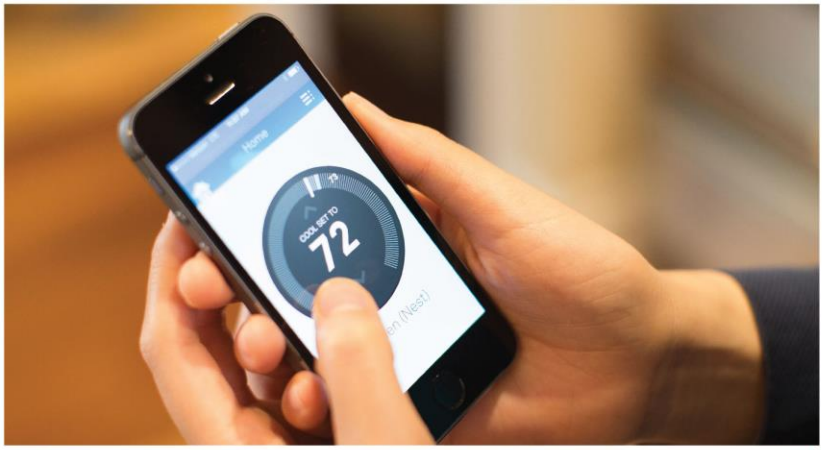
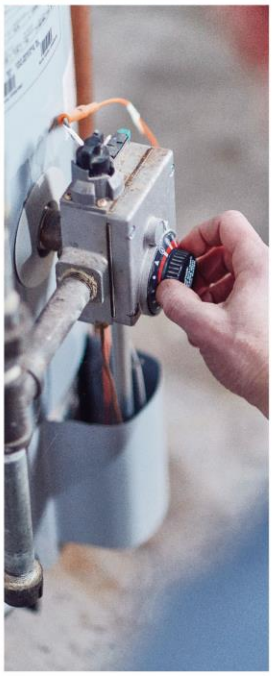
Ameren Missouri

2019-21 MEEIA Energy Efficiency Plan





Ameren MISSOURI

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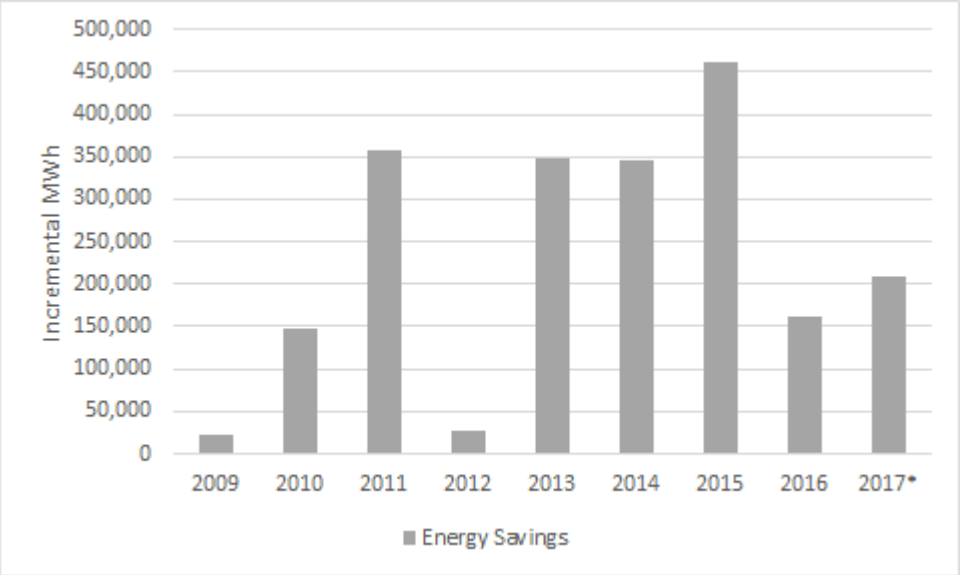
1.0 Portfolio Summary

Ameren Missouri's recent history with implementation of large-scale customer energy efficiency programs began in earnest in 2009 when MEEIA was passed into law. From 2013 through 2017, Ameren Missouri's energy efficiency programs achieved net savings of 2,078,929 MWh. The chart below demonstrates Ameren Missouri's energy efficiency efforts. These results further demonstrate that, with the Commission's support through approval of MEEIA 2013-15 and MEEIA 2016-18, Ameren Missouri has been able to provide its customers with substantial cost-effective energy savings.

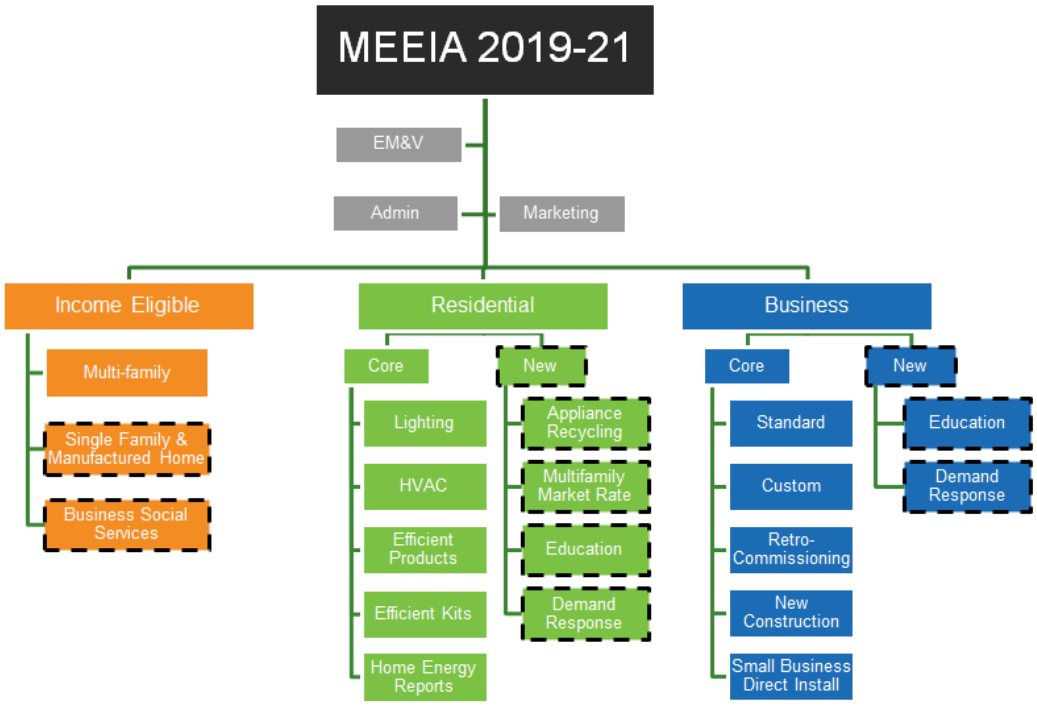
Figure 1 – Historical Ameren Missouri Energy Efficiency Program Savings



*2017 results are net-as-filed; evaluation results are not yet available

The MEEIA 2019-21 portfolio builds on Ameren Missouri's past successes and adds important new elements. The figure below represents a high-level overview of the portfolio, with the details of the programs explained later in this report.

Figure 2 – MEEIA 2019-21 Portfolio Structure



The two figures below show the targeted cumulative energy savings and demand savings for the MEEIA 2019-21 portfolio. The cumulative portfolio energy savings of 794 GWh represent an 2.5% cumulative reduction to retail energy sales, or an annual average of 0.8%. The cumulative portfolio demand savings of 361 MW represent a 5% cumulative reduction to retail demand, or an annual average of 1.7%. It is also apparent that the business portfolio will result in significantly more cumulative energy savings while the demand savings are evenly split between the residential and business portfolios.

Figure 3 – Cumulative Portfolio Energy Savings by Sector

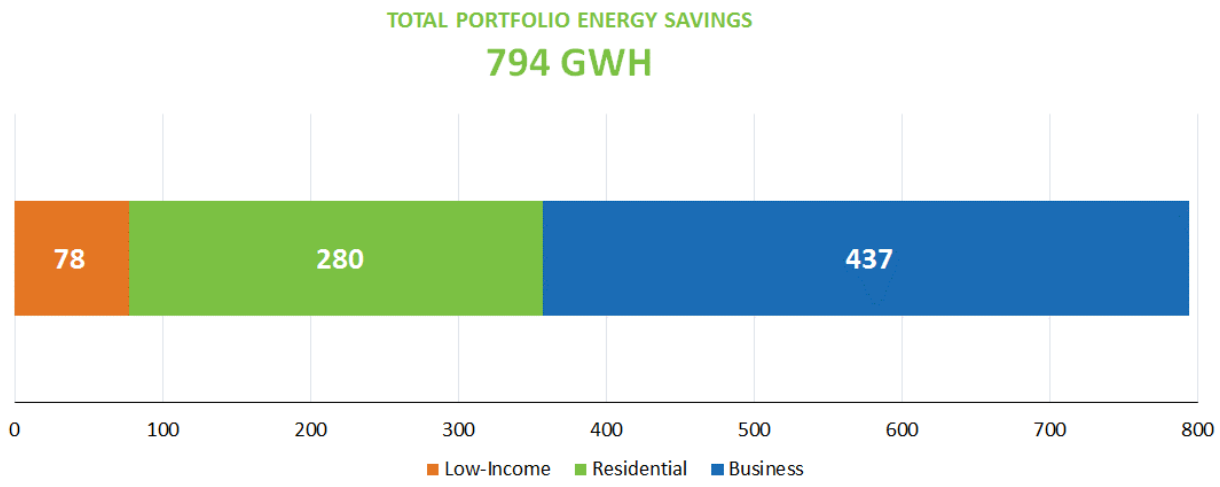
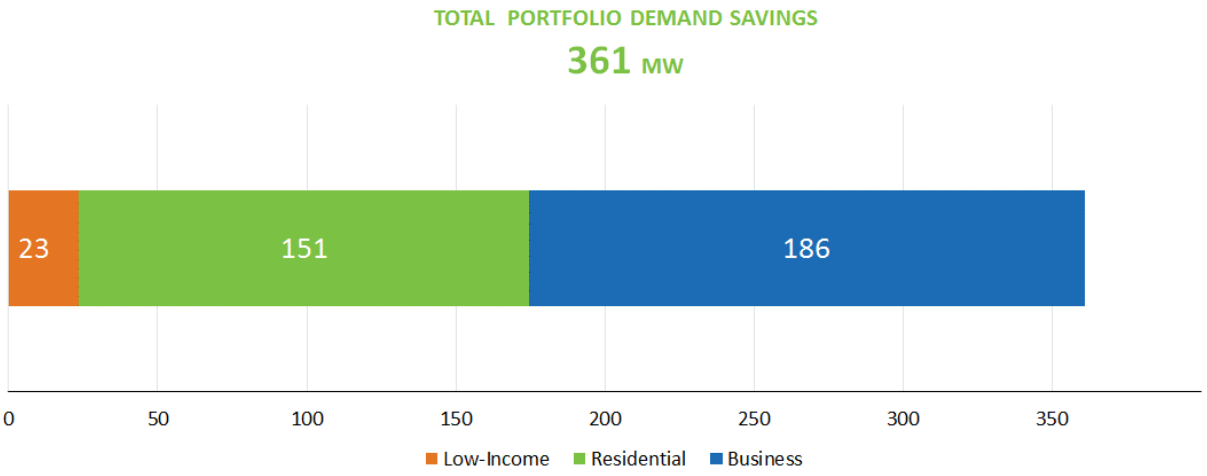


Figure 4 – Cumulative Portfolio Demand Savings by Sector



The two figures below show the same cumulative energy and demand savings, but broken out for each year. This highlights the aggressive growth in the business portfolio.

Figure 5 – Cumulative Portfolio Energy Savings by Sector by Year

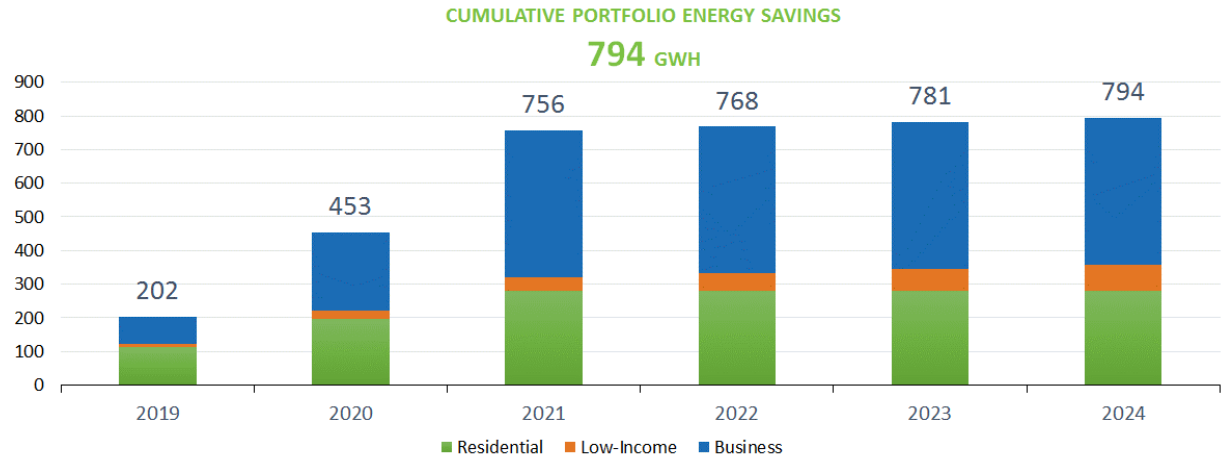
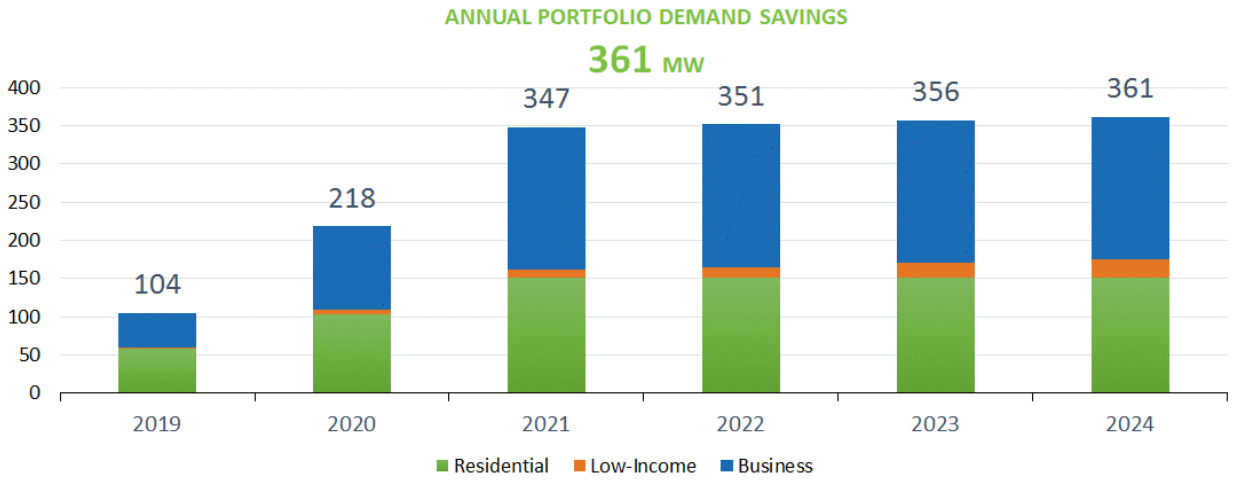


Figure 6 – Cumulative Portfolio Demand Savings by Sector by Year



The two figures below show the portfolio budgets for MEEIA 2019-21. The $195.5 million three-year budget is 37% below the budget estimates reflected in the IRP and compares favorably to the MEEIA 2016-18 budget on a cost-per-unit basis. A sizable portion of the total budget - approximately $50 million - is directed to the low-income sector.

Figure 7 – Total Portfolio Budgets by Sector

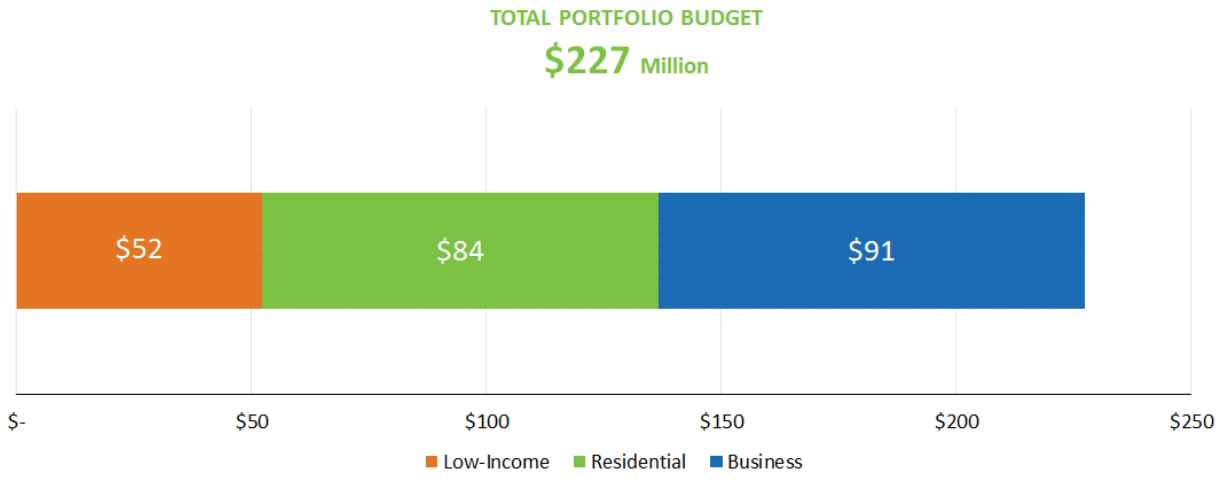
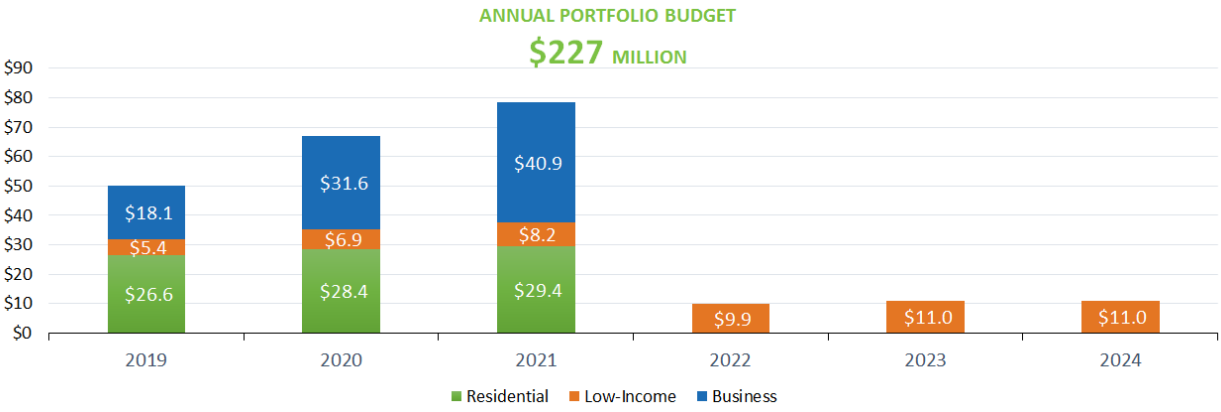


