Ameren Missouri

2019-24 MEEIA Energy Efficiency Plan

Ameren MISSOURI

PUBLIC

Key Aspects of

MEEIA 2019-24 Plan

Ameren MISSOURI

PLAN HIGHLIGHTS

$550,000,000
INVESTMENT
2x The Current Plan

$920 MILLION
NET BENEFITS

$4 BILLION
DEFERRED SUPPLY INVESTMENT

AGGRESSIVE EXPANSION OF THE PLAN

6
YEAR PLAN

NEW DEMAND RESPONSE PROGRAMS

650K
PARTICIPANTS

CONSISTENT
RECOVERY MECHANISM

2 MILLION MWh SAVINGS

60% MORE than current cycle (equivalent to the annual electric usage for 166,500+ average homes)

APPROXIMATELY
1,000 MW
3x MORE than current cycle

$50,000,000+
Expanded programs for low income customers and social service agencies

Table of Contents

1.0 Key Aspects of the Plan

Ameren Missouri's Missouri Energy Efficiency Investment Act ("MEEIA") 2019-24 plan (the "Plan") is designed to implement the results of the Company's 2017 Integrated Resource Planning ("IRP") analyses as well as build on the lessons learned from previous MEEIA experience. The four key elements of the Plan are summarized below and are discussed in more detail throughout this report.

1) 6-Year Term – The Company is seeking approval of a portfolio of demand-side programs and a Demand-Side Investment Mechanism ("DSIM") to cover program launch starting March 1, 2019, through December 31, 2024.[1] The 6-year term is important to enable the Company to achieve deeper energy savings made possible by longer-term relationships with customers. In addition, with the next generation capacity need further in the future than was expected when the Company's last MEEIA filing was made, a longer implementation period as compared to the Company's first two MEEIA program cycles allows the Company to more effectively defer future long-term supply-side and delivery resource needs.
2) Aggressive Expansion of the Portfolio – The Plan reflects a significant increase in the Company's commitment to demand-side resources. As compared to MEEIA 2016-18, MEEIA 2019-24 has 1.8 times the budget, 1.6 times the energy savings, and 3 times the peak demand savings. The portfolio includes 15 new programs (including education initiatives), a significant increase in spending and market reach for low-income customers, specific education initiatives, and a variety of products and channels in which customers can participate. This aggressive expansion was already reflected in the Company's 2017 IRP (File No. EO-2018-0038) based on the latest Market Potential Study, but indicative market pricing has allowed the Company to reduce the program budgets by 40% as compared to the costs assumed in the IRP.
3) New Demand Response Programs – The Plan includes two new demand response programs: one for residential customers and one for business customers. The residential program will use smart thermostats to reduce peak demand and will enroll over 140,000 customers by the end of 2024. The residential demand response program will use a program administrator while the business demand response program will retain an aggregator. The aggregator will recruit and pay incentives to business customers, but Ameren Missouri will bid the aggregated amounts into the Midcontenent Independent System Operator, Inc. ("MISO") market. The business demand response program represents an execution of the discussions on this topic from the Commission's Distributed Energy Resources Workshops (File No. EW-2017-0245).

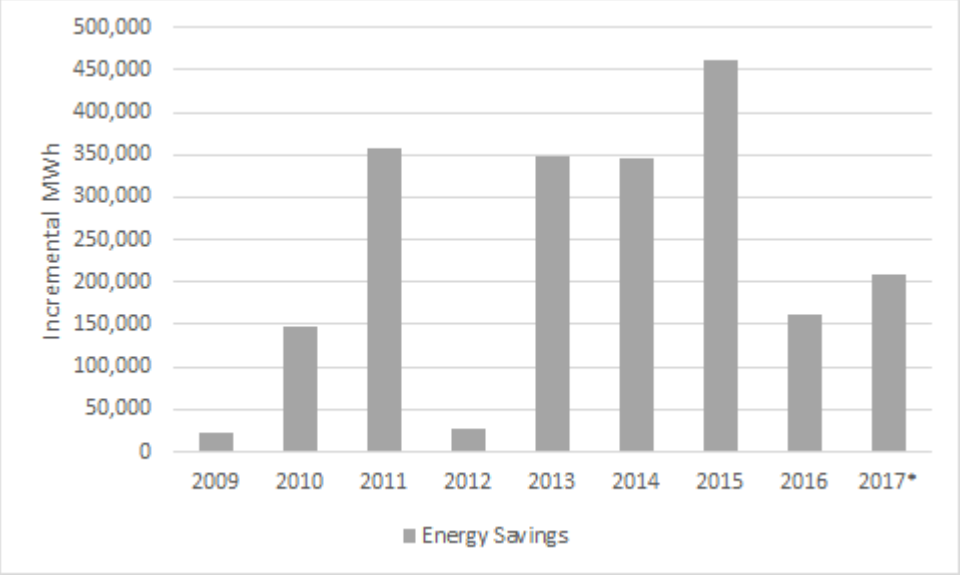
[1] Having an implementation period that covers 70 months will allow the Company to implement a 10-month program year in 2019, followed by five 12-month program years afterward, which will align program years with calendar years.

4) Continuation of DSIM – MEEIA 2016-18 reflected an evolution in the DSIM away from Net Shared Benefits, and those changes were ultimately reflected in the Commission's MEEIA rules. The Plan builds on that DSIM with few changes. The MEEIA 2019-24 DSIM continues the Company's Energy Efficiency Investment Charge Rider ("Rider EEIC"). Rider EEIC will continue to reflect the three components - program costs, the throughput disincentive, and an earnings opportunity - and will operate in similar fashion to how it operates for the MEEIA 2016-18 plan. The earnings opportunity performance metrics have been updated to reflect new market conditions and the new portfolio make-up.

2.0 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 and clearly shows the impact MEEIA has had on the evolution of energy efficiency in the state. 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.

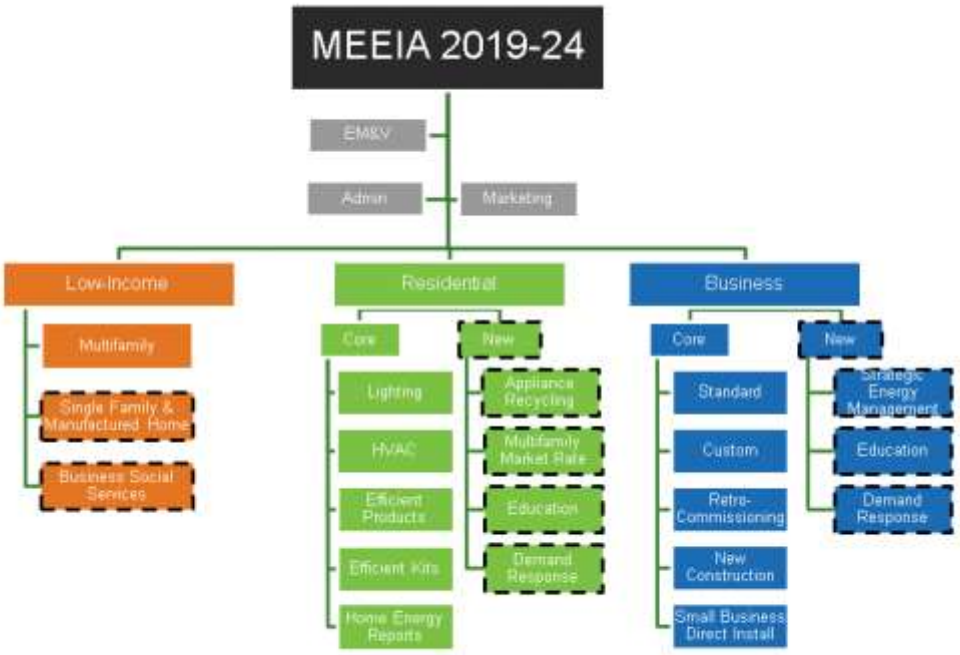
Figure 1 – Historical Ameren Missouri Energy Efficiency Program Savings



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

The MEEIA 2019-24 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 2019-24 Portfolio Structure



The two figures below show the targeted cumulative energy savings and demand savings for the MEEIA 2019-24 portfolio. The cumulative portfolio energy savings of 1,958 GWh represent an 6.6% cumulative reduction to retail energy sales, or an annual average of 1.1%. The cumulative portfolio demand savings of 985 MW represent a 15.7% cumulative reduction to retail demand, or an annual average of 2.5%. 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

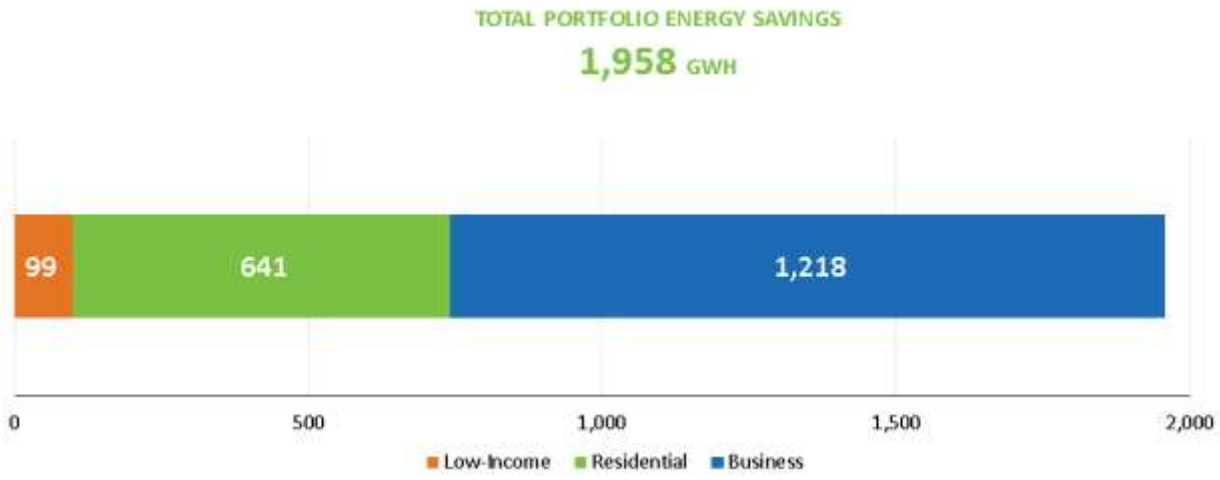
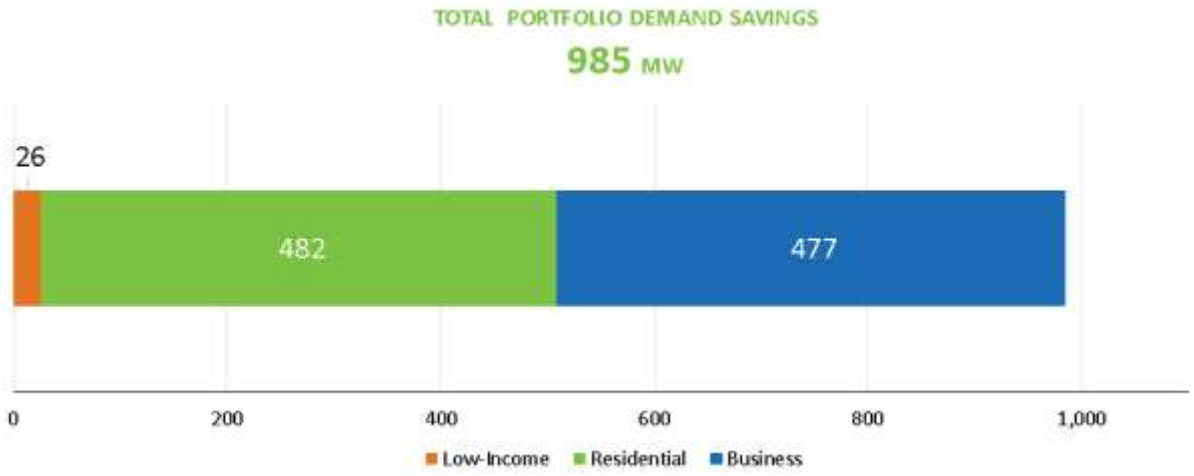


