EVERGY MISSOURI WEST

DEMAND-SIDE RESOURCE ANALYSIS

INTEGRATED RESOURCE PLAN

20 CSR 4240-22.050

APRIL 2021

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VOLUME 5: DEMAND-SIDE RESOURCE ANALYSIS

HIGHLIGHTS

Evergy completed its Demand-Side Management (DSM) Potential Study in October 2020, which included:

- Primary market research of the residential and non-residential sectors.
- Four levels of measure-level potential for 2023-2042: technical potential, economic potential, realistic achievable potential (RAP), and maximum achievable potential (MAP) energy efficiency potential.
- Energy efficiency programs, demand response programs and demand-side rate potential. Energy efficiency will be referred as EE, demand response will be referred as DR and demand-side rates will be referred as DSR in this filing.
- All measures were screened for cost effectiveness using the Total Resource Cost (TRC) test, the Societal Cost Test (SCT), the Utility Cost Test (UCT), the Participant Cost Test (PCT), and the Ratepayer Impact Measure (RIM) test.
- Combined heat and power (CHP) potential.
- Seven scenarios of program-level potential including MAP, RAP, RAP+, RAP-, MEEIA and two Stand-Alone scenarios for DR and DSR programs.
- Emerging Technology potential evaluated in MAP scenario.
- Sensitivity and uncertainty analysis to estimate impact from the current COVID-19 in RAP scenario.

INTRODUCTION

Evergy engaged ICF Resources, LLC to conduct a Demand Side Management (DSM) Potential Study. The DSM study encompassed the Evergy Missouri Metro and Evergy Missouri West service territories and was delivered to Evergy in October 2020 and included both a RAP and a MAP level of DSM, as defined in the IRP Rules. This Potential Study was used as the basis for the scenarios evaluated in this integrated analysis.

SECTION 1: POTENTIAL DEMAND-SIDE RESOURCES

PURPOSE: *This rule specifies the principles by which potential demand-side resource options shall be developed and analyzed for cost effectiveness, with the goal of achieving all cost-effective demand-side savings. It also requires the selection of demand-side candidate resource options that are passed on to integrated resource analysis in 20 CSR 4240-22.060 and an assessment of their maximum achievable potentials, technical potentials, and realistic achievable potentials.*

(1) ***The utility shall identify a set of potential demand-side resources from which demand-side candidate resource options will be identified for the purposes of developing the alternative resource plans required by 20 CSR 4240-22.060(3). A potential demand-side resource consists of a demand-side program designed to deliver one (1) or more energy efficiency and energy management measures or a demand-side rate. The utility shall select the set of potential demand-side resources and describe and document its selection —***

1.1 DESCRIBE AND DOCUMENT SELECTIONS

(A) To provide broad coverage of —

1.1.1 MARKET SEGMENTS COVERAGE

1. Appropriate market segments within each major class; —

ICF identified Evergy's market segments by categorizing billing and customer data, residential and non-residential customer surveys, and secondary sources to allocate energy use and customers to the various sectors and segments such that the total customer count, energy consumption, and peak demand matched the Evergy system totals from the 2019 billing data. The market segments included:

- Residential: Single Family, Single Family Low-Income, Multi-family, Multi-family Low-Income
- Commercial: Small Office, Large Office, Restaurant, Retail, Grocery, College, School, Healthcare, Lodging, Warehouse, Data Center, Miscellaneous

- Industrial: Food Production, Chemicals & Pharmaceuticals, Transportation Equipment, Electronic Equipment, Stone-clay-and-glass, Primary Metals, Rubber & Plastics, Other Industrial

The total number of households and residential electricity sales for the service territory were estimated from ICF's survey and all reported residential energy sales in 2019.

Table 1: Evergy Missouri West Residential Sector Control Totals

Segment	Households	Electricity Sales (GWh)	% of Total Usage (kwh)	Avg. Use / Household (kwh)	Summer Peak (MW)	Winter Peak (MW)
Single Family	190,096	2,786	43%	14,655	629	407
Multifamily	50,059	599	9%	11,966	129	103
Single Family LI	22,207	229	4%	10,327	52	34
Multifamily LI	24,382	195	3%	8,011	42	34
Total	**286,744**	**3,809**	**58%**	**44,959**	**852**	**578**

The commercial and industrial sectors were developed for Evergy's entire service territory in Missouri, including Missouri Metro and Missouri West. With fewer survey completions than the residential sector and less anticipated heterogeneity among customers, ICF modeled commercial and industrial sectors by using ICF's survey on business type and county-level County Business Pattern data in Evergy Missouri territories.

Table 2: Commercial Control Totals (Evergy Missouri -Total)

Segment	Electricity Sales (GWh)	% of Total Usage	Avg. Use / Square Foot (kWh/SqFt)	Summer Peak Demand (MW)	Winter Peak Demand (MW)
Small Office	230	3%	11.6	95	94
Large Office	947	12%	18.2	22	27
Restaurant	336	4%	55.6	57	34
Retail	1,341	17%	9.8	240	158
Grocery	374	5%	21.1	54	39
School	1,194	15%	13.7	183	163
College	127	2%	8.2	19	17
Healthcare	880	11%	8.2	99	84
Lodging	218	3%	14.4	33	19
Data Center	306	4%	186.7[1]	30	27
Warehouse	122	2%	5.7	11	9
Miscellaneous	1,667	22%	12.3	340	240
Total	**7,743**		**14.0**	**1,183**	**911**

[1] Survey responses provided an estimated average electricity intensity of 10.3 kWh/SqFt for data centers; however, very few survey responses were from customers that self-classified as data centers. Instead, ICF relied on an average electricity use per square foot estimate from EnergyStar of 186.7 kWh/SqFt, retrieved from: https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/benchmarking-rendement/DataCenter-US-and-Canada-EN-Feb2018.pdf

Table 3: Industrial Control Totals (Evergy Missouri -Total)

Segment	Electricity Sales (GWh)	% of Total Usage	Summer Peak Demand (MW)	Winter Peak Demand (MW)
Food Production	432	16%	55	49
Chemicals and Pharmaceuticals	330	12%	42	37
Transportation Equipment	268	10%	34	30
Electronic Equipment	120	4%	15	14
Stone, Clay, Glass	104	4%	13	12
Primary Metals	115	4%	14	14
Rubber & Plastics	254	9%	32	28
Other Industrial	1,110	41%	140	125
Total	**2,733**		**345**	**309**

1.1.2 DECISION-MAKER COVERAGE

2. All significant decision-makers, including at least those who choose building design features and thermal integrity levels, equipment and appliance efficiency levels, and utilization levels of the energy-using capital stock; and —

Evergy Missouri West staff meets regularly with customer groups, architects, engineers, trade representatives, contractors, distributors, public agency staff and others to discuss energy usage issues, energy efficiency and demand response programs, and to elicit feedback and suggestions. Additionally, Evergy promotes demand side programs through awareness marketing in local trade publications, online channels and community events.

ICF provided a broad range of stakeholders opportunities to review and comment on the DSM Potential Study methodologies, survey instruments and findings. The stakeholders included the Missouri Public Service Commission Staff, Missouri Office of Public Counsel, Missouri Division of Energy, National Resources Defense Council, and Renew Missouri.

1.1.3 MAJOR END USES COVERAGE

3. All major end uses, including at least the end uses which are to be considered in the utility's load analysis as listed in 20 CSR 4240-22.030(4)(A)1.; —

Evergy Missouri West engaged ICF to conduct a DSM Potential Study completed in 2020. ICF developed a comprehensive list of conventional and emerging technologies considering all customer sectors and end uses. The major end uses by sector include:

- Residential: cooling, heating, water heating, lighting, appliances, electronics and miscellaneous
- Commercial: cooling, heating, ventilation, water heating, interior lighting, exterior lighting, refrigeration, food preparation, office equipment and miscellaneous
- Industrial: cooling, heating, ventilation, interior lighting, exterior lighting, motors, process, and miscellaneous

1.2 DESIGNING EFFECTIVE POTENTIAL DEMAND-SIDE PROGRAMS

(B) To fulfill the goal of achieving all cost effective demand-side savings, the utility shall design highly effective potential demand-side programs consistent with subsection (1)(A) that broadly cover the full spectrum of cost-effective end-use measures for all customer market segments; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study, which was completed in October 2020. ICF developed highly effective potential DSM programs by grouping market segments and end-use measures into programs. The list of the programs are –

Residential Programs:

- Whole House Efficiency
- Home Lighting Rebate
- Home Energy Report

- Income-Eligible Multifamily
- Income-Eligible Home Energy Report
- Multifamily Direct Install
- Smart Thermostat
- Direct Load Control – Water Heaters, Pools and Hot Tubs
- Direct Load Control – Battery Storage
- Direct Load Control – EV Smart Charger
- Time of Use
- Demand Rates
- Critical Peak Pricing

Commercial and Industrial Programs:

- Business Energy Efficiency Rebate-Standard
- Business Energy Efficiency Rebate-Custom
- Small Business Lighting
- Strategic Energy Management
- Block Bidding
- New Construction
- Smart Thermostat
- Thermal Storage
- Business Demand Response
- Time of Use
- Real Time Pricing
- Critical Peak Pricing

Program details for all programs modelled in the potential study including program descriptions, development methodologies, program characteristics as well as implementation strategies can be found in Appendix 5D.

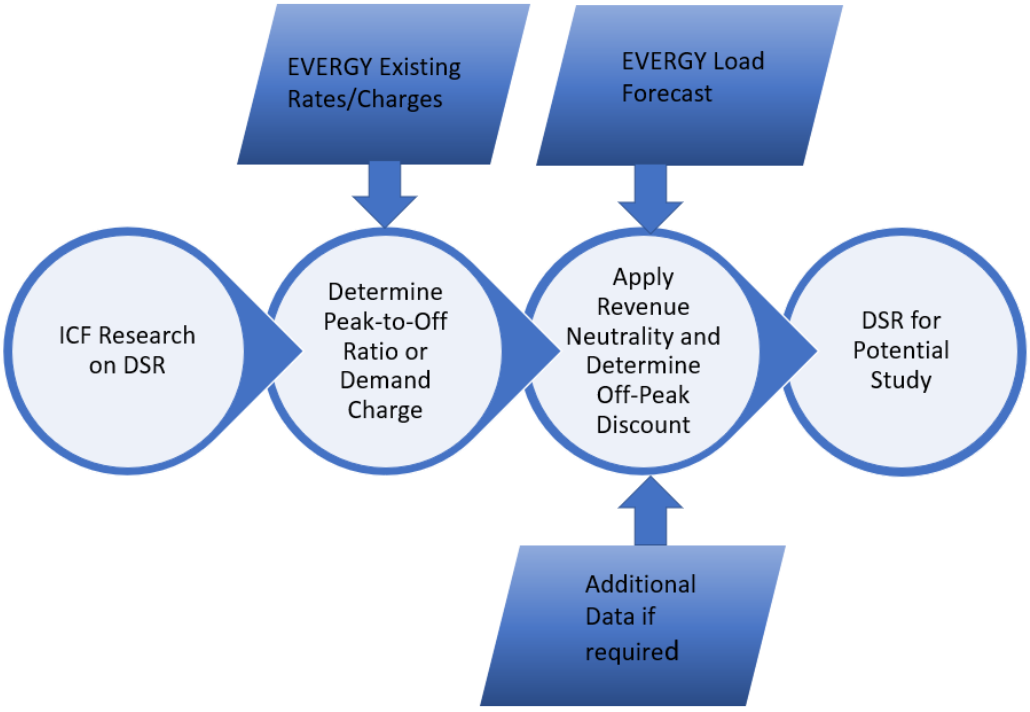
1.3 DEMAND-SIDE RATES

(C)To include demand-side rates for all customer market segments; —

Evergy Missouri West engaged ICF Resources, LLC to conduct a DSM Potential Study. ICF identified demand-side rates based on options that are designed to reduce, shift, or modify their load. ICF began with a larger database of demand-side rates and then selected only those rates applicable to the Evergy territory. While the database was built over time by ICF and contains all the demand-side rate programs implemented as programs or pilots across the country, the filtered programs were chosen to accommodate Evergy's feedback and their applicability based on the saturation of enabling equipment. A stand-alone scenario at MAP level was developed to further evaluate the impact of demand-side rates.

Demand-side rates were determined to be consistent and in alignment with the current rates. A representative rate was chosen for each sector and the impacts were determined accordingly. The residential Time of Use rate are the existing rates in the tariff documents. The peak period and season definitions were as defined in the Residential tariff document and carried over to the Commercial and Industrial segments. Figure 1 shows the process of constructing the demand-side rates.

Figure 1: Process flow for construction of demand-side rate



The final list of demand-side programs evaluated in this study are:

Residential –

- Time of Use
- Demand Rates

Commercial –

- Time of Use
- Real Time Pricing

Industrial –

- Time of Use
- Real Time Pricing

ICF determined that due to the feasibility and applicability for Evergy, some rates are projected to be implemented in the starting year of 2023 including Time of Use for all

customer market segments while some rates are projected to be implemented in the second program cycle in the year of 2026. These rates include Demand Rates for Residential sector and Real Time Pricing for Commercial and Industrial sectors. Program details including program descriptions, development methodologies, program characteristics as well as implementation strategies can be found in Appendix 5D.

1.4 MULTIPLE DESIGNS

(C) To consider and assess multiple designs for demand-side programs and demand-side rates, selecting the optimal designs for implementation, and modifying them as necessary to enhance their performance; and —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study completed in 2020. ICF considered multiple design scenarios including the program-level realistic achievable potential (RAP) and maximum achievable potential (MAP) as well as five additional scenarios in order to provide Evergy Missouri West with a more diverse set of planning cases.

- Program RAP: is the reference case forecast. It is the basis of all other achievable scenarios. It reflects a world in which Evergy continues only operating its current energy efficiency programs without substantial changes. RAP accounts for known state and Federal updates to minimum energy performance standards (MEPS) for lighting and appliances as well as energy performance standards for new buildings and major retrofits.

- Program RAP-: Evergy continues operating only its current programs, but savings levels are lower than what Evergy historically achieved with reduced cost.

- Program RAP+: Similarly, Evergy continues operating only its current programs, but savings levels are higher than what Evergy historically achieved with increased cost.

- Program MAP: is a theoretical scenario where all customer incentives are set to 100% of measure incremental costs. The other important change in this scenario

is that the cost-effectiveness threshold is changed from the program level to the sector level. This would give Evergy more flexibility to adjust programs to meet overall savings targets. Emerging technologies as well as added programs are also evaluated in MAP.

- Program MEEIA: There are few changes in the MEEIA scenario from RAP scenarios. New economic measures are added to current programs, and the performance of current programs is increased above RAP+ levels based on benchmarking and ICF expert input. Additionally, entire new programs and economic measures are added to achieve MEEIA goal (20 CSR 4240-20.094(2)).

- Program DR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program DSR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

1.5 EFFECTS OF IMPROVED TECHNOLOGIES

(D) To include the effects of improved technologies expected over the planning horizon to —

1.5.1 REDUCE OR MANAGE ENERGY USE

***1. Reduce or manage energy use;* or —**

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study, which included the effects of improved technologies expected over the 20-year planning horizon. As a part of the scope of work, ICF selected potential demand-side resources to fulfill the goal of achieving all cost-effective demand-side savings by designing highly effective potential demand-side programs. ICF included the effects of improved technologies expected over the planning horizon to reduce or manage energy use and evaluated combined heat and power (CHP) as a resource.

A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to include the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. ICF identified top 20 emerging technology measures from over 100 measures and refined to analyze the top 10 measures on the list. A comprehensive assessment of the Emerging Technology can be found in Appendix 5C Section I-5.

1.5.2 IMPROVE THE DELIVERY OF PROGRAMS

2. Improve the delivery of demand-side programs or demand-side rates. —

Evergy Missouri West engaged ICF to conduct a DSM Potential Study. As a part of the scope of work, ICF selected potential demand-side resources to fulfill the goal of achieving all cost-effective demand-side savings by designing highly effective potential demand-side programs. ICF used program design, incentive structures, marketing approaches, budgets, and levels of staffing from field experience to refine delivery assumptions and participation rates to a level that can be accomplished given Evergy Missouri West's current DSM programs; and also to reflect the ramp-up time necessary for new initiatives. Incentive amounts and administrative budgets are associated with continuing Evergy Missouri West's current program momentum as well as launching new initiatives into the marketplace. ICF developed these assumptions based on discussions with Evergy Missouri West's staff, review of existing program data, and ICF program benchmarking research.

The proposed DSM programs deliver an effective and balanced portfolio of energy savings opportunities across all customer segments. Program eligibility has been defined broadly to make programs as inclusive as possible. In general, participation guidelines are designed to include all customer sectors and end uses. Each program was designed to leverage the optimal mix of best-practice measures, delivery strategies, and target

markets in order to most effectively deliver programs and measures to Evergy Missouri West customers.