Figure 8 – Total Portfolio Budgets by Sector by Year



Annual tables of energy savings, demand savings, and cost-effectiveness results[1], by program, are available in Appendix A. The figures below demonstrate the portfolio's cost-effectiveness. From the utility cost standpoint, the Plan results in $324 million in lifetime net benefits. It results in $219 million in lifetime net benefits from a total cost perspective.[2]

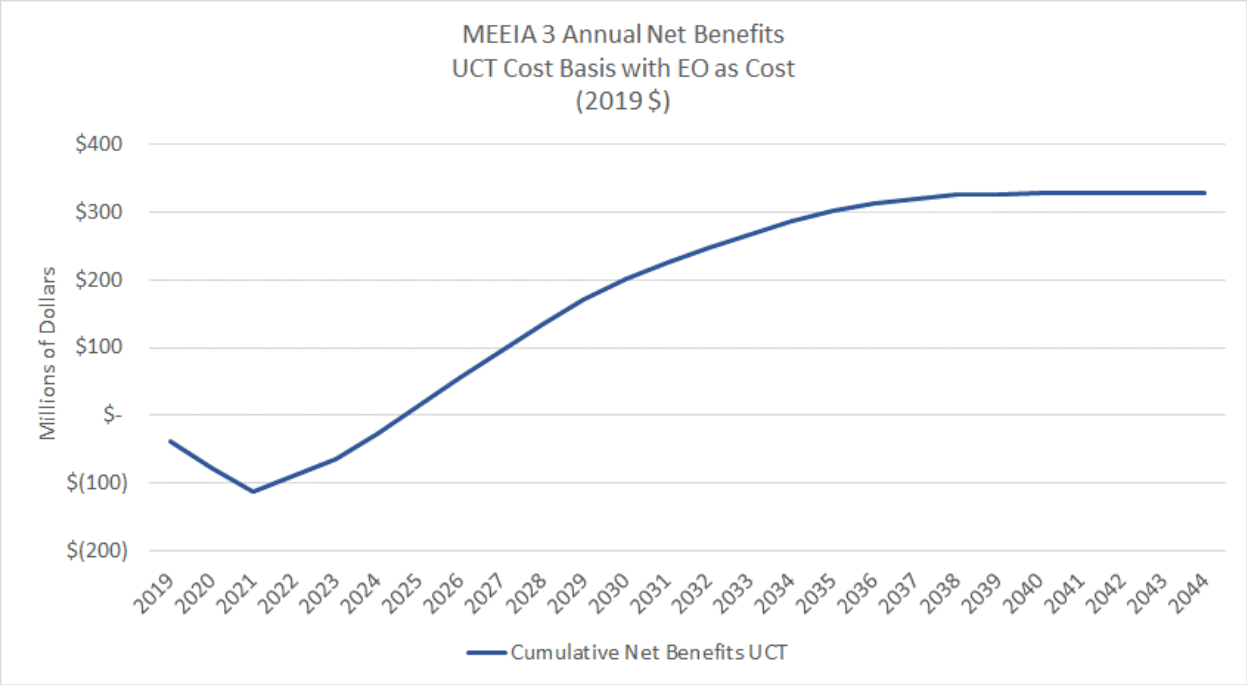
[1] Societal Cost Test results are identical to the Total Resource Cost test results because no Non-Energy Benefits were quantified. Therefore, the Societal Cost Test results were not reported separately.
[2] Avoided costs were based on the Company's 2017 IRP and can be found in Appendix C.

Table 1 – Portfolio Cost-Effectiveness Summary (NPV)[3]

Portfolio Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 592,338,018	$ 592,338,018
Costs	$ 242,054,545	$ 347,690,162
Earning Opportunity	$ 25,916,228	$ 25,916,228
Net Benefits	$ 324,367,245	$ 218,731,628
UCT Benefits/Costs Ratio	2.21	
TRC Benefits/Costs Ratio		1.59

The figure below shows the annual cumulative lifetime benefits by year. The payback to customers is demonstrably substantial, and happens within 7 years compared to the 25+ years of program benefits.

Figure 9 – Annual Cumulative Net Present Value of Net Benefits (UCT)



Pursuing the Policy Goal of MEEIA

As part of the 2017 IRP, the Company analyzed a variety of demand-side portfolios, including Realistic Achievable Potential ("RAP"), Maximum Achievable Potential

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

("MAP"),[4] and a Mid-Case Portfolio, as well as portfolios where energy efficiency and demand response were offered together and also separated. In addition to analyzing a variety of demand-side portfolios, the Company's 2017 IRP analyzed those demand-side portfolios against competing supply-side alternatives and weighed the various resource plans against its decision-making criteria. The Company's Preferred Resource Plan calls for the adoption of the RAP, and the goals in MEEIA 2019-21 are lower than the Preferred Resource Plan.

Table 2 – Comparison of MEEIA 2019-21 to the IRP

	Energy (MWh)	**Demand (MW)**	**Cost ($MM)**
2017 IRP Preferred Plan	986,034	524	$308.5
MEEIA 2019-21	755,829	347	$195.5
% Difference	-23%	-34%	-37%

The Commission's MEEIA rules provide guidelines to review progress towards the goal of all cost-effective demand-side savings. The provided guideline is the greater of RAP or a list of savings percentages. According to the listed savings percentages (starting with program year seven), the incremental energy reduction guidelines are 1.5%, 1.7%, and an ongoing 1.9% reduction for subsequent years, while the incremental demand reduction targets are 1% per year. The rules provide further guidance for cumulative savings by program year. The figures below compare the MEEIA 2019-21 portfolio to the non-mandatory MEEIA guidelines. From Figures 10 and 11 below, it is apparent that the energy savings percent guidelines in the Commission's MEEIA rules are much more aggressive than the proposed portfolio. Even though the MEEIA 2019-21 incremental energy savings are below the percent guidelines found in the Commission's MEEIA rules, the cumulative chart demonstrates the ongoing significant progress reflected in the Plan. In contrast, Figures 12 and 13 demonstrate that the Company's incremental and cumulative demand savings goals exceed the percent guidelines in the Commission's MEEIA rules.

[4] RAP and MAP were based on the Company's latest Market Potential Study which was also part of the Company's 2017 IRP as Appendix A to Chapter 8 – Demand-side Resources.

Figure 10 – Comparison to Incremental Energy Savings Guidelines

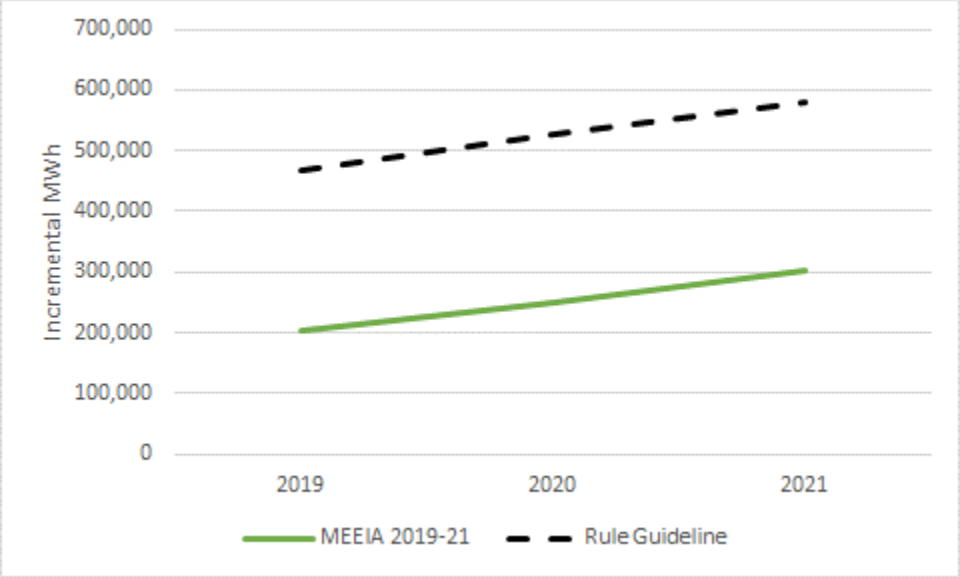


Figure 11 – Comparison to Cumulative Energy Savings Guidelines

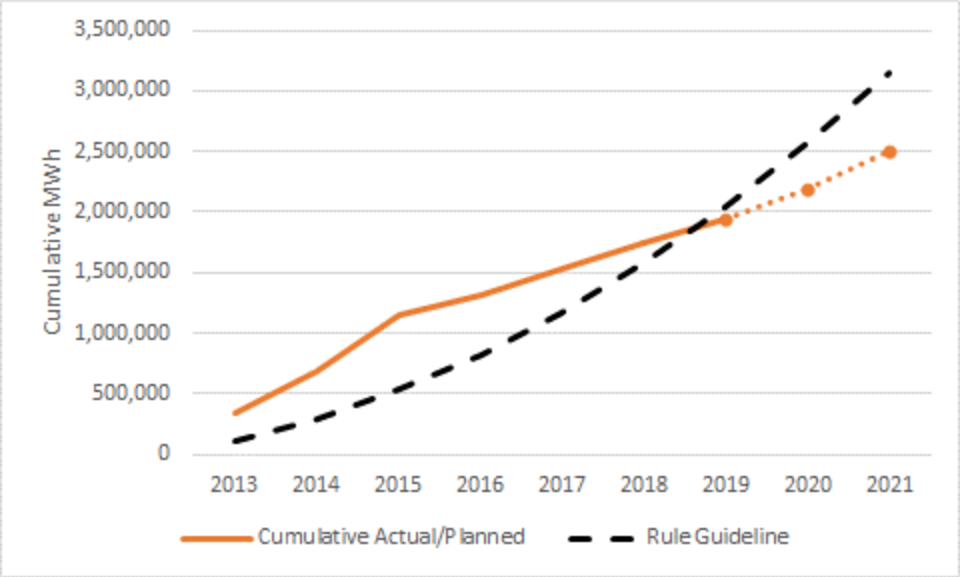


Figure 12 – Comparison to Incremental Demand Savings Guidelines

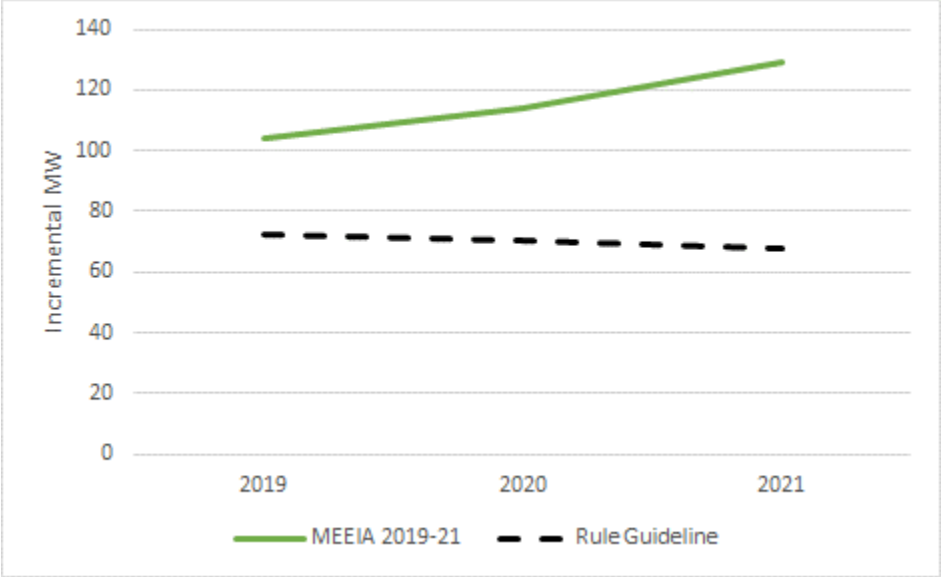
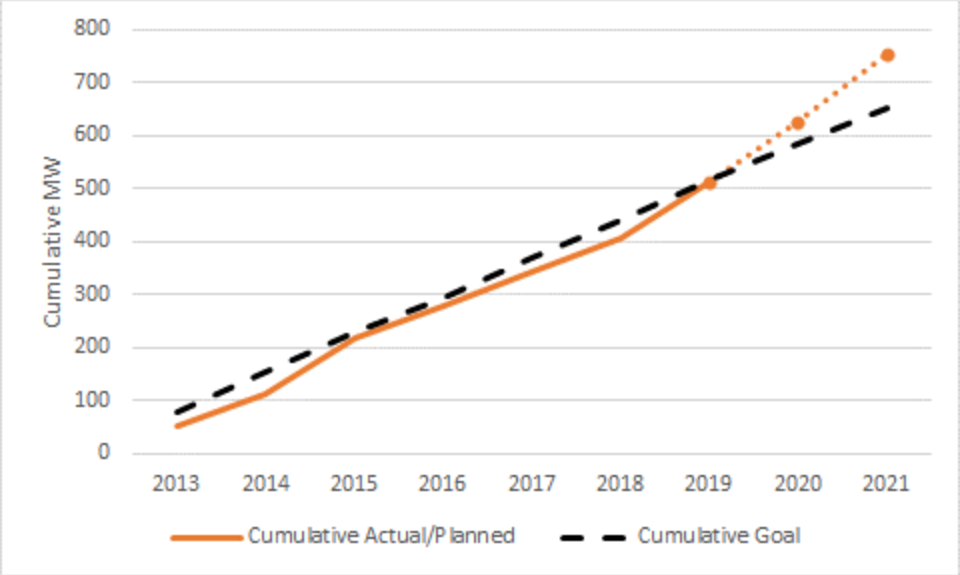


Figure 13 – Comparison to Cumulative Demand Savings Guidelines



2.0 Sector Programs

The Portfolio Summary above provides an overview of the portfolio broken down into three main sectors: Low-Income, Residential, and Business. The sections below deliver more granular sector assessments by providing more description about the underlying programs within each sector, as well as the relevant savings and budgets for each. The program templates included as Appendix B provide additional details for each of the programs proposed by the Plan.

2.1 Low-Income Sector Programs

As shown in Figure 2 above, the Plan's portfolio has three low-income programs designed to achieve savings in three distinct market segments: multifamily dwellings, single family dwellings, and qualifying businesses that have facilities providing social services to the public.

The Plan includes significantly increased investment in energy efficiency programs to serve low-income customers as compared to the previous MEEIA cycle. The multifamily program budget alone reflects an average increase in program spending of nearly 40%.

Residential Single Family Low-Income - New	Employs multiple delivery channels to provide a one-stop-shop for single family, whole-home energy efficiency upgrades for the benefit of low-income residential customers
Residential Multifamily Low-Income	One-stop-shop approach for owners and operators of multifamily low-income properties to assist with applications for financing and technical support along with incentives designed to overcome barriers to completing comprehensive retrofits.
Business Social Services - New	Deliver, install and complete paperwork for low-cost and/or no-cost energy efficiency measures in business social services facilities so they can better serve low-income individuals.

2.1.1 Low-Income Sector Discussion

Residential Low-Income Programs

The low-income programs are designed to serve eligible participants through multiple channels to expand participation and overcome hurdles specific to each customer and/or property type. Multiple delivery channels ensure a diversity of participants and equitable delivery across Ameren Missouri's service territory.

These programs will conduct individual and/or group educational meetings with participating low-income customers to increase awareness of energy efficiency habits and measures, such as purchasing ENERGY STAR® certified products to encourage market transformation.

The residential single family and multifamily programs are highlighted below.

Single Family Low-Income Program

The program is offered to residential customers residing in single family detached housing, duplexes, and mobile homes (wood-frame bolted to steel chassis, designed to be transported). The program will use a neighborhood approach to identify low-income areas with the greatest need, such as those with high energy usage, high incidence of arrearages, or payment delinquencies, allowing the Company to group participants and focus on a single geographic area at a time. In some instances, the program may also serve a single home as the result of receiving a referral by a qualified low-income

assistance agency. The program will provide energy assessments and/or diagnostic testing and install a comprehensive package of whole house energy saving measures at no or low cost to customers.

The program will seek to collaborate with familiar community-based organizations and leaders -- such as homeowner associations, churches, senior centers, schools, other non-profits, and employers or local community leaders -- to obtain their endorsements promoting the program and their assistance with opportunities to stage cooperative recruitment drives and/or education events. This approach of utilizing trusted, familiar organizations generates enthusiasm and momentum behind the effort.

As a subcomponent of the Single Family Low-Income Program, the program administrator may make free energy saving measure packages or incentives directly available to organizations that can provide labor for qualified installations of measures at no charge to low-income residential end users (i.e., provide Low-Income Efficiency Housing Grants). LEDs will also be available for distribution by qualifying organizations, such as food banks. In connection with these grants, the program will provide technical information, education, and support to the receiving organizations so they can understand and comply with the program requirements. Approved Low-Income Efficiency Housing Grants must:

a. Be implemented by a not-for-profit organization, governmental body, entity representing residential customers served by the Company, or through a Company-sponsored event;
b. Be limited in distribution to residential customers residing in the Ameren Missouri service territory;
c. Be used for a project that provides access and sufficient performance data to allow the project's evaluation, measurement, and verification ("EM&V"); and
d. Include consumer education elements regarding the installed equipment.

Multifamily Low-Income Program

Beginning in 2015, Ameren Missouri revised its Multifamily Low-Income Program to administer the residential and business components using a single implementation contractor. To assist in overcoming many of the barriers unique to multifamily properties, the program established a one-stop-shop offering a concierge approach to assist property owners through the process of applying for and securing energy efficiency upgrades using a single application. The program also continued to offer free direct installation of dwelling unit measures and increased common area/whole building incentives by 25% above those offered to other business customers. While the increased incentives were a program enhancement, tying them to business program incentives proved problematic. For example, lowering business incentives also lowered multifamily low-income incentives, thus reducing the ability to encourage participation. Having learned from this,

Ameren Missouri will establish separate low-income multifamily program incentives in the Plan.

Ameren Missouri will continue the one-stop-shop approach in MEEIA 2019-21 in order to encourage property owners along in their energy efficiency journey and enable easy engagement with the program. The goal is to help multifamily property managers understand their buildings' energy usage amounts, continue to achieve immediate energy savings through no-cost direct install measures, and move beyond initial measures to investments in standard and/or custom measures for common areas, building shell, and whole-building systems in order to benefit from deeper energy savings.

The multifamily implementation strategy includes the following:

- Direct outreach and marketing to inform eligible property managers of the many benefits of improving their properties' energy efficiency.
- Assignment of a dedicated contact to assist building managers throughout the process.
- Offering Level I Energy Assessment to qualifying buildings at no cost to provide a report including:
    - list of measures;
    - estimated energy savings;
    - estimated cost savings;
    - estimated cost for equipment and installation;
    - simple payback analysis; and
    - identify appropriate incentive package options to achieve whole-building energy and demand savings.
- Providing bid specifications and referrals for repair work, if required.
- Identifying scope of work and securing qualified program partners to perform energy efficiency upgrades.
- Assisting with retrofit scheduling and completion.
- Verifying quality installation of selected measures.
- Providing all eligible participants with past 12 months of energy usage and technical assistance to begin benchmarking buildings using ENERGY STAR® Portfolio Manager.
- Assisting managers of participating multifamily properties in maintaining their improved building efficiency and boost market transformation by providing incentives to defray the cost to attend Building Operator Certification ("BOC") Training.

Along with project incentives, the program will seek to encourage property owners to achieve maximum savings possible by offering seamless access to financing and other alternatives to reduce financial barriers to investing in energy efficiency upgrades. For example, the Company will obtain a list of applicants with allocated low-income housing tax credits that could be invested in energy efficiency and continue to work with the Missouri Housing Development Commission to establish a link to new tax credit

applicants. If the Level I assessment indicates the need for higher capital expenditures, the program will pay for up to 100% of an ASHRAE[5] Level 2 audit, not to exceed $10,000 per property for properties applying for tax credits through MHDC. Further, where a Home Energy Rating System energy audit is more appropriate for MHDC applicants (e.g. a garden-style property without central systems), audit incentives will also be available. The Company will also facilitate access for its customers to other funding that could be used for energy efficiency measures, such as grants (e.g., federal and state weatherization funding for income-qualified properties), Federal Housing Administration loan incentives, Fannie and Freddie's green loan incentives and energy financing mechanisms such as Property Assessed Clean Energy and energy performance contracts.