Figure 4 – Cumulative Portfolio Demand Savings by Sector



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

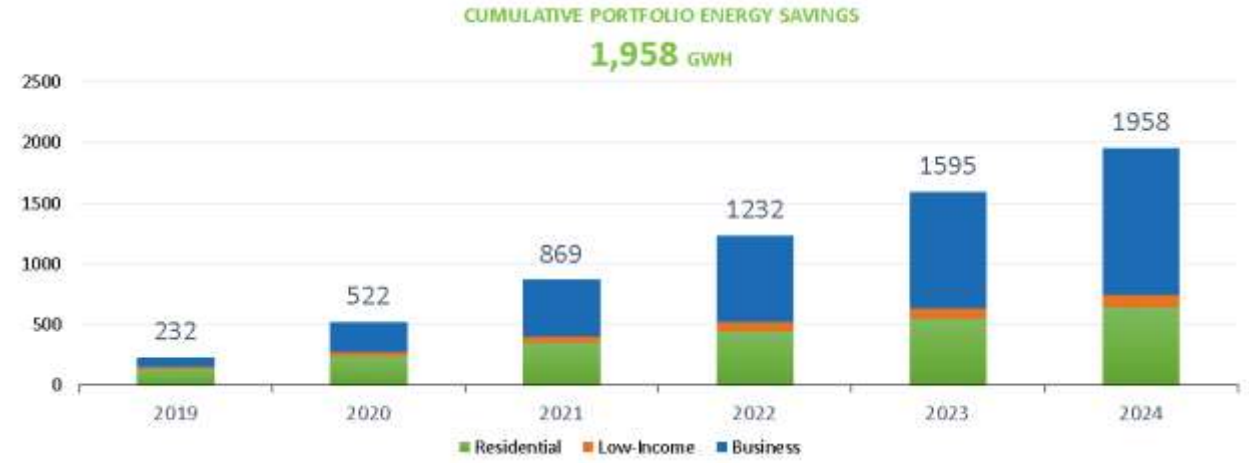


Figure 6 – Cumulative Portfolio Demand Savings by Sector by Year

The two figures below show the portfolio budgets for MEEIA 2019-24. The $551 million budget is 40% 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

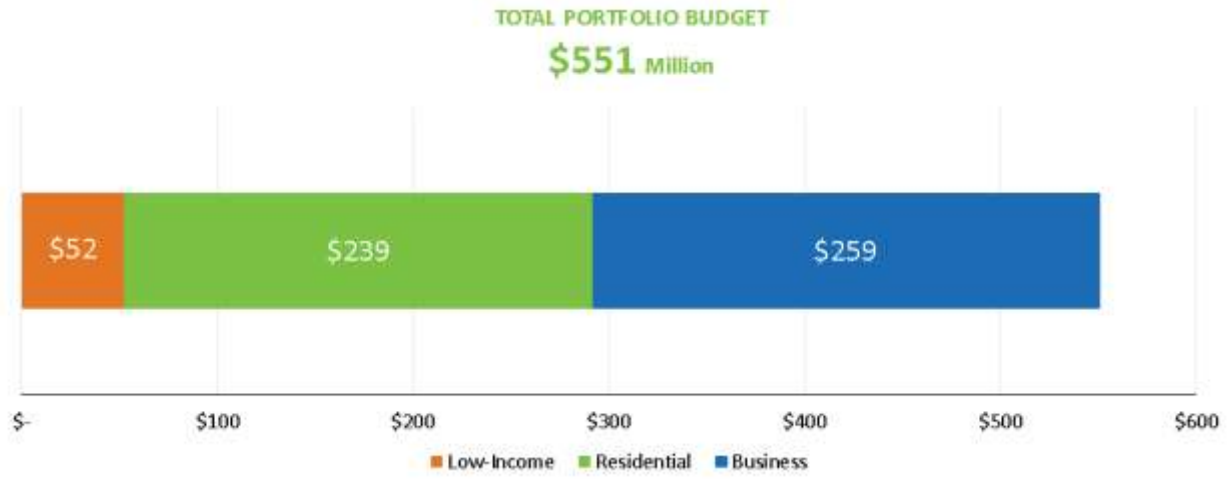


Figure 8 – Total Portfolio Budgets by Sector by Year

Annual tables of energy savings, demand savings, and cost-effectiveness results[2], 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 $920 million in lifetime net benefits. It results in $630 million in lifetime net benefits from a total cost perspective.[3]

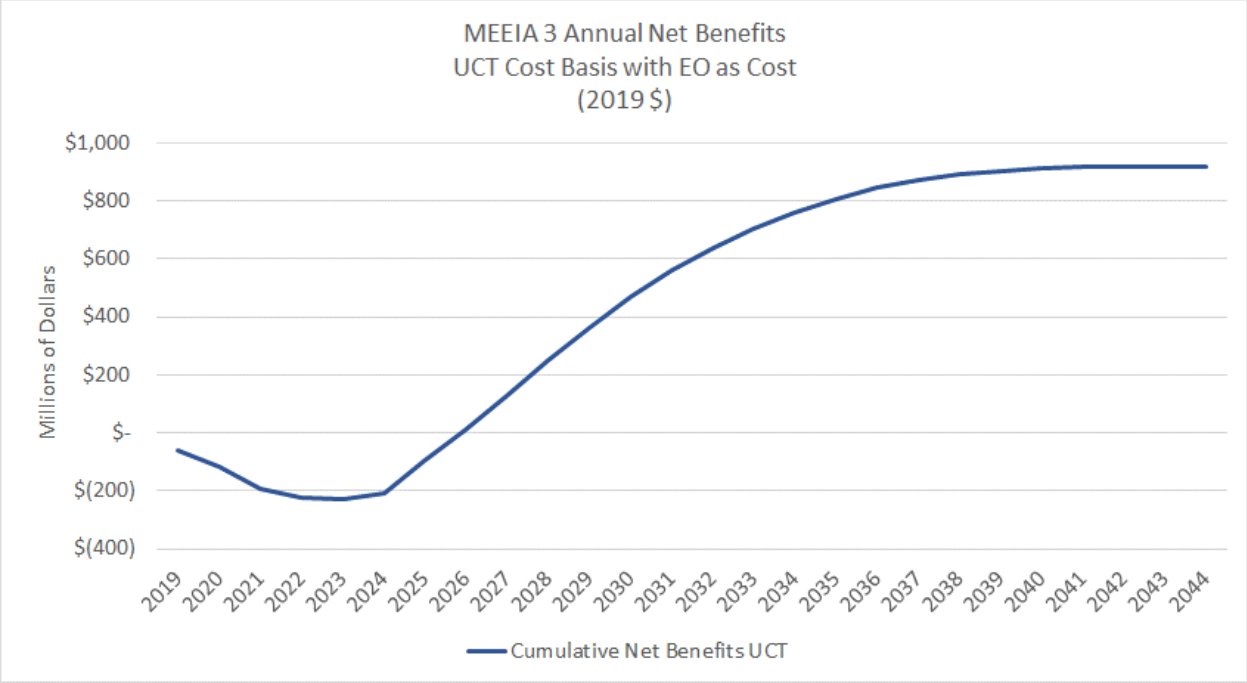
[2] Societal Cost Test results are identical to the Total Resource Cost test results because no Non-Energy Benefits were quantified. Therefore, the Societal Cost Test results were not reported separately.
[3] Avoided costs were based on the Company's 2017 IRP and can be found in Appendix C.

Table 1 – Portfolio Cost-Effectiveness Summary (NPV[4])

Portfolio Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 1,560,048,072	$ 1,560,048,072
Costs	$ 556,003,401	$ 845,995,663
Earning Opportunity	$ 84,335,251	$ 84,335,251
Net Benefits	$ 919,709,420	$ 629,717,158
UCT Benefits/Costs Ratio	2.44	
TRC Benefits/Costs Ratio		1.68

The figure below shows the annual cumulative lifetime benefits by year. The payback to customers is demonstrably substantial, and happens within 8 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

MEEIA's underlying policy is to allow the implementation of programs that reflect valuing demand-side investments equal to supply-side investments with the goal of achieving all cost-effective demand-side savings. Ameren Missouri's 2017 IRP is the most relevant tool to define all cost-effective demand-side savings. As part of the 2017 IRP, the Company analyzed a variety of demand-side portfolios, including Realistic Achievable Potential

[4] Net Present Value.

("RAP"), Maximum Achievable Potential ("MAP"),[5] 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 2019-24 are entirely consistent with the Preferred Resource Plan. The table below demonstrates not only that the energy and demand savings goals are consistent with the 2017 IRP, but that pricing from the market indicates the savings can be achieved with 40% less cost than assumed in the IRP.

Table 2 – Comparison of MEEIA 2019-24 to the IRP

	Energy (MWh)	**Demand (MW)**	**Cost ($MM)**
2017 IRP Preferred Plan	2,041,848	1007	$916
MEEIA 2019-24	1,958,132	985	$551
% Difference	-4%	-2%	-40%

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 2019-24 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 RAP portfolio, which is already nearly double the budgets of the Company's MEEIA 2016-18 plan. Even though the MEEIA 2019-24 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. Together, the charts demonstrate that the Company is making progress towards all cost-

[5] 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.

effective demand-side savings. This is especially clear given the context of the situation: the Company's 2017 IRP evaluated multiple demand-side portfolios (including more aggressive portfolios) and determined that Realistic Achievable Potential is the appropriate portfolio.