Evergy Missouri West's program portfolio uses a combination of education and customer incentives to advance energy efficiency. Customer incentives are the primary mechanism for program delivery. Customers receive rebates to purchase energy efficient equipment and services through existing market actors, including equipment dealers and retailers. To achieve the portfolio's long-term savings goals, it will be necessary for Evergy Missouri West to continue to engage customers, retailers, trade allies, and state and local agencies. Targeting retailers / trade allies and leveraging Evergy Missouri West's relationship with its stakeholders will increase program awareness among consumers and promote the market adoption of high efficiency equipment. Creative and sustained marketing is important to a successful and robust energy efficiency program portfolio.

Evergy Missouri West's programs have been aligned to offer customers consistent programs and incentives across all four service territories. This will allow Evergy Missouri West to streamline implementation and marketing activities and provide equitable programs to all of their customers within the their service territory.

SECTION 2: DEMAND-SIDE RESEARCH

(2) The utility shall conduct, describe, and document market research studies, customer surveys, pilot demand-side programs, pilot demand-side rates, test marketing programs, and other activities as necessary to estimate the maximum achievable potential, technical potential, and realistic achievable potential of potential demand-side resource options for the utility and to develop the information necessary to design and implement cost-effective demand-side programs and demand-side rates. These research activities shall be designed to provide a solid foundation of information applicable to the utility about how and by whom energy-related decisions are made and about the most appropriate and cost-effective methods of influencing these decisions in favor of greater long-run energy efficiency and energy management impacts. The utility may compile existing data or adopt data developed by other entities, including government agencies and other utilities, as long as the utility verifies the applicability of the adopted data to its service territory. The utility shall provide copies of completed market research studies, pilot programs, pilot rates, test marketing programs, and other studies as required by this rule and descriptions of those studies that are planned or in progress and the scheduled completion dates. —

2.1 DSM POTENTIAL STUDY

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study completed in 2020. ICF conducted primary market research for the residential and non-residential sectors, including end-use equipment saturation data, customer demographics and firmographics.

The residential market research was structured to represent all households served by Evergy Missouri West, with a household defined as a single energy-using customer at a unique, contiguous location. Households were assumed to include single-family homes, manufactured homes, or units in multi-family dwellings, as long as those units are billed directly for some unique electricity use. Customers were mailed survey packages to solicit the completion of questionnaires via paper or online. The survey included questions on

home characteristics, demographics, heating / cooling systems, water heating equipment, lighting, etc. Of the total of 3963 questionnaires that were completed in Evergy service territory, 38% were filled out online, while 62% were filled out on paper and returned by mail.

The non-residential market research was structured to represent all of the business establishments served by one of the Evergy companies. For the purposes of this research a “business establishment” was defined as including all of the energy used by a given business at a single contiguous location. The research design involved the use of a computer – assisted telephone interviewing (CATI) survey. The survey included questions about the business, end uses, operating hours, equipment and energy efficiency actions. A total of 860 surveys were completed.

The entire Appliance Saturation Study for all Evergy service territories can be found in Appendix 5B.

ICF developed baseline projection of annual electricity use for each market segment using baseline market characterization and several inputs including data source from Evergy and EIA. ICF used its Demand Side Resource Potential Model (DSRPM) to calculate technical potentials. This R-based model that built on Microsoft Excel® applies an industry-standard, bottom-up approach to estimate DSM potential based on stock turnover. ICF assessed five achievable potential scenarios including Realistic Achievable Potential (RAP), RAP-, RAP+, Missouri Energy Efficiency Investment Act (MEEIA), and Maximum Achievable Potential (MAP) for energy efficiency, demand response and demand-side rates. ICF modeled additional stand-alone scenarios for demand response and demand-side rates. Program performance benchmarking was used to help estimate energy efficiency potential in all achievable scenarios, except RAP- and MAP. Program data of other utilities nationwide for benchmarking. The comprehensive Benchmarking Analysis can be found in Appendix 5E Section B and a wide range of data sources were utilized for all assessment in this study can be found in workpaper “ Evergy Inputs Sources DSM Measure Lists.xlsx”.

2.2 ELECTRIC POWER RESEARCH INSTITUTE

Evergy financially supports research conducted by the Electric Power Research Institute (EPRI). Evergy has access to the EPRI library of energy efficiency and demand response research and data that is available to program participants.

More information about the EPRI energy efficiency and demand response program research can be found on their website, www.epri.com. Additional specific EPRI energy efficiency and demand response programs recently and/or currently supported by the Company are summarized below.

2.2.1 EPRI PROGRAM 18: ELECTRIC TRANSPORTATION

Evergy continues its participation in this EPRI research program. This program develops research products that help electric transportation serve as a major electrification driver, with a focus on safe, affordable, reliable electricity with reduced environmental impacts, while at the same time providing increased choice for customers. This research spans the electric transportation domain from high-level strategic intelligence and fundamentals, through technical research and development, to low-level technical deployment. The result of this research effort has been a long-standing and influential program that provides unbiased and information-rich guidance to utility participants and others and has guided many key EV technologies and systems to commercial adoption.

EPRI research in electric transportation yields data and knowledge beneficial to members of the program. EPRI's products and services are delivered in a variety of ways and generally include the following:

- Facilitated collaboration between the utility industry and major automotive manufacturers, EV infrastructure equipment suppliers, infrastructure operators, and public agencies.
- Analysis of the impacts of EV charging to utility grid systems through laboratory testing and other means.

- Utility-specific analyses of EV market potential, EV-specific load shape and requirements, customer expectations, infrastructure requirements, and informational materials to support utility-internal EV-readiness programs.
- Testing and evaluation of EVs and EV charging equipment, including data collection and analysis of real-world EV operation in utility fleet and other applications.
- Major vehicle and infrastructure demonstration initiatives to collect and analyze real-world operating data on the latest vehicle and infrastructure technologies.
- Development of advanced charging technologies that enable smart integration of EVs into the grid.
- Expanding commercial and industrial electric non-road transport applications and markets through field demonstration, technology development, and assessment.
- Validation of the economic and environmental benefits of EVs to utilities, utility customers, and their communities.

2.2.2 EPRI PROGRAM 199: ELECTRIFICATION

Evergy continues its participation in this EPRI research program. This program is focused on the application of novel, energy-efficient electric technologies as alternatives to fossil-fueled or non-energized processes that can boost customer productivity and also enhance utilities quality of service to their customers. Electricity offers inherent advantages of controllability, precision, versatility, efficiency, and environmental benefits compared to fossil-fueled alternatives in many applications. A lack of familiarity and experience with emerging technologies, however, impedes many enterprises, particularly small- to medium-sized businesses and civil institutions, from pursuing electrification measures that can improve the productivity and efficiency of operations. Identifying and measuring the prime opportunities for electrification in a given service territory can be difficult. This research program aims to address this challenge by developing and refining analytical tools and a knowledge base of technologies, applications, and markets, and

facilitating stakeholder networks to help utilities evaluate and pursue electrification opportunities.

2.3 MEEIA CYCLE 3 RESEARCH & PILOT INITIATIVES

Evergy is embarking with a handful or more of research and pilot initiatives as part of the approved funding associated with the Evergy MEEIA Cycle 3 demand side management programs.

2.3.1 PAYS®

Evergy PAYS® residential pilot program will be launched in response to the Amended Report and Order from the Public Service Commission on April 10, 2020. The Pay as You Save® pilot will provide eligible Missouri residential customers with the direct installation of energy efficient measures without the burden of upfront cost, a common obstacle to participating in energy efficiency programs. The 12 month pilot will explore the feasibility of a PAYS® program in the Evergy Missouri West and Missouri Metro jurisdictions. The pilot will enable Evergy to understand customer experience and overall satisfaction with the program, to assess valued savings, marking potential and impacts to utility financials and program cost-effectiveness. Pay as You Save® is a trademarked program developed by the Energy Efficiency Institute (EEI). The program allows for building owners and tenants to install energy efficient measures with no upfront payment or debt obligation. The utility recovers its cost through a Tariff tied to the utility bill, but repayment must be less than the estimated savings.

2.3.2 PRODUCTS AND SERVICES INCUBATOR (PSI)

Products and Services Incubator (PSI) program is intended to capture and research ideas as well as design and test new and experimental programs/measures. ICF (the implementor) manages the Incubator, which will serve in the identification, scoring, and scoping of a pipeline of concepts, measures, and programs. ICF provides subject matter expertise, support, and research for design ideas. The PSI process supports both emerging technologies and new program delivery strategies. The process begins with an assessment of the current residential and commercial portfolio's needs, and the

incorporation of key Evergy stakeholder inputs to bring the perspective and vision needed to establish a pipeline of pilots that will sustain the portfolio into the future.

The process includes three stages.

Stage 1: Identify – The identify stage is about ideation and determining a minimum viable product. This is a collaborative step in the process obtaining ideas from a wide variety of sources. The following are some tactics we will employ to stay informed of the latest industry trends, challenges, and research:

- Assessing the current portfolio
- Sharing knowledge
- Conducting workshops
- Hosting meetings
- Taking in ideas
- Conducting research
- Maintaining the idea repository
- Scoring ideas
- Assigning and tracking Program Readiness Levels (PRL)

Stage 2: Validate – Evergy and ICF will work together to validate concepts after receiving a green light in the identify stage. If required, business cases will be completed after an idea's viability has been assessed and the concept program's design has been approved. A solid pipeline of ideas and input from Evergy stakeholders is crucial to the process to ensure the pipeline of ideas continues to fuel the validate stage. The validate stage takes the idea from concept to a decision for integration by:

- Assessing viability
- Designing individual pilots
- Developing business cases if needed

- Launching and implementing pilots

Stage 3: Integrate – The integrate stage takes the concept to program by:

- Reviewing
- Knowledge and Infrastructure transfer
- Launch program

Program Readiness Levels (PRLs):

Similar to technology readiness levels used by the DOE and Department of Defense, PRLs indicate where ideas and technology stand in the process. The pilot process also includes opportunities to accelerate ideas based on portfolio and business needs. PRLs will be applied to every idea and technology in the pipeline and include:

PRL 0 – Idea is scored (see Scoring Methodology below),

PRL 1 – Viability Assessments and Comparison

PRL 2 – Pilot Design

PRL 3 – Scope Development, Finalize Design

PRL 4 – Establish Plan and Metrics

PRL 5 – Pilot Launch and Review

PRL 6 – Transfer to Program

Scoring Methodology :

The concept scoring methodology for ideas is a weighted criterion based on the utility's portfolio and business needs. Each pilot concept is scored by measuring them against the criteria. The considerations standardize the scoring by making qualitative data quantifiable. Weights can be changed at any time based on business needs and each concept is scored on a scale from 1 to 10. One is the worst, 10 is the best and 5 is average.

2.3.3 MEEIA CYCLE 3 - PROGRAM YEAR 1 PILOTS

The following section summarizes pilots that launched (PRL 5) in PY1 2020 and are continuing evaluation throughout PY2 2021.

Energy Efficiency for Non-Profits (EENP)

The Energy-Efficiency for Non-Profits (EENP) Pilot targets Evergy commercial or residential customers, specifically nonprofit, 501(c)(3) organizations, that primarily provide lodging and social services to low-income, homeless, and/or at-risk populations. The objective of this pilot is to remove participation barriers for this customer segment, through a simple and streamlined process.

The pilot will test the program's viability for a full-scale offering and inform the design for implementation of a large-scale rollout to commercial customers. The pilot will evaluate the following research questions:

1. What are the upgrade opportunities at these facilities?
2. What is the average savings and rebate level of a completed project?
3. What is the average cost of a completed project?
4. What factors lead to customers successfully completing projects?
5. Is this program design and incentive structure more effective, in terms of savings and participation, than current C&I program offerings?
6. Does the program change customers' perceptions of EVERGY?

The pilot provides awareness of energy efficiency opportunities by offering free walk-thru energy assessments, increased Business Standard rebate incentives, and a free Direct Install services which can include the following; free installation of low-flow water showerheads and aerators, advanced power strips, and pipe insulation for Domestic Hot Water Heaters, free common area lighting upgrades to LED, free HVAC tune-ups for eligible equipment, and free insulation and air sealing services if applicable.

Since launch in September of 2020, the pilot has provided nine walkthrough energy assessments for eligible non-profit customers. These walkthroughs have resulted in one paid rebate for an HVAC equipment upgrade, two completed Direct Installs, and five Direct Installs currently in process. Although still in evaluation phase, this pilot has experienced barriers with customers not taking advantage of increased rebate offerings due to budget constraints and the non-profits complicated grant and financing structure. Additional feedback from customers has suggested even larger rebates would be necessary for organizations to move forward with equipment replacements. However, the pilot has experienced immense interest in the free Direct Install services with 100% of the customers receiving walk-thru assessments moving forward with Direct Install services. Specifically, upgrading exterior and interior lighting has proven to be a primary need for the customers that have participated thus far. Overall, this pilot will continue throughout 2021 until a sufficient sample size of participating customers has been reached.

HVAC Quality Install (QI)

The HVAC Quality Install (QI) Pilot targets contractors (Trade Allies) that work throughout the Evergy service territory, with a focus on those who already have implemented Measure Quick technology within their business practice. Using Measure Quick (MQ) technology, Trade Allies will be able to quickly test, document and verify that a true quality installation has been performed on a newly installed HVAC system, but with a lesser level of effort. The MQ system automatically collects data and reports findings about the operation of the system to the trade ally technician. They will be able to address any issues the diagnostic system identifies and then send the final installation data directly to Evergy via Measure Quick. This data will confirm the equipment was installed and running at “quality installation” standards with a relatively minimum effort in comparison to other manual processes. The HVAC QI pilot provides Trade Allies an incentive to perform this deeper retrofit benefiting both the program and the customer with higher modeled energy savings and a more efficient HVAC system with a longer lifespan.

The pilot will test the program's viability for a full-scale offering and inform the design for implementation into existing MEEIA residential HVAC programs. The pilot will evaluate and test the design as follows:

1. Perform an HVAC QI on up to 200 HVAC units
2. Determine what datapoints can be collected with reasonable effort and meet QI standards
3. Compensate TAs with $50 for each QI retrofit performed
4. Analyze the values and findings to ensure it all qualifies as a true "quality install"
5. Identify Best practices should the concept be selected for program integration

Overall, the pilot will help determine the extra level of effort required during the installation, as well as the level of incentive dollars needed to make the deeper retrofit valuable enough for the Trade Ally to perform regularly.

The QI pilot launched in September of 2020 and identified and train four trade allies that currently use Measure Quick within their business practice. The pilot was able to perform a total of six projects before the end of the cooling season, which was enough to beta test the work flows and identify any data transfer problems before pilot relaunch at the start of the 2021 cooling season. The pilot will continue throughout 2021 with the goal to complete 200 QI's before the start of the next heating season in 2021.

KC – Low-Income Leadership Assistance Collaborative (LILAC)

Evergy has identified a gap in connection and collaboration amongst local low-income support channels in the KC area, in which we desire to fill; this is the premise for KC-LILAC. Specifically, as it relates to three different, but interconnected, home components, including: energy efficiency, health, and structural integrity. This pilot is designed to bring local support resources / agencies / associations / corporations together to offer the best and most comprehensive experience for this area's low-income customers.

The pilot will research, identify, and coordinate a local collaborative group. This collaborative will provide a safe platform where members can share what they have to offer, and network with the other members to create a better, more widespread understanding of what is available. The primary objective for this collaborative is to create a more wholistic support approach for the KC low-income residents focusing on Energy Efficiency, Healthy Homes, and Structural Repairs/Integrity.

The pilot met with various groups in November of 2020 to discuss numerous program offerings and identify resources available to the low-income community. As a result, the collaborative group identified key stakeholders from local organizations that are eager to participate as members of the collaborative. So far, collaborative members include representatives from Evergy, Spire, Elevate Energy, Metropolitan Energy Center, Children's Mercy Hospital, Bridging the Gap, KC Water Department, Westside Housing, and representatives from the Missouri Public Service Commission. The collaborative group met again in January of 2021 to discuss marketing strategies and next steps for the initiative. The pilot will continue throughout 2021 and will likely be incorporated as an continuing initiative in future program years.

2.3.4 MEEIA CYCLE 3 - PROGRAM YEAR 2 PILOTS

The following section summarizes pilots that are designing to launch (PRL 3 & 4) in Quarter 2 of PY2 2021.

Market-Rate Multi-Family Pilot

The Market-Rate Multi-Family Pilot will target building owners, property managers, and landlords of Market Rate Multi-Family apartments across the Evergy service territory and provide energy efficiency retrofit rebates and services. Currently, the tenants, building owners, property managers, and landlords of this multi-family segment are unable to take advantage of available rebates due to current MEEIA program restrictions and eligibility requirements. Specifically, to participate in the existing Business Standard or Custom Rebate program eligibility restrictions require customers to fall under the commercial rate class and be a master metered property to qualify. This restriction typically eliminates

Market-Rate tenant units from participating in any Business Rebate offerings as tenant units typically fall under a Residential rate code. Likewise, Market-Rate units would not be eligible for existing Single-Family Residential or Income-Eligible Multi-Family rebate offerings due to various eligibility restrictions. With this gap of customers not currently being served, it provides a need for a Market-Rate Multi-Family rebate program for properties that fall under the above criteria.