In addition to the strategies noted above, Ameren Missouri will continue its successful collaboration with gas utilities to co-deliver MEEIA programs, which reduces program costs and provides a comprehensive energy efficiency solution for our customers. In the event co-delivery is not possible, the program will ensure participants are aware of all available utility incentives and will assist participants in claiming them.

In addition to maintaining records to assist in on-going business development opportunities, data collected for this program will include measure information, financial data, energy and demand savings, customer outreach and participation information. Data will be tracked and available for EM&V. The following list is not all inclusive, but is an example of tracked data points:

- Number of buildings and units within each property;
- Number of properties that received benchmarking assistance;
- Number of audits performed;
- Number of and type of measures installed;
- Percent energy savings implemented versus identified energy savings opportunity; and
- Incentives paid by property.

The Company will continue to provide quarterly updates to stakeholders and, following receipt of the EM&V report, will provide an annual update to the Missouri Energy Efficiency Advisory Collaborative ("MEEAC").

Eligibility Guidelines for All Residential Low-Income Programs

The goal of these eligibility guidelines is to reduce barriers to participation in the Company's residential low-income offerings by providing multiple pathways to establish eligibility.

[5] American Society of Heating, Refrigerating and Air-Conditioning Engineers.

Approved participants will be required to meet one of the following income eligibility requirements:

1. Participation in a federal, state, or local subsidized housing program.
2. Proof of resident income[6] levels at or below 80% of area median income or 200% of federal poverty level.
3. Fall within a census tract included on the Company's list of eligible low-income census tracts.

With respect to the multifamily program, where a multifamily property does not meet one of the income eligibility criteria listed above but has a combination of qualifying tenants and non-qualifying tenants, at least 50% of the tenants must be eligible to qualify the entire property.

Business Social Services Program

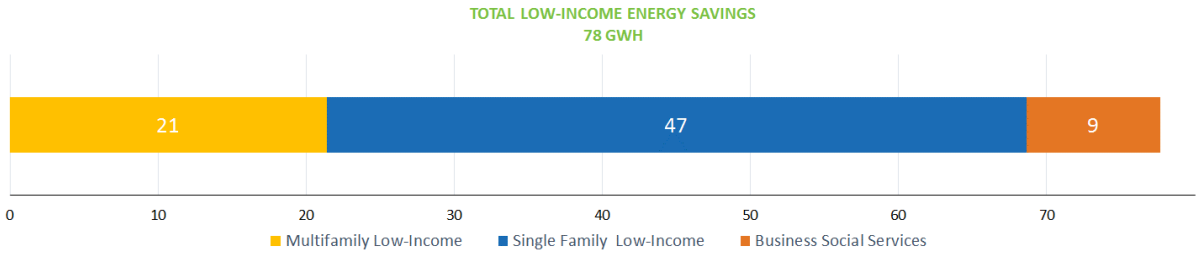
The Business Social Services Program will promote the installation of energy efficient technologies by removing participation barriers. Non-profit businesses with qualifying facilities will be eligible for a streamlined program process with no-cost and low-cost project opportunities. Participation will save energy and allow social service businesses to better serve the low-income public. Such non-profit businesses with qualifying facilities will be able to take advantage of no-cost efficiency lighting upgrades and higher than standard incentives for deep dive savings opportunities, such as HVAC, for those facilities.

A non-profit business's qualifying facilities include those that receive small or large general electric service, and that are primarily used for low-income public social services such as food banks, food pantries, soup kitchens, homeless shelters, employment services, worker training, job banks, and childcare.

2.1.2 Low-Income Sector Summary Charts

The figure below shows that a large majority of the low-income savings are from the Multifamily and Single Family programs.

Figure 14 – Cumulative Low-Income Energy Savings by Program



[6] Proof of income can be accomplished in multiple ways, including but not limited to submission of rent rolls or documentation of being on the US Department of Energy ("DOE") Weatherization Assistance Program waitlist.

Figure 15 – Cumulative Low-Income Demand Savings by Program

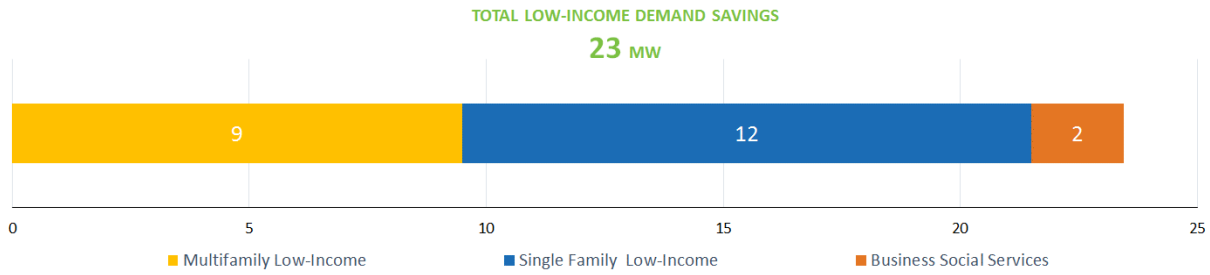


Figure 16 – Cumulative Low-Income Energy Savings by Program by Year

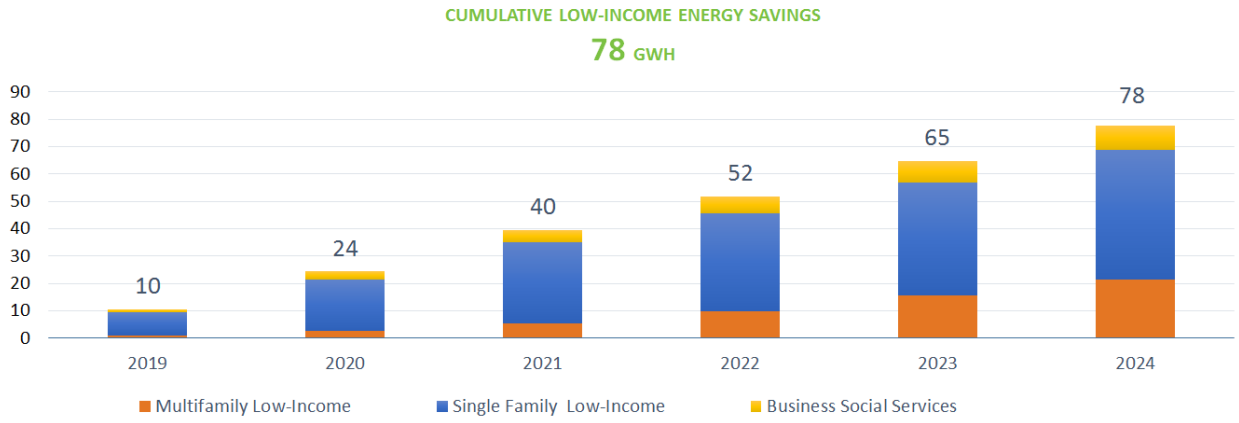
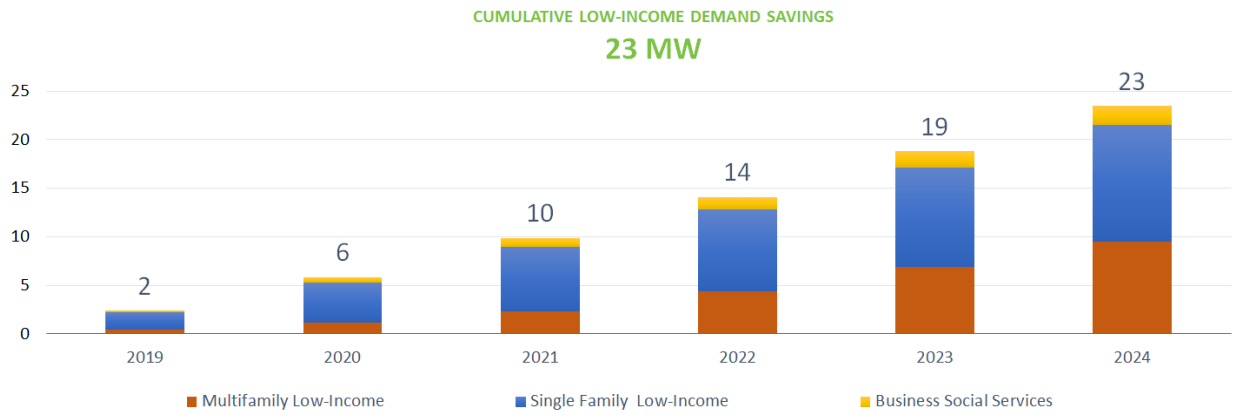


Figure 17 – Cumulative Low-Income Demand Savings by Program by Year



The figures below show that a majority of the budgets are going to the multifamily and single family low-income programs and the budgets are roughly split in an even manner between the two programs.

Figure 18 – Total Low-Income Budgets by Program

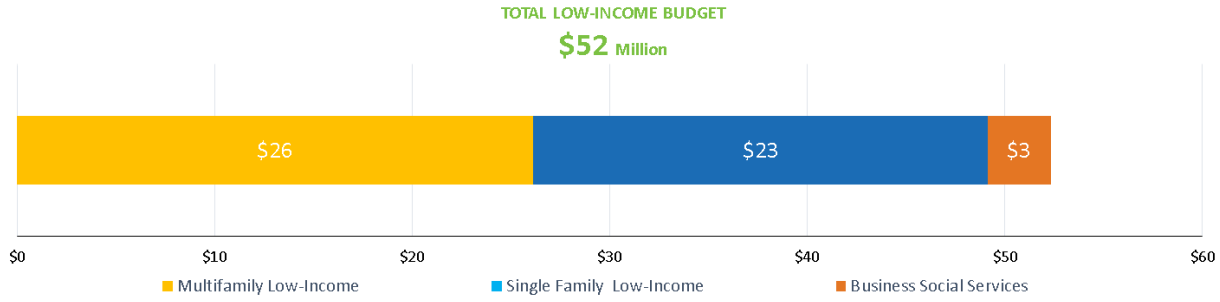
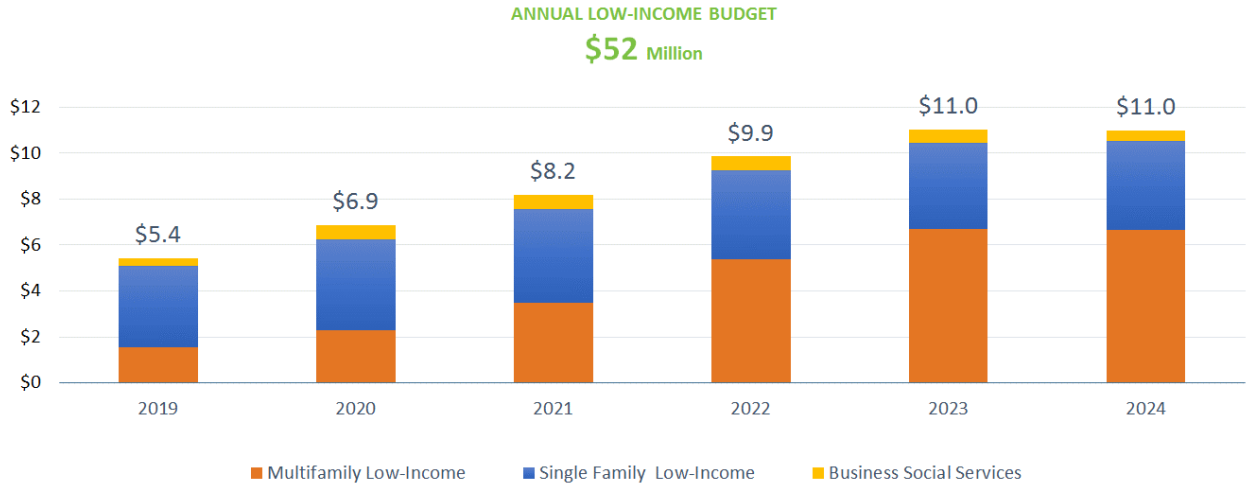


Figure 19 – Total Low-Income Budgets by Program by Year



Although MEEIA does not require low-income programs to pass cost-effectiveness testing, the table below shows that the Low-Income programs proposed in the Plan result in net benefits to all customers:

Table 3 – Low-Income Sector Cost-Effectiveness Summary (NPV)

Low-Income Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 54,586,622	$ 54,586,622
Costs	$ 44,435,748	$ 46,878,418
Net Benefits	$ 10,150,874	$ 7,708,204
UCT Benefits/Costs Ratio	1.23	
TRC Benefits/Costs Ratio		1.16

2.2 Residential Sector Programs

The Plan's portfolio design for residential energy efficiency programs includes five core programs continued from MEEIA 2016-2018, plus three new programs and five new education programs. All of these programs are designed to increase customer access to information about available incentives for energy efficient equipment and how to lower energy costs. The residential programs include traditional energy efficiency programs as well as behavioral and demand response programs. These programs are intended to provide education and awareness through a variety of channels, encourage continued participation through cross-promotion, and provide personalized offers that are timely and relevant. The following is a summary description of the residential programs. A detailed description of each residential program can be found in Appendix B.

Lighting	Incentives are provided to local, national and retail partners to increase sales and awareness of ENERGY STAR® qualified products whereby the end-user receives a discount on the price of ENERGY STAR® qualified or other high efficiency lighting products in stores or online.
Efficient Products	Incentives are provided to customers to raise awareness of the benefits of "high-efficiency" products whereby the end-user receives a discount on the price of qualified products via mail-in rebate, online and/or from program partners and contractors.
HVAC	Incentives are provided to customers for improving the efficiency of new and existing HVAC systems, heat pumps, and air conditioners by achieving electric energy savings. Incentives may also be provided to manufactures or distributers as a midstream channel to promote the sale of energy efficient HVAC measures.
Appliance Recycling - New	An incentive and free pickup is provided to customers for the retirement and recycling of an inefficient refrigerator, freezer, dehumidifier and room ACs in working condition. A turnkey appliance recycling company will verify customer eligibility, schedule pick-up appointments, pick up appliances, recycle and dispose units, and perform incentive processing.
Energy Efficiency Kits	Provides energy efficient kits and educational materials through secondary schools, single family homes and community based events to raise customer awareness of the benefits of high-efficiency products and educates residential customers about energy use in their homes and to offer information, products, and services to residential customers to effectively save on energy costs.
Home Energy Reports	Provides customers with a comparison of their energy usage to that of similar homes and provides personalized energy savings tips to encourage energy consumption behavior changes that result in reduced energy use.
Multifamily Market Based - New	Provides customers who are tenants, property owners, and operators of eligible multifamily properties with education and incentives to encourage the installation of high efficient products and equipment to lower energy usage.
Demand Response – New	Provides customers the resources and incentives necessary to identify and take advantage of demand response opportunities using an integrated, data-informed approach to customer engagement and marketing of available demand response offerings.

EDUCATION PROGRAMS	
Science, Technology, Engineering, and Mathematics (STEM) Education – New	Curriculum for high school students focused on aspects of energy generation and delivery with particular emphasis on consumption and energy efficient equipment and behaviors.
Home Building Code Compliance – New	Education provided to builders, sub-contractors, designers, and others in the home building industry that are focused on high-energy impact measures that are commonly missed in residential code compliance.
Workplace Employee Education – New	Designed to educate residential customers at their workplace on energy use, tactics to reduce energy consumption and to promote long-term energy savings.
Smart Home Energy Management – New	Educates residential customers about Smart Home Energy Management products and availability, to advance and increase adoption of those technologies.
Real Estate Audits – New	Designed to use real estate institutions as a channel to encourage the use of home energy audits to improve home performance prior to the purchase of a new home.

2.2.1 Discussion of Selected Residential Sector Programs

The residential programs in the Plan build on the traditional energy efficiency concepts and programs that have proven successful in the nearly decade of experience in delivering energy efficiency programs in the marketplace. At its core, the suite of program offerings provides education, awareness, and financial incentives to offset the cost of energy efficient products or energy saving solutions. The Company will continue to deliver and build upon the relationships and delivery strategies that deliver cost-effective programs such as:

- The promotion of ENERGY STAR® certified products;
- Promotion of high impact energy saving technologies such as heating and cooling equipment through a network of trained professionals;
- Delivery of products such as energy efficient kits as an entry to educating customers in energy efficiency; and
- Co-delivery of energy saving products and equipment with gas and/or water utilities.

Lighting Program

The Lighting Program is a low-cost participation opportunity for customers. The following aspects of the Lighting Program are noteworthy:

- The program offers only LED general service lighting through rebates and distribution (no CFLs).

- The design for the Lighting Program assumes that most general service light bulbs manufactured in 2020 will be 60-70% efficient.[7] The baseline assumption for standard light bulbs will be halogen technology through 2021 (assuming that there will still be some halogen products available in 2021) switching to a CFL baseline starting in 2022. Baselines and lighting product offerings will be assessed by EM&V throughout the MEEIA 2019-21 implementation period.
- For purposes of cost-effectiveness modeling and performance target-setting, an annual hours-use degradation factor was applied based on the historic and current observed EM&V assessments. Over time, efficient residential lighting measures are expected to be installed within sockets with lower hours of use.

Appliance Recycling Program

The Appliance Recycling Program is a popular program for customers and does not require a purchase to participate. The program was offered in the MEEIA 2013-15 plan, but was not included in the MEEIA 2016-18 plan. The 2016 market potential study included an Appliance Recycling Program and the Company sees this program as a potential gateway to participation in other programs. Annual EM&V analysis will help effectively monitor the market for this program and support future adjustments if necessary.

Home Energy Report

Since the Home Energy Report ("HER") was first introduced to customers in 2016, several improvements have been identified and implemented. Such improvements include: the addition of an electronic HER; reconstituting the target segment to focus on high energy users; and redesigned report elements.

The MEEIA 2019-21 program is designed to build off experience thus far and add powerful new features. The HER will begin with a new design with the following typical primary components: home comparison; savings tips; and a cross promotion/marketing module. Three key enhancements will be added upon program launch: 1) end-use disaggregation; 2) a new engaging online portal; and 3) increased frequency of delivery over multiple channels. The end-use disaggregation provides customers with more relevant and actionable tips. The new online portal will provide opportunities to set goals, participate in challenges, and update the home profile, among others. A paper copy will be mailed to customers 6 times per year, with 12 email reports per year, and 12 energy challenge emails per year.

[7] This is the efficiency standard generally necessary to be compliant with rules pertaining to Energy Independence and Securities Act.

Heating and Cooling ("HVAC") Program

The HVAC Program produces significant cost-effective savings with long-lived system coincident peak demand reductions. The following aspects of the HVAC Program are noteworthy:

- Rebates for SEER 14 central air conditioners will no longer be offered for non-low-income customers.
- Rebates for tune-ups will no longer be offered for non-low-income customers.