Figure 10 – Comparison to Incremental Energy Savings Guidelines

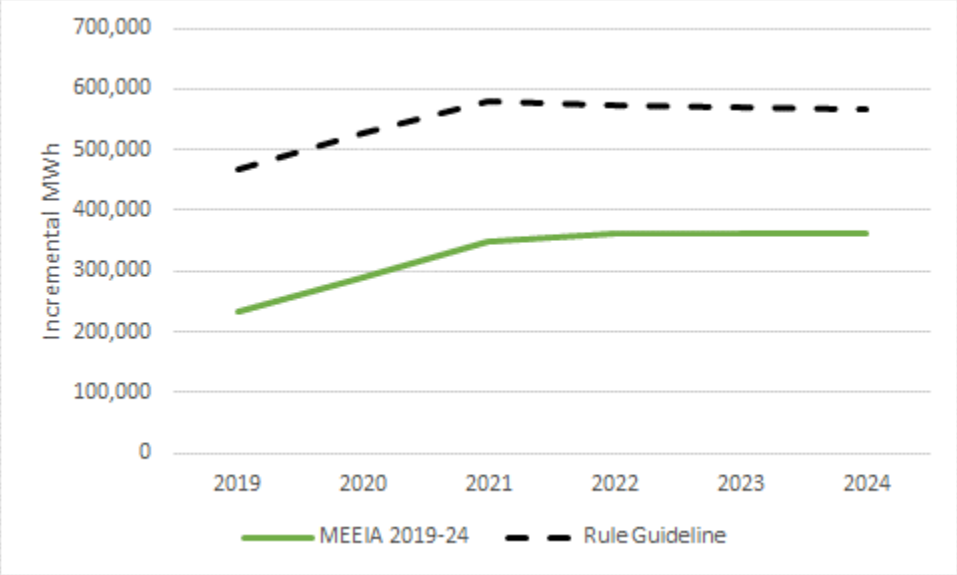


Figure 11 – Comparison to Cumulative Energy Savings Guidelines

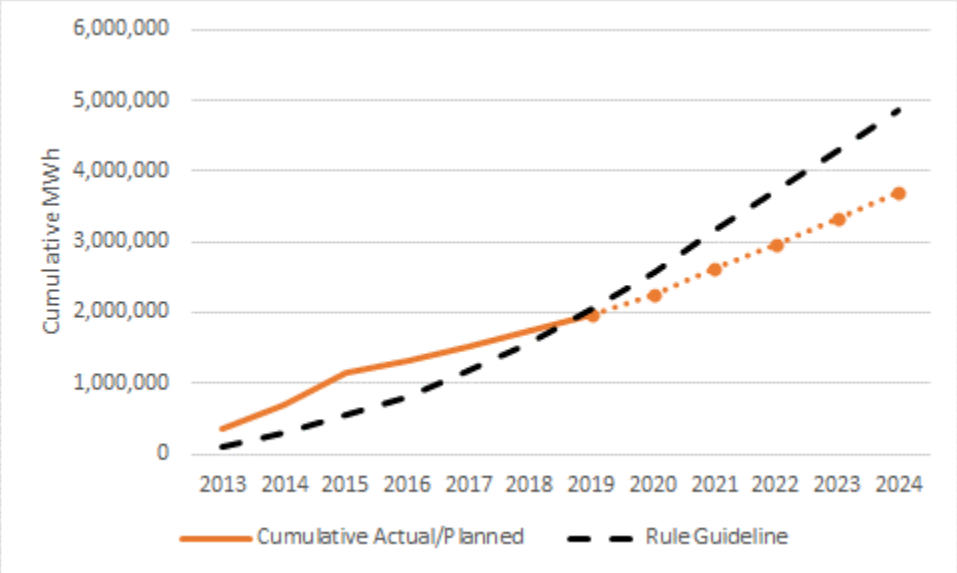


Figure 12 – Comparison to Incremental Demand Savings Guidelines

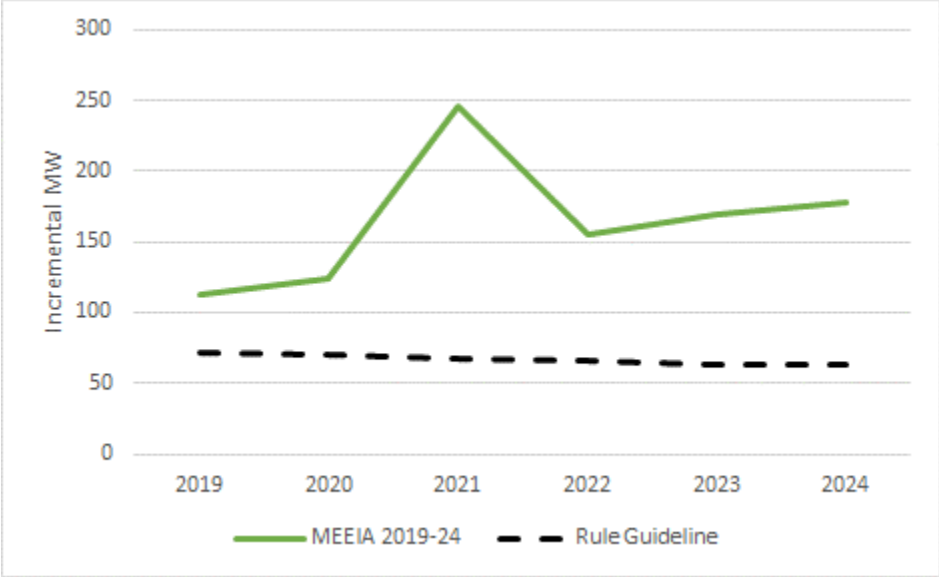
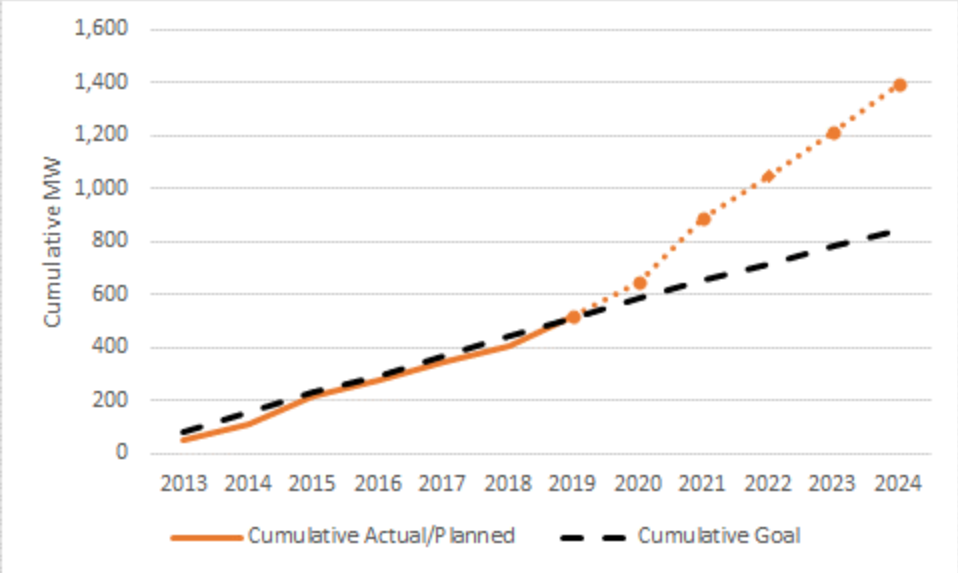


Figure 13 – Comparison to Cumulative Demand Savings Guidelines



3.0 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.

3.1 Low-Income Sector Programs

As shown in Figure 2 above, the Plan's portfiolio 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.

3.1.1 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 2019-24 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[6] Level 2 audit for buildings over 4 stories high, not to exceed $10,000 per property for properties applying for tax credits through MHDC. 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.

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

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

1. Reside in federal, state, or local subsidized housing and fall within the subsidized housing program's income guidelines.
2. Reside in non-subsidized housing with proof of income[7] levels at or below 80% of area median income.
3. Fall within a census tract that indicates at least 85% of customers are at or below 80% of area median income.

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

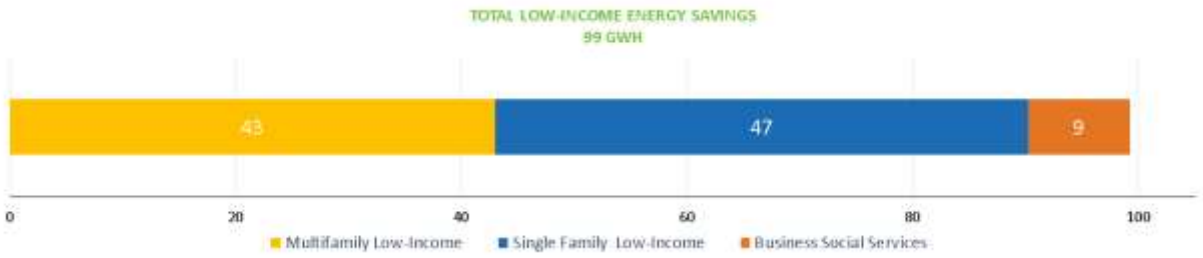
The Business Social Services Program will promote the installation of energy efficient technologies by removing participation barriers. Non-profit businesses with qualifying facilities will be eligible for a streamlined program process with no-cost and low-cost project opportunities. Participation will 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.

3.1.2 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



[7] 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

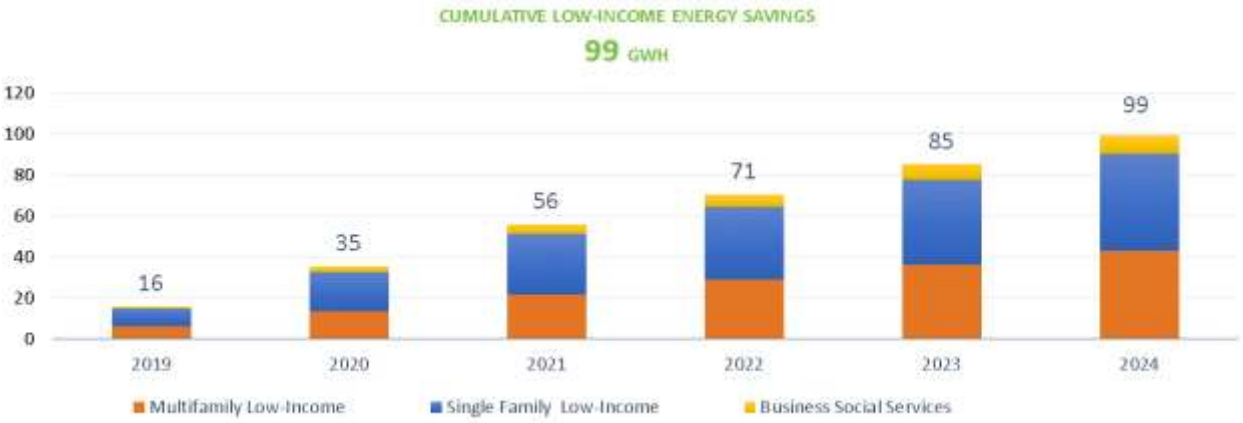


Figure 17 – Cumulative Low-Income Demand Savings by Program by Year

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

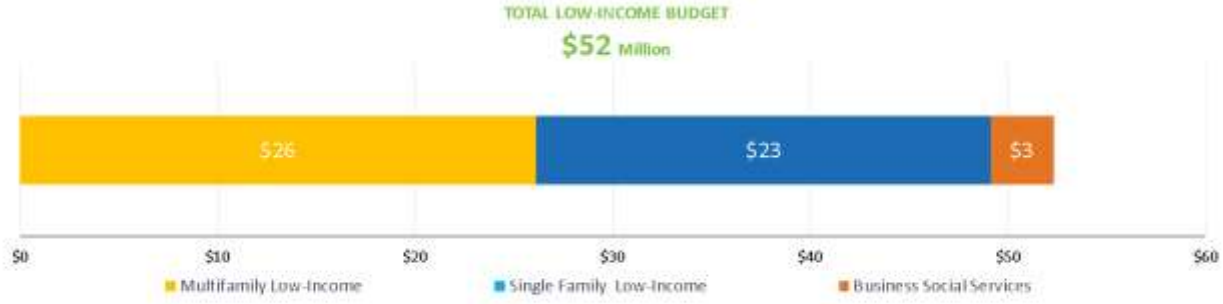
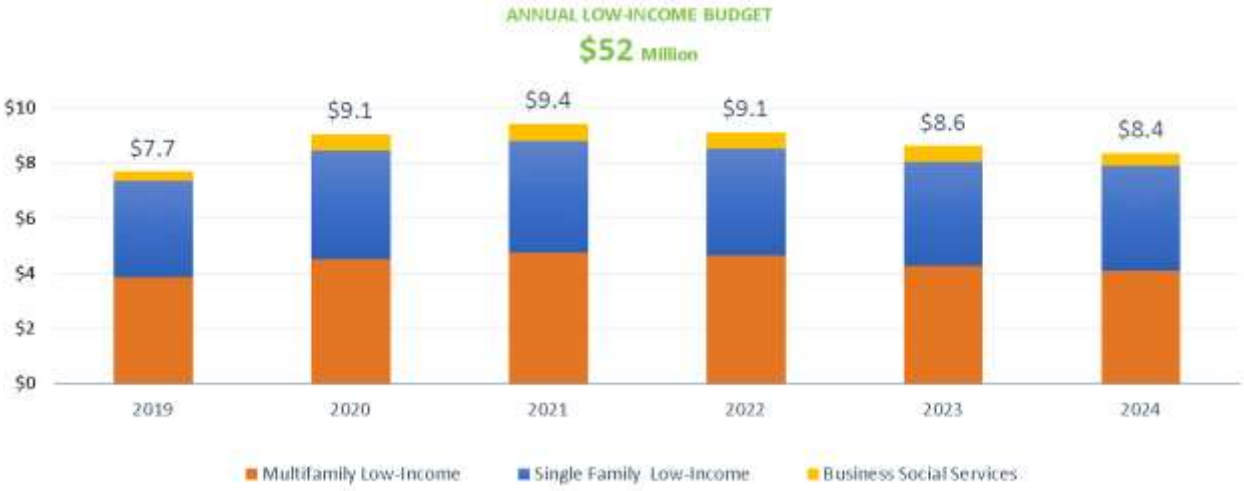


Figure 19 – Total Low-Income Budgets by Program by Year



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	$ 58,910,558	$ 58,910,558
Costs	$ 45,448,108	$ 50,663,062
Net Benefits	$ 13,462,449	$ 8,247,496
UCT Benefits/Costs Ratio	1.30	
TRC Benefits/Costs Ratio		1.16

3.2 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 six 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.
Community Challenge & Rewards – New	Targets select residential customer segments (i.e., high usage, hard-to-reach, etc.) to encourage energy efficiency education and engagement such as taking specific efficient actions to earn rewards.
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.