The pilot will provide Market-Rate Multi-Family customers with rebates for equipment retrofits for measures including heat pumps, air conditioners, clothes washers, refrigerators, and more for their tenant units. Additionally, the program will offer, Direct Install for the tenant units which will include LED Lighting, Low-Flow Water Products, and Smart Power strips. The pilot is currently finalizing design and incentive structures and scheduled to launch in Quarter 2 of PY2 2021 and run throughout the remainder of 2021 and likely into 2022.

Income-Eligible Multi-Family Commercial Laundry

The Income-Eligible Multi-Family Commercial Laundry Pilot will target low-income multifamily property managers and building owners who lease or own commercial washing machines and provide incentives to upgrade to high efficiency ENERGY STAR equipment. Currently, the Income-Eligible Multi-Family program does not specifically offer incentives for multifamily properties that lease or own commercial laundry equipment. However, within Evergy's service territory a significant portion of multifamily and affordable housing providers offer common area laundry facilities for residents. Property Managers and Owners often lease laundry equipment and provide common area laundry facilities for three reasons; utilizing a route operator allows properties to focus on property management and not worry about laundry services or maintenance, providing in-unit washer and dryers can often lead to more maintenance issues (i.e. water damage), and some common area laundry rooms can generate extra income for properties.

Specifically, this pilot will offer rebates for commercial washing machines, as EnergyStar does not label commercial clothes dryers at this time. Overall rebate amounts can be offered based on the facilities water and dryer heating fuel type, where larger rebates are

provided for all electric properties. However, rebates can also be offered at one flat standard incentive, regardless of water and dryer heating fuel type. With this pilot design, Evergy will provide a specific segment of Income-Eligible Multi-Family customers that lease or own commercial laundry equipment, with retrofit rebates that are currently not available through existing DSM programs. The pilot will test the program's viability for a full-scale offering and inform the design for implementation into the existing income-eligible multi-family program. The pilot is currently finalizing design and incentive structures and scheduled to launch in Quarter 2 of PY2 2021 and run throughout the remainder of 2021 and likely into 2022.

2.3.5 ONLINE MARKET PLACE

The Online Marketplace pilot will test the implementation of an eCommerce platform for utility customers to purchase energy efficiency products and services, enroll in programs, receive instant validation for program eligibility, and have access to advisory tools to enhance their purchase decisions. Utility marketplaces can deliver benefits that go beyond meeting savings targets and achieving earnings opportunity goals. Utilities with an eCommerce platform gain increased brand awareness and higher customer satisfaction; and after engaging with a utility marketplace, customers are more likely to participate in additional utility programs and offerings. In the current Covid-19 environment, an online marketplace becomes even more important as a channel because it puts people first–mitigating risk to customers and programs teams–as we are making the conscious decision to be safe at home.

The Online Marketplace pilot is planned to be rolled out in a two phased approach. The Phase One design would include select, incentivized energy efficiency products that are currently approved under MEEIA Cycle 3; including LED bulbs, smart thermostats and items from the Energy Savings Kit, which can be offered both individually and as a bundle. A Phase Two marketplace could see the inclusion of additional products and services not currently approved as part of MEEIA programs and will require a roundtable workshop to narrow the scope of offerings.

The Online Marketplace Business case was completed in September of 2020 and outlined a Phase One and Phase Two marketplace design. The Marketplace Pilot submitted a Request for Quotes for the launch of the Phase 1 products focused marketplace in Q1, 2021. The RFQ responses were due by January 29th, 2021. All submitted RFQ responses will be reviewed and a Marketplace Vendor will be selected.

2.3.6 PILOTS IN RESEARCH PHASE

The following section lists pilots that are in the Research Phase (PRL 1) for potential launch in future program years.

- Appliance Recycling
- Small Business Virtual Energy Manager
- Smart Home Options
- Zero Net Energy New Construction Homes for Low-Income
- Virtual Commissioning
- Power Check Device
- Battery Storage

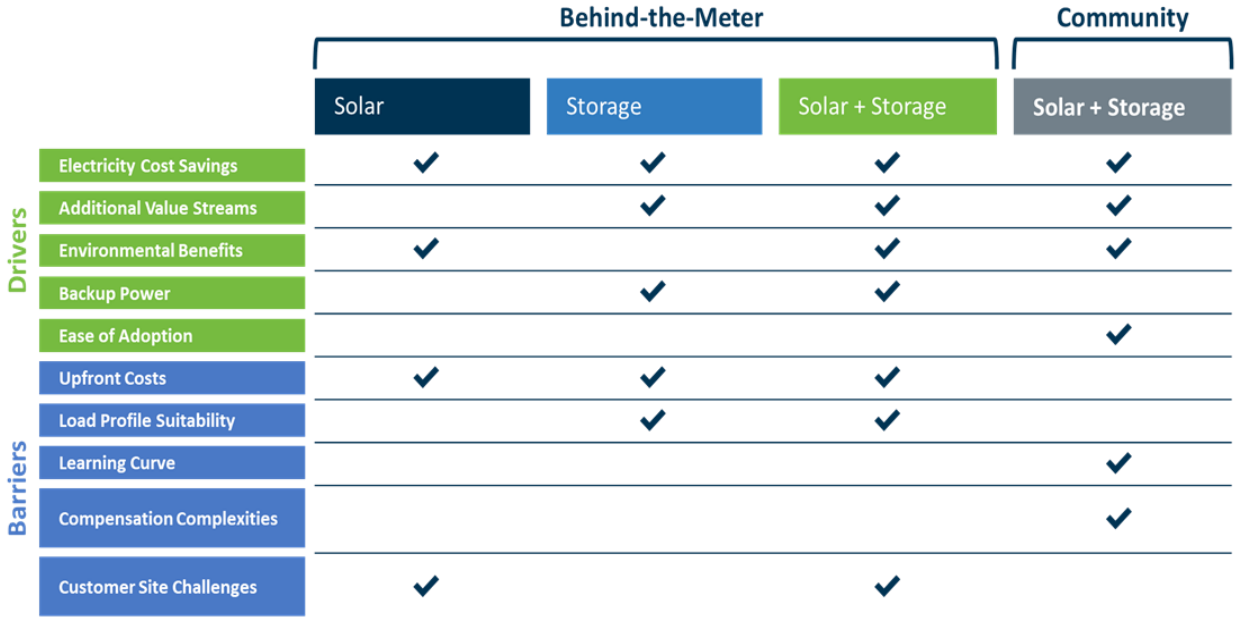
2.4 BTM DER POTENTIAL STUDY

Evergy recently conducted a Behind the Meter (BTM) Potential Study to gain insights on the adoption of Distributed Energy Resources (DER). The study provided a supplement to the Company's awareness of existing solar adoption known through the solar rebate program.

A Forecast Summary was developed to report on both the current penetration rates and future potential within Evergy's service territories and when that adoption might occur. It is divided into two parts:

- Technology Inventory: Evergy identified and analyzed the key BTM solar and storage technologies, including customer drivers and barriers, utility best practices, and forward-looking trends. Figure 2 shows the technology overview.

Figure 2 Technology Overview



- 30-Year Forecast: Evergy conducted 30-year forecasts of three adoption Scenarios (Low, Mid, and High) for four technologies/technology combinations, each of which was performed for each of the four Evergy service territories and for three different customer classes (residential, commercial, and industrial) within them. This resulted in 144 discrete output combinations (e.g., high adoption of community solar + storage among residential customers in Kansas Metro) for each of the 30 years in question, which were then recombined in various ways to analyze the results. Figure 3 shows the approach and parameters utilized and Figure 4 shows the scenarios analyzed in this study.

Figure 3 Approach and Parameters

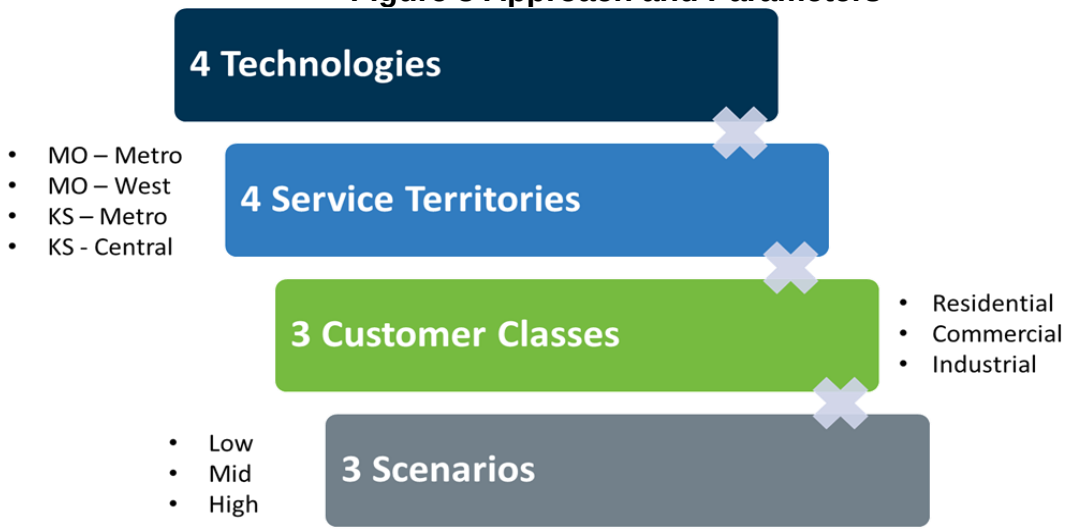


Figure 4 Scenarios Analyzed

	Low	Mid	High
Adoption Curve	*Slow* adoption curve	*Moderate* adoption curve based on similar trends nationwide	*Aggressive* adoption curve, but capped below leading markets
	NREL ATB 2020 *Conservative* forecast	NREL ATB 2020 *Moderate* forecast	NREL ATB 2020 *Advanced* forecast
Tariffs / Rates	EAAGS Scenario 6 (*High Load, Low Gas, No CO2 Restrictions*)	EAAGS "Expected Value"	EAAGS Scenario 15 (*Low Load, Mid Gas, with CO2 Restrictions*)
	No new or extended incentives included	*No* new or extended incentives included	*No* new or extended incentives included

Forecast Summary

The section below summarizes the modeled outputs, summarized on a consolidated basis by service territory and then organized by each technology combinations. The forecast summaries for each Evergy Missouri West is shown in Table 4.

Table 4 Missouri West Forecast Summary (kW Capacity)

		Low		Mid		High	
		PV	Storage	PV	Storage	PV	Storage
2025	BTM PV	77,341		100,640		115,097	
	BTM Storage		348		1,776		2,720
	BTM PV + Storage	-	-	600	515	1,690	1,487
	Adjustment for BTM Forecast Overlap	-	-	(600)	(52)	(1,465)	(161)
	Community Solar + Storage	1,300	165	3,725	484	7,125	994
	Totals	**78,641**	**513**	**104,365**	**2,724**	**122,447**	**5,040**
2035	BTM PV	128,291		106,290		261,728	
	BTM Storage		4,074		26,474		78,954
	BTM PV + Storage	429	369	7,866	7,252	24,856	23,688
	Adjustment for BTM Forecast Overlap	(429)	(37)	(4,711)	(900)	(9,948)	(3,197)
	Community Solar + Storage	10,920	3,773	36,675	12,840	96,425	33,896
	Totals	**139,211**	**8,179**	**146,120**	**45,666**	**373,061**	**133,341**
2050	BTM PV	187,304		172,516		406,836	
	BTM Storage		6,527		61,100		201,985
	BTM PV + Storage	1,402	1,205	19,864	17,975	57,812	54,438
	Adjustment for BTM Forecast Overlap	(1,402)	(120)	(14,055)	(2,120)	(27,338)	(7,137)
	Community Solar + Storage	13,770	5,483	58,175	25,740	156,825	66,458
	Totals	**201,074**	**13,094**	**236,500**	**102,695**	**594,135**	**315,744**

The Evergy 2020 BTM Solar & Storage Potential Study can be found in Appendix 5G.

SECTION 3: DEVELOPMENT OF POTENTIAL DEMAND-SIDE PROGRAMS

(3) The utility shall develop potential demand-side programs that are designed to deliver an appropriate selection of end-use measures to each market segment. The utility shall describe and document its potential demand-side program planning and design process which shall include at least the following activities and elements: —

3.1 POTENTIAL STUDY ESTIMATE PROCESS

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study completed in 2020. The energy efficiency potential estimates represent net savings[1] developed into several levels of potential. The potential study calculated five types of potential:

- Technical Potential: Theoretical upper limit of energy efficiency potential, assuming that customers adopt all feasible measures regardless of cost or customer preference. At the time of existing equipment failure, customers replace their equipment with the most efficient option available. In new construction, customers and developers also choose the most efficient equipment option.

- Economic Potential: is the cost-effective subset of technical potential. An initial economic screening process based on the Total Resource Cost (TRC) test was used to assess cost-effectiveness and filter out any measures with a benefit-cost ratio below one. For measures that were not cost-effective on a TRC basis, a second level screening was conducted using the Utility Cost Test (UCT). If the measure had a UCT of one or greater, the measure was included in the economic potential..

[1] "Net" savings mean that the baseline forecast includes naturally occurring efficiency. In other words, the baseline assumes that energy efficiency levels reflect that some customers are already purchasing the more efficient option.

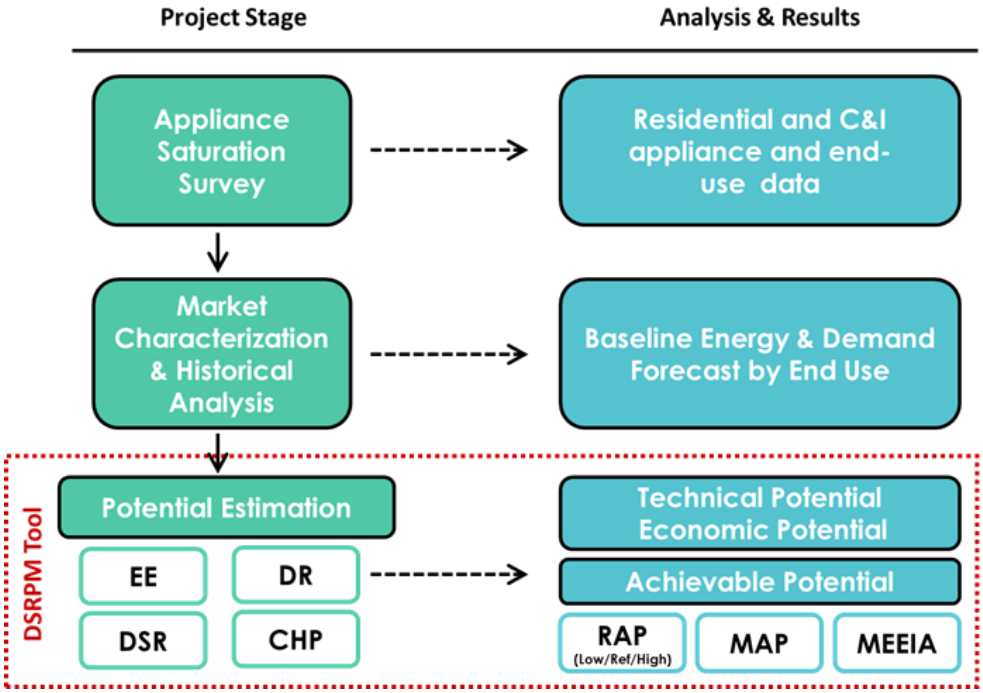
- Maximum Achievable Potential (MAP): is a theoretical scenario where all customer incentives are set to 100% of measure incremental costs. The cost-effectiveness threshold is at the sector level. This would give Evergy more flexibility to adjust programs to meet overall savings targets. Emerging technologies are also added in MAP.

- Realistic Achievable Potential (RAP): is the reference case forecast and the basis of all other achievable scenarios. It reflects a world in which Evergy continues only operating its current energy efficiency programs without substantial changes. As with all scenarios, RAP accounts for known state and Federal updates to minimum energy performance standards (MEPS) for lighting and appliances as well as energy performance standards for new buildings and major retrofits. In the RAP- scenario, Evergy continues operating only its current programs, but savings levels are lower than what Evergy historically achieved. Similarly, in RAP+ current programs achieve higher savings levels than they did historically

- Missouri Energy Efficiency Investment Act (MEEIA): is designed to meet the MEEIA (20 CSR 4240-20.094(2)). New economic measures are added to current programs, and where possible the performance of current programs is increased above RAP+ levels based on benchmarking and ICF expert input. Additionally, entire new programs are added.

The analysis consisted of stages: survey of appliance saturation, market characterization and load forecast, and potential estimation for energy efficiency, demand response, demand-side rates, and combined heat and power programs. An overview of the project flow and the corresponding outcomes at each stage is shown in Figure 5 below.

Figure 5: Overall analysis flowchart



A number of analytical steps were taken to produce the potential estimates.[2]

3.1.1 STEP 1. MARKET CHARACTERIZATION

In order to estimate the savings potential from energy-efficient measures, it is necessary to understand how much energy is used today and what equipment is currently being used. The characterization begins with a segmentation of Evergy Missouri West's electricity footprint to quantify energy use by sector, segment, end-use application, and the current set of technologies used. Table 5 illustrates Evergy Missouri West's electricity footprint segmentation.

[2] See the Evergy 2020 DSM Potential Study for the full report.

