatched. In some cases, participant counts are adjusted to reflect impact modeling decisions.

<sup>B</sup> Energy savings for the Business DR program only include event season events.

To compare the DR portfolio demand savings performance against the MEEIA III MW goals, the evaluation team 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 assumptions. Figure 1 summarizes portfolio performance toward MEEIA III cumulative goals. As shown in the figure, the portfolio exceeded the demand goal of 114.79 MW by 18.68 MW for a total of 133.47 MW, achieving 116% of the goal, but fell considerably short of the energy savings goal, achieving 1,137.90 MWh of the 5,412 MWh goal (21%).<sup>7</sup>

<sup>7</sup> Energy savings for the Business DR program includes savings from the December 2021 test event in addition to the event season events.

Figure 1. DR Portfolio Performance Against MEEIA III Cumulative Goals

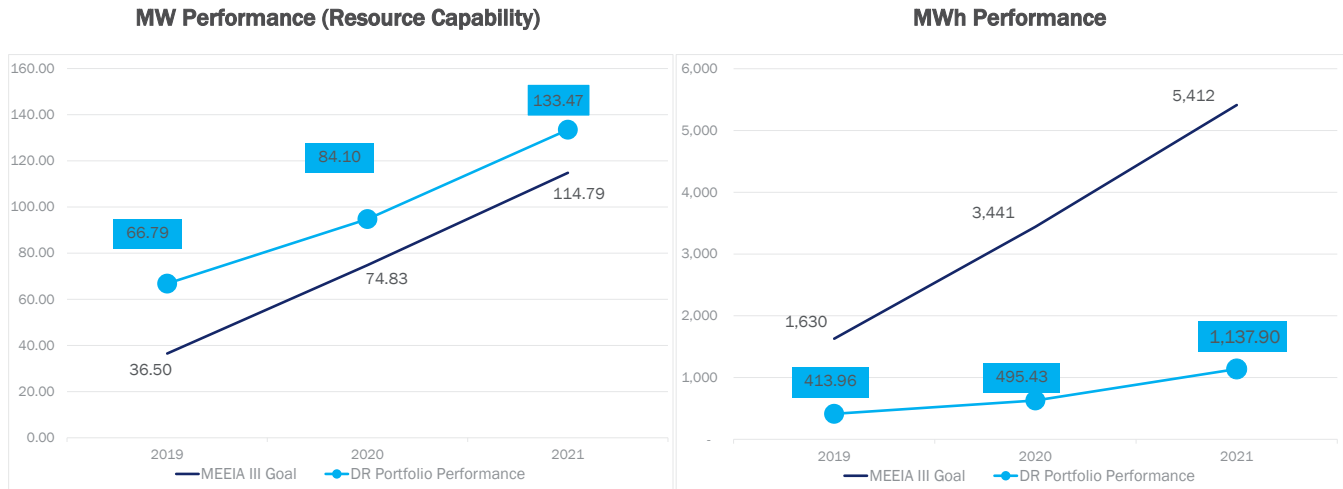


Table 14 provides a detailed summary of each program’s performance against MEEIA III goals, including participation goals. As shown in the table, both programs exceeded goals in terms of customer enrollment. As of the end of PY2021, the Residential DR Program achieved 157% of its enrollment goal, while the Business DR program achieved 424% of the enrollment goal. From a resource capability perspective, both Residential and Business DR programs had a strong performance, achieving 113% and 118% of their respective goals. Combined, the two programs exceeded the MEEIA III goal by 16%. Similar to the event season impacts, resource capability impacts likely suffer from under-estimation of savings for two high-temperature event days.

Both programs underperformed against their energy savings goals (6% and 61% for the Residential and Business DR programs, respectively). Energy savings for the Residential DR Program include event day impacts during the event season as well as energy savings achieved through optimization of Emerson devices on non-event days. Energy savings for the Business DR Program include savings achieved during the December 2021 test event and savings achieved during the three events called during the event season.