3.2.1 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 provide 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.[8] 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 2019-24 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. This degradation factor (6.94%) accounts for the anticipated decreasing daily hours-of-use from 2.73 hours for 2019 to 2.2 hours for 2024.

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. While the average savings per appliance is expected to drop later in the implementation period because of the increased efficiency inherent in the older units being recycled, the program is still cost effective through 2024. 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 eletronic HER; reconstituting the target segment to focus on high energy users; and redesigned report elements.

The MEEIA 2019-24 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,

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

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.

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 setpoints. 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.

3.2.2 Residential Sector Summary Charts

As Figure 20 below shows, the HVAC Program continues to contribute the largest portion of residential energy savings, at over 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 demand response is the largest contributor to demand savings (at 48%), with HVAC contributing 37% and the remaining 15% from the other programs.

Figure 21 – Cumulative Residential Demand Savings by Program

The figure 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. Also reflected is a decline in annual energy savings from the lighting program.

Figure 22 – Incremental Residential Energy Savings by Program by Year

The Residential DR Program is designed to provide significant demand savings, but starts off relatively slow in order to provide learning about the development and operation of a residential demand response program and with less expense over the implementation period.

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 67%, 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, with the exception of DR which grows as the program expends.

Figure 25 – Total Residential Budgets by Program by Year

The table below indicates, from a utility cost standpoint, residential customers will benefit $2.44 for every $1 spent.

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

Residential Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 647,871,708	$ 647,871,708
Costs	$ 265,357,715	$ 379,372,617
Net Benefits	$ 382,513,994	$ 268,499,092
UCT Benefits/Costs Ratio	2.44	
TRC Benefits/Costs Ratio		1.71

3.3 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 Strategic Energy Management ("SEM") and DR Programs, 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 Small Business Direct Install Program is to remove participation barriers for small businesses through a simple and streamlined process.
Strategic Energy Management – New	Provide energy education, technical assistance, and company-wide coaching for large commercial and industrial customers to drive behavioral change and transformation of company culture with respect to energy use and management.
Demand Response - New	Provides customers the resources and incentives necessary to identify and take advantage of demand response opportunities.

EDUCATION PROGRAMS	
Small Business Energy Reports - New	Raises awareness and education for small business customers by providing actual usage and tips in conjunction with benchmarking comparable facilities and operations to better monitor and manage energy.
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.

3.3.1 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 2019-24 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 and 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.

The new SEM Program will provide energy education, technical assistance, and company-wide coaching for 6 to 10 of the largest commercial and industrial customers to drive behavioral change and transformation of company culture with respect to energy use and management.

The SEM Program will provide benefits such as:

- Provide a long-term approach to efficiency for the entire participating company;
- Achieve a reduction of Operation and Maintenance (O&M) expenses as a result of SEM plan implementation;
- Improve the persistence of energy savings;
- Institutionalize energy efficient behaviors and practices;
- Encourage whole building performance improvements;
- Increase number and size of traditional energy efficiency projects implemented; and

- Achieve greater customer satisfaction to the portfolio of business energy efficiency programs.

Separately, capital measures that are adopted due to participation in the SEM Program, and that are eligible for incentives under other energy efficiency business programs (such as the Standard and Custom Programs), are routed through those programs to receive the applicable incentives as if they were regular projects. These savings are netted out of the SEM savings and recorded under the Standard or Custom programs. In this way, SEM also becomes a lead generator for other programs and further drives portfolio success.

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.

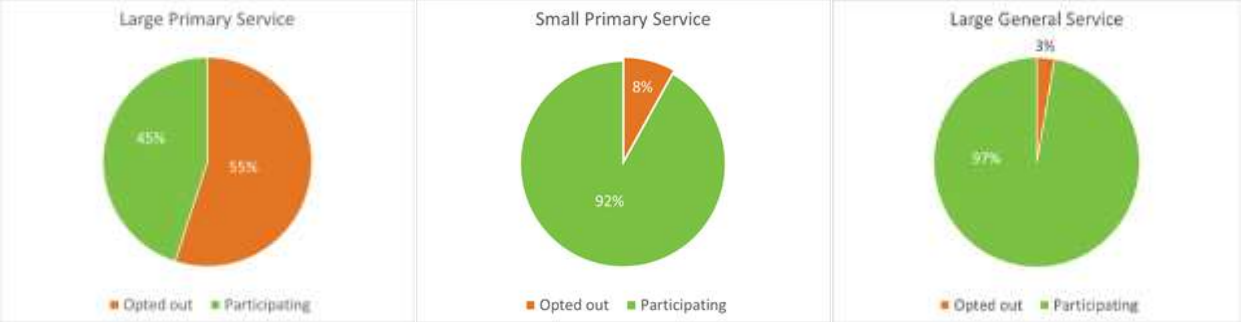
3.3.1.1 Business Customer Opt-Out

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.

3.3.1.2 Transition Plan for Long-Lead Projects

Transition plans between MEEIA cycles are required to obtain all energy savings and allow customers with long-lead projects that span cycles to take advantage of energy savings opportunities. A MEEIA 2019-24 transition plan will allow customers to accept an energy efficiency incentive commitment for projects during the MEEIA 2019-24 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 longer 6-year term in MEEIA 2019-24 and 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 2019-24 transition plan by the end of the third program year.

3.3.2 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, SEM, 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 70% 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

DR begins the first 2 years with relatively small MW goals to learn about the recruitment and operation of the DR Program. Year 3 ramps up the savings to build a significant capacity resource. The resource will continue for years 4-6, but there are no incremental MW savings planned for years 4-6.

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

The effect of the 6-year MEEIA implementation period can be seen in the budget increases over the first 3 years and leveling out in the remaining 3 years.

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)

Business Cost Effectiveness		
	Utility Cost Test	Total Resource Cost
Benefits	$ 853,265,806	$ 853,265,806
Costs	$ 245,197,578	$ 415,959,984
Net Benefits	$ 608,068,228	$ 437,305,822
UCT Benefits/Costs Ratio	3.48	
TRC Benefits/Costs Ratio		2.05

4.0 Evaluation, Measurement and Verification

4.1 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 2019-24 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 additional 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 2019-24 programs, the Commission Auditor:

1. Monitors the planning, implementation and analysis activities of Ameren Missouri's independent EM&V contractors;
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 2019-24. 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.

4.2 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

4.2.1 Evaluation Plans

The evaluation plans are work plans developed at the beginning of the program 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 2019-24 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 six-year EM&V plan prior to its implementation and informed as modifications are made throughout the program cycle.

4.2.2 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.

4.2.3 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 peakshaving 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.[9]

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 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. Events that are called for purposes other than peak shaving may be excluded from the annual capacity calculation. Similar weather normalization and resource capability calculations will be performed on the Business DR to the extent they are relevant.

4.2.4 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;

[9] 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.

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 of lights for each delivery channel that should no longer be offered because of market changes.

4.2.5 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.[10] 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 2019-24 case ("evaluation stakeholders") and the Commission's Auditor.

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

- 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.

- 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.

4.3 Technical Resource Manual

The Ameren Missouri MEEIA 2019-24 TRM is largely based on the draft Missouri Statewide TRM, which was led and created in collaboration with the Missouri Departmetn 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 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 2019-24. 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.

4.4 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 2019-24 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). There are three types of free-riders:

- Total free-riders: Participants who would have completely replicated the program measure(s) or practice(s) on their own and at the same time in the absence of the program.
- Partial free-riders: Participants who would have partially replicated the program measure(s) or practice(s) by implementing a lesser quantity or lower efficiency level.
- Deferred free-riders: Participants who would have completely or partially replicated the program measure(s) or practice(s) at a time after the program timeframe[11].

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. There are generally two types of spillover; participant spillover and non-participant spillover. Each can be described as follows:

- Participant spillover: This represents the additional energy savings that are achieved when a program participant—as a result of the program's influence—installs energy efficiency measures or practices outside the efficiency program after having participated.

  Evaluators have further defined the broad category of participant spillover into the following subcategories:

  - Inside spillover: Occurs when participants take additional program-induced actions at the project site;
  - Outside spillover: Occurs when program participants initiate actions that reduce energy use at sites that are not participating in the program;

[11] Id.

- Like spillover: Refers to program-induced actions participants make outside the program that are of the same type as those made through the program (at the project site or other sites); and

- Unlike spillover: Refers to energy efficiency actions participants make outside the program that are unlike program actions (at the project site or other sites) but that are influenced in some way by the program.

- Nonparticipant spillover: This represents the additional energy savings that are achieved when a nonparticipant implements energy efficiency measures or practices as a result of the program's influence (for example, through exposure to the program) but is not accounted for in program savings.[12] Nonparticpant spillover can include both like and unlike spillover.

5.0 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 2019-24 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 2019-24 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

[12] Id.

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 subcompoent 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 2019-24 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 2019-24 starting in February 2024.

5.1 Cost Allocations[13]

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 2019-24 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.

5.2 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

[13] Ameren Missouri is not proposing programs for its Lighting Service classifications; therefore, no MEEIA 2019-24 costs will be allocated to or charged to those classes at this time.

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 2019-24, 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 2019-24 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 2019-24 will be for employees hired by Ameren Missouri after Commission approval of the Plan who: (a) were not an Ameren Missouri or Ameren Services Company employee at the time of hire; (b) were hired by Ameren Missouri and assigned exclusively to support Ameren Missouri's MEEIA programs; and (c) were not an Ameren Missouri or Ameren Services Company employee as of the date 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. In the first general rate proceeding following such an employee's hiring, that employee's labor and benefit costs will be rolled into the revenue requirement upon which base rates are set and, starting with the effective date of new rates in such a general rate proceeding, their labor and benefit cost will no longer be 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 2019-24 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 2019-24 of $174 million over 8 years (throughput disincentive continues until the first rate case with a true-up period that covers the last month of MEEIA 2019-24).[14] Acutal 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.

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

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 2019-24. To forecast MEEIA 2019-24 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.

5.2.1 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 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, every bill of every customer was analyzed.

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 easily 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 each scenario of usage reduction, 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.[15] 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

[15] 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.