Residential Demand Response Program

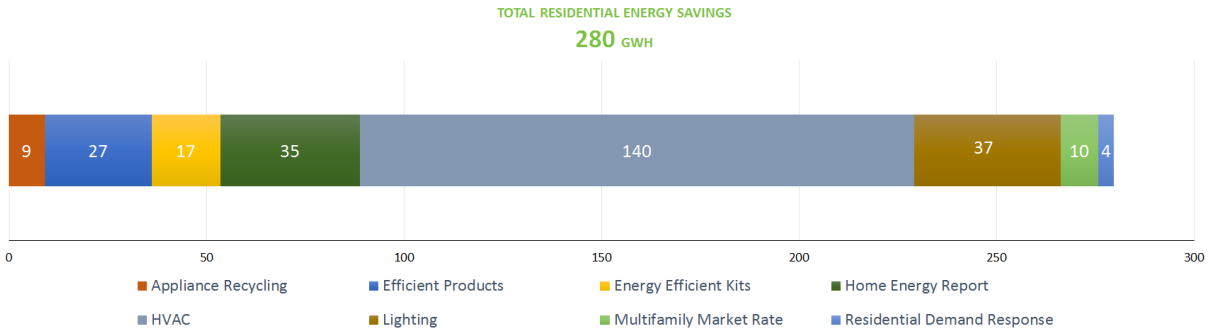
The Residential Demand Response ("DR") Program is new to the residential portfolio and enables a new method for obtaining cost-effective peak demand and energy savings. The Residential DR Program is designed to leverage smart thermostats to reduce consumption during summer system peak conditions. The program is "comfort-centric," as the program will operate with a specific goal to stay within temperature guidelines for each customer based on the customer's smart thermostat temperature set points. In addition to the peak demand savings from a typical DR program, the Company's program design includes energy savings from custom smart thermostat programming intended to achieve energy savings throughout the year that are above and beyond the inherent energy savings from smart thermostats.

The Residential DR Program will partner with device manufacturers to balance a variety of channels to recruit program participants, such as integrating with the Ameren Missouri online marketplace, leveraging the existing network of smart thermostat owners seeded through the MEEIA 2016-18 programs, and planning for the option of installation incentives in later years as the program reaches for deeper participation beyond early adopters.

2.2.2 Residential Sector Summary Charts

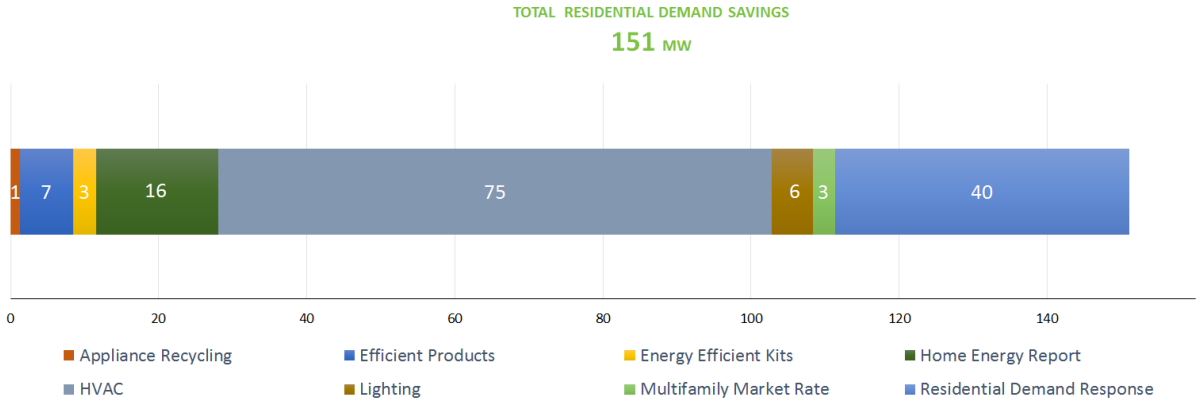
As Figure 20 below shows, the HVAC Program continues to contribute the largest portion of residential energy savings, at about 50% of the residential portfolio. As can also be seen in Figure 20, the Lighting Program contributes less than historically observed due to factors described earlier in this section.

Figure 20 – Cumulative Residential Energy Savings by Program



The figure below shows HVAC is the largest contributor to demand savings (at about 50%), with demand response contributing 26% and the remaining 24% from the other programs.

Figure 21 – Cumulative Residential Demand Savings by Program



The figures below illustrates that HER savings are only incremental for the first year. This is because behavioral energy savings for HER are estimated to have a one-year life and will occur annually as HERs are distributed throughout the implementation period.

Figure 22 – Incremental Residential Energy Savings by Program by Year

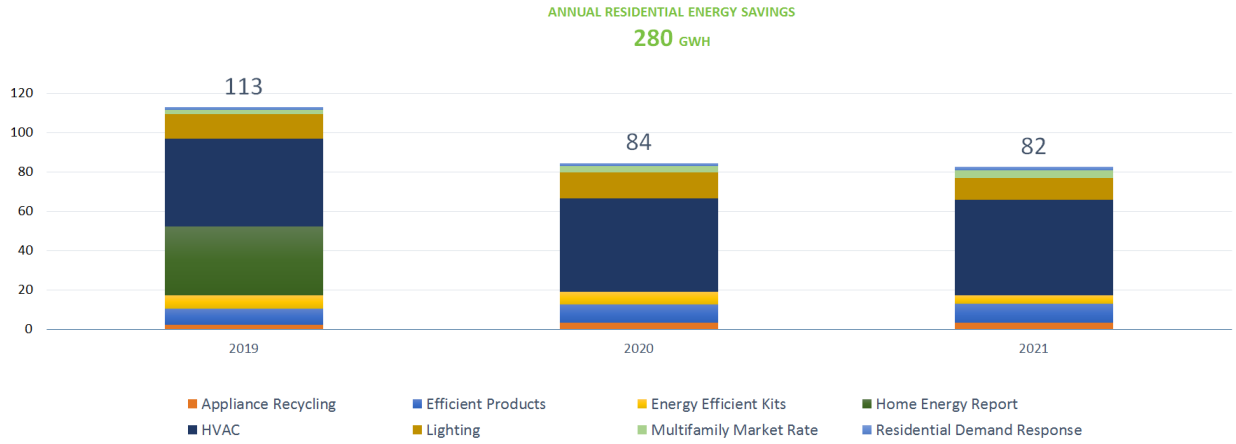
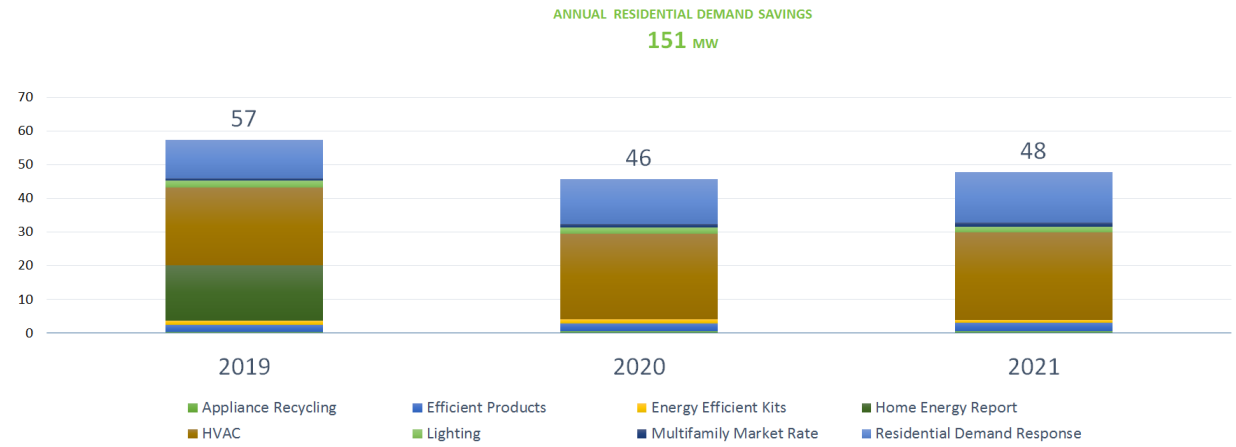
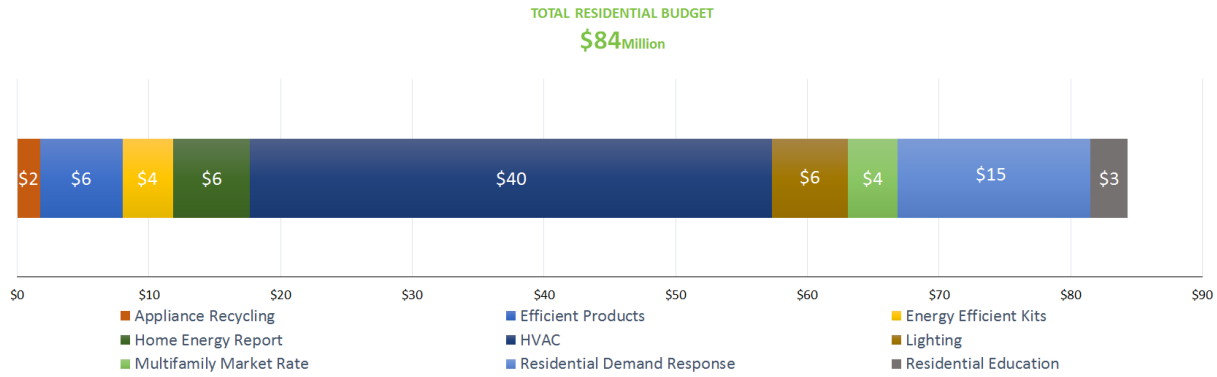


Figure 23 – Incremental Residential Demand Savings by Program by Year



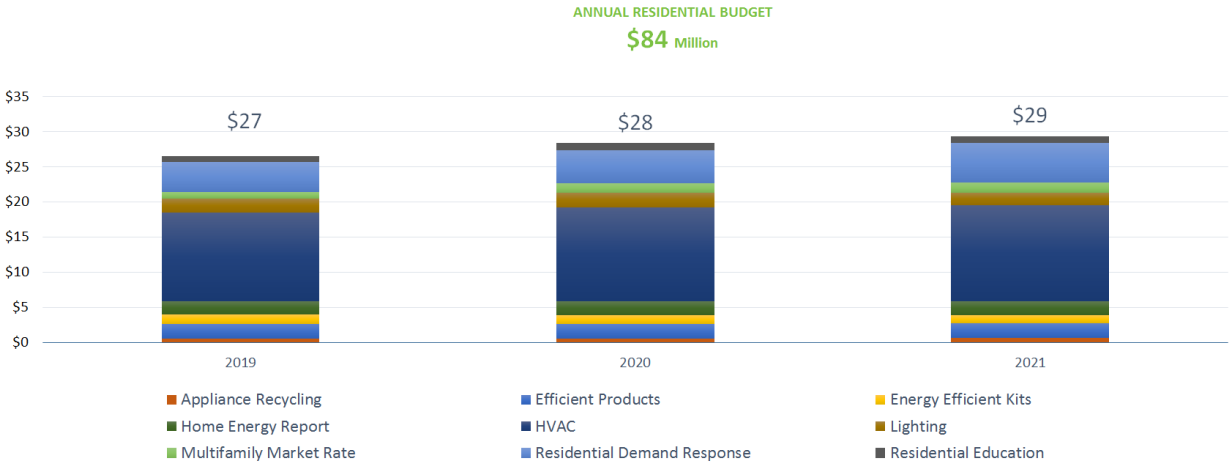
The HVAC and DR Programs make up the largest portion of the Residential Programs' budget at 64%, and have the highest impact on demand savings.

Figure 24 – Total Residential Budgets by Program



Most program budgets remain fairly consistent over the implementation period.

Figure 25 – Total Residential Budgets by Program by Year



The table below indicates, from a utility cost standpoint, residential customers will benefit $2.41 for every $1 spent.

Table 4 – Residential Sector Cost-effectiveness Summary (NPV)[8]

Residential Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 222,766,709	$ 222,766,709
Costs	$ 92,287,103	$ 128,616,801
Net Benefits	$ 130,479,606	$ 94,149,908
UCT Benefits/Costs Ratio	2.41	
TRC Benefits/Costs Ratio		1.73

2.3 Business Sector Programs

The Business Sector Programs are built around the importance of customers understanding energy and being aware of how they use it, and Ameren Missouri's ability to identify and implement savings opportunities. In addition to expanding the current business portfolio by adding a DR Program, the Company is supporting customers by reducing barriers to participation through:

- A concierge-customer approach;
- Benchmarking and energy usage to identify savings targets;
- Using targeted business segments;
- Connecting businesses with trade ally contractors;
- Providing energy efficiency project finance options; and
- Offering a mobile energy savings application tool.

Each Business Sector Program is summarized below and a detailed description of each program can be found in Appendix B.

Standard Incentive	Provides incentives to customers to purchase energy efficient measures with predetermined savings value savings calculations and fixed incentive levels.
Custom Incentive	Applies to energy efficient measures that do not fall into the Standard Incentive Program. These projects are often complex and unique, requiring separate incentive applications and calculations of estimated energy savings.
Retro-Commissioning	This program has a special focus on complex control systems and provides options and incentives for businesses to improve operations and maintenance practices for buildings, systems, and processes, achieving electric energy savings.
New Construction	Provides incentives to overcome cost barriers to incorporating energy efficient building design and construction to achieve electric energy savings.
Small Business Direct Install	Provide installation of low-cost and/or no-cost energy-efficient measures to small business customers. Program providers will deliver, install and complete paperwork for measures provided for in this program. The primary objective of the

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

	Small Business Direct Install Program is to remove participation barriers for small businesses through a simple and streamlined process.
Demand Response - New	Provides customers the resources and incentives necessary to identify and take advantage of demand response opportunities.

EDUCATION PROGRAMS	
Building Operator Certification - New	Ameren Missouri will coordinate with the Midwest Energy Efficiency Alliance ("MEEA") to offer BOC to business customers participating MEEIA Cycle 3. BOC achieves measurable energy savings in the operation of public facilities and commercial buildings by training individuals directly responsible for day-to-day operations. The Company agrees to work with a program implementer to support offering at least one, but no more than two, Building Operator Certification training series per year, with such funding not to exceed $25,000 per series.

2.3.1 Discussion of Selected Business Sector Programs

Building on Ameren Missouri's support of the City of St. Louis' "Building Energy Awareness" ordinance and the MEEIA 2016-18 benchmarking project, a new initiative will be started to allow customers to verify multiple electric accounts associated with a single facility and automatically upload the monthly aggregated usage data directly into the EPA ENERGY STAR® Portfolio Manager ("ESPM"). The first stage of this project, to be completed in 2019, is focused on (but not limited to) all single premise facilities with 4 or more electric accounts with an aggregate annual load of 48,000 kWh or greater. The objective of the second stage, to be completed in 2020, is to identify and implement a cost-effective energy tool that can effectively segment small business customers based on how effectively they use electricity. Some of the primary components will include business type, facility size, and historic electric energy usage. This will be used to identify and act on business energy efficiency opportunities. As part of this initiative, our approaches and value opportunities will be promoted and shared with other natural gas and water utilities.

The Company's outreach plans focused on specific business customer segments will be implemented using direct outreach by the program administrator and trade allies to educate customers on savings opportunities and secure energy efficiency incentives through the business programs. Targeted market approaches will include considerations such as business types, energy usage, energy intensity ratings, and Energy Star® benchmarking scores.

Concierge service will be implemented in MEEIA 2019-21 to support the customer through all phases of a project. As part of this service, business development representatives will coach customers to implement ESPM benchmarking and assist them with energy savings opportunities. For customers who participate in the programs and decide to pursue certification, the business development representative will also facilitate ENERGY STAR® Certification. A primary target segment is one or more electric accounts under a parent account using two million kWh annually, and applying additional criteria mentioned in the prior paragraph. Examples of customers in this targeting include school

districts, property management groups, and government accounts such as state, county, and local governments.

Additionally, to aid with connecting customers with energy efficiency program trade allies, Ameren Missouri will initiate a web connection tool where a customer's potential projects, identified through the benchmarking process or other means, can be posted. This will provide trade ally members the opportunity to review each customer's potential project, engage in project development, and present energy efficiency upgrade proposals to customers. As part of the concierge service, the implementation specialist or business development representative will support customers with the upload of their project data into the web connection tool. This reduces customer barriers associated with identifying energy efficiency contractors and gives trade ally contractors an additional avenue to engage potential customers. A simple request form to submit potential projects will include customer contact information, proposal scope, technology (e.g., lighting, HVAC, refrigeration, etc.) and proposal timeline.

Ameren Missouri will also add finance options to energy efficiency incentive offers to help business customers move ahead with proposed upgrades. Continuing with the concierge service approach, financing options will be an integral part of the total energy efficiency incentive offer. An energy efficiency financial calculator will be used to demonstrate different financial structure scenarios, utilizing typical rates, terms, etc. Financing will be available for qualified customers through traditional business loans along with specialty financing such as Missouri Energy Loan Program and Property Assessed Clean Energy ("PACE"). The executed loan agreements and financing costs will be between the customer and lender.

Combined Heat and Power (“CHP”) can qualify under the Business Custom Program. Consistent with Ameren Missouri’s Custom project applications, CHP projects will be reviewed and approved on a case-by-case basis and approval shall be based upon available program funding and appropriate interconnection agreements. The Company will document all inquiries regarding CHP and retain records associated with such requests. The Company will inform the Missouri Division of Energy of all CHP customers.

The Business DR Program is new to the business portfolio. The Company will procure demand savings through an aggregator who will recruit customers using unique contract offerings and price points for each customer. With the aggregator providing the contracted demand savings, Ameren Missouri expects to register this DR program as a Load Modifying Resource in the MISO market.

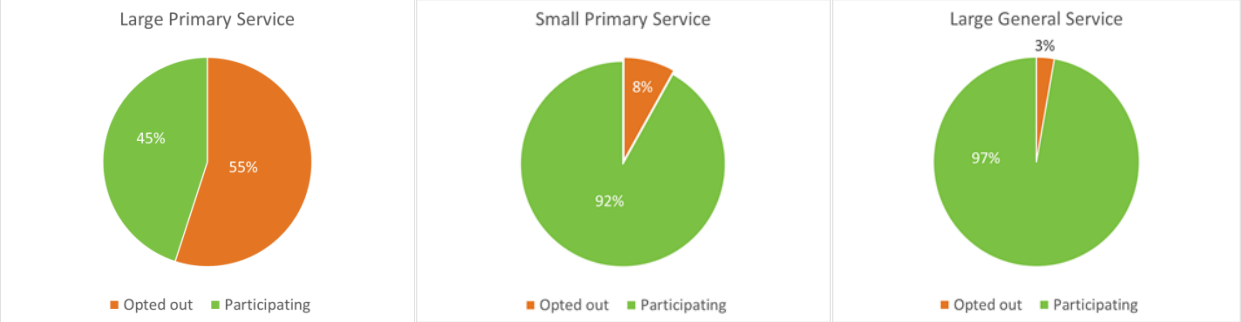
2.3.1.1 Business Customer Opt-Out

MEEIA allows eligible customers to opt-out of paying the costs of utility energy efficiency programs. Three categories of customers can opt-out:

- Customers with a single facility exceeding 5,000 kW of peak demand can opt-out without restriction;
- Interstate pipeline pumping station customers can opt-out without restriction; and
- Customers that can aggregate accounts to greater than 2,500 kW of coincident demand can opt-out provided the customer has a comprehensive demand-side or energy efficiency program and can demonstrate an achievement of savings at least equal to those expected from utility-provided programs. Opt-out shall be in effect for 10 years beginning with the first calendar year of the opt-out. Customers must declare their desire to continue to opt-out after the 10 years.

In 2017, 26 Commercial and Industrial ("C&I") customers opted out of the MEEIA program with their total annual load of 2,629,990 MWh. This is 14.1% of the total C&I customers' load. The figure below shows the percentage of energy by rate class that opted-out.