Table 14. DR Portfolio Performance Against MEEIA III

Program	Cumulative 2021 MEEIA III Goal	PY2021 Performance	Goal Achieved (%)
<b>Participation as of the End of PY2021 (Participants)</b>			
Residential DR Program	23,644	37,129	157%
Business DR Program	150	636	424%
<b>Total DR Portfolio</b>	<b>23,794</b>	<b>37,765</b>	<b>159%</b>
<b>Resource Capability (MW)</b>			
Residential DR Program	39.79	45.10	113%
Business DR Program	75.00	88.37	118%
<b>Total DR Portfolio</b>	<b>114.79</b>	<b>133.47</b>	<b>116%</b>
<b>Energy Savings (MWh)</b>			
Residential DR Program	3,912.00	229.34	6%
Business DR Program <sup>A</sup>	1,500.00	908.56	61%
<b>Total DR Portfolio</b>	<b>5,412.00</b>	<b>1,137.90</b>	<b>21%</b>

<sup>A</sup> Includes energy savings achieved during the December 2021 test event.

In addition to the event season performance and resource capability performance, we also calculated cumulative DR capability (Table 15). 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. For the Business DR Program, however, per the MEEIA III Plan,<sup>8</sup> the cumulative DR capability is based only on the performance of tested participants, as opposed to all participants enrolled in the program at year-end.<sup>9</sup> In PY2021, all Business DR participating customers were tested as part of either summer events or the winter test event. Therefore, cumulative DR capability is equal to the resource capability.

**Table 15. DR Portfolio Summary of Cumulative DR Capability Estimated Impacts by Program**

<b>Program</b>	<b>Target (MW)</b>	<b>PY2021 Performance (MW)</b>	<b>% of Target Achieved</b>
Residential DR Program	39.79	45.10	113%
Business DR Program	75.00	88.37	118%
<b>Total DR Portfolio</b>	<b>114.79</b>	<b>133.47</b>	<b>116%</b>

---

<sup>8</sup> Ameren Missouri. “Ameren Missouri 2019–21 MEEIA Energy Efficiency Plan.” <https://efis.psc.mo.gov/mpsc/commoncomponents/viewdocument.asp?DocId=936195031>

<sup>9</sup> Including event season DR or test events as well as winter test events.

### 3. Earnings Opportunities

This section provides the evaluated inputs necessary for calculating Ameren Missouri's PY2021 achieved EO metrics. Ameren Missouri included seven EO metrics in its 2019–2021 Energy Efficiency Plan. Those metrics are:

1. Average Percent Energy Savings per Property for the MFIE Program;
2. Average Percent Energy Savings per Property for the SFIE 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, BSS, and DR programs);
5. Subtotaled Coincident Peak Demand Savings from Measures with a 10–14 Year EUL (excluding HER, Low-Income programs, BSS, and DR programs);
6. Subtotaled Coincident Peak Demand Savings from Measures with a 15+ Year EUL (excluding HER, Low-Income programs, BSS, 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 EO Calculator along with the evaluated results in Table 16 below.<sup>10</sup> The source column provides a reference to where each evaluated value can be found in the PY2021 Evaluation Report. Each EO metric also has a performance target and maximum performance cap built into the EO Calculator.

---

<sup>10</sup> Ameren Missouri 2019–2021 MEEIA Energy Efficiency Plan, Appendix N

Table 16. Evaluated Earnings Opportunity Metrics

EO Metric	Unit of Evaluated Value	Evaluated Value a	EO Target b	EO Cap Multiplier c	EO Maximum d = b*c	EO Eligible Performance e = min of (a or d)	Payout Amount per Unit f	EO Payout Amount g = e * f	Source of Evaluated Value
1 <sup>A</sup>	% of Baseline Usage	20.70%	15%	125%	18.75%	18.75%	\$33,333	\$625,000	Vol 2. Table 112
2 <sup>A</sup>	% of Baseline Usage	14.11%	10%	125%	12.50%	12.50%	\$33,333	\$416,667	Vol 2. Table 122
3 <sup>B</sup>	MWh	37,963	35,250	105%	37,013	37,013	\$4.73	\$175,000	Vol 1. Table 8
4	MWh	260,499	285,540	115%	328,371	260,499	\$7.65	\$1,991,982	Vol 1. Table 2
5	MW	9.37	17.74	125%	22.17	9.37	\$87,086	\$815,999	Vol 1. Table 3
6	MW	55.89	55.90	125%	69.88	55.89	\$108,897	\$6,086,269	Vol 1. Table 3
7	MW	133.47	114.79	125%	143.48	133.47	\$19,902	\$2,656,270	Vol 1. Table 14

<sup>A</sup> A threshold criterion is 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 Missouri does not meet this criterion the EO Eligible Performance is 0%.