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 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.[16] 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 the actual demand and energy savings impacts by end-use category arising from MEEIA 2016-18 programs during the same period over which the marginal rate analysis was performed (the twelve months ending March 2018). The analysis incorporated this data and end use load shape information to determine the estimated percent reduction in customer billing demand for a given percentage energy reduction. This relationship between demand and energy was applied to the usage reduction scenarios (1%, 5%, and 10% savings) to determine corresponding reductions to billing demands to be used when recalculating customer bills.

Even though the rate design is slightly different, a similar method of analyzing 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"). Due to the mechanics of the FAC, the portion of the forgone marginal revenue from each kWh of load reduction that was designed to cover net energy costs is subject to a reconciliation that essentially allows the Company to recover

[16] 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.

95% of the forgone net energy-related amount of revenue. As such, the marginal rate calculated above is adjusted to just reflect the portion of that revenue that contributes to the fixed (non-energy-related) cost recovery of the Company.

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 are presented in the table below.

Table 7 – Margin Rate by Rate Class and Month[17]

Class	RES	SGS	LGS	SPS	LPS
January	$0.047932	$0.055465	$0.040577	$0.037934	$0.035142
February	$0.049275	$0.057145	$0.042104	$0.038465	$0.038644
March	$0.051036	$0.059875	$0.040102	$0.039216	$0.036980
April	$0.054300	$0.063496	$0.044668	$0.040272	$0.037822
May	$0.055689	$0.064725	$0.045172	$0.041036	$0.035885
June	$0.110116	$0.096316	$0.084686	$0.077335	$0.068292
July	$0.110116	$0.096316	$0.082404	$0.076574	$0.069570
August	$0.110116	$0.096316	$0.082725	$0.076763	$0.069739
September	$0.110116	$0.096316	$0.083956	$0.076766	$0.071286
October	$0.051224	$0.061234	$0.043229	$0.039481	$0.037593
November	$0.054640	$0.063391	$0.044236	$0.039680	$0.037617
December	$0.051244	$0.060803	$0.042825	$0.039083	$0.036655

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.

[17] If the Company's base rates change (e.g., due to tax reform or otherwise) before the Plan's programs commence, these margin rates will need to be updated to reflect a marginal rate analysis using the new base rates.

5.2.2 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 a NTG factor is determined through EM&V for that program year. Thereafter, for each given program year, the 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, 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.[19] In addition, the rate case test period

[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 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;

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 rebasing adjustment will be applied for each program year vintage accordingly with the relevant vintage 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.

5.3 Earnings Opportunity

By passing MEEIA, the state of Missouri adopted the policy of valuing demand-side investments equal to traditional investments in supply and delivery infrastructure. In support of this policy, the Commission provides utilities with timely earnings opportunities associated with cost-effective efficiency savings. Furthermore, the Commission's resource planning rules require the utility to consider and analyze demand-side resources, renewable energy, and supply-side resources on an equivalent basis. The utilities in the state of Missouri earn a return on investments they make in supply-side and delivery resources. Therefore, utility decision-makers evaluate the earnings implications of demand-side resources they would deploy, and unless demand-side resources are afforded comparable earnings opportunities those resources would no longer be valued on an equivalent basis with supply-side and/or delivery resources - circumstances that MEEIA was explicitly designed and enacted to prevent.

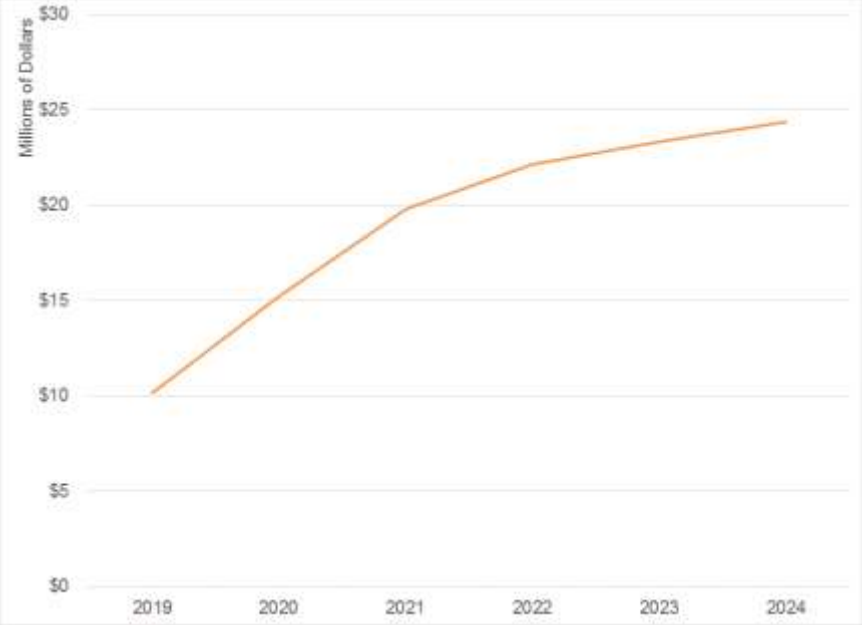
5.3.1 Earnings Opportunity Payouts

Based upon an extensive analysis of forgone earnings and benchmarking to other jurisdictions, the Company is proposing an annual average earnings opportunity of approximately $19 million, which equates to a total of $115 million for the life of the Plan.

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

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

Consistent with the MEEIA 2016-18 earnings opportunity, the Company is proposing the earnings opportunity be based on the performance of eight metrics that are explained in detail further below. An important difference compared to MEEIA 2016-18 is that the MEEIA 2019-24 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 arnings 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 eight 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 eight 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) Energy Savings of Residential Lighting Program;
5) Subtotaled Portfolio Energy Savings for energy efficiency programs;
6) Subtotaled Coincident Peak Demand Savings from Measures <10 Year Useful Life;
7) Subtotaled Coincident Peak Demand Savings from Measures ≥10 Year Useful Life; and
8) 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 elgible 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 Mutlifamily 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 130% 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 elgible 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 130% 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. This performance metric has an annual cap of 130% performance compared to the annual target.

Energy Savings of Residential Lighting Program

Rationale for Performance Metric: Provides incentives for cost-effective lighting upgrades and reflects the uncertainty in the residential lighting market by allowing the pursuit of low cost upgrades for customers without allowing the residential lighting performance to drive overall performance of the energy efficiency portfolio.

The performance metric for the Residential Lighting Program will be the first-year incremental MWh energy savings reported in the EM&V report. 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. This performance metric has an annual cap of 130% 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, HER Program, Residential Lighting Program, 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 150% performance compared to the annual target.

Subtotaled Coincident Peak Demand Savings from Measures <10 Year Useful Life

Rationale for Performance Metric: Provices incentives to achieve coincident peak demand savings recognizing that even relatively shorter-lived measures can impact near-term 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 first-year 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, HER Program, Residential Lighting Program, and DR energy savings will be excluded from this performance metric. Only measures with an effective useful life of fewer than 10 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 130% performance compared to the annual target.

Subtotaled Coincident Peak Demand Savings from Measures ≥10 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 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 first-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, HER Program, Residential Lighting Program, and DR energy savings will be excluded from the energy savings for this performance metric. Only measures with an effective useful life of 10 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 150% 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 cumulative demand response capability in each year will be the normalized average peak savings per participant multiplied by the number of participants enrolled at the end of the program year. For Business DR, the cumulative demand response capability will be the evaluated MW from customers enrolled during each year's summer peak events plus tested[20] MW from new enrollees after the summer event period but before the end of the program year. The cumulative DR capability will be reported 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 130% performance compared to the annual target.

5.3.2 Forgone Earnings Analysis

There are at least three separate sources of earnings Ameren Missouri would forgo by implementing its proposed 2019-24 MEEIA portfolio:

1) Forgone renewable generation earnings associated with Renewable Energy Standard ("RES") compliance resource additions;
2) Forgone earnings from deferred supply-side resources – natural gas-fired Combined Cycles ("CC") in the case of Ameren Missouri's contingency plan; and

[20] Tested MWs will be determined by simulating a 1 hour event for a new participant. 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.

3) Forgone earnings from deferred transmission and distribution infrastructure investments.

Each of these forgone earnings opportunities are discussed and quantified below.

Table 8 – Annual Forgone Earnings Opportunity Attributed to MEEIA 2019-24

Forgone Earnings Category	NPV of Forgone Earnings ($MM)	6-Yr Annuity Amount for MEEIA 2019-24 EO
Renewable Compliance	$68	$15.8
Combined Cycle Plants	$32-$88*	$7-$20*
Transmission & Distribution	$55	$12.7
Total ($MM):	**$155-$211**	**$35.5-$48.5**

*Dependent on combinations of MEEIA cycle implementations

5.3.2.1 Forgone Renewable Generation Earnings Opportunity

The Missouri Renewable Energy Standard ("RES") began as a public initiative and was placed on the Missouri ballot during the November 4, 2008, election. Labeled as Proposition C, its effect on Ameren Missouri was a requirement to acquire renewable energy resources as a percentage of total retail sales.

The following table details the renewable energy requirements as a percentage of the retail electric sales for each of the total and solar RES portfolio requirements:

Table 9 – RES Requirement as a Percent of Retail Energy Sales

Time Period	Total Renewable Requirement	Solar[21]
2018-2020	10%	2%
2021-forward	15%	2%

The Company's most recent RES Compliance Plan, which was filed in April 2018, includes 739 MW of Company-owned wind generation resources to be fully operational by the end of 2020, and 25 MW of Company-owned solar resources to be installed in 2022 followed by an additional 14 MW of solar resources in 2025. This RES Compliance Plan is based on continuation of the RAP energy efficiency portfolio as in the 2017 IRP throughout the 20-year planning horizon. Simply put, lower retail energy sales results in less renewable compliance investment because retail sales are the driver of the investment amount. In this case, energy efficiency is directly reducing Ameren Missouri's investment opportunity in renewable generation. The negative earnings impact of energy efficiency grows as the renewable energy requirement steps up to 15% from 2021 forward.

To demonstrate how the proposed MEEIA 2019-24 portfolio reduces the need for renewable resources for compliance with the RES, Ameren Missouri first determined an

[21] Solar percentages are applied to the Total Renewable Requirement RES amounts.

updated compliance plan with the recently finalized energy savings targets for MEEIA 2019-24 versus those included in the 2017 IRP. With the updated MEEIA 2019-24 energy savings, the RES compliance model resulted in the need for 737 MW of wind and a total of 40 MW of solar resources.

The Company then generated another RES compliance plan assuming MEEIA 2019-24 was skipped and energy efficiency programs began again in 2025. This hypothetical RES compliance plan showed that, given the increase in customer energy usage due to a lack of programs without MEEIA 2019-24, Ameren Missouri would need to include 811 MW of Company-owned wind generation to be fully operational by the end of 2020, 25 MW of Company-owned solar generation to be installed in 2022, and an additional 16 MW of solar generation in 2025.

In other words, the proposed MEEIA 2019-24 portfolio results in avoiding 74 MW of wind and 1 MW of solar generation resources, which in total reduces Ameren Missouri's NPV of after-tax earnings opportunity by $68 million. The annuity in order to eliminate disincentive of forgone earnings for the Company from deployment of DSM programs would be $15.8 million.

This analysis highlights the importance and the urgency of energy savings as the renewable energy requirements as a percentage of the retail electric sales will be going up in 2021.

5.3.2.2 Forgone Combined Cycle Earnings Opportunity

IRP Analysis

The Company's IRP filing provides useful comparisons of demand-side and supply-side resource earnings opportunities. Ameren Missouri filed its 2017 IRP on September 25, 2017. In that filing, Ameren Missouri communicated its preferred plan, which includes RAP-level energy efficiency and demand response programs throughout the planning horizon, provided that the constructive regulatory treatment for DSM continues and utility incentives are aligned with helping customers use energy more efficiently as required by the MEEIA.