Figure 32 – Opt-Out Percentage by Rate Class (2017 Actuals)



Based on market information, approximately 9 additional customers with an approximate total load of 1,131,660 MWh may apply to opt-out in the 2018 fall opt-out window.

Customers electing to opt-out are not eligible to participate in the Business Demand Response Program since the program provides incentives to participating customers.

2.3.1.2 Transition Plan for Long-Lead Projects

Transition plans between MEEIA cycles are required to obtain all cost-effective energy savings and allow customers with long-lead projects that span cycles to take advantage of energy savings opportunities. A MEEIA 2019-21 transition plan will allow customers to accept an energy efficiency incentive commitment for projects during the MEEIA 2019-21 term and receive the incentive payment beyond the term, whether or not there is another MEEIA plan.

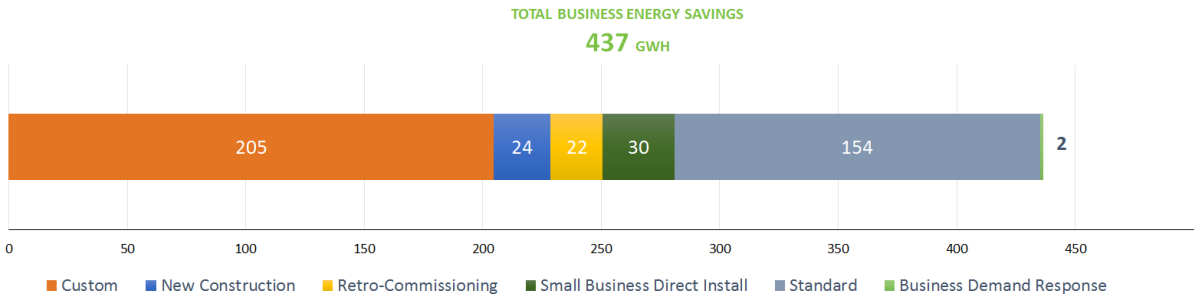
During MEEIA 2016-18, a transition plan was developed collaboratively with regulatory stakeholders and approved by the Commission. This transition plan allowed customers with long-lead projects to participate in MEEIA 2016-18 even if the completion dates of their projects fall after the current MEEIA cycle expires, as long as the completion date still falls within a specified timeline. With 9 months still remaining in MEEIA 2016-18, 57 long-lead projects in different stages of planning have an estimated total energy savings of 35,248 MWh and completion dates beyond MEEIA 2016-18. These customers would not have had the opportunity to obtain these savings without the agreed-upon transition plan. It is still anticipated the number of projects and savings requests may far exceed the $4 million MEEIA 2016-18 transition budget.

With the need to obtain additional knowledge on the effectiveness of the MEEIA 2016-18 transition plan, the Company will lead discussions with interested regulatory stakeholders about implementing a MEEIA 2019-21 transition plan by the end of the second program year.

2.3.2 Business Sector Summary Charts

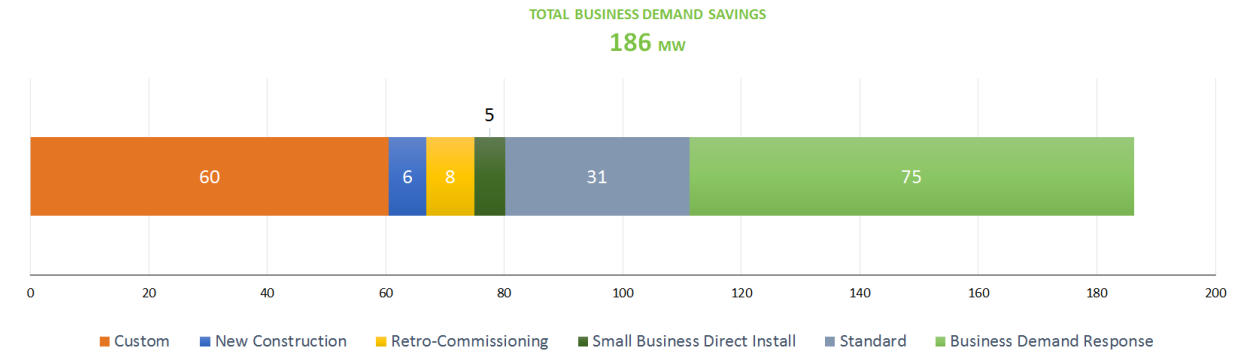
Over the implementation period, Custom and Standard Business Programs make up 80% of the total energy savings forecast with New Construction, Retro-Commissioning, Small Business Direct Install, and DR making up the remainder.

Figure 26 – Cumulative Business Energy Savings by Program



The Custom Program also leads in demand savings with the DR Program a close second, combining for 73% of the demand savings.

Figure 27 – Cumulative Business Demand Savings by Programs



The first year slow start in energy and demand savings is associated with the beginning of a new cycle and the programs not starting until March 1, 2019.

Figure 28 – Incremental Business Energy Savings by Program

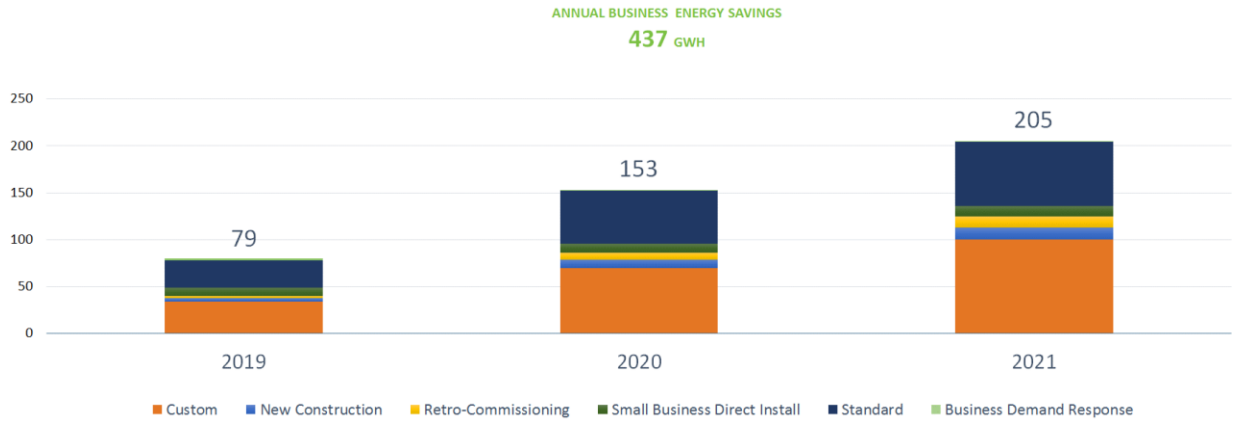
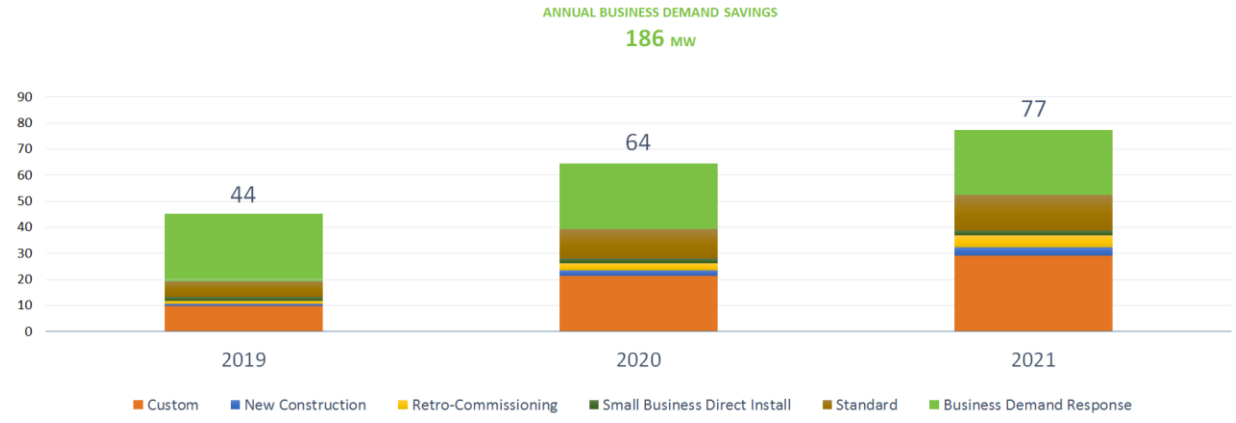


Figure 29 – Incremental Business Demand Savings by Program



Based on implementation budget cost versus associated demand reduction, the DR Program is the most cost-effective, with the Small Business Direct Install Program having the highest implementation costs versus energy and demand savings.

Figure 30 – Total Business Budgets by Program

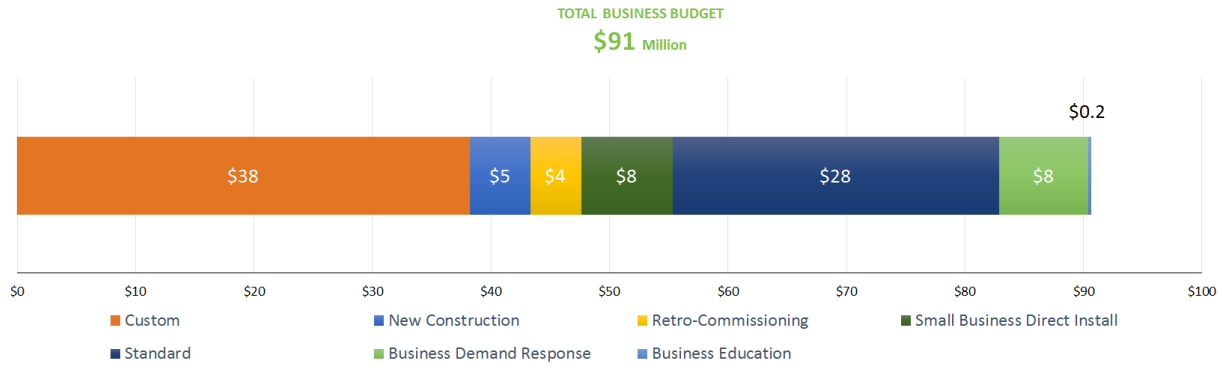
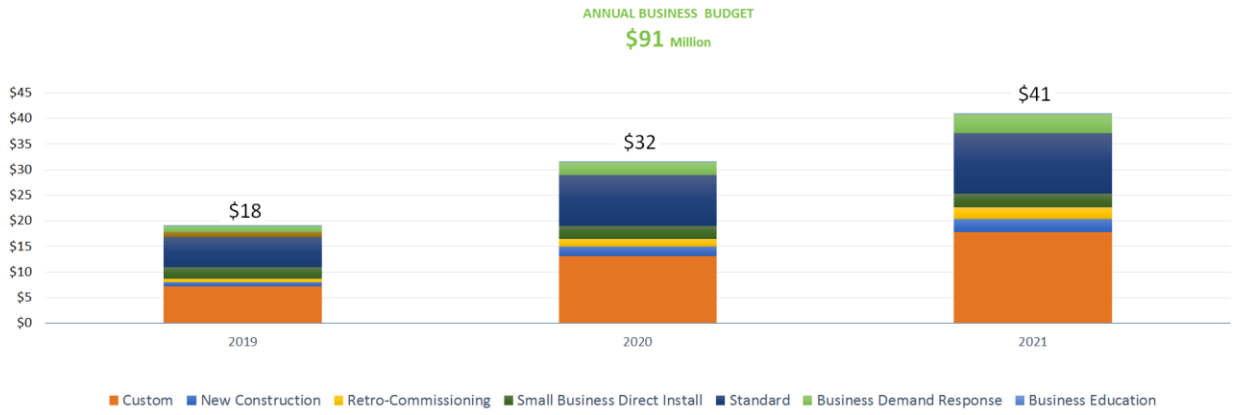


Figure 31- Total Business Budgets by Program by Year



When compared to Table 3 (Residential Sector Cost-Effectiveness), it is apparent that the Business Programs are significantly more cost effective.

Table 5 – Business Sector Cost-Effectiveness Summary (NPV[9])

Business Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 314,984,687	$ 314,984,687
Costs	$ 105,331,695	$ 172,194,942
Net Benefits	$ 209,652,992	$ 142,789,744
UCT Benefits/Costs Ratio	2.99	
TRC Benefits/Costs Ratio		1.83

3.0 Evaluation, Measurement and Verification

3.1 Structure and Processes

A robust EM&V assessment of savings associated with a demand-side program is comprised of, at a minimum, an impact evaluation and a process evaluation. The impact evaluation answers whether the program works by taking a systematic assessment of the relevant data relating to the operational outcomes of a program (e.g., the MWh saved). The process evaluation provides insights on how the program can be improved through careful examination of program implementation, by reviewing existing procedures, and by interviewing program participants and program staff. This review attempts to determine whether procedures are being followed and how well the procedures are working.

Ameren Missouri will procure the services of an independent, third-party contractor to provide an objective assessment of the performance of the MEEIA 2019-21 portfolio. The completed evaluations will be performed in accordance with EM&V best practices like those documented in the International Performance Measurement and Verification Protocols and/or the Uniform Methods Project protocols. The use of established protocols reinforces the reliability of the assessed savings achieved by the energy efficiency programs.

The Commission rules require the use of an EM&V Auditor ("Auditor") hired by the Commission to audit and report on the work of Ameren Missouri's independent EM&V contractors. Ideally, for the MEEIA 2019-21 programs, the Commission Auditor:

1. Monitors the planning, implementation and analysis activities of Ameren Missouri's independent EM&V contractors;

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

2. Provides on-going feedback to Ameren Missouri's stakeholders on EM&V issues; and
3. Provides stakeholders with a copy of a final annual report in a timely manner.

A budget of 5% of the program administration and incentive costs has been established for the EM&V efforts during MEEIA 2019-21. Primary market research will be performed during the course of the EM&V program assessments. This will provide for an important, broader perspective on market/customer activities beyond the utility's programs, as well as an ongoing update to critical inputs used for program planning in a way that is internally consistent with the research conducted on utility demand-side resource programs.

3.2 Evaluation Contractor Role

In addition to the reporting of savings estimates, the evaluation contractors are expected to contribute meaningfully to operational efforts, to measure consideration discussions, to inform the design of customer forms and materials, to assist in the setup of the data tracking system, and to suggest program delivery modifications. Besides coordinating independent EM&V, Ameren Missouri requires implementation contractors to develop and implement internal Quality Assurance and Quality Control ("QA/QC"), inspection, and due diligence procedures. These procedures will vary by program and are in place to assure customer eligibility, completion of installations, and the reasonableness and accuracy of savings upon which incentives are based. Evaluators will review these QA/QC procedures. To be successful in these areas, it is important to maintain open lines of communication with both the evaluation contractors and the implementation contractors while maintaining the independence of all evaluation and implementation contractors.

3.2.1 Evaluation Plans

The evaluation plans are work plans developed at the beginning of the program cycle that fulfill the evaluation objectives and identify the planned activities undertaken in each program year with step-by-step action plans.

The sample evaluation plans found within Appendix E provide a high level description of the EM&V effort that will take place for each of the MEEIA 2019-21 programs. The detailed evaluation plans for each program will be developed and shared with stakeholders at least 30 days prior to program launch. As programs and markets evolve each year, the evaluation methods may need to change to ensure the evaluation method(s) being used continue to be appropriate. Findings from process evaluations and market assessments will help identify when to reassess impact evaluation methods. The regulatory stakeholders will be engaged with the development and review of the overall EM&V plan prior to its implementation and informed as modifications are made throughout the program cycle.

Ameren Missouri will conduct customer research as part of its annual evaluation process. Before each program year begins, the evaluator will submit a full evaluation plan to the Company, the program implementers, and the stakeholders for feedback. In addition to typical EM&V activities, the evaluation plan will cover topics through surveys and/or focus groups, such as gauging what customers want and in which programs they may be willing to participate and what barriers may keep customers from participating in programs. The Company will seek to determine, through its customer research methods, leading ways in which customers and specific customer groups (e.g., low-income, multi-family housing, homeowners) may be most effectively educated on energy efficiency measures as well as specific efficiency programs that would most likely be effectively utilized by such customer groups. Surveys will collect data regarding income level, rental versus owner status, multifamily versus single family, and zip code. Such customer research should encompass participants and non-participants.

3.2.2 Impact Evaluation

One of the most important aspects of evaluation is the measurement of savings achieved by implemented energy efficiency measures. The impact evaluation estimates of gross measure savings may include engineering analysis and formulas, building simulation models, meter data, statistical models and billing analysis. The evaluator is expected to complete annual impact evaluations of all programs. This will include any necessary measurement to recommend adjustments to the attributes of the measures, including changes/updates to measure inputs, incremental costs, and formulas to calculate savings and cost-effectiveness.

3.2.3 Demand Response Evaluation

Evaluations performed for a DR program differ from an evaluation done for an energy efficiency program. For DR, the evaluation will capture at least the following two measures of savings:

- The amount of demand reduced during a peak shaving event and the associated energy savings; and
- Total kW under control by the program at program year-end and available to be called under Ameren Missouri's system peak conditions.[10]

For Residential DR, the evaluation will include analysis of the time before an event to account for pre-cooling and after an event to account for snap back usage to return the home to a normal temperature setting. EM&V will also calculate energy savings on non-event days due to additional energy management activities undertaken through this program. Because DR is a resource used to meet future peak demand needs during a system peak event on the Ameren Missouri system, it is important to also report its

[10] This includes weather-normalized actual average event demand reductions (to system peak design conditions) and scaled to the total number of program participants at year end.

capabilities under conditions that are consistent with how Ameren Missouri forecasts peak demand and performs its long-term planning analyses. Therefore, DR capability will be weather-normalized to a design criteria consistent with the Company's peak forecasting weather assumptions. The normalized DR kW capability at this design criteria will then be multiplied by the total number of participants in the program at the end of the program year.

For Business DR, the actual meter readings during a DR event will be compared to the customer's baseline to calculate the consumption and demand savings per event. The DR annual capacity will be the average demand savings across all peak shaving events throughout the summer event season. Similar weather normalization and resource capability calculations will be performed on the Business DR to the extent they are relevant.

3.2.4 Process Evaluations

Ameren Missouri will again collaborate with its evaluators to identify appropriate process evaluation goals, procedures, and practices. These evaluations focus more on program design and delivery, market segments, and other societal factors that affect the program's performance. Additionally, the evaluations will address the requirements of 4 CSR 240-22.070(8), which include:

1. Identifying primary market imperfections common to the target market segment;
2. Identifying the adequacy of market segment definition and the appropriateness of the market segments;
3. Identifying if the mix of end-use measures adequately addresses the market segment end-use needs and measure diversity;
4. Appropriateness of communication channels of market segment delivery mechanisms; and
5. Methods for overcoming identified market imperfections to increase customer acceptance and program effectiveness.

Further, the process evaluation will review the performance of the programs that are being delivered and make recommendations regarding improvements that can be made associated with the delivery of energy efficiency products.

Because of uncertainty in the residential lighting market (including the execution of equipment efficiency standards) and the fast pace of change in LED prices and adoption, for the Residential Lighting Program, the evaluation contractor will perform an annual assessment to identify specific Stock Keeping Units ("SKU") of lights for each delivery channel that should no longer be offered because of market changes.

3.2.5 Annual EM&V Reporting

As required by the Commission's MEEIA regulations, the evaluators will provide the regulatory stakeholders with a copy of the draft and the final EM&V report at the same time as they are provided to Ameren Missouri.