<sup>B</sup> A threshold criterion is that the HER Program is cost-effective as evaluated under the Total Resource Cost (TRC) Test. If the program is not cost-effective, the EO Eligible Performance is 0%. As seen in Table 17, the HER Program was cost-effective in PY2021 with a TRC score of 3.17.

## 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 18 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.<sup>11</sup> We assessed cost-effectiveness using all five costs-effectiveness tests recommended by the California Standard Practice Manual and used in prior evaluations:<sup>12</sup>

- **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
- **Societal Cost Test (SCT):** Perspective of all utility customers (participants and nonparticipants) in the utility service territory<sup>13</sup>

The TRC test is the primary test of cost-effectiveness, per Ameren Missouri’s 2019–2021 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 PY2021 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

---

<sup>11</sup> The PAYS Program was evaluated for cost-effectiveness itself, but was excluded from the Low-Income Portfolio aggregation and the overall Portfolio aggregation because it is not included in Residential Portfolio targets and does not contribute to portfolio earnings opportunities for PY2021.

<sup>12</sup> *California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects*. October 2001.

<sup>13</sup> 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.

differences 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.

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 PY2021, according to every test except the RIM test. The combined portfolio achieved a TRC score of 1.79 and a UCT score of 2.23. According to the TRC test, the Residential and Business sector-level portfolios were also cost-effective, while the Low-Income portfolio was not cost-effective.<sup>14</sup>

Table 17 summarizes the cost-effectiveness results for all programs in the Low-Income, Residential, and Business portfolios.<sup>15</sup>

Table 17. Summary of PY2021 Low-Income, Residential, and Business Program Cost-Effectiveness

Program	TRC	UCT	RIM	PCT
<b>Low-Income Portfolio</b>				
SFIE	0.65	0.50	0.27	4.50
MFIE	0.64	0.57	0.28	4.32
BSS	1.71	0.71	0.35	6.06
<b>Low-Income Total</b>	<b>0.67</b>	<b>0.55</b>	<b>0.28</b>	<b>4.46</b>
<b>Residential Portfolio</b>				
Lighting	7.64	5.60	0.50	n/a
HVAC	1.25	1.49	0.48	3.89
HER	3.17	3.17	0.50	n/a
REP	0.99	1.38	0.42	3.41
EE Kits	1.73	2.56	0.46	6.90
MFMR	1.71	1.98	0.50	5.82
RAR	0.95	1.36	0.34	4.76
Residential DR <sup>A</sup>	1.62	1.62	1.91	n/a
<b>Residential Total</b>	<b>2.23</b>	<b>2.41</b>	<b>0.54</b>	<b>10.16</b>
<b>Business Portfolio</b>				
Standard	2.89	3.01	0.61	6.41
Custom	1.47	3.30	0.93	1.73
SBDI	2.71	2.73	0.55	6.68

<sup>14</sup> MEEIA and the Revised Statutes 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.

<sup>15</sup> For cost-effectiveness testing, the DR programs are included in the respective Business and Residential portfolios.



Program	TRC	UCT	RIM	PCT
New Construction	1.32	3.15	0.78	1.89
RCx	2.66	3.04	0.92	3.96
Business DR <sup>A</sup>	1.00	1.00	0.96	n/a
<b>Business Total</b>	<b>1.67</b>	<b>2.42</b>	<b>0.74</b>	<b>3.04</b>
<b>Portfolio Total</b>	<b>1.79</b>	<b>2.23</b>	<b>0.62</b>	<b>4.97</b>
PAYS	0.68	0.76	0.39	4.08

<sup>A</sup> Includes the lifetime costs and benefits of Demand Response programs over a 10-year effective useful life.

Overall, Ameren Missouri's combined portfolio of energy efficiency programs generated \$184 million dollars in lifetime benefits at a cost of \$102 million, resulting in \$81 million dollars in net benefits (based on the TRC test). The UCT test results in a higher total net benefit (\$101 million). Both the Residential and the Business Portfolios generated just under \$42 million dollars of TRC-lifetime net benefits each.