In its IRP filing, Ameren Missouri also selected a contingency plan in the event the requirements of MEEIA are not met. In this contingency plan, there are no additional demand-side programs after the completion of MEEIA 2016-18, and Ameren Missouri would need to construct three CC plants during the 20-year planning horizon to meet its capacity needs. The first CC would be needed in 2034, and the second and third CCs both would be needed in 2037. The IRP analysis showed that RAP DSM would defer the need for these CCs to 2044, 2049 and 2055. Clearly, the NPV of earnings with the much delayed CCs would be significantly lower than the NPV of earnings for the no-DSM contingency plan. Ameren Missouri estimated an annuity for the RAP DSM plan so that it

can generate earnings equal to the NPV of earnings that earlier deployment of CCs generate in the contingency plan with no DSM. The analysis indicated that, in order to make up for the forgone earnings from the deferred CCs, the RAP DSM would need to have an after-tax earnings annuity of $36.1 million (as tax rates changed, the annuity would need to be $31.1 million).

Since filing its 2017 IRP, Ameren Missouri updated its IRP analysis using its the MEEIA 2019-24 portfolio savings reflected in the plan. The timing of the CCs in the updated RAP portfolio plan changed very slightly with the deferral of the CC in 2034 to 2044, and the two CCs in 2037 to 2049 and 2054 (instead of 2055). The estimated annuity in order to eliminate the disincentive of forgone earnings for the utility from deployment of demand-side programs would be $30.65 according to this updated analysis (quite close in the earlier calculation $31.1 million). This analysis assumes all MEEIA plans within the full planning horizon are equally compensated for long-term forgone earnings opportunity.

MEEIA Plan Synergies

As stated above, Ameren Missouri selected a preferred plan that includes continued deployment of demand-side resources throughout the planning horizon (through 2037) where three CCs are deferred for many years. There is no doubt that the continued and uninterrupted deployment of demand-side programs and the combined effect from all the cycles is necessary achieve major deferrals of supply-side resources, as discussed further below.

As a screening analysis, Ameren Missouri analyzed the impact of 3-year MEEIA plan cycle by breaking its proposed 6-year plan into two 3-year periods. This demonstrated that neither 3-year implementation (MEEIA 2019-21 or MEEIA 2022-24) period by itself would result in any deferral of a new supply-side resource; in contrast, the 6-year implementation period does impact future supply-side resource timing. This preliminary screening analysis itself illustrates the value of an extended 6-year plan rather than two 3-year plans.

To further illustrate the importance of the continuation of demand-side programs, Ameren Missouri also analyzed combinations of implementation cycles,[22] e.g., implement Cycle 3 and no more demand-side programs afterwards, or implement Cycle 4 and no demand-side programs before and after, or Cycles 4 and 5 alone, or Cycles 4, 5, and 6 without implementing Cycle 3. All of these different cycle combinations demonstrated that deployment of demand-side resources without interruption is the most effective way to achieve deferrals of new supply-side resources further into the future because skipping even one cycle results in the need of a CC earlier than what the need would be with all

[22] Cycle 3: MEEIA 2019-24, Cycle 4: 2025-30, Cycle 5: 2031-36, Cycle 6:2037.

the cycles implemented. The table below summarizes the impact of MEEIA 2019-24 ("Cycle 3") combined with other cycles versus not implementing MEEIA 2019-24.

Table 10 – MEEIA 2019-24 Impact on Supply-Side Resource Deferral

	CC Deferral	NPV of EO	Gain from Cycle 3		
Synergies	# of Years	$ Million	CC Deferral	NPV EO	EO Annual
Cycle 3-4	12	$106	5	$39.5	$9
Cycle 4	7	$66			
Cycle 3-4-5	34	$266	13	$88.2	$20
Cycle 4-5	21	$178			
Cycle 3-4-5-6	39	$298	5	$32.2	$7
Cycle 4-5-6	34	$266			

The table shows if Cycle 3 (MEEIA 2019-24) is not implemented and Cycle 4 (MEEIA 2025-30) is implemented by itself, it would achieve a total number of 7 years of CC plant deferrals, and the resulting NPV of forgone earnings would be $66 million. On the other hand, if Cycle 3 is implemented and followed by Cycle 4, then the combined effect of these two cycles would be 11 years of deferrals for a total NPV of forgone earnings of $106 million. It is apparent that MEEIA 2019-24 adds 5 years of deferrals and an NPV of forgone earnings of $39 million or an annualized earnings opportunity ("EO") of $9 million over 6 years.

Similarly, if Cycle 3 (MEEIA 2019-24) is not implemented and Cycles 4 and 5 are implemented, they would achieve a total number of 21 years of CC deferrals with a resulting NPV of forgone earnings of $178 million. On the other hand, if Cycle 3 is implemented and followed by Cycles 4 and 5, then the combined effect of these three cycles would be 34 years of deferrals for a total NPV of forgone earnings of $266 million: MEEIA 2019-24 adds 13 years of deferrals and an NPV of forgone earnings of $88 million or an annualized earnings opportunity of $20 million over 6 years.

Finally, if Cycle 3 (MEEIA 2019-24) is not implemented and Cycles 4, 5 and 6 are implemented, they would achieve a total number of 34 years of CC deferrals with a resulting NPV of forgone earnings of $266 million. On the other hand, if Cycle 3 is implemented and followed by Cycles 4, 5, and 6 then the combined effect of these four cycles would be 39 years of deferrals for a total NPV of forgone earnings of $298 million: MEEIA 2019-24 adds 5 years of deferrals and an NPV of forgone earnings of $32 million or an annual earnings opportunity of $7 million over 6 years.

This analysis illustrates that even though Ameren Missouri does not have an immediate capacity need, implementing MEEIA 2019-24 is imperative in achieving longer periods of supply-side resource deferrals.

5.3.2.3 Forgone Transmission and Distribution Earnings Opportunity

It is common industry practice to include avoided transmission and distribution ("T&D") costs in the cost-effectiveness tests for demand-side resources as these resources defer investments in delivery infrastructure. In fact, avoided T&D costs are required by the Commission's IRP rules. Accordingly, when calculating the revenue requirements for the various alternative resource plans, Ameren Missouri includes reduced T&D capital expenditures associated with the alternative resource plans that include DSM portfolios. The 2017 IRP filing showed that the Company's preferred plan, which includes continuation of RAP DSM programs, results in a reduction of $116 million of pre-tax earnings (net present value) from avoided T&D investments.

Ameren Missouri analyzed the impact of deferred investments in delivery infrastructure on its earnings directly attributable to the proposed MEEIA 2019-24 portfolio by isolating those effects from the IRP modeling. The analysis demonstrates that MEEIA 2019-24 reduces the NPV of after-tax earnings of Ameren Missouri by $55 million. The annuity to make up for the lost earnings opportunity would be $12.7 million over 6 years.

Unless the Company is given a comparable earnings opportunity for the DSM resources it deploys, Ameren Missouri will be giving up the opportunity to grow its earnings over time not just by the deferred supply-side resources, but also by the deferred delivery infrastructure resources.

5.3.3 Earnings Opportunity Benchmarking

The IRP analysis described above demonstrates forgone utility earnings opportunity are material and observable, indicating a $35.5-$48.5 million annual earnings opportunity would allow utility decision makers to value demand-side resources equally to supply side. Benchmarking results from other states confirm the reasonableness of the earnings opportunity reflected in the Plan given the calculated forgone earnings the Plan produces.

In an Institute for Electric Innovations ("IEI") report titled, “Energy Efficiency Trends in Electric Power Industry,” published in December 2017, there is a comprehensive review of shareholder incentive mechanisms offered in various states around the country. More than 30 states have regulatory frameworks that support electric company investments in energy efficiency. Some of those incentives described in the IEI report are reported in terms of absolute dollars of incentives allowed. Since utilities generally, and their energy efficiency portfolios specifically may be of significantly different sizes, comparing absolute dollars of incentives is of little use. However, many state incentive programs are related in terms of either the percent of program costs that a utility may earn as an incentive, a percent of benefits the utility may earn, or in terms of a $/kWh incentive that may be earned. Each of these metrics may be useful for comparing across utilities. Below is a table comparing sample states as well as prior MEEIA experience to the MEEIA 2019-24 proposed earnings opportunity amounts. While the IRP forgone earnings analysis

indicates the Company could be seeking significantly more earnings opportunity, it is apparent from the comparison below that the Company's proposed amount is within industry bounds.

Table 11 – Earnings Opportunity Benchmarking Summary

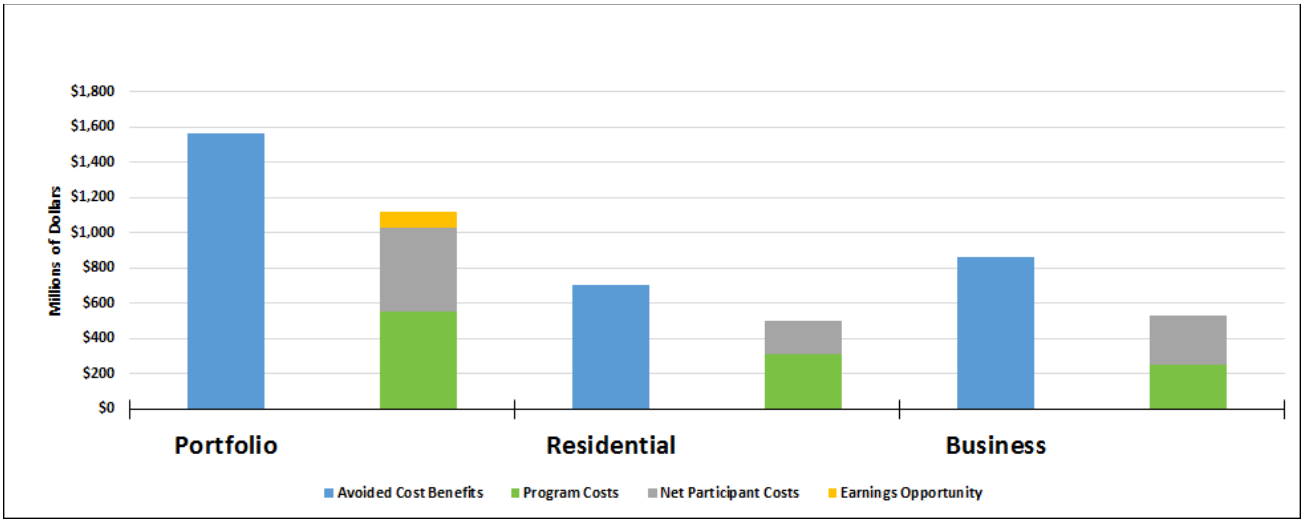
MEEIA 2019-24 Earnings Opportunity	100% Payout	Benchmark Utilities	
% Net Benefits	11.60%	MI: 25% IN: 15% GA: 8.5%	CO: 20% MEEIA2: 17% MEEIA1: 13%
% of Program Cost	20.90%	TX: 20% AR: 10% IN: 15% MI: 15% OK: 15%	NM: 7.5% CO: 25% MEEIA2: 17% MEEIA1: 13%
$/kWh	$0.06	MN: $0.08/kWh MEEIA2: $0.04/kWh MEEIA1: $0.025/kWh	

While the table above serves as a high-level comparison, it is also important to point out some limitations in those comparisons. For instance, restructured states where the distribution utilities no longer own generation face a significantly smaller magnitude of forgone earnings than vertically integrated utilities such as Ameren Missouri. As demonstrated in the IRP forgone earnings analysis, the forgone earnings from major supply-side generation can be significant. It is also very important to consider the business structure (e.g., ratemaking and legal environments) of the utilities in various states when assessing whether the incentive benchmark is particularly useful for comparisons in Missouri.