Table 5: Overview of Evergy Missouri West Analysis Segmentation Scheme

Dimension	Segmentation Variables	Description
1	Sector	Residential, Commercial, and Industrial
2	Segment	*Residential*: Single Family and Multifamily, Single Family Low Income and Multifamily Low Income *Commercial*: Small Office, Large Office, Restaurant, Retail, Grocery, College, School, Healthcare, Lodging, Warehouse, Data Center, Miscellaneous *Industrial*: Food Production, Chemicals & Pharmaceuticals, Transportation Equipment, Electronic Equipment, Stone-clay-and-glass, Primary Metals, Rubber & Plastics, Other Industrial
3	Vintage	Existing and New Construction
4	End uses	Cooling, Heating, Lighting, Water heat, motors, etc. (as appropriate by sector)
5	Appliances/technologies	Lamp type, air conditioning equipment, motors by application, etc.
6	Equipment efficiency levels for new purchases	Baseline and higher-efficiency options as appropriate for each technology

With the segmentation scheme defined, ICF then performed a high-level market characterization of electricity sales in the base year (2019) to allocate sales to each customer segment. ICF used Evergy Missouri West billing and customer data, residential and non-residential customer surveys, and secondary sources to allocate energy use and customers to the various sectors.

3.1.2 STEP 2. DEVELOP BASELINE PROJECTION

Baseline Projection

ICF developed a baseline projection of annual electricity use for each segment from 2023 through 2042. This baseline projection assumes the status quo and as such, does not include any energy efficiency nor other utility programs. The projection was developed using the baseline market characterization and several inputs, including:

- Customer growth forecasts provided by Evergy;
- Population, income per capita, and electricity price growth forecasts from EIA AEO 2019; and

- Projected changes in equipment saturations and efficiencies from EIA.

3.1.3 STEP 3. DEFINE AND CHARACTERIZE ENERGY EFFICIENCY RESOURCES

A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to including the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. This includes Energy Recovery Ventilator, Data Center Air Flow Management, Efficient UPS, Modular Data Center and Web-Enabled Power Monitoring for Small and Medium-Sized Business.

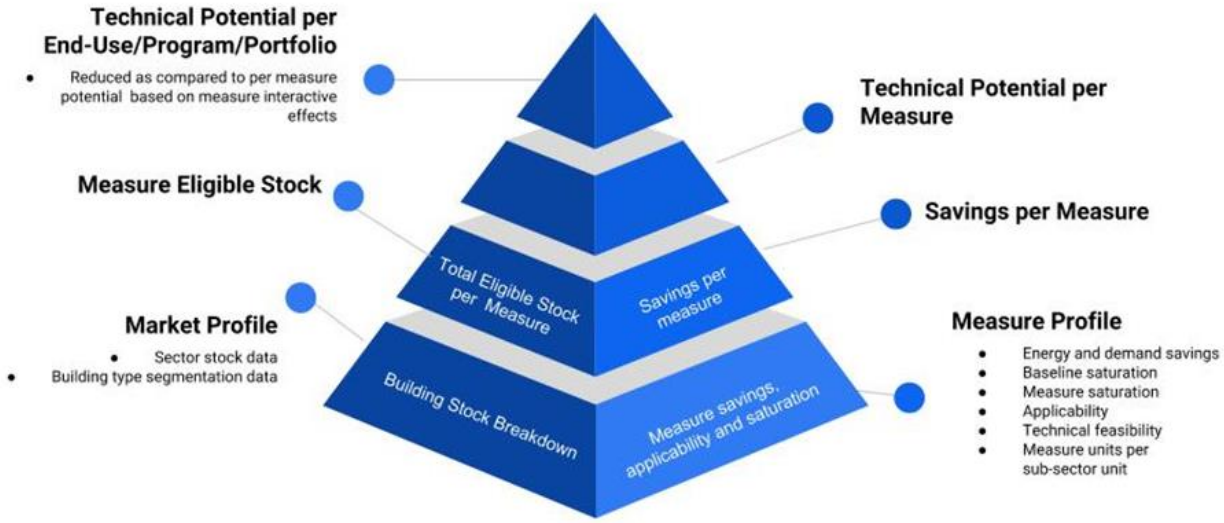
3.1.4 STEP 4. ESTIMATE TECHNICAL AND ECONOMIC POTENTIAL

Technical potential is the level of energy and demand savings that would result from installing the most technically efficient measures available for each end-use, regardless of cost. It is the upper bound of how much could theoretically be saved.

To calculate technical potential, ICF used its Demand Side Resource Potential Model (DSRPM). This R-based model applies an industry-standard, bottom-up approach to estimate DSM potential based on stock turnover. Built upon the principles outlined by the National Action Plan for Energy Efficiency, the model enables detailed accounting of savings and costs by program, sector, building type, and end use. DSRPM is a measure-based model. Therefore, the first step in estimating technical potential was to input the measure database constructed in the previous phase of the analysis into the model. For ease of modeling and reporting, separate models were constructed for each sector: residential, commercial, and industrial. The potential study was also segmented into the two territories outlined by Evergy—Missouri Metro and Missouri West, resulting in a total of 6 models for the study.

As a stock-based turnover model, DSRPM uses a combination of savings per measure unit and total number of measure units, or total eligible stock, to quantify technical potential, as shown in Figure 6.

Figure 6: DSRPM methodology for calculating measure technical potential based on savings per measure and total eligible stock



After inputting the measure characteristic data into DSRPM, the next step was to calculate the eligible stock for each measure. This requires a combination of measure-specific data, such as baseline and efficient measure saturation, as well as market-specific data, such as the total number of households. The measure-specific applicability and saturation variables are part of the measure database, whereas the additional utility territory specific variables are taken from the results of the market characterization study.

Economic potential is the cost-effective subset of technical potential. An initial economic screening process based on the Total Resource Cost (TRC) test was used to assess cost-effectiveness and filter out any measures with a benefit-cost ration below one. For measures that were not cost-effective on a TRC basis, a second level screening was conducted using the Utility Cost Test (UCT). If the measure had a UCT of one or greater, the measure was included in the economic potential.

Each economic potential estimate was based on the most efficient, cost-effective measure available for a given baseline opportunity. Exceptions to this rule were made for two measure types: low-income measures and measures within general education programs. This is because neither of these programs are subject to cost-effectiveness screening per Missouri Electric Utility Resource Planning regulations.[3]

3.1.5 STEP 5. ESTIMATE ACHIEVABLE POTENTIAL

The program-level potential was developed by considering and bundling the measure-level analysis–energy efficiency, demand response, demand-side rates, and combined heat and power–in an integrated and holistic manner to ascertain the total potential savings, costs, and delivery structure of an actual and realizable portfolio of DSM resources. Program potential is defined as the portion of the potential that might be reasonably achieved given the realities of implementation and the constraints of program resources. It is a subset of measure-level achievable potential that is aligned with recent program accomplishments, available future budget, and long-term strategic goals.

ICF used program design, incentive structures, marketing approaches, budgets, and levels of staffing from field experience to refine delivery assumptions and participation rates to a level that can be accomplished given Evergy Missouri West's current DSM programs; and also to reflect the ramp-up time necessary for new initiatives. Incentive amounts and administrative budgets are associated with continuing Evergy Missouri West's current program momentum as well as launching new initiatives into the marketplace. ICF developed these assumptions based on discussions with Evergy staff, review of existing program data, and ICF program benchmarking research.

The achievable energy efficiency potential analysis was conducted using both bottom-up and top-down approaches. The approach varied by scenario; each scenario is described below. The process for identifying programs to include in the analysis was based on Missouri electric utility resource planning rules and Missouri Energy Efficiency Investment Act (MEEIA) implementing rules. The programs identified were evaluated for cost

[3] Missouri Energy Efficiency Investment Act (MEEIA) (4 CSR 240-20.094 subsections (3)(A)4., (4)(J), and (6)(B)) https://s1.sos.mo.gov/cmsimages/adrules/csr/current/4csr/4c240-20.pdf

effectiveness pursuant to the Missouri IRP rules, 20 CSR 4240-22.050(5) and Missouri demand-side programs, 4 CSR240-20.094(4)(C). Table 6 outlines the parameters of each energy efficiency achievable scenarios.

Table 6: Achievable Energy Efficiency Potential Scenarios

Variable/Scenario	Realistic Achievable Potential (RAP)	RAP (-)	RAP (+)	MEEIA	Max Achievable Potential (MAP)
Annual EE resource standard (% of sales)	NA	NA	NA	1.90%	1.90%
Primary BC test	TRC	TRC	TRC	TRC	TRC
Cost-effectiveness threshold	Program	Program	Program	Program	Sector-level Portfolio
Discount rate	WACC	WACC	WACC	WACC	WACC
Avoided costs	All direct utility benefits	All direct utility benefits	All direct utility benefits	All direct utility benefits	All direct utility benefits
Non-energy benefits*	Yes	Yes	Yes	Yes	Yes
Programs included	Current	Current	Current	Expanded current + new	Expanded current + new + emerging tech
Program costs	Current	< Current (varies by program)	> Current (varies by program)	> RAP(+) (varies by program)	100% of incremental

*Non-energy benefits (NEBs) include (1) Avoided probable environmental compliance costs (2) Water, wastewater, and gas (3) Other confidently quantifiable NEBs (e.g., avoided O&M costs). The NEBs are only included in the Societal Cost Test (SCT).

The achievable demand response potential applies expected participation levels to economic potential. Participation curves are developed as industry-standard bass diffusion curves, and ICF developed the expected ramp rate and steady-state participation levels. While the ramp rates are based on existing trends for current programs, ICF used program implementation experience to develop the rates for new programs. The steady-state participation levels are outcomes of research into various potential studies for new programs, EM&V reports for well-established programs, and ICF expert opinion. Table 7 provides a high level summary of the parameters across the scenarios.

Table 7: Achievable Demand Response Potential Scenarios

Variable/Scenario	Realistic Achievable Potential (RAP)	RAP (-)	RAP (+)	MEEIA Goals	Max Achievable Potential (MAP)	Stand-Alone
Primary BC test	TRC	TRC	TRC	TRC	TRC	TRC
Cost-effectiveness threshold	Program	Program	Program	Program	Portfolio	Program
Programs included	RAP Programs	RAP Programs	RAP Programs	MAP Programs	MAP Programs	MAP Programs
Participation Curve	Medium	Low	High	High	Aggressive	Aggressive

3.2 PREVIOUSLY IMPLEMENTED DEMAND-SIDE PROGRAMS FROM OTHER UTILITIES

***(A) Review demand-side programs that have been implemented by other utilities with similar characteristics and identify programs that would be applicable for the utility*; —**

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. ICF conducted a benchmarking assessment of input assumptions and analysis results to ensure the potential estimates developed were reasonable and appropriate.

The assessment included a review of the studies of various utilities such as Ameren and Entergy. In addition, ICF performed benchmarking analysis for program performance evaluation. A comprehensive Benchmarking Analysis of the utilities from ten states can be found in Appendix 5 section B.

3.3 MARKET SEGMENT IDENTIFICATION

(B) Identify, describe, and document market segments that are numerous and diverse enough to provide relatively complete coverage of the major classes and decision-makers identified in subsection (1)(A) and that are specifically defined to reflect the primary market imperfections that are common to the members of the market segment; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. ICF identified the market segments by categorizing billing and customer data, residential and non-residential customer surveys, and secondary sources to allocate energy use and

customers to the various sectors and segments such that the total customer count, energy consumption, and peak demand matched the system totals from the 2019 billing data. The market segments included:

- Residential: Single Family, Single Family Low-Income, Multi-family, Multi-family Low-Income
- Commercial: Small Office, Large Office, Restaurant, Retail, Grocery, College, School, Healthcare, Lodging, Warehouse, Data Center, Miscellaneous
- Industrial: Food Production, Chemicals & Pharmaceuticals, Transportation Equipment, Electronic Equipment, Stone-clay-and-glass, Primary Metals, Rubber & Plastics, Other Industrial

The total number of households and residential electricity sales for the service territory were obtained from Evergy Missouri West's customer database. Table 8 shows the Control Totals of Evergy Missouri West Residential sector.

Table 8: Evergy Missouri West Residential Sector Control Totals

Segment	Households	Electricity Sales (GWh)	% of Total Usage (kwh)	Avg. Use / Household (kwh)	Summer Peak (MW)	Winter Peak (MW)
Single Family	190,096	2,786	43%	14,655	629	407
Multifamily	50,059	599	9%	11,966	129	103
Single Family LI	22,207	229	4%	10,327	52	34
Multifamily LI	24,382	195	3%	8,011	42	34
Total	**286,744**	**3,809**	**58%**	**44,959**	**852**	**578**

The commercial and industrial sectors were developed for Evergy Missouri's entire service territory, including Metro and West. With fewer survey completions than the residential sector and less anticipated heterogeneity among customers, ICF modeled the non-residential customers as a whole and made territory-specific calculations using pro-rata shares. Table 9 and Table 10 show the Control Totals of Evergy Missouri Commercial and Industrial sectors respectively

Table 9: Evergy Commercial Control Totals

Segment	Electricity Sales (GWh)	% of Total Usage	Avg. Use / Square Foot (kWh/SqFt)	Summer Peak Demand (MW)	Winter Peak Demand (MW)
Small Office	230	3%	11.6	95	94
Large Office	947	12%	18.2	22	27
Restaurant	336	4%	55.6	57	34
Retail	1,341	17%	9.8	240	158
Grocery	374	5%	21.1	54	39
School	1,194	15%	13.7	183	163
College	127	2%	8.2	19	17
Healthcare	880	11%	8.2	99	84
Lodging	218	3%	14.4	33	19
Data Center	306	4%	186.7[1]	30	27
Warehouse	122	2%	5.7	11	9
Miscellaneous	1,667	22%	12.3	340	240
Total	**7,743**		**14.0**	**1,183**	**911**

[1] Survey responses provided an estimated average electricity intensity of 10.3 kWh/SqFt for data centers; however, very few survey responses were from customers that self-classified as data centers. Instead, ICF relied on an average electricity use per square foot estimate from EnergyStar of 186.7 kWh/SqFt, retrieved from: https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/energy/pdf/benchmarking-rendement/DataCenter-US-and-Canada-EN-Feb2018.pdf

Table 10: Evergy Industrial Control Totals

Segment	Electricity Sales (GWh)	% of Total Usage	Summer Peak Demand (MW)	Winter Peak Demand (MW)
Food Production	432	16%	55	49
Chemicals and Pharmaceuticals	330	12%	42	37
Transportation Equipment	268	10%	34	30
Electronic Equipment	120	4%	15	14
Stone, Clay, Glass	104	4%	13	12
Primary Metals	115	4%	14	14
Rubber & Plastics	254	9%	32	28
Other Industrial	1,110	41%	140	125
Total	**2,733**		**345**	**309**

3.4 DEVELOPMENT OF END USE MEASURES

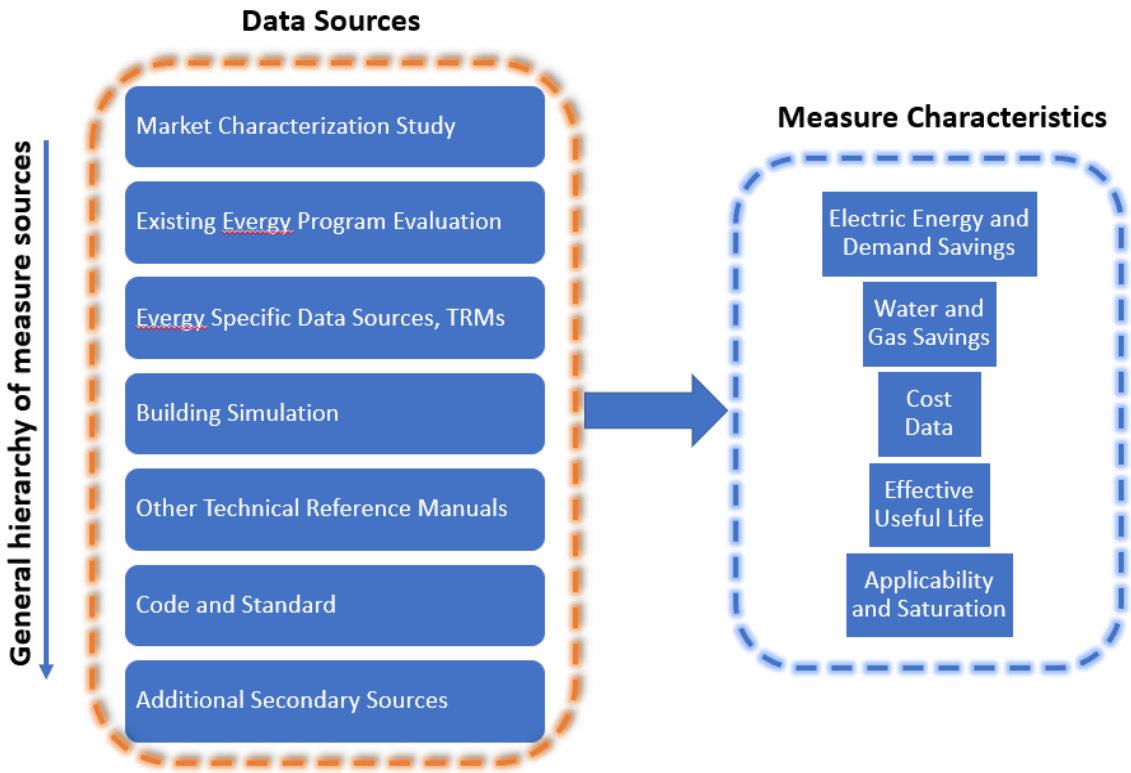
(C) Identify a comprehensive list of end-use measures and demand-side programs considered by the utility and develop menus of end-use measures for each demand-side program. The demand-side programs shall be appropriate to the shared characteristics of each market segment. The end-use measures shall reflect technological changes in end-uses that may be reasonably anticipated to occur during the planning horizon; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. ICF utilized a 3-pronged approach to create a comprehensive list of measures. That includes literature review of Missouri and Evergy specific sources, literature review of comparable state TRM and internal ICF measure database and consultation with program implementation leads from ICF. A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to including the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. The emerging technology assessment can be found in Appendix 3 section I-5. In addition, a full list of

Measure Assumptions for Residential, Commercial and Industrial sectors can been found in Appendix 5 section A.