The reports will include energy savings and demand reductions for each of the programs and each of the residential and non-residential portfolios. The reports will also summarize *ex-ante* and *ex-post* measure level savings on which the updates for the Deemed Savings Table (Appendix F) and Technical Resource Manual ("TRM") (Appendices G – I) will be based.[11] Finally, the reports will include a summary of the process evaluation and will identify specific details regarding the impact methodologies and results as well as key findings, conclusions, and recommendations. Based on the annual evaluations, Ameren Missouri will complete the cost-effectiveness analysis at the program and portfolio level and calculate the net lifetime benefits of the programs to be included in the evaluation reports. Additionally, before the end of 2018, Ameren Missouri will host a meeting with stakeholders to develop high-level reporting protocols. These protocols include items like report structure, the use of standardized definitions, etc. This activity aligns well with certain efforts already underway with the Missouri Statewide Collaborative.

Similar to the process reflected in the Company's MEEIA 2013-15 and 2016-18 plans, as approved by the Commission, the below-described process is included in this Plan and will govern review and finalization of annual EM&V:

- EM&V reports will be completed for each program year the Plan. Seventy (70) days after the end of each program year, the EM&V contractor will circulate a draft EM&V report to all parties to the MEEIA 2019-21 case ("evaluation stakeholders") and the Commission's Auditor.

- Fifty-six (56) days after circulation of the draft EM&V report, the Auditor and each evaluation stakeholder can provide any comments and recommendations for report changes to the EM&V contractor and to all other evaluation stakeholders and the Auditor.

- Prior to issuing the Final EM&V Report, the EM&V contractor will host at least one conference call/meeting with the Auditor and the evaluation stakeholders to discuss the comments and recommendations for report changes. The EM&V contractor will determine what comments and/or changes are incorporated into the Final EM&V Report. Thirty-five (35) days after the deadline for comments and recommendations for report changes, a Final EM&V Report will be provided to all evaluation stakeholders and the Auditor by the EM&V contractor. Fourteen (14) days following the Final EM&V Report, the Commission's Auditor will issue its final report.

[11] The Deemed Savings Table and Technical Resource Manual are discussed further below.

- Any evaluation stakeholder who wants a change to the impact evaluation portion of the Final EM&V Report will have twenty-one (21) days from the issuance of the Final EM&V Report to file a request with the Commission to make such a change ("Change Request"). Any evaluation stakeholder filing a Change Request will set forth all reasons and provide support for the requested change in its initial Change Request filing. Responses to a Change Request may be filed by any evaluation stakeholder and are due twenty-one (21) days after the Change Request is filed. The response must set forth all reasons and provide support for opposing or agreeing with the Change Request. Within seven (7) days after the deadline for filing a Change Request (if a Change Request is filed), the evaluation stakeholders will hold a conference call/meeting to agree upon a proposed procedural schedule that results in any evidentiary hearing that is necessary to resolve the Change Request to be completed within sixty-three (63) days of the filing of the Change Request. The proposed procedural schedule will also recommend to the Commission that a Report and Order resolving the Change Request be issued within thirty (30) days after the conclusion of such a hearing. The evaluation stakeholders will be parties to a Change Request resolution proceeding without the necessity of applying to intervene. The procedural schedule for such a Change Request proceeding will provide that data request objections must be lodged within seven (7) days and responses will be due within ten (10) days (notifications that additional time is required to respond will also be due within seven (7) days).

- For purposes of calculating achievements towards annual earnings opportunity metrics, the Company will utilize the impact evaluation energy and demand savings (kWh and kW) estimates of the Final EM&V Report, as it may be modified by the Commission's resolution (using the above-described process) of any issues related to the impact evaluation portion of the Final EM&V Report.

3.3 Technical Resource Manual

The Ameren Missouri MEEIA 2019-21 TRM is largely based on the draft Missouri Statewide TRM, which was led and created in collaboration with the Missouri Department of Economic Development - Division of Energy. The draft Missouri Statewide TRM serves as the source for measure savings formulas and default inputs (to use in the absence of utility-specific evaluation results). The Deemed Savings Table represents the application of the formulas in the TRM for discrete measures that are being offered and also reflects the inputs into those formulas based on utility-specific evaluation results. The Deemed Savings Table is attached as Appendix F and the TRM is attached in three volumes as Appendices G - I: TRM-Introduction and User Guide (Appendix G); TRM-Business Measures (Appendix H); and TRM-Residential Measures (Appendix I). Together, the TRM and the Deemed Savings Table are important to improve the transparency of savings calculations. To facilitate further transparency, the Deemed Savings Table has been created in Excel with working formulas for each measure and organized in a way to improve connection to the formulas specified in the TRM. The evaluators will utilize the Excel-based Deemed Savings Table to save time by making updates to the measure

savings/inputs inherent in the evaluation process and thus avoiding the extra effort typically expended after an evaluation to translate the EM&V results into the necessary regulatory updates. To the extent evaluators suggest alternative savings algorithms compared to what the TRM specifies, such recommendations will be made as part of the evaluation plans and justification will be provided.

The TRM and Deemed Savings Table are living documents that will be updated periodically throughout MEEIA 2019-21. Changes to the TRM will be submitted for Commission approval and will likely be a result of evaluations and/or the need to add additional measures. The Deemed Savings Table will be the primary source of savings used as inputs for the throughput disincentive calculations and will be updated regularly (roughly annually depending on evaluation cycles) to reflect updates to measure savings from evaluations. To the extent final EM&V results from program year 2017 of MEEIA 2016-18 require, the TRM and/or Deemed Savings Table included with this Plan will be updated before the start of the Plan's programs. To the extent the Deemed Savings Table requires only changes to measures and measure inputs, those updates will be achieved by following steps 3,4,5,6, 10, & 11 of the 11-Step Change Process outlined in the Company's tariffs.

3.4 Net-To-Gross

The TRM and Deemed Savings Table described above govern the estimation of the gross impacts of the measures delivered by Ameren Missouri's programs. However, a second and important part of the savings equation is the estimation of net savings based on application of a Net-to-Gross ("NTG") ratio. The NTG ratio is what establishes the amount of savings that are attributable to utility programs.

The MEEIA 2019-21 equation for estimating the NTG ratio for energy efficiency programs is:

$$\boldsymbol{NTG\ Ratio} = 1 - Freeridership\ ratio + Spillover\ ratio$$

$$(where\ the\ denominator\ in\ each\ ratio\ is\ the\ gross\ savings)$$

Free-ridership is the program savings attributable to free-riders (program participants who would have implemented a program measure or practice in the absence of the program).

Spillover refers to additional reductions in energy consumption or demand that are due to program influences beyond those directly associated with program participation. As a result, these savings may not be recorded in the program tracking system and credited to the program.

4.0 Demand-Side Investment Mechanism

The DSIM included in the Plan reflects a set of regulatory policies and practices that provide timely recovery of program costs, align the financial interests of the Company

with helping its customers use energy more efficiently and in a manner that sustains or enhances its customers' incentives to use energy more efficiently, and provide an earnings opportunity. For the MEEIA 2019-21 plan, the DSIM from MEEIA 2016-18 provides a useful framework from which to begin. In fact, the basic structure of the DSIM proposed for MEEIA 2019-21 is very similar in most respects to the DSIM that is currently in place for the MEEIA 2016-18 programs. Ameren Missouri has updated its analysis to reflect new portfolio characteristics, new avoided costs, and new margin rates to produce updated throughput disincentive and earnings opportunity components of the DSIM. Overall, the existing framework has been effective in aligning incentives and otherwise discharging the Commission's obligations under MEEIA. As noted, the proposed DSM includes three components: 1) program cost recovery; 2) throughput disincentive recovery; and 3) an earnings opportunity. These components and other terms of the DSIM are outlined further below. In addition, the operation of the DSIM and its defined terms, which are explained in this report, are also embedded into the Rider EEIC tariff, included with this report as part of Appendix J. Appendix K includes the proposed notice to explain the proposed DSIM to customers, while Appendix L shows a sample of how the DSIM line item will appear on a residential and non-residential bill.

Below are key elements of the proposed Rider EEIC that are also a continuation of the MEEIA 2016-18 DSIM framework:

1) The Company will make a Rider EEIC filing each calendar year to become effective as of the subsequent calendar year’s February billing month. The Company is allowed, or may be ordered by the Commission, to make one other Rider EEIC filing in each calendar year with such subsequent filing to be effective beginning with either the June or October billing month (to coincide with rate changes in the Company's Fuel Adjustment Clause rate).
2) The Energy Efficiency Investment Rate (EEIR) will be the sum of the Net Program Costs (NPC), Net Throughput Disincentive (NTD), Net Earnings Opportunity (NEO), and Net Ordered Adjustments (NOA) divided by the Projected Energy, in kWh, forecasted to be delivered to the customers to which the Rider EEIC applies during the effective period (typically the 12 billing months applicable to the Rider EEIC filing).
3) Each subcomponent of the EEIR will include a monthly reconciliation of actual costs to billed revenues with interest at the Company's short-term borrowing rate.
4) Any remaining reconciliation balances from MEEIA 2016-18 for program costs, earnings opportunity, and other Commission-ordered amounts will be rolled into the respective reconciliation balances for MEEIA 2019-21 starting in February 2022. Any remaining reconciliation balance for MEEIA 2016-18 throughput disincentive will be rolled into the throughput disincentive reconciliation balance for MEEIA 2019-21 starting in February 2024.

4.1 Cost Allocations[12]

Residential Program costs and throughput disincentive will be recovered from the residential service class, with the exception of low-income costs as explained below. Non-residential program costs will be allocated based on non-residential service classification retail sales (kWh) as adjusted for opt-out, while the non-residential throughput disincentive will be allocated based on MEEIA 2019-21 energy savings for each respective non-residential service classification. Portfolio-level common program costs, low-income program costs, low-income throughput disincentive, and the low-income Rider EEIC exemption will be allocated to each service classification based on retail sales (kWh) as adjusted for opt-out of eligible business customers. The earnings opportunity will also be allocated to each service classification based on retail sales (kWh) as adjusted for opt-out.

4.2 Program Costs

For the program cost recovery component of the DSIM, the coming year's program expenses will be forecasted and included in Rider EEIC. Each month, the cumulative difference between actual program expenditures and actual revenues billed for program costs will accrue short-term interest and be trued-up through Rider EEIC over the following year. In short, Rider EEIC reflects identical mechanics of program costs as reflected in the current Rider EEIC.

Program costs to be recovered include the cost of customer incentives, administration and professional services (including business development, project analysis, trade ally management, planning, and customer interaction), incremental energy efficiency labor and benefits, marketing (including creative development, direct mail, television, radio, social media, collateral, and program literature), potential study, EM&V, data tracking, education (including energy efficiency awareness activities, programs to educate customers about energy efficiency and conservation), and other costs. These will be tracked by specific project codes within accounts 908 or 930 and an Activity Code of "M3PC" for each program in MEEIA 2019-21, as seen in Appendix M. Costs will be further delineated using Resource Types. For example, the Resource Type "CI" will be used for customer incentives, "EX" for administration and professional services, and other Resource Type for other costs, as specified in Appendix M.

Different than MEEIA 2016-18, the MEEIA 2019-21 DISM includes the Company's internal incremental labor costs until those labor costs are included in base rates. This change in treatment of internal labor costs is directly related to the expected increase of internal resources due to the aggressive expansion of the portfolio. Incremental labor for MEEIA 2019-21 will be for employees hired by Ameren Missouri after Commission

[12] Ameren Missouri is not proposing programs for its Lighting Service classifications; therefore, no MEEIA 2019-21 costs will be allocated to or charged to those classes at this time.

approval of the Plan who were 1) hired by Ameren Missouri after Commission approval of the MEEIA 2019-21 Plan that were (a) not hired to replace an Ameren Missouri or Ameren Services Company employee whose labor and benefit costs were accounted for in Ameren Missouri's prior general rate proceeding, (b) hired by Ameren Missouri and assigned exclusively to support Ameren Missouri's MEEIA Programs; and 2) were not an Ameren Missouri or Ameren Services Company employee whose labor and benefit costs were accounted for in Ameren Missouri's prior general rate proceeding. For such qualifying employees, the accounting for their time will be fixed so that it is charged directly to the MEEIA programs using a unique project code for Incremental Labor and the M3PC activity code, which will result in such an employee's labor and benefit costs being charged to the MEEIA programs as a program cost and included in Rider EEIC.

Throughput Disincentive

Over the Company's last two MEEIA cases, the throughput disincentive has been extensively documented, analyzed, and included in the Commission-approved DSIM. It is well documented that energy efficiency savings cause negative impacts on utility earnings due to the combination of regulatory lag (the time it takes to incorporate changes in billing determinants into base rates) and through the reliance on volumetric rates to cover fixed costs. Throughput disincentive starts impacting the utility the moment an energy efficient measure is installed, so absent an appropriate solution the negative earnings impact is immediate, cumulative, and continuous until base rates are updated to reflect the reduction in billing units. Therefore, in order to align utility incentives with helping customers use energy more efficiently, the reduction in revenues associated with covering fixed costs must be offset by allowing throughput disincentive recovery. The recovery of throughput disincentive is explicitly allowed by the updated MEEIA rules. In addition, to avoid a negative impact to utility earnings, the revenue from recovery of the throughput disincentive must meet a specific accounting standard due to the nature of what is being recovered (i.e., revenues that the Company would have received had it not implemented its MEEIA portfolio).

According to accounting rules that govern the types of revenues that come from Ameren Missouri's DSIM, in order to recognize the additional revenues to be billed in the future and to avoid a contemporaneous reduction in Company earnings, all of the following conditions must be satisfied:

1) The demand-side program must be established by an order from the utility's regulatory commission that allows for automatic adjustment of future rates (verification of the accuracy of the adjustment to future rates by the regulator would not preclude the adjustment from being considered automatic);

2) The amount of additional revenues for the period must be objectively determinable and probable of recovery; and

3) The additional revenues must be collected within 24 months following the end of the annual period in which they are recognized.

The Company's MEEIA 2016-18 Rider EEIC met these accounting requirements, and the proposed MEEIA 2019-21 Rider EEIC continues the key elements necessary to meet these accounting requirements.

Based on a margin rate analysis (that analyzed all customer bills for 12 months) and rate class level energy and demand savings estimates by end use categories, the Company has estimated total throughput disincentive for MEEIA 2019-21 of $51 million over 8 years (throughput disincentive continues until the first rate case with a true-up period that covers the last month of MEEIA 2019-21).[13] Actual throughput disincentive will be based on actual measure installations and relevant updates to inputs (e.g., TRM and Deemed Savings Table, margin rates, rebasing amounts, etc.) based on actual future EM&V results as well as general rate proceeding timing and outcomes.

Estimating the throughout disincentive requires detailed modeling of energy savings by rate class and by end-use category, interacted with ratemaking fundamentals. The Company has developed this detailed modeling over the years and has consistently made it more granular and more accurate. In fact, the MEEIA 2016-18 throughput disincentive recovery mechanism reflects these mechanics, and the Company has used the MEEIA 2016-18 Rider EEIC spreadsheets to estimate the throughput disincentive for MEEIA 2019-21. To forecast MEEIA 2019-21 throughput disincentive, the Company assumed that energy savings by rate class will follow the same split as the recent experience with MEEIA 2016-18 (March 2016 through January 2018).

With energy savings by rate class and end-use category, the next step is to convert those energy savings into dollars, which happens by multiplying rate class savings by a rate class margin rate (i.e., the rate portion associated with covering fixed costs). Because the Company's MEEIA 2016-18 programs have targeted demand savings more aggressively than MEEIA 2013-15, the marginal rate analysis needed to determine margin rates has been updated and the explanation of that update is below.

4.2.1 Marginal Rate Analysis

In order to quantify the financial impact on utility revenues and margins resulting from the decline in usage associated with the adoption of efficiency measures, it is necessary to identify the specific rate that is applied to usage of the customers and is reduced as such measures are implemented. This is more complicated than it may initially appear, as each customer class has a unique rate structure and not every kilowatt-hour of energy and kilowatt of demand is priced the same. In order to accurately assess the

[13] For purposes of this analysis, the Company assumed a rate case is filed July 1, 2019, then every 24 months thereafter.

financial impacts of the throughput disincentive, the Company has performed a study to determine the marginal rate for the average customer in each tariff class. Because of the unique rate structures applicable to each class, customers might pay a different amount for marginal usage or for the last kWh consumed than they do on average for all of their usage. This is relevant in the context of the throughput disincentive because customers that use less energy due to installation of energy efficient measures experience a reduction on their bill according to the price of the last kWh consumed (or the last kW of billing demand established for customers on a rate with demand charges). Therefore, using marginal rates will help accurately measure the bill savings to participants and of the throughput disincentive to the Company. To come up with marginal rates for each tariff class - and each end use category for classes with demand charges as will be discussed further below - every bill of every customer was analyzed for a one year period.

The Company first downloaded all of the bills for every customer from the 12-month period ending with the March 2018 billing month. Every bill was then calculated manually based on the applicable usage characteristics and tariff rate components. Next, each bill's usage was reduced by 1%, 5%, and 10%. These usage declines were used to simulate the effect of various energy efficient measures. For example, replacing a couple of light bulbs at a customer premise that has a relatively large load might only impact that customers' consumption by a percent. Replacing the air conditioning unit for a customer might save 10% or more of their usage. By analyzing 1%, 5%, and 10% declines, we can see the marginal impact on the bill of assorted types of measures. For the LGS, SPS, and LPS customer classes, which feature rates that include demand charges, this exercise was replicated to simulate the impacts of various end use categories, each of which may have a unique impact on energy and demand savings and may vary due to the seasonality of some of the end uses. For each scenario of usage reduction – and for each end use category for the applicable classes - the bill was recalculated. The result is to have a calculation representing the original bill and a bill after the implementation of various types of energy efficient measures. The total energy consumption and total billed revenues for each scenario were then summed from the individual customer bills. The three scenarios of usage reduction were compared to the base case by calculating the change in revenue and change in consumption relative to that base case. The division of those two components ($/kWh) results in the average customer's marginal rate. The table below shows the calculations for the residential rate class assuming a 1% usage decline induced by energy efficiency.

Table 6 – Marginal Rate Study: Residential Class 1% Energy Reduction

		Summer	Non-Summer	Total
Actual Bills	Class Usage (kWh)	4,712,942,640	8,438,376,647	13,151,319,287
	Class Revenue	592,888,184	640,673,540	1,233,561,724
	Average Rate	**$ 0.126**	**$ 0.076**	**$ 0.094**
1% Energy Reduction Case	Change in Usage (kWh)	(47,129,426)	(84,383,766)	(131,513,192)
	Change in Revenue	(5,928,882)	(5,580,781)	(11,509,663)
	Marginal Rate	**$ 0.126**	**$ 0.066**	**$ 0.087**
Marginal Rate vs Average Rate		**100%**	**87%**	**93%**

Note that in the summer the marginal and average rates are identical for this class. That is logical considering the rate structure. In the summer period, all kWh of residential usage are priced the same. If every unit of energy has the same price, by definition the average and marginal unit must have the same price. However, in the non-summer period, the first 750 kWh of consumption per customer per month are priced at one rate and any additional kWhs are priced at a lower rate. This is called a declining block rate structure.[14] Since the marginal usage for many customers occurs in the lower priced block, the bill reductions will actually occur at something less than the average energy rate. In this case, after analyzing all of the bills from that one-year period, the marginal rate is 93% of the average rate (or 7% lower).

For the other rate classes, the results are noticeably different. Each tariff has distinctive features of rate design. For the Small General Service ("SGS") class, the rate design is similar to the Residential class, with one notable exception: the size of the block after which the non-summer period declining rate structure is initiated is variable and customer specific. Each customer's May through October billing month usage is used to establish the cut off point for the declining block rate. When a customer uses less in the May-October timeframe (as they implement energy efficient measures), they essentially establish for themselves a more favorable block cut-off for the non-summer months, giving them a discount on more usage for the rest of the year. This unique feature of this rate actually causes the marginal rate to be higher than the average rate on an annual basis.