5.4 Impact on Customers

MEEIA 2019-24 is expected to result in a lifetime net benefits to all customers (participants and nonparticipants) of $920 million from the utility cost perspective and about $630 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. In fact, the MEEIA 2019-24 is helping defer $4 billion in supply and delivery investments. The figure below illustrates the total cost perspective and demonstrates that the benefits of MEEIA 2019-24 far exceed the costs.

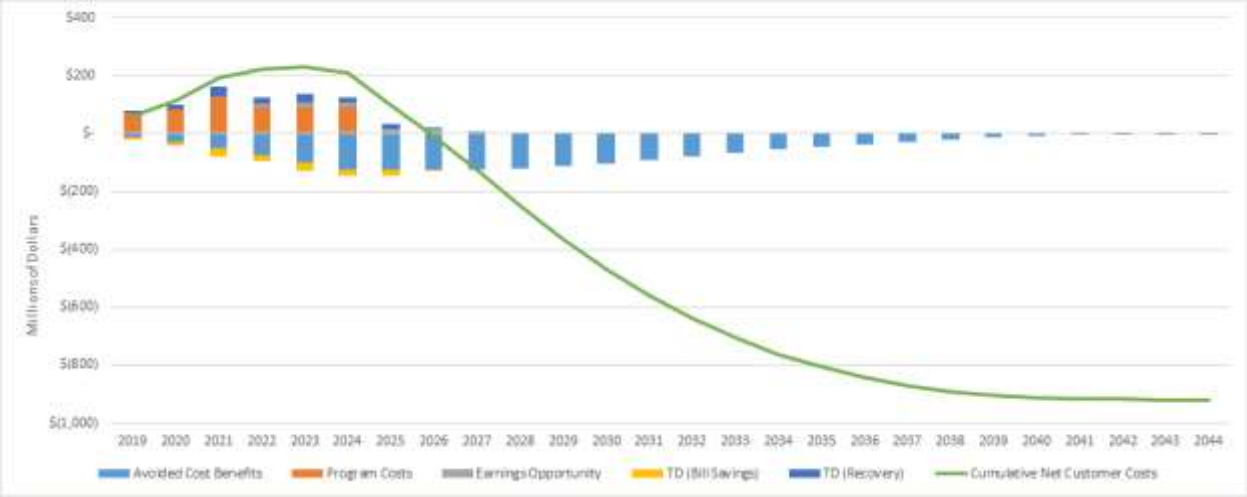
Figure 34 – TRC Cost-Effectiveness Results



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.

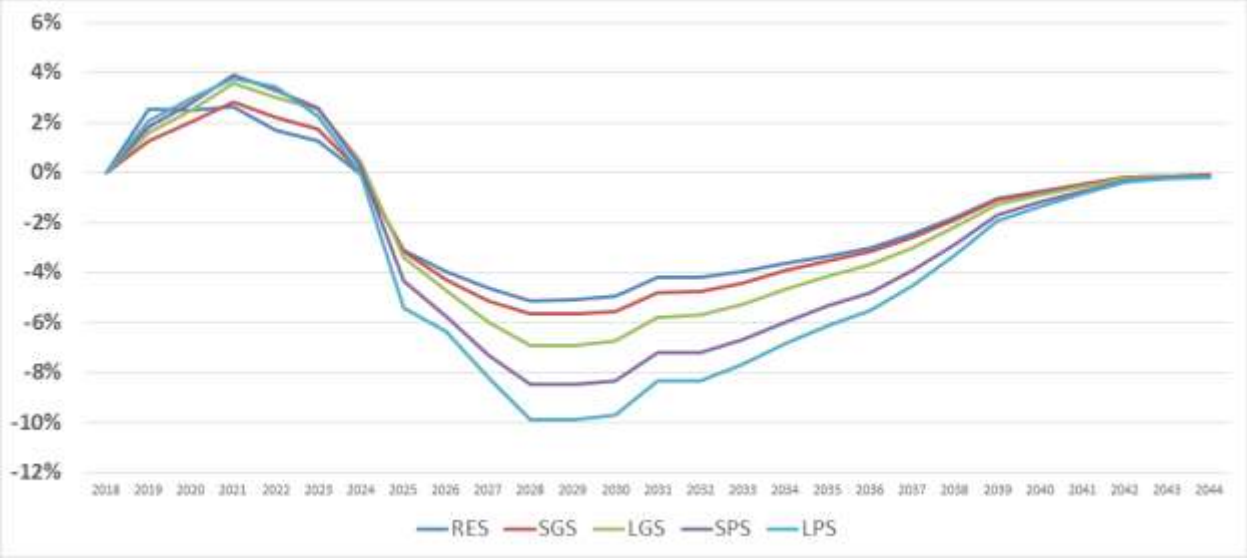
The figure below shows the annual and cumulative costs and benefits of MEEIA 2019-24. It is apparent from the figure below that the costs of the programs are borne by customers up front, consistent with MEEIA's requirement for timely cost recovery, but benefits continue to accrue for a long period of 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 2019-24



The projected bill impacts by rate class associated with the MEEIA 2019-24 programs are shown in the figure below.

Figure 36 – DSIM Bill Impacts

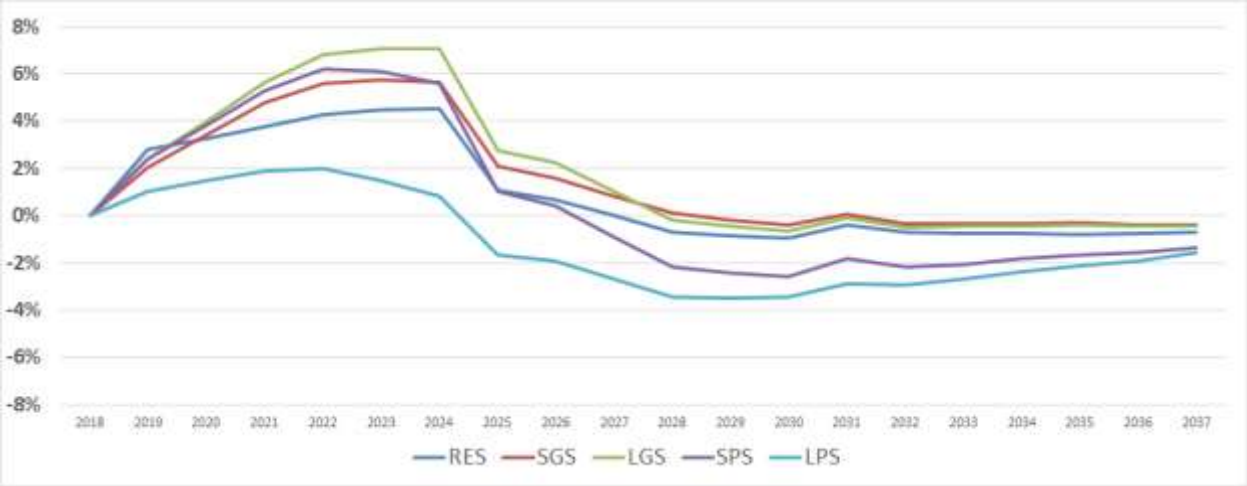


Note that like the cumulative cost curve, the bill impacts cause an increase in total bills at first, as the program costs and throughput disincentive are paid as they occur and the EO is realized annually and collected over 2 years. As soon as the implementation period concludes and the costs are paid, bills are immediately lower beginning in 2024 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 up to or exceeding 9% 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 2019-24 Portfolio and DSIM Rate Impacts



The rate impacts also peak during the program years of 2019-2024 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 2019-24 programs, as shown previously on the bill impacts. Again, the lifetime reduction in revenue requirement is $920 million.

5.5 Impact on the Company

5.5.1 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 forgoeses 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 2019-24 Plan Impacts on Net Income

	Total	2019	2020	2021	2022	2023	2024	2025	2026
Revenue									
Program Cost Recovery	$ 550.8	$57.6	$ 76.2	$ 93.7	$103.6	$107.6	$112.1	$ -	$ -
TD (Bill Savings)	$(173.9)	$ (7.9)	$(15.2)	$ (33.4)	$ (24.2)	$ (37.8)	$ (25.1)	$(24.8)	$(5.6)
TD (Recovery)	$ 173.9	$ 7.9	$ 15.2	$ 33.4	$ 24.2	$ 37.8	$ 25.1	$ 24.8	$ 5.6
Earnings Opportunity	$ 115.0	$ -	$ 10.1	$ 15.2	$ 19.8	$ 22.1	$ 23.3	$ 24.4	
Total Revenue	**$ 665.8**	**$57.6**	**$ 86.4**	**$108.9**	**$123.4**	**$129.7**	**$135.5**	**$ 24.4**	**$ -**
Costs									
Program Costs	$ 550.8	$57.6	$ 76.2	$ 93.7	$103.6	$107.6	$112.1	$ -	$ -
Total Costs	**$ 550.8**	**$57.6**	**$ 76.2**	**$ 93.7**	**$103.6**	**$107.6**	**$112.1**	**$ -**	**$ -**
Gross Margin	$ 115.0	$ -	$ 10.1	$ 15.2	$ 19.8	$ 22.1	$ 23.3	$ 24.4	$ -
Income Taxes	$ 29.3	$ -	$ 2.6	$ 3.9	$ 5.0	$ 5.6	$ 5.9	$ 6.2	$ -
Net Income	**$ 85.7**	**$ -**	**$ 7.6**	**$ 11.4**	**$ 14.8**	**$ 16.5**	**$ 17.4**	**$ 18.2**	**$ -**

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 two years, 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 table below looks at Ameren Missouri's current five-year business planning period and translates the financial impacts of MEEIA 2019-24 into the impacts on key credit metrics: FFO[23]/Debt and FFO/Interest.

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

Table 13 – MEEIA 2019-24 Plan Impact on Key Credit Metrics (Confidential)

	Metric	2018	2019	2020	2021	2022
Baseline Credit Metrics	FFO/Debit	0.237	0.223	0.219	0.258	0.243
	FFO/Interest	5.857	6.019	6.048	6.541	6.197
MEEIA 2019-24 Plan Impacts	FFO/Debit	0.000	0.000	[redacted]	0.000	0.001
	FFO/Interest	0.000	0.000	[redacted]	0.000	0.028

The table above demonstrates that overall impacts of the Plan and DSIM on credit metrics are small, but generally slightly supportive of credit quality. The credit metrics analysis provides support for the conclusion that the DSIM aligns the Company's incentives. Additionally, the relatively small movement of the metrics in context with their baseline levels suggests little impact on the financial risk of the Company.

5.5.2 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 2019-24 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 2019-24 plan is meant to accelerate adoption of energy saving behaviors and measures; therefore, the Plan is more likely to increase the risk of load 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.

5.6 IRP Check-In Process

Prior MEEIA plans had three-year implementation periods. Experience with these past plans indicates it is possible to make longer term commitments to demand-side resources while enhancing customer benefits and reducing customer risk. Customer benefits can be enhanced primarily by allowing more time to develop deeper relationships around energy savings with customers and achieving corresponding deeper energy savings. The forgone earnings analysis above clearly shows that continued and uninterrupted delivery of demand-side programs results in longer deferrals of major investments; therefore, longer implementation periods improve the likelihood of longer-term deferrals.