Each measure was characterized with energy and demand savings, water and gas savings, incremental cost, effective useful life, and applicability and saturation. An economic screening was performed for each measure, which serves as the basis for developing the economic and achievable potential, utilizing the measure information along with Evergy's avoided cost data. Figure 7 represents ICF's energy efficiency measure assessment process.

Figure 7: Measure Assessment Process



3.5 ADVANCED METERING AND DISTRIBUTION ASSESSMENT

(D) Assess how advancements in metering and distribution technologies that may be reasonably anticipated to occur during the planning horizon affect the ability to implement or deliver potential demand-side programs; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. Advanced Metering Infrastructure (AMI) rollout in the entire Evergy Missouri West's service territory is complete. For the potential study, ICF assumed that AMI is fully available in all years of interest (2023-2042). Therefore, measures or programs relying on AMI meters will have no limitations with regards to metering infrastructure for the study period.

3.6 END-USE MEASURES MARKETING PLAN

(E) Design a marketing plan and delivery process to present the menu of end-use measures to the members of each market segment and to persuade decision-makers to implement as many of these measures as may be appropriate to their situation. When appropriate, consider multiple approaches such as rebates, financing, and direct installations for the same menu of end-use measures; —

The marketing and customer communication plan and delivery process will be designed to inform customers of the DSM programs, the benefits of each program and how they can participate in a program. The plan will include a combination of strategies to reach all market segments and decision-makers. The Evergy website content and functionality will be a crucial component of the marketing plan, as the website directs customers to information about the DSM programs.

A strategy will be developed to move customers along the marketing funnel from awareness to education to conversion to engagement. Key points of the strategy and ensuing marketing campaigns will be to:

1. Develop a set of campaigns driven by seasonal timeliness and opportunities during and immediately after customers' engagement with each product to generate leads for the portfolio, especially the priority programs.

2. Drive customers from awareness to conversion by matching campaign elements to customers' informational needs at various points within the marketing funnel. Continue supporting customers through the engagement portion of the funnel via cross-promotion.

3. Ensure planned campaigns remain flexible and responsive to shifts in program strategy, program performance or based on current unknowns becoming clearer, the need to balance costs versus participation through the year, and other unanticipated variables.

4. Implement analytics across all marketing tactics to measure responsiveness, make adjustments as needed to in-market items, and understand ROI.

5. Craft malleable and creative approaches for planned campaigns, preserving our ability to complement and roll up to new creative strategy that will be developed for the general awareness advertising campaign.

6. Engage Evergy employees through communications campaigns that will increase employee awareness of products so they can help tell our story to customers, and encourage participation among eligible employees.

Tactics that can help move customers to participation include the following:

- Evergy website content providing program information resources, contact information, and links to other relevant service and information resources.

- Digital channels (like Pandora, Hulu and Youtube).

- Search engine marketing, Google Ads, paid social, retargeting, email

- Program brochures or direct mail marketing that describe the benefits and features of the program.
- Bill inserts, on-bill messages and targeted email messages.
- Print and paid media advertisements.
- Direct customer outreach (e.g., Evergy customer representatives and/or an implementation contractor).
- Presence at conferences and public events used to increase general awareness of the program and distribute promotional materials.
- Partnerships with local contractors/businesses.
- Customized emails.

3.7 STATEWIDE MARKETING AND OUTREACH PROGRAM EVALUATION

***(F) Evaluate, describe, and document the feasibility, cost-reduction potential, and potential benefits of statewide marketing and outreach programs, joint programs with natural gas utilities, upstream market transformation programs, and other activities. In the event that statewide marketing and outreach programs are preferred, the utilities shall develop joint programs in consultation with the stakeholder group*; —**

Challenges definitely exist with an overall statewide marketing plan considering the variety of program offerings across the state and within service territories. Evergy Missouri West saw this in the degree of effort and diligence in MEEIA Cycle 1 and MEEIA Cycle 2 needed to properly educate customers and promote programs in the Missouri Metro territory vs. the Missouri West territory based on slightly different vintages of the programs. That being said, we continue to engage with peer utilities across the state at least once per year to identify opportunities with programs that are similar to evaluate the effectiveness in delivery.

Evergy has embarked on a demand side program co-delivery model with Spire for two of the MEEIA Cycle 3 programs. Both Evergy and Spire expect to see a reduced overall cost of administration of the programs by joint delivery. The resulting program is also planned to provide some additional boost to participation by allowing for multiple marketing channels and enhanced total rebate available.

An additional area of cooperation includes efforts Evergy has undertaken to market programs jointly run with outside organizations, such as non-profit organizations and state agencies.

Evergy also currently has engaged in upstream energy efficiency programming in both the residential lighting sector as well as for a couple commercial standard measures, pumps and nozzles. In the residential sector, midstream lighting (i.e. instant discount at retailer) has been effective for many years in driving customer demand for efficient lighting products. Evergy is deploying commercial midstream measures, and hope that with time

and market adoption those measures can become a strong contributor to the demand side management program portfolio.

3.8 COST-EFFECTIVENESS

(G)Estimate the characteristics needed for the twenty (20)-year planning horizon to assess the cost effectiveness of each potential demand-side program, including: —

3.8.1 STAND-ALONE DEMAND AND ENERGY REDUCTION IMPACTS

1. An assessment of the demand and energy reduction impacts of each stand-alone end-use measure contained in each potential demand-side program; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. ICF utilized a 3-pronged approach to create a comprehensive list of measures. That includes literature review of Missouri and Evergy specific sources, literature review of comparable state TRM and internal ICF measure database and consultation with program implementation leads from ICF. A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to including the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. The emerging technology assessment can be found in Appendix 3 section I-5. In addition, a full list of Measure Assumptions for Residential, Commercial and Industrial sectors can been found in Appendix 5 section A.

Each measure was characterized with energy and demand savings, water and gas savings, incremental cost, effective useful life, and applicability and saturation. An economic screening was performed for each measure, which serves as the basis for developing the economic and achievable potential, utilizing the measure information along with Evergy's avoided cost data.

3.8.2 IMPACT OF BUNDLING END-USE MEASURES

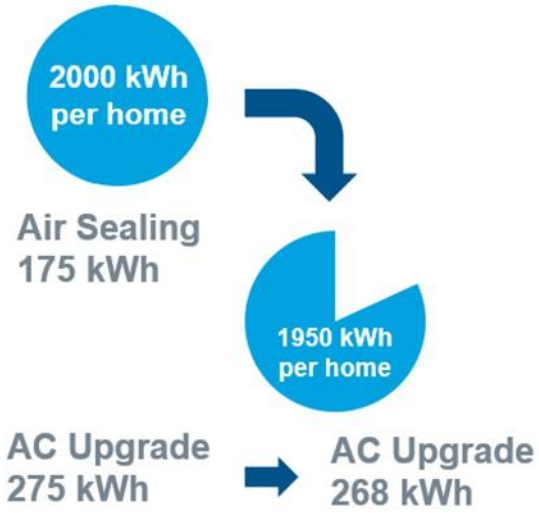
2. An assessment of how the interactions between end-use measures, when bundled with other end-use measures in the potential demand-side program, would affect the stand-alone end-use measure impact estimates; —

ICF accounted for the interactions between measure types within each resource type (EE, DR, and DSR), as well as between measure types across these categories. For instance, an air sealing measure will reduce the overall heating and cooling load of a building, which will impact the savings obtainable from the implementation of an efficient heat pump and the savings obtainable from an AC cycling DR program.

To account for these interactions, ICF implemented a cascading approach, in which savings from the first measure decrease the baseline end-use EUI for the next measure, and therefore, the savings opportunity for the next measure. ICF assumed an implementation hierarchy to allow for a straightforward cascade of impacts between measures. Figure 8 illustrates this concept and shows the order in which measures were assumed to be implemented. The order of the hierarchy was established with an explicit preference for long life measures that reduce building loads, such as envelope improvements, in accordance with the foundational principles of efficient building design. Next, more permanent long-life measures such as HVAC system upgrades were prioritized, followed by more easily removable equipment. The lowest priority energy efficiency measures were behavioral. Due to their single measure year lives and absence of lasting material impact to the physical building, DR and DSR are last in the hierarchy.

Figure 8 shows a cascading example for interaction between air sealing and air conditioner upgrade as well as the hierarchy of cascading factors for different measure types.

Figure 8: Cascading example for interaction between air sealing and AC upgrade & hierarchy of cascading factors for different measure types



Hierarchy Position	Measure Type
1	Envelope Upgrades
2	System Upgrades (such as HVAC)
3	Equipment Upgrades (such as motors, light fixtures, water heaters)
4	Removable Equipment Upgrades (such as clothes washers, refrigerators)
5	Easily removable/low cost equipment (light bulbs, plug loads)
6	Behavioral EE Measures
7	Demand Side Rates
8	Demand Response

3.8.3 CHANGE IN PARTICIPANTS AND INSTALLATIONS

3. An estimate of the incremental and cumulative number of program participants and end-use measure installations due to the potential demand-side program; —

An estimate of the potential DSM Program incremental and cumulative end-use measure installations and participants can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

3.8.4 DEMAND REDUCTION AND ENERGY SAVINGS

***4. For each year of the planning horizon, an estimate of the incremental and cumulative demand reduction and energy savings due to the potential demand-side program;* and —**

Table 11 below presents the incremental annualized energy savings due to the potential demand-side programs for Evergy Missouri West.

Table 11: Evergy Missouri West Incremental Energy Savings (MWH)

Year	RAP	RAP-	RAP+	MEEIA	MAP
2023	86,104	50,669	120,485	157,619	201,591
2024	76,025	44,970	96,448	127,293	130,638
2025	69,246	41,298	83,303	112,106	112,673
2026	64,743	38,715	75,696	102,068	102,766
2027	61,486	36,732	71,046	97,141	98,721
2028	58,783	34,952	67,700	97,493	101,457
2029	57,124	33,575	65,776	96,065	99,259
2030	55,748	32,356	64,409	94,232	97,279
2031	56,667	32,401	67,551	97,250	102,787
2032	56,756	32,242	67,317	96,136	100,267
2033	59,210	34,076	69,923	99,006	108,388
2034	59,795	33,374	71,474	102,602	110,667
2035	62,037	34,032	76,784	109,461	119,621
2036	62,712	34,430	76,799	108,420	114,245
2037	62,525	34,556	75,103	105,445	109,271
2038	61,921	34,538	73,078	103,485	108,049
2039	62,575	35,286	74,756	106,665	114,084
2040	62,590	35,566	74,100	106,379	112,433
2041	62,621	35,775	73,669	105,725	110,348
2042	62,554	35,866	72,954	104,655	108,319

Table 12 below presents the incremental annual demand savings due to the potential demand-side programs for Evergy Missouri West.

Table 12: Evergy Missouri West Incremental Demand Savings (MW)

Year	RAP	RAP-	RAP+	MEEIA	MAP
2023	121	107	134	144	269
2024	33	19	42	44	45
2025	30	17	38	40	39
2026	33	21	42	44	41
2027	45	34	54	56	51
2028	30	19	38	42	37
2029	30	20	36	42	37
2030	28	19	33	39	36
2031	25	17	30	36	35
2032	31	24	35	40	40
2033	26	17	33	35	53
2034	24	13	30	34	41
2035	23	12	30	34	42
2036	25	14	32	36	42
2037	37	27	43	47	53
2038	22	13	28	40	45
2039	23	15	28	34	39
2040	24	16	28	34	37
2041	23	15	26	32	35
2042	30	23	33	39	41

Table 13 below presents the cumulative annual energy savings due to the potential demand-side programs for Evergy Missouri West.

Table 13: Evergy Missouri West Cumulative Energy Savings (MWH)

Year	RAP	RAP-	RAP+	MEEIA	MAP
2023	56,270	33,842	74,859	100,435	134,048
2024	114,797	66,749	159,329	205,286	250,463
2025	164,123	94,419	224,509	286,672	333,326
2026	206,956	118,252	278,654	354,415	401,510
2027	245,379	139,300	326,332	414,193	462,269
2028	279,532	157,587	368,338	466,121	515,939
2029	311,141	173,897	406,909	514,843	567,328
2030	338,775	187,984	441,171	560,679	615,776
2031	362,172	198,572	470,635	602,416	660,531
2032	383,114	206,889	498,088	641,211	702,904
2033	395,513	210,597	516,570	666,063	729,955
2034	401,598	211,660	525,802	678,322	743,360
2035	403,431	209,635	528,804	684,898	753,187
2036	406,589	207,722	535,785	698,922	772,184
2037	413,685	207,987	549,339	720,560	797,872
2038	421,428	209,065	563,127	739,195	818,243
2039	427,041	209,471	571,645	750,054	829,973
2040	429,981	209,201	575,539	756,405	837,738
2041	433,654	210,799	580,808	764,580	847,244
2042	437,108	212,901	586,264	773,266	856,648

Table 14 below presents the cumulative annual demand savings due to the potential demand-side programs for Evergy Missouri West.

Table 14: Evergy Missouri West Cumulative Demand Savings (MW)

Year	RAP	RAP-	RAP+	MEEIA	MAP
2023	107	98	114	121	237
2024	136	116	154	164	289
2025	162	131	189	198	322
2026	189	146	223	231	354
2027	215	161	257	265	384
2028	238	174	287	295	408
2029	259	187	315	324	432
2030	277	198	338	350	454
2031	291	206	356	371	473
2032	303	213	371	389	490
2033	310	215	380	399	500
2034	314	217	385	405	507
2035	317	217	388	409	511
2036	319	217	391	414	517
2037	325	219	398	422	527
2038	328	219	403	428	533
2039	331	220	407	431	538
2040	334	221	410	435	541
2041	335	221	411	437	544
2042	335	222	412	439	547

The Estimate of the incremental and cumulative demand and energy savings by each of the potential demand-side program by sectors can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

3.8.5 COST ESTIMATES

***5. For each year of the planning horizon, an estimate of the costs, including*: —**

Table 15 below presents the total portfolio budget by year for each of the program design scenarios.

Table 15: Evergy Missouri West Program Costs (Nominal Dollars, 000$)

Year	RAP	RAP-	RAP+	MEEIA	MAP
2023	$ 24,444	$ 14,884	$ 33,171	$ 48,042	$ 154,965
2024	$ 25,194	$ 15,916	$ 31,490	$ 44,637	$ 107,905
2025	$ 25,267	$ 16,403	$ 30,590	$ 42,966	$ 92,265
2026	$ 27,666	$ 19,000	$ 32,579	$ 46,186	$ 90,282
2027	$ 31,016	$ 22,505	$ 35,812	$ 48,993	$ 90,594
2028	$ 28,695	$ 20,322	$ 33,436	$ 47,473	$ 96,958
2029	$ 29,002	$ 20,679	$ 33,651	$ 47,656	$ 95,018
2030	$ 28,788	$ 20,487	$ 33,374	$ 47,186	$ 92,324
2031	$ 28,694	$ 20,155	$ 33,611	$ 47,684	$ 100,706
2032	$ 30,569	$ 21,888	$ 35,403	$ 49,493	$ 101,360
2033	$ 30,235	$ 20,795	$ 36,050	$ 49,627	$ 110,620
2034	$ 30,870	$ 20,452	$ 36,889	$ 51,648	$ 115,803
2035	$ 31,975	$ 20,885	$ 39,003	$ 54,646	$ 139,420
2036	$ 33,686	$ 22,339	$ 40,789	$ 56,553	$ 132,503
2037	$ 37,694	$ 26,243	$ 44,615	$ 60,499	$ 127,681
2038	$ 34,669	$ 23,238	$ 41,347	$ 60,290	$ 127,940
2039	$ 35,795	$ 24,357	$ 42,536	$ 59,429	$ 135,686
2040	$ 36,541	$ 25,129	$ 43,111	$ 60,448	$ 136,446
2041	$ 37,029	$ 25,535	$ 43,472	$ 61,064	$ 134,493
2042	$ 39,988	$ 28,363	$ 46,314	$ 64,239	$ 134,888

The breakdown of total costs by program, incremental costs, incentive costs, costs to the customer, and the utilities costs to administer the programs are located in the workpaper "Evergy MO West 2021 IRP Exhibits.xlsx".