For the Large General Service ("LGS") and Small Primary Service ("SPS") rate classes, there is a common rate design that is sometimes referred to as an hours use rate. This more complex rate is not described fully here due to the technical complexity, but the workpapers with the filing have all of the supporting details. The notable feature of this rate is that, because it is applicable to a wide range of usage levels of

[14] The rationale for this type of rate structure is grounded in the fact that Ameren Missouri's maximum load occurs in the summer. Capacity is built to meet that load, but often results in excess capacity in the winter. The declining block winter rate reflects lower costs associated with more efficient utilization of the Company's existing fixed assets.

customers and incorporates interactions between a demand and energy charge, the hours use rate causes the average and marginal rates to be identical for all customers and usage levels that have a constant load factor.[15] The only way the marginal rate and average rate can be different is if the energy efficiency measure impacts the customer's billing demand differently than its energy. To assess the relative impacts of energy efficiency on energy consumption relative to demand, the Company used end use load shapes and load research data to determine the relationship between demand and energy savings of various energy efficiency measure categories. The end use load shapes used in this analysis were originally developed for the Company's 2017 IRP, and represent load research that characterizes the consumption patterns associated with customers' utilization of certain end use categories, such as lighting, refrigeration, air conditioning, etc.[16] For each end use category, the peak usage day of each month was identified from the load shape. Then, for each class, the hour of the day where the class peaks[17] (the hour which the classes' usage reaches its highest level) is identified. The value from the end use category load shape from the peak day of each month for the hour at which the class peaks is taken to estimate a reduction in billing demand for a given level of energy usage – which is represented by the sum of the hourly values from the end use category load shape for the given month. The marginal analysis incorporated this end use load shape information to determine the estimated percent reduction in customer billing demand for a given percentage energy reduction by month and by class, by comparing the end use category's impact on billing demand and energy as determined in the steps described above to the class demand and energy from the Company's load research in order to understand the relationship between energy savings and demand savings. This relationship between demand and energy was applied to the usage reduction scenarios (1%, 5%, and 10% savings) to determine corresponding reductions to monthly billing demands to be used when recalculating customer bills. For the end use categories with strong seasonal differences in usage (i.e., heating, cooling), the demand impact was set to zero in the "off" seasons (e.g. summer for heating and winter for cooling) due to the negligible usage of those end uses during those seasons.

Even though the rate design is slightly different, a similar method of analyzing

[15] The load factor is the ratio of the average usage level to the maximum usage level. It is informative about how efficiently a load utilizes capacity. A high load factor is indicative of a customer that has a relatively flat usage profile. This results in a lower average rate for the high load factor customer, since there isn't a need to build as much excess capacity that will remain idle during the customer's lower usage periods.

[16] The full list of end use categories for which unique marginal rate impacts are calculated includes: cooling, heating, water heating, cooking, refrigeration, miscellaneous/air compressors/motors, lighting, exterior lighting, HVAC (which applies to measures that impact both heating and cooling use), office equipment, and ventilation.

[17] The peak day of the class may not be the same as the peak day identified by the end use categories' load shape.

energy savings by end use categories was utilized for the Large Primary Service ("LPS") rate class to determine demand savings given a kWh or energy savings.

Once the marginal revenue reductions associated with each kWh of savings have been calculated, the marginal rate is reduced by a factor derived from the Company's Fuel Adjustment Clause ("FAC"). The marginal rate for each class (and end use category where applicable) is further reduced by the per kWh credit applied to all customer bills in that class as a result of the rate reduction implemented in the summer of 2018 to return the benefits associated with the federal income tax rate reduction to customers.

The resulting margin rates are different on a class-by-class basis and a month-by-month basis due to the load characteristics of that class and how they interact with the demand and energy savings associated with efficient measures. The margin rates determined by the marginal rate analysis for each class and end use category, where applicable, are presented in Appendix J.

It should be noted that the various cases (i.e., 1%, 5%, and 10% reductions) produced extremely similar results to each other, to the point of being immaterial in terms of the differences. This indicates that regardless of the size of the impact of the energy efficient measure, the margin rate is similar. With each general rate proceeding, the process above will be repeated to produce updated margin rates to reflect the outcome of the rate proceeding with regard to potential changes to items such as customer usage data, demand and energy savings by end use category, underlying costs, and class rate designs. Updated margin rates resulting from general rate proceedings will be updated in Rider EEIC and used for throughput disincentive calculations from that point forward until the results of the subsequent general rate proceeding. The process described above will be followed for those updates, using the same demand and energy relationships derived from the end use category load shapes, but excluding the tax reform rate credit to the extent that the credit is being discontinued in that case as the effects of the tax reform are directly incorporated into base rates.

4.2.2 Throughput Disincentive Calculation for Rider EEIC

The throughput disincentive ("TD") calculation will largely follow the same procedure as what is being used in MEEIA 2016-18 with the addition of Demand Response Event Net Energy component that will be handled differently due to the short-term nature of the savings associated with peak shaving events.

The first input required for the monthly throughput disincentive calculation is the kWh savings by end-use category by rate class. Monthly load shapes by end-use category are used to distribute types of energy savings (which are reported as annualized kWh savings) across the months in the year to better reflect the seasonality of the savings that were achieved. For example, the cooling category has most of its savings during the

summer months while the lighting category has savings spread out more evenly with an increase in the winter months. The end-use categories and load shapes are detailed in volume 1 of the TRM (Appendix G). The conversion to monthly savings data allows the Company to determine current month energy savings[18] as well as cumulative monthly energy savings from prior month energy savings activities. As energy savings are incorporated into base rates, the cumulative monthly savings are reduced to avoid double counting. The process of including savings in base rates and rebasing the throughput disincentive is discussed further below. Next, the savings are multiplied by a NTG factor. Each program year will use an initially-assumed NTG of 0.85 until such time as ex-post gross savings and a NTG factor is determined through EM&V for that program year. Thereafter, for each given program year, the ex-post gross savings and NTG factor determined through EM&V will be used. This net monthly savings (current month plus cumulative savings less savings included in base rates) by rate class is then multiplied by the appropriate margin rate to arrive at the monthly dollar value of throughput disincentive by rate class.

When base rates are adjusted, upon the conclusion of a general rate proceeding or otherwise, the cumulative, annualized[19], and normalized (at a net-to-gross factor of 1.0) kWh savings from all active MEEIA programs, except for Demand Response Event Net Energy ("DRENE"), will be reflected in the unit sales and retail revenues used in setting the rates through the rate case true-up period.[20] In addition, the rate case test period hourly loads used for fuel modeling will be adjusted to reflect the annualization of kWh for MEEIA programs, except those listed above, using hourly end-use category load shapes. Upon the adjustment for the kWh savings in the rate case, the throughput disincentive will be rebased to subtract the kWh savings that are reflected in the billing units used to establish new rates from the cumulative kWh savings when the rates take effect. The

[18] Current month savings are divided by 2 to reflect a "half-month" convention, which reflects the fact that not all measures were installed on day 1 of a month just as all measures were not installed on the last day of the month.

[19] The Home Energy Report and Education Programs will not be annualized.

[20] The Procedure for computing the MEEIA annualization adjustment for billing units is as follows:

Step 1: Begin with estimated actual hourly load per class;

Step 2: Compute hourly weather normalized energy per class for Step 5;

Step 3: Compute calendar month energy efficiency annualization adjustment based on the difference between the actual monthly energy efficiency savings realized and the annualized energy efficiency savings for each end-use measure category and rate class;

Step 4: Compute hourly energy efficiency annualization adjustment by using the applicable end-use hourly shape for each measure category applied to the results of Step 3;

Step 5: Apply the hourly energy efficiency annualization adjustments from Step 4 to the hourly weather normalized energy from Step 2 (as adjusted for growth). The results of this step are to be used in the hourly loads used for fuel modeling; and

Step 6: Convert calendar month energy efficiency annualization adjustments from Step 3 to billing month energy efficiency annualization adjustments by computing a weighted average of the calendar months based on billing cycle percentages

rebasing adjustment will be applied for each program year vintage accordingly with the relevant vintage ex-post gross savings and portfolio-level net-to-gross factor.

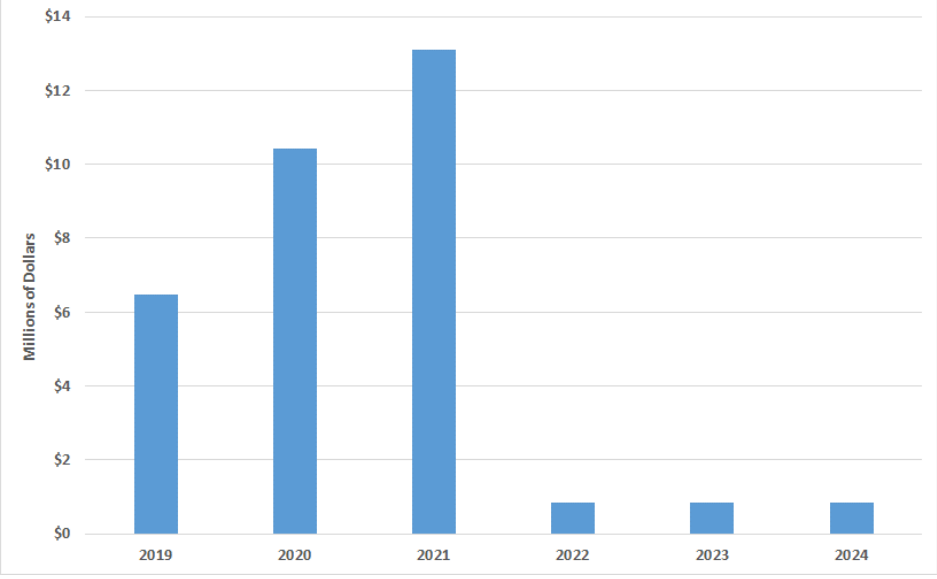
DRENE savings resulting from a demand response event are treated differently than first year savings from energy efficiency measures (including demand response annual energy savings). The DRENE savings are for a specific period and would not be allocated by load shape across the whole year. The savings also do not continue into any subsequent months. All of the throughput disincentive is occurring within a month and will be recovered within the same month. Any DRENE savings occurring in the test period used to establish base rates will be added back to the observed loads in those periods and the throughput disincentive associated with future DRENE savings will be recovered through the DSIM.

4.3 Earnings Opportunity

4.3.1 Earnings Opportunity Payouts

The Company has included an annual average earnings opportunity of approximately $10 million, which equates to a total of $30 million for the 2019-21 implementation period with another $2.5 million associated with the 2022-24 period for the low-income programs. The chart below shows the target annual payout amounts based on the performance targets in each year. This section further provides the details of the various performance targets as well as the justification of the earnings opportunity amount.

Figure 33 – Annual Earnings Opportunity Payout Targets



Earnings Opportunity Calculator

The MEEIA 2019-21 earnings opportunity includes annual targets, in contrast to a cumulative goal over the entire Plan implementation period. To determine the annual earnings opportunity award, the Earnings Opportunity Calculator (included as Appendix N) will be used. The Earnings Opportunity Calculator is a spreadsheet with a sheet for each program year containing all of the necessary calculations and details to calculate the earnings opportunity award. The Earnings Opportunity Calculator also has the cells color-coded to identify which cells are formulas, static inputs that do not change (like performance targets), input cells for EM&V results, and the earnings opportunity award payout amounts. Each of the seven performance metrics is setup in the Earnings Opportunity Calculator such that the EM&V results for each program year are the only cells (highlighted in blue) that are to be updated and the spreadsheet will automatically calculate the annual earnings opportunity payout amount for each program year. Each performance metric also has a performance target and maximum performance cap built into the Earnings Opportunity Calculator. Ameren Missouri will instruct its EM&V contractor to include a separate section in a portfolio summary report with each input for each performance metric in the Earnings Opportunity Calculator.

The seven metrics used in the earnings opportunities:

1) Average Percent Energy Savings Per Property for Multifamily Low-Income Program;
2) Average Percent Energy Savings Per Property for Single Family Low-Income Program;
3) Energy Savings of HER Program;
4) Subtotaled Portfolio Energy Savings for energy efficiency programs;
5) Subtotaled Coincident Peak Demand Savings from Measures 10-14 Year Useful Life;
6) Subtotaled Coincident Peak Demand Savings from Measures ≥15 Year Useful Life; and
7) Cumulative Demand Response Capability for demand response programs.

Inclusion of Throughput Disincentive True-up in the Annual Earnings Opportunity

After the completion of each program year, the EM&V schedule will be followed and those evaluated results will be input into the Earnings Opportunity Calculator. The Earnings Opportunity Calculator will determine the annual earnings opportunity award, which will be included in the subsequent Rider EEIC filing for recovery. Along with the annual determination of the earnings opportunity award, a true-up of the throughput disincentive will be determined for the program year based on the EM&V results compared to what was included in Rider EEIC as deemed savings. NTG will be trued-up at the portfolio level. The true-up amount (positive or negative) will be added to the annual earnings opportunity award amount subject to a floor of $0 per year. Program year vintages of throughput disincentive shall be tracked and trued-up separately until they are included in base rates.

Performance Metrics for Earnings Opportunity

Average Percent Energy Savings Per Property for Multifamily Low-Income Program

Rationale for Performance Metric: Provides incentives to pursue deeper savings per property as well as a holistic assessment of the program's impact.

The annual Multifamily Low-Income Program performance metric consists of two main elements. First is a threshold criterion that ensures at least 85% of the Commission-approved annual budget (administrative cost plus customer incentive cost) for the program year in question is spent. Each program year's budget, along with the calculation of the 85% threshold, has already been included in the Earnings Opportunity Calculator and will not change. The only input needed for this metric is the actual spend for each program year to compare to the 85% threshold budget. That actual spend will be reported directly out of the Company's accounting system and included in the EM&V report. If the Company's actual spend on the Multifamily Low-Income Program is less than the 85% threshold amount, then the Company is eligible for 0% of the earnings opportunity award for that specific performance metric for that program year. Otherwise, the Company is eligible for 100% of the earnings opportunity award amount subject to its performance in the second main element: Average Percent Energy Savings Per Property.

The Average Percent Energy Savings Per Property will be calculated as the total Multifamily Low-Income Program's evaluated energy savings for the program year divided by the total billed energy consumption for all of the properties served during that program year. The total billed energy consumption for all of the properties will be the billed consumption for each property covering 12 months prior to the month the property participated in the program, as reported in the Company's billing system. A property is defined as a multi-unit dwelling sharing the same address. For each program year, the EM&V report will report the Multifamily Low-Income Program's evaluated energy savings and the 12-month total billed energy consumption for use as inputs into the Earnings Opportunity Calculator. This performance metric has an annual cap of 125% performance compared to the annual target.

Average Percent Savings Per Property for Single Family Low-Income Program

Rationale for Performance Metric: Provides incentive to pursue deeper savings per property as well as a holistic assessment of the program's impact.

The annual Single Family Low-Income Program performance metric consists of two main elements. First is 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. Each program year's budget, along with the calculation of the 85% threshold, has already been

included in the Earnings Opportunity Calculator and will not change. The only input needed for this metric is the actual spend for each program year to compare to the 85% threshold budget. That actual spend will be reported directly out of the Company's accounting system and included in the EM&V report. If the Company's actual spend on the Single Family Low-Income Program is less than the 85% threshold amount, then the Company is eligible for 0% of the earnings opportunity award on that specific performance metric for that program year. Otherwise, the Company is eligible for 100% of the earnings opportunity award amount subject to its performance in the second main element: Average Percent Energy Savings Per Property.

The Average Percent Energy Savings Per Property will be calculated as the total Single Family Low-Income Program's evaluated energy savings (less the Low-Income Efficiency Housing Grants) for the program year divided by the total billed energy consumption for all of the properties served during that program year. The total billed energy consumption for all of the properties will be the billed consumption for each property covering 12 months prior to the month the property participated in the program as reported in the Company's billing system. A property is defined as the single dwelling at an address. For each program year, the EM&V report will report the Single Family Low-Income Program's evaluated energy savings (less the Low-Income Efficiency Housing Grants) and the 12-month total billed energy consumption for use as inputs into the Earnings Opportunity Calculator. This performance metric has an annual cap of 125% performance compared to the annual target.

Energy Savings of Home Energy Report Program

Rationale for Performance Metric: Provides incentives for ongoing intervention to produce repeatable annual savings from participants.

The performance metric for the HER will be the MWh energy savings reported in the EM&V report (not incremental savings). The reported energy savings for each program year will be input into the Earnings Opportunity Calculator to determine the earnings opportunity award amount for this performance metric. For program years 2020 and 2021 there is a threshold criterion that the evaluated TRC test be greater than 1.0. The TRC will be reported directly out of the EM&V report. If the TRC is less than the 1.0 threshold, then the Company is eligible for 0% of the earnings opportunity award on that specific performance metric for that program year. Otherwise, the Company is eligible for 100% of the earnings opportunity award amount subject to its performance in the evaluated MWh energy savings. This performance metric has an annual cap of 105% performance compared to the annual target.

Subtotaled Portfolio Energy Savings

Rationale for Performance Metric: Provides incentives for energy savings from qualifying energy efficiency programs. Energy savings have an important impact on future renewable resource requirements and therefore provide significant value to all customers.

The performance metric for the Energy Efficiency Energy Savings will be the first-year incremental MWh energy savings reported in the EM&V report. The residential low-income programs, Business Social Services Program, HER Program, Education Programs, and DR energy savings will be excluded from the energy savings for this performance metric. The EM&V report will include a subtotal of portfolio energy savings matching the definition of this performance metric for each program year and that subtotal will be input into the Earnings Opportunity Calculator to determine the earnings opportunity award amount for this performance metric. This performance metric has an annual cap of 115% performance compared to the annual target.

Subtotaled Coincident Peak Demand Savings from Measures 10-14 Year Useful Life

Rationale for Performance Metric: Provides incentives to achieve coincident peak demand savings recognizing that measures with significant useful lives can impact investments in supply-side resource needs like investments in transmission and distribution infrastructure. The payout per MW saved is lower than that for longer-life savings in the category below.

The performance metric for this performance measure will be the final-year[21] incremental MW coincident peak demand savings determined by multiplying the energy savings by the relevant measure category energy-to-peak-demand-conversion-factor specified in the TRM/Deemed Savings Table and will be reported in the EM&V report. Consistent with the Subtotaled Portfolio Energy Savings performance metric, the Residential Low-Income Programs, Business Social Services Program, HER Program, Education Programs, and DR energy savings will be excluded from this performance metric. Only measures with an effective useful life of 10-14 years will be included in this metric. The EM&V report will include a subtotal of portfolio coincident peak demand savings matching the definition of this performance metric for each program year and that subtotal will be input into the Earnings Opportunity Calculator to determine the earnings opportunity award amount for this performance metric. This performance metric has an annual cap of 125% performance compared to the annual target.

Subtotaled Coincident Peak Demand Savings from Measures ≥15 Year Useful Life

Rationale for Performance Metric: Provides incentives for coincident peak demand savings, recognizing that longer-lived measures' peak demand savings are more likely to

[21] Determined by the effective useful life of the given measure.

contribute to deferral of large supply-side generation investments in the future. The payout per MW saved is higher than that for shorter-life savings in the category above.