Table 18 provides a summary of the total cost and benefits associated with each program in the Low-Income, Residential, and Business portfolios under the TRC and UCT tests.

Table 18. Summary of TRC Cost and Benefits (2019 Dollars)

Program	Lifetime Benefits	TRC Test		UCT Test	
		Program Costs	Net Benefits	Program Costs	Net Benefits
<b>Low Income Portfolio</b>					
SFIE	\$1,742,999	\$2,684,054	-\$941,055	\$3,480,625	-\$1,737,626
MFIE	\$2,465,677	\$3,849,608	-\$1,383,931	\$4,310,819	-\$1,845,142
BSS	\$228,114	\$133,055	\$95,060	\$319,647	-\$91,532
<b>Low-Income Total</b>	<b>\$4,436,790</b>	<b>\$6,666,717</b>	<b>-\$2,229,926</b>	<b>\$8,111,091</b>	<b>-\$3,674,300</b>
<b>Residential Portfolio</b>					
Lighting	\$33,181,843	\$4,344,016	\$28,837,827	\$5,923,469	\$27,258,374
HVAC	\$19,946,763	\$15,947,986	\$3,998,777	\$13,350,659	\$6,596,104
HER	\$5,286,003	\$1,669,155	\$3,616,848	\$1,669,155	\$3,616,848
REP	\$3,204,686	\$3,243,500	-\$38,814	\$2,317,621	\$887,065
EE Kits	\$1,529,565	\$885,290	\$644,275	\$598,051	\$931,514
MFMR	\$1,883,484	\$1,100,216	\$783,268	\$952,387	\$931,097
RAR	\$415,516	\$439,539	-\$24,022	\$304,622	\$110,894
Residential DR <sup>A</sup>	\$9,955,085	\$6,155,588	\$3,799,497	\$6,155,588	\$3,799,497
<b>Residential Total</b>	<b>\$75,402,947</b>	<b>\$33,785,291</b>	<b>\$41,617,656</b>	<b>\$31,271,553</b>	<b>\$44,131,393</b>
<b>Business Portfolio</b>					
Standard	\$38,291,381	\$13,263,328	\$25,028,053	\$12,709,651	\$25,581,730
Custom	\$19,022,763	\$12,909,409	\$6,113,353	\$5,768,816	\$13,253,947
SBDI	\$2,443,806	\$902,792	\$1,541,014	\$894,084	\$1,549,722
New Construction	\$25,638,413	\$19,354,694	\$6,283,719	\$8,130,745	\$17,507,667

RCx	\$4,391,627	\$1,651,226	\$2,740,402	\$1,443,163	\$2,948,464
Business DR <sup>A</sup>	\$13,905,353	\$13,917,455	-\$12,102	\$13,917,455	-\$12,102
<b>Business Total</b>	<b>\$103,693,343</b>	<b>\$61,998,905</b>	<b>\$41,694,438</b>	<b>\$42,863,915</b>	<b>\$60,829,428</b>
<b>Portfolio Total</b>	<b>\$183,533,080</b>	<b>\$102,450,912</b>	<b>\$81,082,168</b>	<b>\$82,246,559</b>	<b>\$101,286,521</b>
PAYS	\$535,078	\$782,315	-\$247,237	\$699,620	-\$164,542

<sup>A</sup> Includes the lifetime costs and benefits of Demand Response programs over a 10-year effective useful life.

For more information, please contact:

**Antje Flanders**  
**Vice President**

617-301-4643 tel  
617-497-7944 Fax  
aflanders@opiniondynamics.com

1000 Winter Street  
Waltham, MA 02451



Opinion **Dynamics**

**Boston | Headquarters**

617 492 1400 tel  
617 492 7944 fax  
800 966 1254 toll free

1000 Winter Street  
Waltham, MA 02451

**San Francisco Bay**

510 444 5050 tel  
510 444 5222 fax

1 Kaiser Plaza  
Suite 445  
Oakland, CA 94612

**San Diego**

858 270 5010 tel  
858 270 5211 fax

7590 Fay Avenue  
Suite 406  
La Jolla, CA 92037

**Portland**

503 287 9136 tel  
503-281-7375 fax

3934 NE MLK Jr. Blvd.  
Suite 300  
Portland, OR 97212