A. The incremental cost of each stand-alone end-use measure; —

The incremental cost of each stand-alone energy use measure are located in the workpaper "Evergy MO West 2021 IRP Exhibits.xlsx".

B. The cost of incentives paid by the utility to customers or utility financing to encourage participation in the potential demand-side program. The utility shall consider multiple levels of incentives paid by the utility for each end-use measure within a potential demand-side program, with corresponding adjustments to the maximum achievable potential and the realistic achievable potential of that potential demand-side program; —

ICF considered multiple levels of incentives in the development of the program design scenarios.

- MAP scenario incentives are approximately 100% of the incremental cost
- MEEIA scenario incentives are increased above RAP+ scenario's incentives and with additional demand-side programs modeled.
- RAP- scenario incentives are approximately 50% of the RAP scenario incentives.
- RAP+ scenario incentives are approximately 140% of the RAP scenario incentive cost for 2023, 130% of the RAP scenario incentive cost for 2024 and approximately 120% of RAP scenario incentives for 2025-2042.
- RAP scenario incentives are based on current Evergy program performance.

Customer incentives can be found in the workpapers "Evergy MO West 2021 IRP Exhibits.xlsx".

C. *The cost of incentives to customers to participate in the potential demand-side program paid by the entities other than the utility; —*

No assumption was made that any incentives would be paid by entities other than the utility.

D. The cost to the customer and to the utility of technology to implement a potential demand–side program; —

The cost to the customer and the utility to implement the potential DSM programs can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

E. ***The utility’s cost to administer the potential demand-side program; and —***

The utility’s cost to administer the potential DSM programs can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

***F. Other costs identified by the utility*; —**

ICF did not identify other utility costs.

3.9 TABULATION OF PARTICIPANTS, IMPACT, & COSTS

(H) A tabulation of the incremental and cumulative number of participants, load impacts, utility costs, and program participant costs in each year of the planning horizon for each potential demand-side program; and —

The incremental and cumulative participations, load impacts, utility costs and program participant costs in each year for the potential DSM programs can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

3.10 SOURCES AND QUALITY OF INFORMATION

(I) The utility shall describe and document how it performed the assessments and developed the estimates pursuant to subsection (3)(G) and shall provide documentation of its sources and quality of information. —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. ICF has the experience, subject matter expertise, and tools to provide an approach that is not only innovative but also resource efficient. ICF’s approach addresses Evergy’s concerns of considering the break neck pace of technology innovation, changing landscape of codes & standards, increasing the useful life of the study. ICF’s approach had the following key components. The first step was to conduct an appliance saturation study. This study collected a variety of appliance and end-use information from both

residential and commercial and industrial (C&I) customers through survey research using multiple modes (e.g., web, mail, telephone). Using the end-use loads specified by the appliance saturation study, the ICF team applied a cost effective yet accurate approach to develop the baseline load forecast, which provided a sound basis for conducting the market potential study. Next, ICF reviewed the measure list with their national team of program managers to ensure comprehensiveness and confirm that measure level assumptions were verified through field experience. ICF's Demand Side Resource Potential Model (DSRPM) then was used to calculate technical, economic, and achievable potential. The model output precise disaggregation that was used to identify the biggest drivers of savings in Evergy Missouri service territories by building types and end-uses. ICF then analyzed the current portfolio of Evergy's programs, benchmark against other portfolios in the region and develop an array of program options with menus of measures. This process drew measure findings from the economic potential model through further analysis and bundle those measures into realistic programs based on ICF's program-level research and implementation experience. The proposed programs was refined through the achievable potential scenarios. For the DR and DSR programs, ICF leveraged their DR and DSR program specific models within the DSRPM. ICF applied an innovative, evidence-based approach to determine the impacts of interactive effects between measures modeled within the programs for the achievable potential scenarios. Drawing upon ICF's experience analyzing historical program participation data, savings reduction factors for measure combinations based on field data from multiple measure installations were determined. This provided Evergy with more realistic estimation of achievable potential; one that accounted for interactive measure impacts based specifically on the participation patterns of the type of program that the measure was a part of. Finally, to create a portfolio that was truly optimized from a cost effectiveness perspective, ICF leveraged their DSM Optimizer that was integrated into the DSRPM tool. ICF also conduct a sensitivity and uncertainty to focus on refine the most impactful portions of the program design.

The entire data sources that ICF utilized to perform the potential study can be found in workpaper " Evergy Inputs Sources DSM Measure Lists.xlsx".

In addition, ICF applied a two-tiered white box path approach for quality assurance (QA). This means that the person conducting the analysis does not do a final QA, but a supervisor or a peer conducts the final QA. This generates superior quality deliverables as it reduces biases that may exist in reviewing self-work as a final deliverable. The white-box approach means that not only the inputs and outputs of the analysis are reviewed by the reviewer, but also a full trace through of the calculation is performed. This is a far superior approach to a black box path, where only the inputs and outputs are reviewed. This approach to QA helped ICF deliver high quality results.

SECTION 4: DEMAND-SIDE RATE DEVELOPMENT

(4) The utility shall develop potential demand-side rates designed for each market segment to reduce the net consumption of electricity or modify the timing of its use. The utility shall describe and document its demand-side rate planning and design process and shall include at least the following activities and elements: —

4.1 DEMAND-SIDE RATE REVIEW

(A) Review demand-side rates that have been implemented by other utilities and identify whether similar demand-side rates would be applicable for the utility taking into account factors such as similarity in electric prices and customer makeup; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. ICF reviewed developed demand-side rates that have been implemented by other utilities as well as Evergy's Time of Use pilot program. ICF looked at the universe of demand-side rate based options and identified options that are designed to reduce, shift, or modify their load. ICF first held a workshop with Evergy Missouri West staff to

- Review current Evergy Missouri West rates
- Identify the universe of demand-side rate alternatives
- Identify strategic pros and cons
- Compare demand-side rates to Evergy Missouri West's current rates
- Recommend a set of rates for the potential analysis

ICF began with a larger database of programs and rates that ICF built over various studies, annual program reports on DSM by utilities, EM&V reports for pilots and programs. Then selected only those programs and rates applicable to the Evergy territory. While the database was built over time by ICF and contains all the DR and DSR programs implemented as programs or pilots across the country, the filtered programs were chosen based on Evergy's feedback and their applicability based on the saturation of enabling equipment. ICF estimate the demand reduction per participant for DSR programs using its proprietary Time of Use Rate Evaluation Tool (ToURET), which uses electricity estimates information to produce the peak and off peak reduction or increase in customer loads;

The final list of demand-side programs evaluated in this study are:

Residential –

- Time of Use
- Demand Rates

Commercial –

- Time of Use
- Real Time Pricing

Industrial –

- Time of Use
- Real Time Pricing

The entire list of data sources utilized in this potential study can be found in workpaper "Evergy Inputs Sources DSM Measure Lists.xlsx".

4.2 IDENTIFY DEMAND SIDE RATES

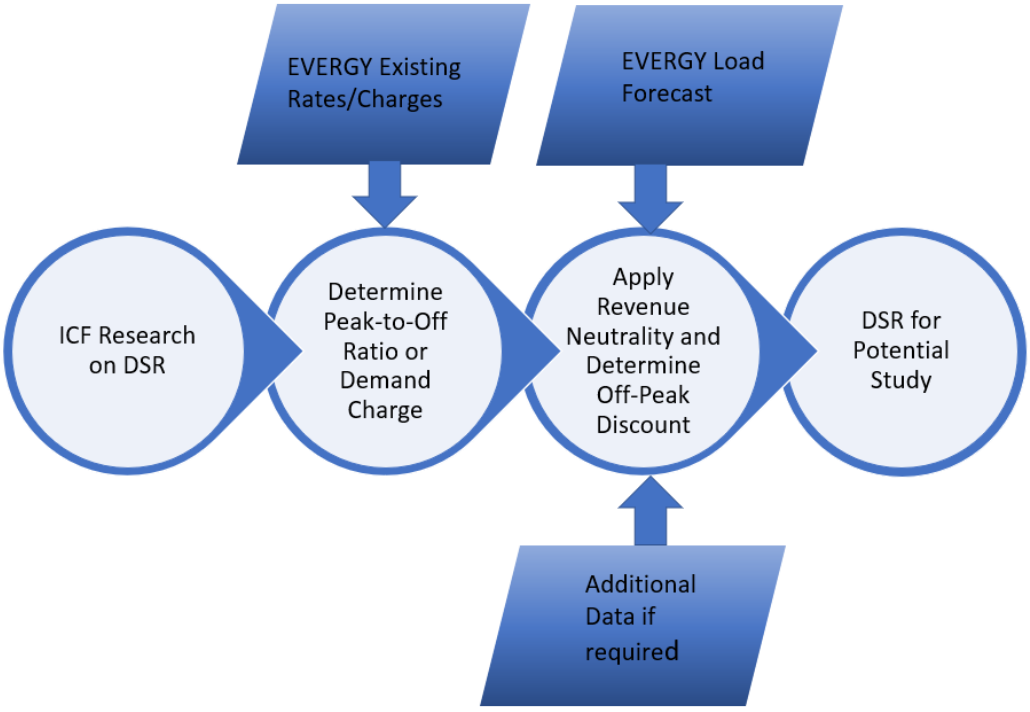
(B) Identify demand-side rates applicable to the major classes and decision-makers identified in subsection (1)(A). When appropriate, consider multiple demand-side rate designs for the same major classes; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study completed in 2020. ICF reviewed developed demand-side rates that have been implemented by other utilities as well as Evergy's Time of Use pilot program. ICF looked at the universe of demand-side rate based options and identified options that are designed to incentivize customers to reduce, shift, or modify their load.

ICF began with a larger database of programs and rates and selected only those programs and rates applicable to the Evergy territory. While the database was built over time by ICF and contains all the DR and DSR programs implemented as programs or pilots across the country, the filtered programs were chosen based on Evergy's feedback and their applicability based on the saturation of enabling equipment. A stand – alone scenario at Maximum Achievable Potential (MAP) level was also developed to further evaluate the impact of demand-side rates.

Demand-side rates were determined to be consistent and align with the current rates. A representative rate was chosen for each sector and the impacts were determined accordingly. The residential Time of Use rate are the existing rates in the tariff documents. The peak period and season definitions were as defined in the Residential tariff document and carried over to the Commercial and Industrial segments. The Figure 9 shows the process of constructing the demand-side rates.

Figure 9: Process flow for construction of demand side rates



The final list of demand-side programs evaluated in this study are:

Residential –

- Time of Use
- Demand Rates

Commercial –

- Time of Use
- Real Time Pricing

Industrial –

- Time of Use
- Real Time Pricing

Program details including program descriptions, development methodologies, program characteristics as well as implementation strategies can be found in Appendix 5D

4.3 ASSESS TECHNOLOGICAL ADVANCEMENTS-

(C) Assess how technological advancements that may be reasonably anticipated to occur during the planning horizon, including advanced metering and distribution systems, affect the ability to implement demand-side rates; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to include the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. ICF identified top 20 emerging technology measures from over 100 measures and refined to analyze the top 10 measures on the list. A comprehensive assessment of the Emerging Technology can be found in Appendix 5C.

Advanced Metering Infrastructure (AMI) rollout in the Evergy Missouri West's service territory is complete. For the potential study, ICF assumed that AMI is fully available in all years of interest (2023-2042). Therefore, measures or programs relying on AMI meters will have no limitations with regards to metering infrastructure for the study period.

4.4 ESTIMATE INPUT DATA AND OTHER CHARACTERISTICS

(D) Estimate the input data and other characteristics needed for the twenty (20)-year planning horizon to assess the cost effectiveness of each potential demand-side rate, including: —

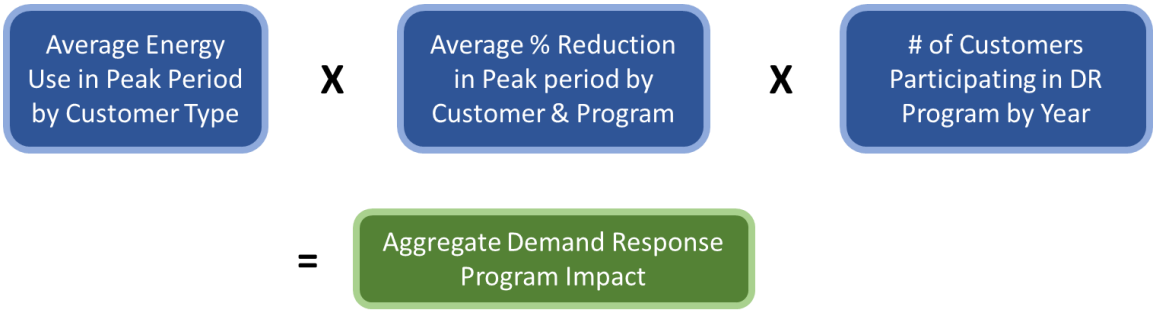
4.4.1 DEMAND AND ENERGY REDUCTION IMPACT

1. An assessment of the demand and energy reduction impacts of each potential demand-side rate; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. The potential demand savings are calculated by multiplying the per-customer load reduction at system peak by the total number of participating customers. Existing program impacts were sourced from Evergy Missouri program experience from the MEEIA Cycle 2.

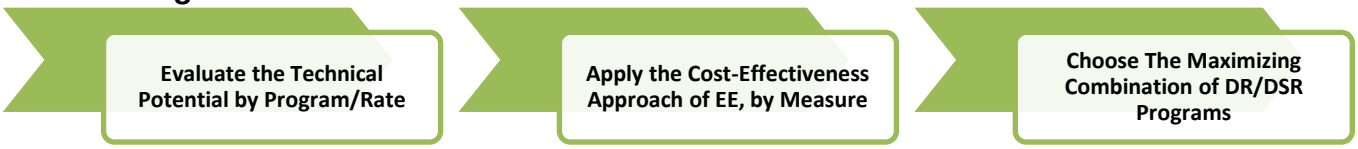
The Demand Response (DR) programs and Demand-Side Rates (DSR) are modeled with ICF's DSRPM. As with Energy Efficiency, the DR and DSR components of DSRPM were built on principles highlighted by FERC, the National Demand Response Potential Model Guide, and Action Plans for the demand response and demand-side rates Potential Evaluation. While the basic framework of determining potential remain the same, DR and DSR programs have key differentiating factors that mandate additional modules and modeling nuances, which are baked into DSRPM. An illustration of the overarching guideline is shown in Figure 10.

Figure 10 : DR/DSR potential evaluation—basic principle



Technical and economic potential for DR and DSR are theoretical concepts and were evaluated in an effort to be consistent with the energy efficiency component of this study. Consequently, the approach draws from some of the concepts within Energy Efficiency (EE) while recognizing and designing an approach that incorporates the factors that differentiate DR and DSR from EE. The high-level 3-step approach adopted is outlined in Figure 11.

Figure 11: Process flow for construction of demand-side rates



Achievable potential applies expected participation levels to economic potential. Participation curves are developed as industry-standard bass diffusion curves, and ICF developed the expected ramp rate and steady-state participation levels. While the ramp rates are based on existing trends for current programs, ICF used program implementation experience to develop the rates for new programs. The steady-state participation levels are outcomes of research into various potential studies for new programs, Evaluation, Measurement, and Verification (EM&V) reports for well-established programs, and ICF expert opinion.

DR and DSR was modeled for the five scenarios– Realistic Achievable Potential (RAP), RAP-, RAP+, MAP, and MEEIA–as well as an additional scenario that shows the DR and DSR program-level stand-alone potential. Table 16 provides a high-level summary of the parameters across the scenarios.

Table 16: DR and DSR Achievable Potential Scenarios

Variable/Scenario	Realistic Achievable Potential (RAP)	RAP (-)	RAP (+)	MEEIA Goals	Max Achievable Potential (MAP)	Stand-Alone
Primary BC test	TRC	TRC	TRC	TRC	TRC	TRC
Cost-effectiveness threshold	Program	Program	Program	Program	Portfolio	Program
Programs included	RAP Programs	RAP Programs	RAP Programs	MAP Programs	MAP Programs	MAP Programs
Participation Curve	Medium	Low	High	High	Aggressive	Aggressive

ICF estimates the demand reduction per participant for DSRs using its proprietary Time of Use Rate Evaluation Tool (ToURET), which uses elasticity estimates and rates information to produce the peak and off-peak reduction or increase in customer loads. The DR programs on the other hand, use the kW per participant reduction derived from various programs implemented across the US, and are calibrated to the programs in Evergy territories to the extent possible. The peak reduction estimates used in this potential study for all program and rate options are provided in Table 17.