The performance metric for this performance measure will be the 15th year incremental MW coincident peak demand savings determined by multiplying the MWh energy savings by the relevant measure category energy-to-peak-demand-conversion-factor specified in the TRM/Deemed Savings Table and will be reported in the EM&V report. Consistent with the Subtotaled Portfolio Energy Savings performance metric, the Residential Low-Income Programs, Business Social Services Program, HER Program, Education Programs, and DR energy savings will be excluded from the energy savings for this performance metric. Only measures with an effective useful life of 15 or more years will be included in this metric. The EM&V report will include a subtotal of portfolio coincident peak demand savings matching the definition of this performance metric for each program year and that subtotal will be input into the Earnings Opportunity Calculator to determine the earnings opportunity award amount for this performance metric. This performance metric has an annual cap of 125% performance compared to the annual target.

Cumulative Demand Response Capability

Rationale for Performance Metric: Provides incentives for peak demand savings as well as the retention of the demand response capability over the implementation period.

This performance metric will be based on the cumulative MW demand response capability at the end of each program year. First, demand response savings will be measured during the peak events called each program year. Then those savings will be adjusted to reflect normal weather for peak conditions. Finally, peak demand savings will be adjusted to reflect enrollments through the end of the program year. For Residential DR, the total demand response capability in each year will be the sum of the normalized average peak savings per participant plus the normalized average peak savings per participant multiplied by the number of participants enrolled after the Program Season, but before the end of the program year[22]. For Business DR, the total demand response capability will be the evaluated MW reductions from customers enrolled during each year's summer peak events plus tested[23] MW reductions from new enrollees after the Program Season, but before the end of the program year.[24] The cumulative DR capability will be reported

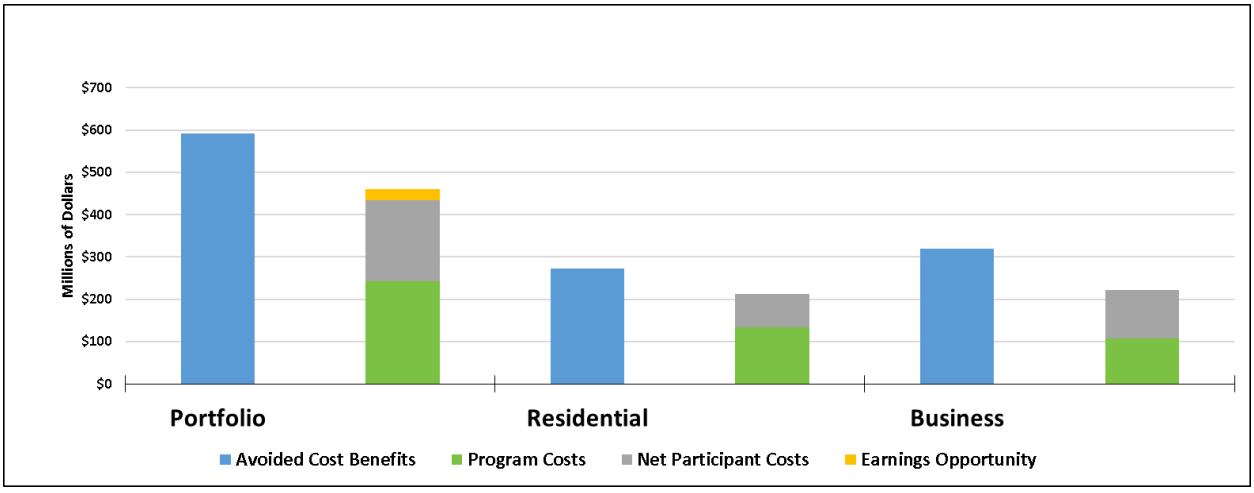
[22] Participants enrolled after the Program Season in program year 3 will not count toward MW reduction targets.
[23] Tested MWs will be determined by simulating an event for a new participant equivalent to the average length of the events called within that program year. A 2 week window will be scheduled in which the test event will occur. The parameters for the event will be the same as if it were a real DR event. The notification, the baseline, the expectation of the participant's performance, and the evaluation of the participant's performance will be as if it were a real event.
[24] Participants enrolled after the Program Season in program year 3 will not count toward MW reduction targets.

each year in the EM&V report. The reported cumulative MW capability for each program year will be input into the Earnings Opportunity Calculator to determine the earnings opportunity award amount for this performance metric. This performance metric has an annual cap of 125% performance compared to the annual target.

4.4 Impact on Customers

MEEIA 2019-21 is expected to result in a lifetime net benefits to all customers (participants and nonparticipants) of $324 million from the utility cost perspective and about $219 million from the total cost perspective. The benefits for both of these tests include the following categories: avoided energy, avoided generation capacity and avoided transmission and distribution investment. The figure below illustrates the total cost perspective and demonstrates that the benefits of MEEIA 2019-21 far exceed the costs.

Figure 34 – TRC Cost-Effectiveness Results

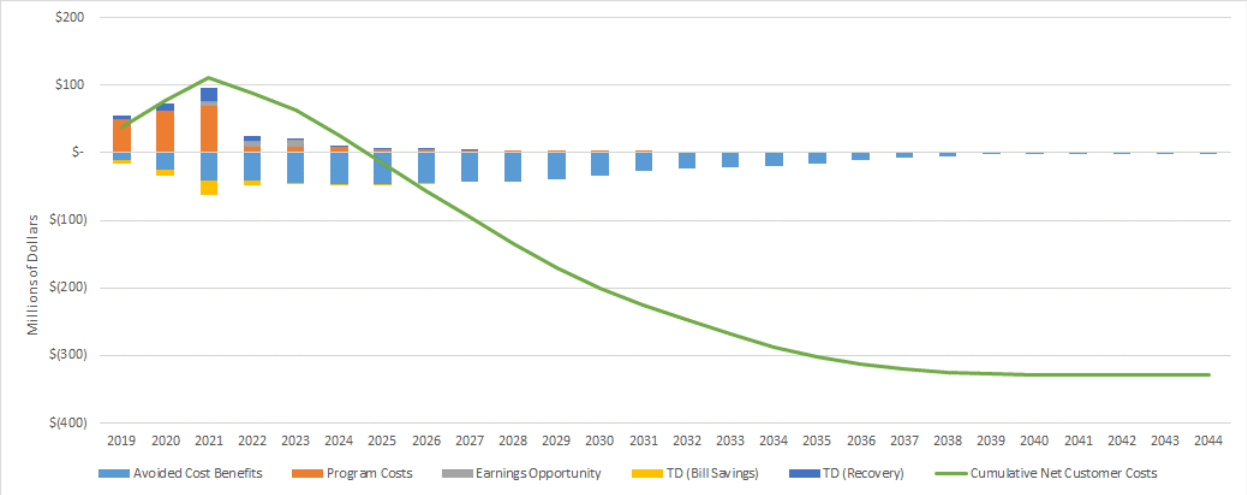


It is important to note that the figure above does not include the throughput disincentive or the throughput disincentive recovery. As a practical matter, the throughput disincentive is a subset of "lost revenues" that are included in the Ratepayer Impact Measure ("RIM") cost-effectiveness test. In short, the throughput disincentive represents the amount of "lost revenue" from the RIM test that is in between rate cases while the RIM test assumes perfect ratemaking (i.e., that utility costs and revenues automatically balance out). The "lost revenues" in the RIM test are the same amount as the "bill savings" from the participant cost test. The TRC and UCT do not include "lost revenues" because they are not incremental costs to demand-side resources and are a transfer payment between customers.

The figure below shows the annual and cumulative costs and benefits of MEEIA 2019-21. It is apparent from the figure below that the costs of the programs are borne by customers up front, consistent with MEEIA's requirement for timely cost recovery, but

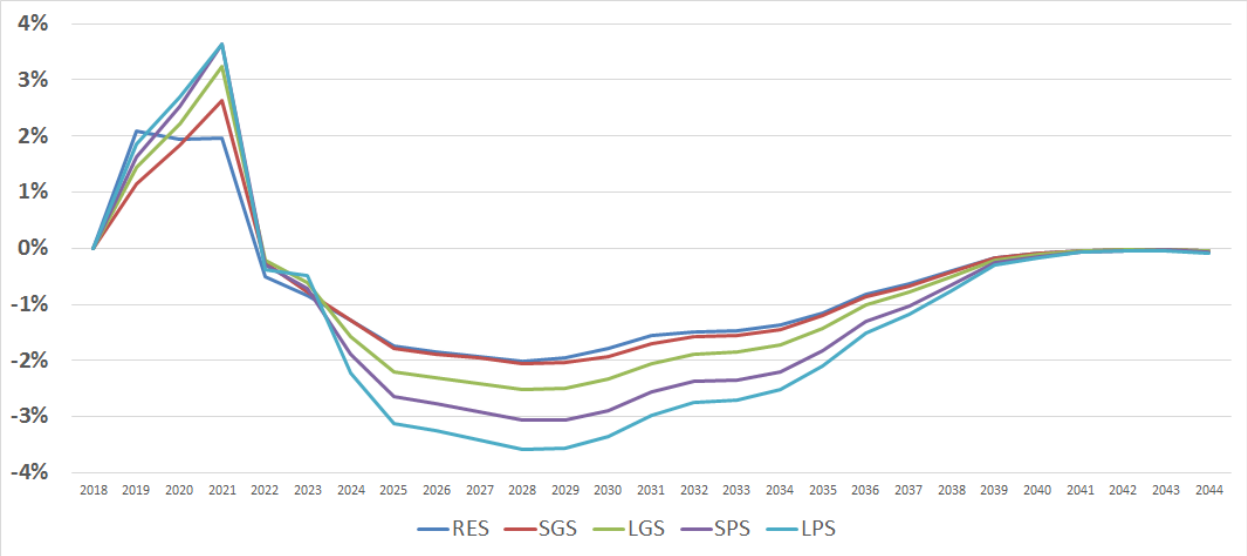
benefits continue to accrue for a long period of time following the end of the program implementation. The benefits surpass the costs in total magnitude in 2026, and continue to grow for the useful lives of the installed measures.

Figure 35 – 25 Year Revenue Requirement Impact of MEEIA 2019-21



The projected bill impacts by rate class associated with the MEEIA 2019-21 programs are shown in the figure below.

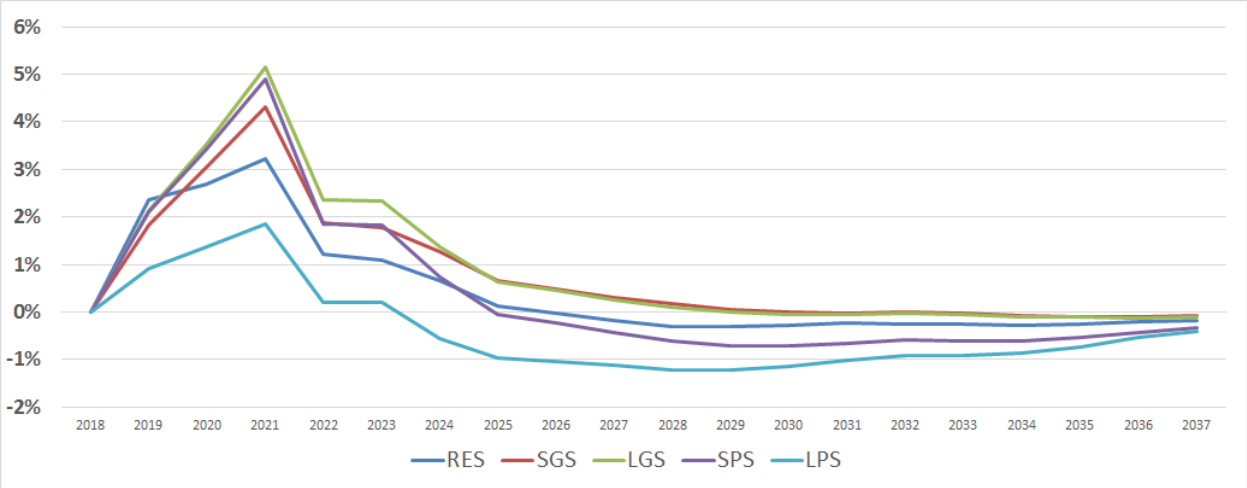
Figure 36 – DSIM Bill Impacts



Note that like the cumulative cost curve, the bill impacts cause an increase in total bills at first, as the program costs and throughput disincentive are paid as they occur and the EO is realized annually and collected over 2 years. As soon as the implementation period concludes and the costs are paid, bills are immediately lower beginning in 2022 than they would otherwise have been absent the programs. Depending on the rate class, by the time the earnings opportunity is paid in full, customers begin recognizing annual bill reductions of 2%-4% per year.

While bills trend lower over time, the same is not necessarily the case with average rates paid by customers. Keep in mind that over time customers receive bill savings even in the face of higher rates because the volumes of energy that they are purchasing at those rates are lower than they otherwise would have been. The rate impacts are still worth noting and are shown in the figure below.

Figure 37 – MEEIA 2019-21 Portfolio and DSIM Rate Impacts



The rate impacts also peak during the program years of 2019-2021 while costs are reflected in rates. After the end of the programs, rates are higher because the fixed costs of the utility revenue requirement end up being spread over fewer kWh of usage due to the energy savings customers are recognizing. It is imperative to recognize that despite higher rates, the total customer outlays for energy are fully expected to be lower with the implementation the MEEIA 2019-21 programs, as shown previously on the bill impacts. Again, the lifetime reduction in revenue requirement is $324 million.

4.5 Impact on the Company

4.5.1 Financial Impact

In order to find that the Company's incentives are aligned with helping customers use energy more efficiently, the Commission should assess the financial impact of the Plan, including the proposed programs and the DSIM, on the Company's projected financial results. There are two criteria that the Commission should use to establish a finding that it has discharged its obligations under MEEIA. The first is the very objective finding that program costs are being recovered on a timely basis and the negative impacts of the throughput disincentive are also remedied on a timely basis. The second is that there is a timely earnings opportunity to replicate the earnings opportunity associated with supply side and other investments that the Company forgoes when implementing energy efficiency. The Company has presented a number of analyses and benchmarks, so that the Commission has sufficient basis to find that the earnings opportunity aligns the Company's incentives with its customers' interest in using energy more efficiently. The table below presents the income statement impacts anticipated from the Plan assuming achievement of 100% of the savings goal.

Table 12 – MEEIA 2019-21 Plan Impacts on Net Income

	Total	2019	2020	2021	2022	2023	2024	2025	2026
Revenue									
Program Cost Recovery	$227.3	$50.1	$66.8	$78.5	$9.9	$11.0	$11.0	$0.0	$0.0
TD (Bill Savings)	$51.4	$5.6	$10.8	$23.6	$8.5	$1.1	$0.8	$0.8	$0.2
TD (Recovery)	$51.4	$5.6	$10.8	$23.6	$8.5	$1.1	$0.8	$0.8	$0.2
Earnings Opportunity	$32.5	$0.0	$6.5	$10.4	$13.1	$0.8	$0.8	$0.8	$0.0
Total Revenue	**$362.6**	**$61.3**	**$94.9**	**$136.1**	**$39.9**	**$14.1**	**$13.4**	**$2.4**	**$0.4**
Costs									
Program Costs	$227.3	$50.1	$66.8	$78.5	$9.9	$11.0	$11.0	$0.0	$0.0
Total Costs	**$227.3**	**$50.1**	**$66.8**	**$78.5**	**$9.9**	**$11.0**	**$11.0**	**$0.0**	**$0.0**
Gross Margin	$32.5	$0.0	$6.5	$10.4	$13.1	$0.8	$0.8	$0.8	$0.0
Income Taxes	$8.3	$0.0	$1.6	$2.7	$3.3	$0.2	$0.2	$0.2	$0.0
Net Income	**$24.2**	**$0.0**	**$4.8**	**$7.8**	**$9.8**	**$0.6**	**$0.6**	**$0.6**	**$0.0**

There are a few items worth observing in the table above. It is important to note that the TD bill savings equals the TD recovery, meaning that overall, the impact of TD is addressed adequately. Second, despite the fact that the earnings opportunity is collected over 12 months, the accounting treatment of the incentive affords the Company the ability to record the associated revenues in the year in which the award is earned. For purposes of this analysis, it is assumed that the award would be recorded as earnings each year as final EM&V results are available.

The overall impacts of the Plan and DSIM on key credit metrics (FFO[25]/Debt and FFO/Interest) are relatively small in context with the baseline credit metric levels which suggests little impact on the financial risk of the Company.

4.5.2 Business Risk Impact

Recognition and management of risk is critical to the success of the Company. The Company has identified the highest enterprise risks as being modifications to major power plants, greenhouse gas emission control requirements, cyber security, and nuclear event liability. In addition, the Company has identified load loss associated with energy efficiency (or other demand-side resources) outside of the Company's programs as an important business risk. The proposed DSIM does not directly impact the need for modifications to major power plants, greenhouse gas emission control requirements, nor the likelihood of a nuclear event liability. In regard to cyber security, implementing the MEEIA 2019-21 plan will require the Company to share certain information with its contractors, but the Company has extensive policies and procedures in place to mitigate those risks. The MEEIA 2019-21 plan is meant to accelerate adoption of energy saving behaviors and measures; therefore, the Plan is more likely to increase the risk of load

[25] FFO stands for Funds From Operations and is a key metric associated with operating cash flows.

loss outside the program to the extent the programs are effective at market transformation without capturing those effects through EM&V. In summary, the proposed DSIM has a negligible impact on overall business risk.

4.6 Low-Income Check-In Process

There are benefits to the certainty created by offering low-income programs for an extended period of time (70 months) but in no case is there an intention to preclude future changes to program offerings or to preclude obtaining input on those changes. To facilitate ongoing discussion of program delivery, before the implementation of each program year's annual evaluation, the Company's evaluation contractor will seek feedback on the proposed scope of the evaluation from the low-income working group of the Statewide Missouri Energy Efficiency Advisory Collaborative. Such annual evaluations may explore topics such as identifying program gaps in meeting market needs, the comprehensiveness of the program's one-stop-shop services, the effectiveness of the programs dealing with market barriers, the appropriateness of incentive levels, benchmarking program performance to other jurisdictions. Furthermore, the Company's evaluation contractor will hold at least two meetings with the low-income working group of the Statewide Missouri Energy Efficiency Advisory Collaborative to review the results of each annual evaluation. As deemed appropriate, the Company may make revisions to the Low-Income Programs based on discussions at the mid-cycle review through the 11-step Change Process described in Sheet No. 221.4 of the revised Appendix J. As part of the Company's 2020 IRP, the Company will include an explanation of how the updated potential study results are likely to affect its ongoing low-income programs. Furthermore, as part of the Company's MEEIA Cycle 4 Plan, the Company will solicit stakeholder feedback on potential changes to the remaining 2022-24 portion of the low-income programs and shall document and include that feedback in its MEEIA Cycle 4 filing. Other parties to the Company's MEEIA Cycle 4 Plan case will have the opportunity to propose additional low-income energy efficiency programs at that time, as well as the opportunity to recommend changes to the ongoing low-income programming.

5.0 Appendices

5.1 Appendix A – Portfolio and Programs Summary

5.2 Appendix B – Programs Templates

5.3 Appendix C – Avoided Costs

5.4 Appendix D – Incentive Ranges

5.5 Appendix E – Sample Evaluation Plans

5.6 Appendix F – Deemed Savings Table

5.7 Appendix G – TRM: Overview and User Guide

5.8 Appendix H – TRM: Business Measures

5.9 Appendix I – TRM: Residential Measures

5.10 Appendix J – Exemplar Tariffs

5.11 Appendix K – Customer DSIM Explanation

5.12 Appendix L – Customer Bill Examples

5.13 Appendix M – MEEIA 2019-21 Accounting

5.14 Appendix N – Earnings Opportunity Calculator