It is possible, however, that significant changes could occur over a 6-year MEEIA 2019-24 implementation period that warrant considering whether changes to the Plan should be made. The Commission's rules and the proposed MEEIA 2019-24 elements provide significant protection against the impact of any such changes. For instance, the Commission's rules already have provisions for starting new programs and stopping existing programs at any time.[24] The continuation of the 11-Step Change Process found in Ameren Missouri's tariffs allows opportunities for relatively quick program changes to respond to evolving market conditions. More importantly, the Company is proposing full evaluations each year to provide important information for decision making about program offerings and program operations. In addition, MEEIA 2019-24 evaluations will include additional market research to provide a more holistic view of market conditions that can influence decisions about programs as well as program planning. In short, there are provisions in place to identify changes and execute changes to the MEEIA portfolio without processing a whole new MEEIA filing.

However, Ameren Missouri recognizes that there could be certain "triggers" that warrant consideration of modifications to three aspects of the Plan before the full 6-year implementation period is complete. The three aspects are: (a) program budgets; (b) energy and/or demand targets; or (c) the earnings opportunity. Consequently, the Plan includes an IRP Check-in process that will allow consideration of modifications to (a), (b), or (c) if the conditions in one of the following three triggers are satisfied in the 2020 triennial IRP filing:

1) **The first capacity resource need changes from 2034 using the capacity position that will exist without demand-side programs during the planning horizon for the 2020 IRP**.[25] Such a change could occur because of the loss or addition of a major customer, the addition of significant new renewable generation, the early retirement of a baseload energy center, a significant regulatory policy change, or some similar, significant event. The significance of such a change in this area is that it indicates that consideration should be given to whether changes to the earnings opportunity are warranted and/or whether other resource considerations should be factored into the commitment to demand-side resources.

2) **The 2020 IRP reflects a 20% or greater change in present value per unit avoided costs as compared to the avoided costs in Appendix C to this Plan**. Avoided costs are the source of economic benefit from demand-side resources. Consequently, to the extent the economic benefits of demand-side resources are changing materially

[24] 4 CSR 240-20.094(5) and (6).

[25] To effectively determine whether there has been a material net change in the assumptions on which expected resource deferrals due to MEEIA 2019-24 were based, the capacity position will be adjusted to exclude the effects of all demand savings due to MEEIA 2019-24 programs, including any to-date savings achieved. Put another way, the capacity position will be adjusted to represent the capacity need if MEEIA 2019-24 had never been implemented.

(defined as 20% or more) it is important to check-in on the level of commitment to demand-side resources. To test whether this trigger has occurred: the present value per unit of avoided costs for both the 2017 IRP and 2020 IRP will be calculated over the period 2022 (the first year of the second half of MEEIA 2019-24) through 2037 (the last year of the 2017 IRP planning horizon) using a discount rate of 5.95%. The comparsion will happen for avoided energy costs and total avoided capacity costs (generation, transmission, and distribution capacity) and the percentage differences between the present value of the per unit avoided costs must be outside 20% (postive or negative) for both avoided energy costs and total avoided capacity costs. The 2020 IRP present value per unit avoided costs will be compared to the table below. If those 2020 IRP present value per unit avoided costs fall outside the ranges in the 2nd and 3rd row of Table 13, the trigger will have occurred.

Table 14 – Avoided Cost IRP Check-In Process Trigger Points

	Avoided Energy Costs (NPV, $/MWh)	Avoided Total Capacity Costs (NPV, $/kW-Year)
2017 IRP Base Value	$413.20	$1,106.09
2020 IRP Trigger Cap (+20%)	$495.84	$1,327.30
2020 IRP Trigger Floor (-20%)	$344.33	$921.74

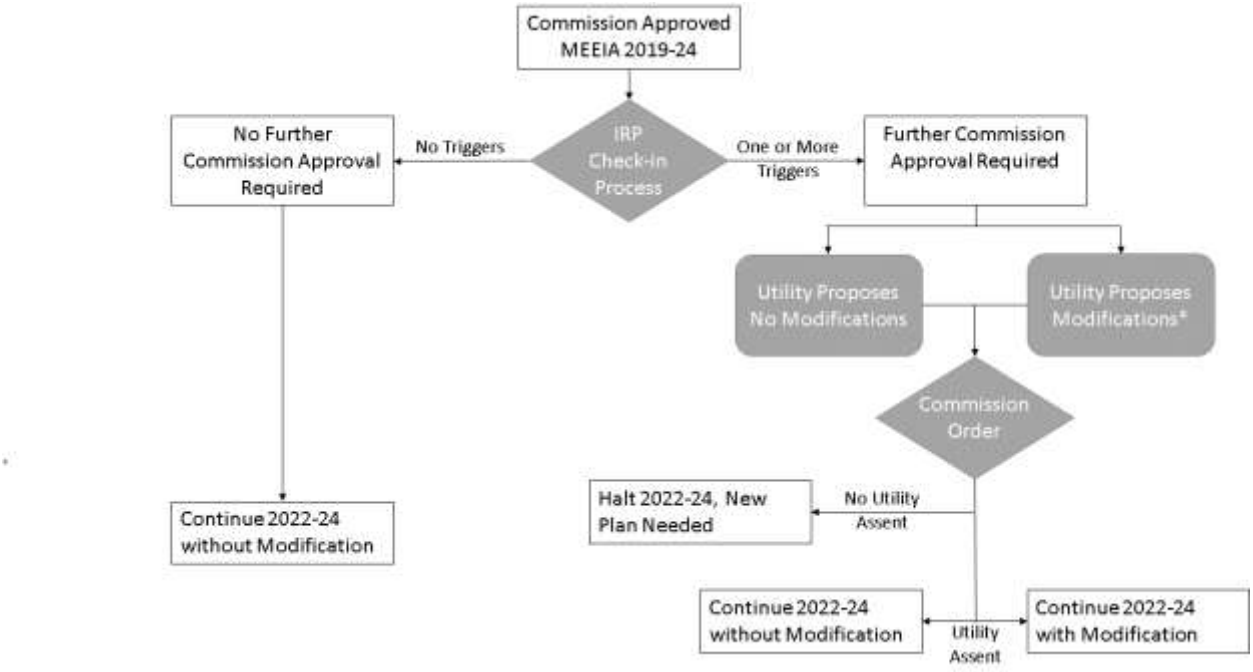
3) **A 20% or greater change in Energy Efficiency RAP (cumulative from 2022–24)**. Ameren Missouri will be updating its next demand-side potential study in 2019 for use in its 2020 triennial IRP filing and will include primary market research. To the extent the potential study contains results for the time period of 2022-24 where either the cost of achieving the RAP or the energy savings from doing so are materially different (defined as +/- 20% or more) than the RAP underlying this Plan for 2022-2024, this trigger will occur. The 2019 energy efficiency potential study results will be compared to the table below to determine whether there has been a significiant change in RAP and if the updated cumulative energy savings or program costs fall outside the ranges in the 2nd and 3rd row of Table 14, the trigger will have occurred.

Table 15 – Energy Efficiency RAP Trigger Points

	Cumulative Energy Savings[26] (MWh)	Total Program Costs[27] (Sum, $)
2022-24 MEEIA Plan Base Value	1,073,143	$251,103,139.13
Trigger Cap (+20%)	1,287,772	$301,323,766.96
Trigger Floor (-20%)	894,286	$209,252,615.94

The figure below illustrates the IRP Check-in Process described above. Any Commission-approved modifications must also receive utility assent, consistent with the voluntary nature of MEEIA.

Figure 38 - IRP Check-In Process Flow Chart



*Modifications are limited to budgets, energy and/or demand targets, and earnings opportunity

From a timing standpoint, it is important that the IRP Check-In Process happens on a timeline where there is adequate time to capture potential business environment updates that influence the three IRP check-in triggers above, but not so late that modifications from the check-in cannot be implemented at the beginning of program year 2022. Therefore, the Company is requesting in this docket that the Commission grant it a variance from the default IRP rule requirement that would otherwise require its next

[26] Summation of incremental savings for each program year, not counting residential behavior savings unless more or less than than 32,250 MWh.
[27] Total program costs includes portfolio costs that are allocated to programs.

triennial IRP to be filed by April 1, 2020, and instead allow it to be filed by October 1, 2020.[28] Similar variances were granted for the Company's last two triennial IRP filings, which were filed on or shortly before October 1 in both 2014 and 2017.

From a process standpoint, collaborative discussions to receive input will start on or before October 2020 if one of the above-triggers has occurred. By November 2020, if one of the above-listed triggers is reflected in the 2020 IRP, the Company will propose to the parties in the MEEIA 2019-24 case, any modifications it believes are warranted to annual budgets, energy savings/demand savings targets, or the earnings opportunity. The IRP check-in process will occur on the following schedule so that any changes can be implemented by January 1, 2022:

- No later than February 26, 2021, Ameren Missouri will submit any proposed modifications to the Commission. The proposed modifications will be limited to budgets, energy and/or demand savings targets, and the earnings opportunity. The procedural schedule will provide that data request objections or notifications of the need for additional time must be given within seven (7) days and responses will be due within ten (10) days.
- On April 2, 2021, responses from interested parties to the MEEIA 2019-24 case will be due. Responses will address the the Company's proposed changes and may also include alternative proposed modifciations budgets, energy and/or demand savings targets, or the earnings opportunity.
- The Company's response to the other parties' responses will be due 30 days later.
- Evidentiary hearings will be held in the first half of June 2021 to the extent possible based on Commission availability, with other procedural milestones (such as any discovery cutoff date, filing of an issues list and position statements, etc.) to occur according an a Commission-approved procedural schedule.
- Initial post-hearing briefs will be due 28 days after the end of evidentiary hearings and reply briefs 14 days thereafter.
- Commission order resolving the question of whether modifications are required to continue the Plan in 2022-2024 issued by mid-September, 2021.

[28] In conjunction with the change in the 2020 IRP filing date, the Company is also requesting that the Commission grant it a waiver from the requirement to file its IRP annual update reports for 2021 and 2022 by April 1st in each year, and instead allow the Company to file these reports by October 1st in each of 2021 and 2022. This will allow the Company to file two annual update reports between its 2020 and 2023 triennial IRP filings on a reasonable schedule.

6.0 Appendices

6.1 Appendix A – Portfolio and Programs Summary

6.2 Appendix B – Programs Templates

6.3 Appendix C – Avoided Costs

6.4 Appendix D – Incentive Ranges

6.5 Appendix E – Sample Evaluation Plans

6.6 Appendix F – Deemed Savings Table

6.7 Appendix G – TRM: Overview and User Guide

6.8 Appendix H – TRM: Business Measures

6.9 Appendix I – TRM: Residential Measures

6.10 Appendix J – Exemplar Tariffs

6.11 Appendix K – Customer DSIM Explanation

6.12 Appendix L – Customer Bill Examples

6.13 Appendix M – MEEIA 2019-24 Accounting

6.14 Appendix N – Earnings Opportunity Calculator

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a Ameren Missouri's 3rd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA	))))	File No. EO-2018-0211

AFFIDAVIT OF WILLIAM R. DAVIS

STATE OF MISSOURI)
)
CITY OF ST. LOUIS)

William R. Davis, being first duly sworn on his oath, states:

1. My name is William R. Davis. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri") as Director of Energy Efficiency and Renewables.

2. I have directed and participated in the preparation of the *Ameren Missouri 2019-24 MEEIA*[1] *Energy Efficiency Plan* and its associated appendices (collectively, "Report"), that I have knowledge of the Report in its entirety, and that the Report is true and correct to the best of my knowledge and belief.

William R Davis
William R. Davis

Subscribed and sworn to before me this 31st day of May, 2018.

Geri A. Best
Notary Public

GERI A. BEST
Notary Public - Notary Seal
State of Missouri
Commissioned for St. Louis County
My Commission Expires: February 15, 2022
Commission Number: 14839811

[1] Missouri Energy Efficiency Investment Act.