Table 17: Per Participant Impact Estimates for DR/DSR Programs

Territory	Sector	Program - Measure	Unit	Savings	
				Summer	Winter
West	Residential	Smart Thermostat	kW/part	1.05	0.59
West	Residential	Direct Load Control - Water Heating	kW/part	32.0%	43.0%
West	Residential	Direct Load Control - Pool Pumps	kW/part	1.50	1.50
West	Residential	Direct Load Control - Hot Tubs	kW/part	0.00	1.29
West	Residential	Direct Load Control - EV Smart Chargers	kW/part	0.92	0.92
West	Residential	Critical Peak Pricing	% part. peak	21.4%	14.4%
West	Residential	Peak Time Rebates	% part. peak	8.2%	8.2%
West	Residential	Direct Load Control - Battery Storage	% part. peak	70.2%	70.2%
West	Residential	Demand Rates	% part. peak	17.5%	9.1%
West	Residential	Time of Use	% part. peak	14.7%	8.2%
West	Commercial	Business Demand Response	% part. peak	22.2%	22.2%
West	Commercial	Critical Peak Pricing	% part. peak	13.4%	10.5%
West	Commercial	Direct Load Control - Pool Pumps	kW/part	2.00	2.00
West	Commercial	Direct Load Control - Water Heating	kW/part	0.19	0.30
West	Commercial	Smart Thermostat	kW/part	1.05	0.44
West	Commercial	Thermal Storage	% part. peak	33.2%	14.5%
West	Commercial	Real Time Pricing	% part. peak	13.4%	10.5%
West	Commercial	Time of Use	% part. peak	9.3%	7.2%
West	Industrial	Business Demand Response	% part. peak	22.2%	22.2%
West	Industrial	Real Time Pricing	% part. peak	8.7%	5.1%
West	Industrial	Time of Use	% part. peak	5.9%	3.4%

Demand-side rates were determined to be consistent and align with the current rates. A representative rate was chosen for each sector and the impacts were determined accordingly. The residential Time of Use (TOU) rate are the existing rates in the tariff documents: Schedule MORT, Sheet No, 146.5 for West and Schedule RTOU, Sheet No. 7 for Metro. The peak period and season definitions were as defined in the Residential tariff document and carried over to the Commercial and Industrial segments.

Participation assumptions developed for the RAP, MAP and MEEIA scenarios are listed in Table 18. The RAP- scenario applies a factor of 0.75 to the RAP scenario participation rates; RAP+ has the same steady state participation as MEEIA, except for Smart Thermostats, where it is the average of RAP and MAP.

Table 18: Participation Assumptions for DR and DSR Programs

Category	Sector	Program - Measure	Steady State Participation Rate		
			RAP	MAP	MEEIA
DR	Residential	Smart Thermostat	34.5%	50.6%	34.5%
DR	Residential	Direct Load Control - Water Heating	22.0%	32.3%	27.1%
DR	Residential	Direct Load Control - Pool Pumps	19.0%	38.0%	28.5%
DR	Residential	Direct Load Control - Hot Tubs	19.0%	38.0%	28.5%
DR	Residential	Direct Load Control - EV Smart Chargers	28.0%	80.0%	54.0%
DR	Residential	Critical Peak Pricing	19.0%	34.0%	26.5%
DR	Residential	Direct Load Control - Battery Storage	1.0%	2.0%	1.5%
DSR	Residential	Demand Rates	14.0%	20.0%	17.0%
DSR	Residential	Time of Use	28.0%	80.0%	34.0%
DR	Commercial	Business Demand Response	25.0%	25.0%	25.0%
DR	Commercial	Critical Peak Pricing	19.0%	34.0%	26.5%
DR	Commercial	Direct Load Control - Pool Pumps	7.0%	14.0%	10.5%
DR	Commercial	Direct Load Control - Water Heating	5.0%	7.3%	6.2%
DR	Commercial	Smart Thermostat	11.1%	16.3%	11.1%
DR	Commercial	Thermal Storage	1.5%	2.0%	1.8%
DSR	Commercial	Real Time Pricing	9.0%	32.5%	20.8%
DSR	Commercial	Time of Use	13.0%	72.0%	24.5%
DR	Industrial	Business Demand Response	55.0%	55.0%	55.0%
DSR	Industrial	Real Time Pricing	9.0%	32.5%	20.8%
DSR	Industrial	Time of Use	13.0%	72.0%	24.5%

4.4.2 INTERACTION OF MULTIPLE DEMAND-SIDE RATES

2. An assessment of how the interactions between multiple potential demand-side rates, if offered simultaneously, would affect the impact estimates; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. To avoid double counting of load reduction impacts, program-eligibility criteria were defined to ensure that customers do not participate in mutually exclusive programs at the same time.

See 4.4.3 Interaction Of Potential Demand-Side Rates And Programs for reference, which includes how the interactions between multiple potential demand-side rates if offered simultaneously.

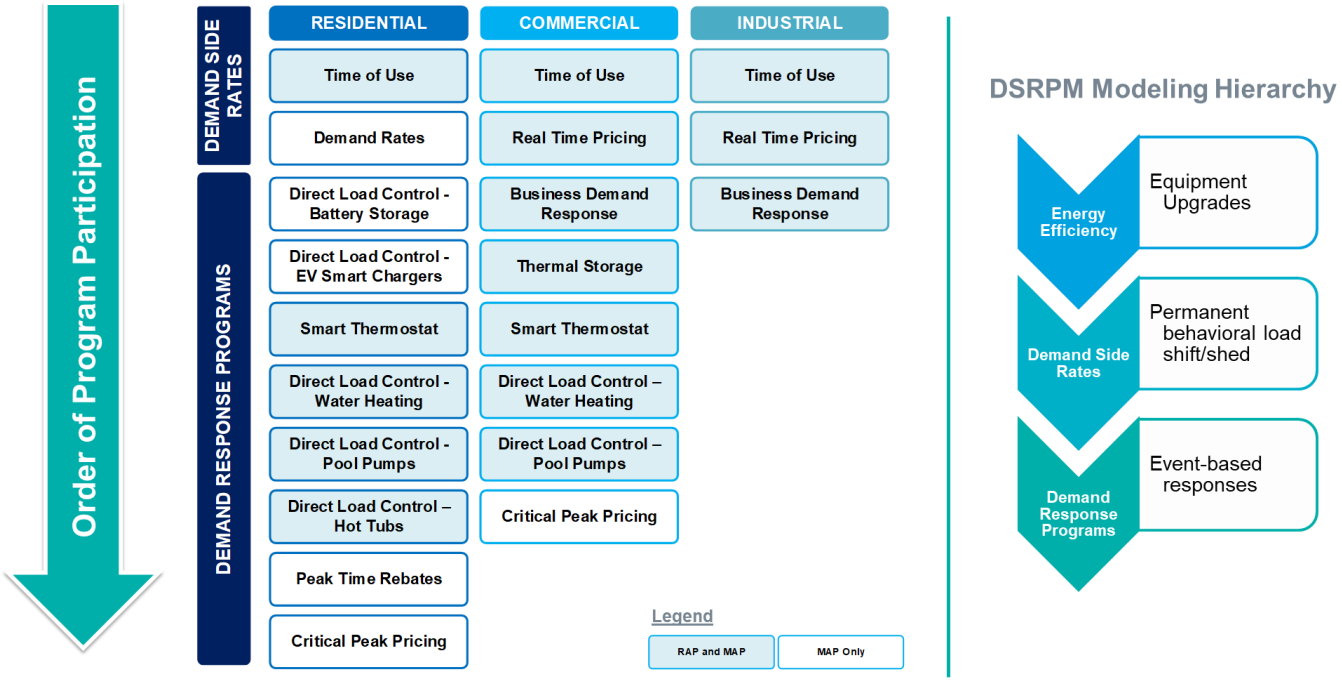
4.4.3 INTERACTION OF POTENTIAL DEMAND-SIDE RATES AND PROGRAMS

3. An assessment of how the interactions between potential demand-side rates and potential demand-side programs would affect the impact estimates of the potential demand side programs and potential demand-side rates; —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. To avoid double counting of load reduction impacts, program-eligibility criteria were defined to ensure that customers do not participate in mutually exclusive programs at the same time.

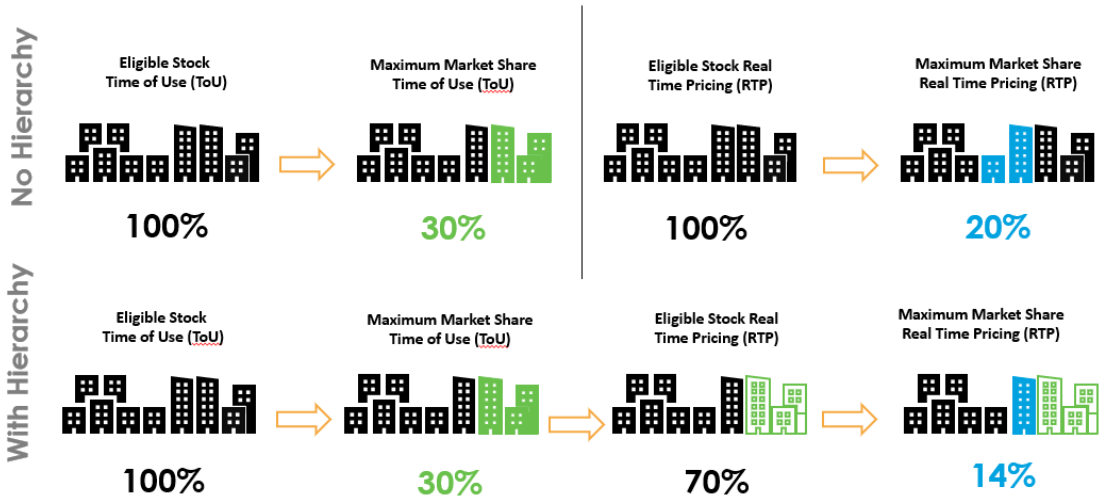
DR and DSR programs come with associated complexity in that some programs are mutually exclusive while some are stackable. Thus, it is necessary to establish a hierarchy in order to ensure that the savings are appropriately estimated. The inputs in DSRPM are set up to follow the 'natural order' of implementation, as shown in Figure 12, with the EE equipment upgrade impact showing up prior to the shift associated with DSRs, followed by the one-time shifts per event of the DR programs; there is also a program hierarchy within DSR and DR. This order of programs is meant to capture the programs that have maximum per-customer impact (such as battery storage), existing programs (such as smart thermostats), and other well established programs (such as DLC for water heating) first, followed by programs that are new (such as Critical Peak Pricing). Please note that the order of participation is not indicative of any suggested order of implementation; rather, it is meant to capture the eligible stock and cascading aspects for modeling purposes.

Figure 12: DR/DSR and DSRPM hierarchy of participation



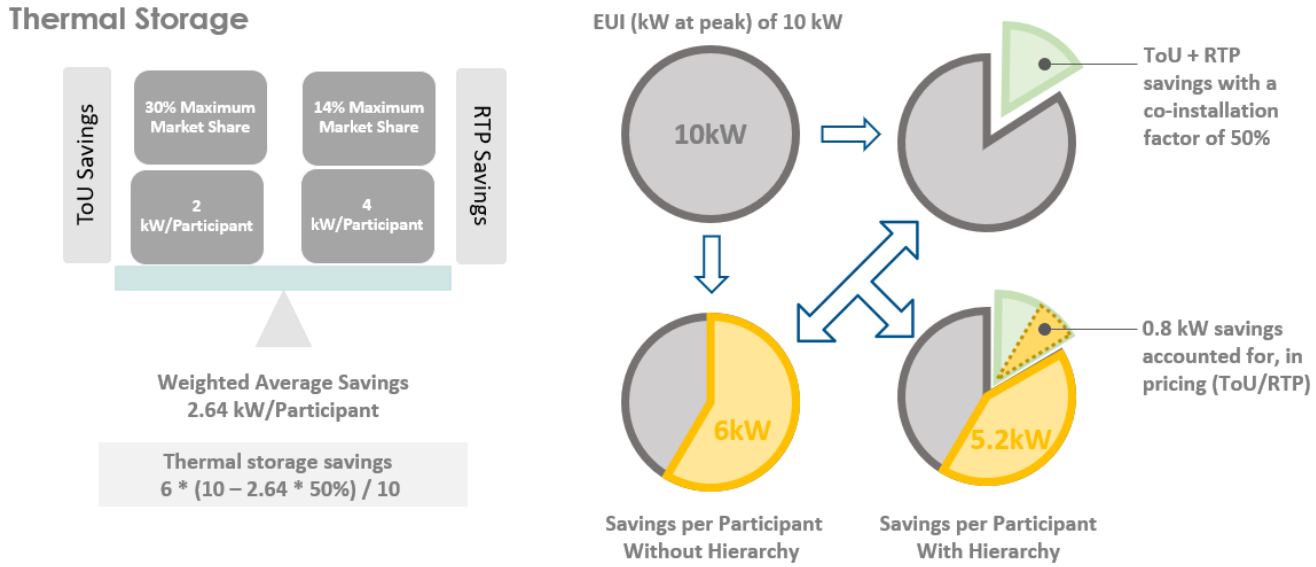
An illustrative example of how the eligible stock estimation is done for mutually exclusive programs or rates is exhibited in Figure 13, where the “no hierarchy” row shows how the participation of Real Time Pricing (RTP) would have remained at 20% if a hierarchy was not considered in the modeling. The “with hierarchy” row, on the other hand, removes the 30% maximum market share value of the TOU program from the eligible stock for RTP, resulting in the maximum market share for RTP dropping from 2% to 14%.

Figure 13: Participation hierarchy example



For programs that are not mutually exclusive, cascading within DSRPM ensures there is no double-counting of savings. An illustrative example is shown in Figure 14, wherein a customer enrolled in TOU or RTP subsequently responds to thermal storage events. If the average savings of such a customer was 6 kW in the absence of TOU/RTP programs, it now reduces to 5.2 kW, since 0.8 kW of the savings otherwise attributable to thermal storage is now a part of TOU/RTP savings.

Figure 14: Cascading effects example



ICF estimated several levels of potential as defined below:

- *Standalone DR/DSR potential.* Each DR and DSR option is assessed independently, without regard for the participation hierarchy and assuming maximum expected participation. This gives the maximum savings that could be attained for each option. It also allows us to consider a first-level estimate of cost-effectiveness.

- *Maximum achievable DR/DSR potential.* The case considers more program options than realistic achievable scenarios in modelling and only those programs that pass the first-level cost-effectiveness screen and assumes the highest level of customer participation. It is the upper limit of achievable potential when programs are implemented in the hierarchy assumed.

- *Realistic achievable DR/DSR potential.* The case is the reference case and to reflect the achievable participation. Participation levels for existing programs were calibrated to the existing participation levels to ensure a gradual uptake, while participation in new program started out at pilot levels and gradually reached the steady-state maximum market shares by 2042.

- *MEEIA DR/DSR potential*. The case was modeled to meet the MEEIA goals, as specified in the energy efficiency scenarios. However, because the EE portfolios met the goals, DR and DSR portfolio was not optimized and was modeled at above realistic achievable potential participation levels, with the exception that the existing Smart Thermostat program was kept at RAP levels of participation to reflect the most realistic scenario.

4.4.4 DEMAND AND REDUCTION ENERGY SAVINGS

4. For each year of the planning horizon, an estimate of the incremental and cumulative demand reduction and energy savings due to the potential demand-side rate; and —

The estimated incremental and cumulative demand and energy reduction savings due to the potential demand-side rates can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

4.4.5 COST OF DEMAND-SIDE RATES

5. For each year of the planning horizon, an estimate of the costs of each potential demand-side rate, including: —

A. The cost of incentives to customers to participate in the potential demand-side rate paid by the utility. The utility shall consider multiple levels of incentives to achieve customer participation in each potential demand-side rate, with corresponding adjustments to the maximum achievable potential and the realistic achievable potentials of that potential demand-side rate; —

There is no assumed incentive cost to participate the potential demand-side rate paid by the utility.

B. The cost to the customer and to the utility of technology to implement the potential demand-side rate; —

There is no assumed cost to the customer. The cost to the utility to implement the potential demand-side rates can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

C. The utility’s cost to administer the potential demand-side rate; and —

The utility’s cost to administer the potential demand-side rates can be found in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”.

D. Other costs identified by the utility; —

No other costs were identified.

4.5 TABULATION OF NUMBER OF PARTICIPANTS

(E) A tabulation of the incremental and cumulative number of participants, load impacts, utility costs, and program participant costs in each year of the planning horizon for each potential demand-side program; —

There is no assumed cost to the customer. The incremental and cumulative participants, load impacts, utility costs and program participant costs for each potential demand-side rate can be found in the workpaper “Evergy Missouri West 2021 IRP Exhibits.xlsx”.

4.6 SPP DR ELIGIBILITY

(F) Evaluate how each demand-side rate would be considered by the utility’s Regional Transmission Organization (RTO) in resource adequacy determinations, eligibility to participate as a demand response resource in RTO markets for energy, capacity, and ancillary services; and —

Most demand-side rates are not eligible to be considered as a resource in the Southwest Power Pool (SPP) as they are not loads that are controllable and dispatchable by the market. Retail tariffs that have a curtailment requirement and demand response programs could potentially participate in the SPP market if they met all market requirements.

To offer a Demand Response Resource (DRR) into the Southwest Power Pool (SPP) market, market participants must register the resource as either a Dispatchable Demand Response (DDR) Resource or a Block Demand Response (BDR) Resource.

A DDR resource is a controllable load and/or a behind-the-meter generator that is dispatchable on a 5-minute basis and has telemetering installed that can provide real-time load values to SPP via SCADA on a 10-second basis and meet all other market requirements.

A BDR is a resource that is not dispatchable on a 5-minute basis but can be dispatched and committed in hourly blocks. A BDR resource must also have telemetering installed and have the real-time load consumption sent to SPP SCADA via ICCP on a 10-second basis. A BDR resource is also required to submit an hourly load profile prior to the hour for which the BDR resource has been committed which represents the forecast assuming no load reduction.

A major limiting factor for the use of DRRs in the SPP market are the telemetering requirements. SPPs requirements stipulate that the DRRs must be metered at the individual meter level. Therefore, the company cannot register a DR program as a whole, but would have to register and telemeter each individual participating customer as a separate resource. This would greatly increase the amount of work required to manage the program and would also increase the cost, with unclear benefits.

Further, SPP does not have a capacity market and thus the DRRs do not receive a capacity payment and only receive compensation for the energy and ancillary services provided. DRRs are included in the must offer requirements of the SPP market, meaning that the company is required to offer all available resources into the market. The utility does retain some capability to self-commit the resource, but if there are a limited number of times we can call on a particular DR program and SPP has already utilized all those times, then we will have nothing left to use.

Finally, SPP does not recognize demand response as a resource equal to a generator in the capacity margin requirements. If the DRR does not get dispatched, the utility does not realize a reduction in its peak demand and therefore does not avoid the capacity need. For the time being, it would appear that the company may have greater ability to control and manage its peak demand by self-dispatching its DRRs rather than submitting demand response offers into the SPP market. This will help to maximize the value of DRR by capturing the value of avoided capacity by reducing its overall system load from SPP's perspective.

The recent FERC Order 2222 requires SPP and other RTO to provide greater market access to aggregators of Distributed Energy Resources (DER). SPP has a process

underway to develop the market protocols to comply with the FERC order. The company will continue to evaluate and monitor SPPs DR and DER market options for the best way to maximize the value of DRR and DERs.

4.7 DOCUMENT HOW ASSESMENTS WERE PERFORMED

(G)The utility shall describe and document how it performed the assessments and developed the estimates pursuant to subsection (4)(D) and shall document its sources and quality of information. —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. The study considered a comprehensive list of demand response programs available in the DSM marketplace today and projected into the 20-year study time horizon. These are controllable or dispatchable programmatic options where customers agree to reduce, shift, or modify their load during a limited number of event hours throughout the year. Table 19 represents the demand response programs and demand-side rates analyzed.

Table 19: List of Demand Response Program and Demand-Side Rates Options in the Analysis

Category	Sector	Program - Measure	Start Year	Scenario	
				RAP	MAP
DR	Residential	Smart Thermostat	Existing	●	●
DR	Residential	Direct Load Control - Water Heating	2023	●	●
DR	Residential	Direct Load Control - Pool Pumps	2023	●	●
DR	Residential	Direct Load Control - Hot Tubs	2023	●	●
DR	Residential	Direct Load Control - EV Smart Chargers	2023		●
DR	Residential	Critical Peak Pricing	2026		●
DR	Residential	Peak Time Rebates	2026		●
DR	Residential	Direct Load Control - Battery Storage	2023		●
DSR	Residential	Demand Rates	2026		●
DSR	Residential	Time of Use	Existing	●	●
DR	Commercial	Business Demand Response	Existing	●	●
DR	Commercial	Critical Peak Pricing	2026		●
DR	Commercial	Direct Load Control - Pool Pumps	2023	●	●
DR	Commercial	Direct Load Control - Water Heating	2023	●	●
DR	Commercial	Smart Thermostat	Existing	●	●
DR	Commercial	Thermal Storage	2023	●	●
DSR	Commercial	Real Time Pricing	2026	●	●
DSR	Commercial	Time of Use	2023	●	●
DR	Industrial	Business Demand Response	Existing	●	●
DSR	Industrial	Real Time Pricing	2026	●	●
DSR	Industrial	Time of Use	2023	●	●

The demand response (DR) and demand-side rate (DSR) component of this potential study assessed technical, economic, and achievable potential in the residential, commercial, and industrial sectors within Evergy Missouri service areas. While technical and economic potential are theoretical concepts for DR and DSR, the achievable potential scenarios provide a comprehensive view of the potential that can be achieved under various assumptions.

The study framework follows the same basic outline as energy efficiency, but the details of the methodology adopted vary significantly for DR and DSR. Survey data was the primary source to estimate the market size for the DR programs, while AMI saturation (at 100%) determined the market size for the rates. The baseline kW usage was guided by

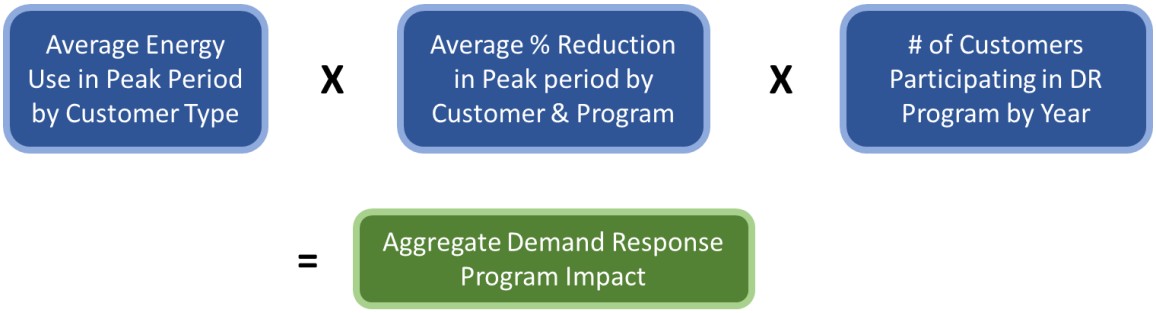
the energy usage and simulations for various building types, and the peaks were approximated at various breakdowns— building type and end use. The technical potential and economic potential used an unconventional approach of determining the (cost-effective) mix of programs that resulted in the maximum savings.

Seven achievable potential scenarios were developed: realistic achievable potential (RAP), RAP-, RAP+, Missouri Energy Efficiency Investment Act (MEEIA), Maximum Achievable Potential (MAP) and two Stand-Alone Potential. As in the case of energy efficiency, RAP is the reference case, and RAP- and RAP+ are variants of RAP assuming lower/higher participation levels. MEEIA scenario was modeled to meet the target of 1% incremental demand each year, in conjunction with the energy efficiency portfolio. MAP is the upper limit of achievable potential when programs are implemented in the hierarchy assumed, while the Stand-Alone Potential aims to provide the absolute maximum potential if the programs were implemented independently and individually.

Further details on the assumptions, approach, and results of the study are provided in the following sections. Program and portfolio savings, costs, and cost-effectiveness results are in the Appendix 5E (HC) and 5F (PUBLIC).

An illustration of the overarching guideline is shown in Figure 15.

Figure 15: DR/DSR potential evaluation—basic principle



ICF began with a larger database of programs and rates and selected only those programs and rates applicable to the Evergy territory. While the database was built over

time by ICF and contains all the DR and DSR programs implemented as programs or pilots across the country, the filtered programs were chosen based on Evergy's feedback and their applicability based on the saturation of enabling equipment.

Technical potential is the theoretical upper bound for DR and DSR programs, which can be obtained with the assumption that every eligible customer would participate in the program and/or rate, subject to feasibility. Technical potential is evaluated with no regard to the cost of program implementation. Further details of the criteria and modeling assumptions used include:

- The feasibility criterion ensures that the customer does not participate in two rates at the same time, and instead enrolls him or her in the rate that produces the maximum impact. For example, a customer with AMI who is eligible for both Time of Use (TOU) and Real Time Pricing (RTP) rates, will be enrolled in RTP rate for technical potential evaluation. RTP begins in 2026, and hence the customer is on TOU rate for 2023 to 2025 and then moved to RTP.

- Cascading of impacts was considered to avoid double-counting of savings. For example, a customer enrolling in TOU rate and a Smart Thermostat (ST) program would not see as much savings from the ST program as a customer who is on a flat rate. This is because the customer would have optimized cooling usage to account for the peak rates, thus reducing the potential of the ST program.

- Residential battery storage was excluded from the technical potential calculation because installing batteries of sufficient size would just make the technical potential 100% for the residential customers. This would not allow for any other programs to be considered or evaluated.

Achievable potential applies expected participation levels to economic potential. Participation curves are developed as industry-standard bass diffusion curves, and ICF developed the expected ramp rate and steady-state participation levels. While the ramp rates are based on existing trends for current programs, ICF used program

implementation experience to develop the rates for new programs. The steady-state participation levels are outcomes of research into various potential studies for new programs, EM&V reports for well-established programs, and ICF expert opinion.

DR and DSR programs come with associated complexity in that some programs are mutually exclusive while some are stackable. Thus, it is necessary to establish a hierarchy in order to ensure that the savings are appropriately estimated. The inputs in DSRPM tool are set up to follow the 'natural order' of implementation, as shown in Figure 16, with the EE equipment upgrade impact showing up prior to the shift associated with DSRs, followed by the one-time shifts per event of the DR programs; there is also a program hierarchy within DSR and DR. This order of programs is meant to capture the programs that have maximum per-customer impact (such as battery storage), existing programs (such as smart thermostats), and other well established programs (such as DLC for water heating) first, followed by programs that are new (such as Critical Peak Pricing). Please note that the order of participation is not indicative of any suggested order of implementation; rather, it is meant to capture the eligible stock and cascading aspects for modeling purposes.

Figure 16: DR/DSR and DSRPM hierarchy of participation

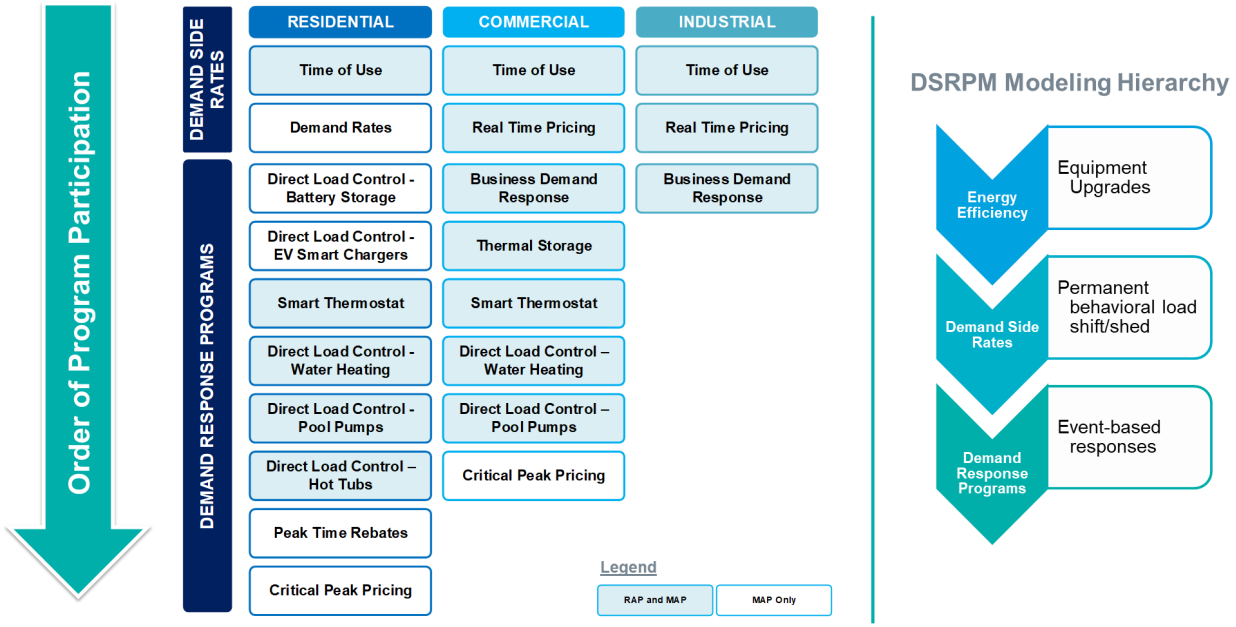


Table 20 below provides a high-level summary of the parameters across the scenarios.

Table 20: DR and DSR Achievable Potential Scenarios

Variable/Scenario	Realistic Achievable Potential (RAP)	RAP (-)	RAP (+)	MEEIA Goals	Max Achievable Potential (MAP)	Stand-Alone
Primary BC test	TRC	TRC	TRC	TRC	TRC	TRC
Cost-effectiveness threshold	Program	Program	Program	Program	Portfolio	Program
Programs included	RAP Programs	RAP Programs	RAP Programs	MAP Programs	MAP Programs	MAP Programs
Participation Curve	Medium	Low	High	High	Aggressive	Aggressive

ICF estimates the demand reduction per participant for DSRs using its proprietary Time of Use Rate Evaluation Tool (ToURET), which uses elasticity estimates and rates information to produce the peak and off-peak reduction or increase in customer loads. The DR programs on the other hand, use the kW per participant reduction derived from various programs implemented across the US, and are calibrated to the programs in Evergy territories to the extent possible. The peak reduction estimates used in this potential study for all program and rate options are provided in Table 21.

Table 21: Per Participant Impact Estimates for DR/DSR Programs

Territory	Sector	Program - Measure	Unit	Savings	
				Summer	Winter
West	Residential	Smart Thermostat	kW/part	1.05	0.59
West	Residential	Direct Load Control - Water Heating	kW/part	32.0%	43.0%
West	Residential	Direct Load Control - Pool Pumps	kW/part	1.50	1.50
West	Residential	Direct Load Control - Hot Tubs	kW/part	0.00	1.29
West	Residential	Direct Load Control - EV Smart Chargers	kW/part	0.92	0.92
West	Residential	Critical Peak Pricing	% part. peak	21.4%	14.4%
West	Residential	Peak Time Rebates	% part. peak	8.2%	8.2%
West	Residential	Direct Load Control - Battery Storage	% part. peak	70.2%	70.2%
West	Residential	Demand Rates	% part. peak	17.5%	9.1%
West	Residential	Time of Use	% part. peak	14.7%	8.2%
West	Commercial	Business Demand Response	% part. peak	22.2%	22.2%
West	Commercial	Critical Peak Pricing	% part. peak	13.4%	10.5%
West	Commercial	Direct Load Control - Pool Pumps	kW/part	2.00	2.00
West	Commercial	Direct Load Control - Water Heating	kW/part	0.19	0.30
West	Commercial	Smart Thermostat	kW/part	1.05	0.44
West	Commercial	Thermal Storage	% part. peak	33.2%	14.5%
West	Commercial	Real Time Pricing	% part. peak	13.4%	10.5%
West	Commercial	Time of Use	% part. peak	9.3%	7.2%
West	Industrial	Business Demand Response	% part. peak	22.2%	22.2%
West	Industrial	Real Time Pricing	% part. peak	8.7%	5.1%
West	Industrial	Time of Use	% part. peak	5.9%	3.4%

Participation assumptions developed for the RAP, MAP and MEEIA scenarios are listed in Table 22. The RAP- scenario applies a factor of 0.75 to the RAP scenario participation rates; RAP+ has the same steady state participation as MEEIA, except for Smart Thermostats, where it is the average of RAP and MAP.

Table 22: Participation Assumptions for DR and DSR Programs

Category	Sector	Program - Measure	Steady State Participation Rate		
			RAP	MAP	MEEIA
DR	Residential	Smart Thermostat	34.5%	50.6%	34.5%
DR	Residential	Direct Load Control - Water Heating	22.0%	32.3%	27.1%
DR	Residential	Direct Load Control - Pool Pumps	19.0%	38.0%	28.5%
DR	Residential	Direct Load Control - Hot Tubs	19.0%	38.0%	28.5%
DR	Residential	Direct Load Control - EV Smart Chargers	28.0%	80.0%	54.0%
DR	Residential	Critical Peak Pricing	19.0%	34.0%	26.5%
DR	Residential	Direct Load Control - Battery Storage	1.0%	2.0%	1.5%
DSR	Residential	Demand Rates	14.0%	20.0%	17.0%
DSR	Residential	Time of Use	28.0%	80.0%	34.0%
DR	Commercial	Business Demand Response	25.0%	25.0%	25.0%
DR	Commercial	Critical Peak Pricing	19.0%	34.0%	26.5%
DR	Commercial	Direct Load Control - Pool Pumps	7.0%	14.0%	10.5%
DR	Commercial	Direct Load Control - Water Heating	5.0%	7.3%	6.2%
DR	Commercial	Smart Thermostat	11.1%	16.3%	11.1%
DR	Commercial	Thermal Storage	1.5%	2.0%	1.8%
DSR	Commercial	Real Time Pricing	9.0%	32.5%	20.8%
DSR	Commercial	Time of Use	13.0%	72.0%	24.5%
DR	Industrial	Business Demand Response	55.0%	55.0%	55.0%
DSR	Industrial	Real Time Pricing	9.0%	32.5%	20.8%
DSR	Industrial	Time of Use	13.0%	72.0%	24.5%

The entire list of data sources ICF utilized for this study can be found in workpaper "Evergy Inputs Sources DSM Measure Lists.xlsx".

In addition, ICF applied a two-tiered white box path approach for quality assurance (QA) to this study. This means that the person conducting the analysis does not do a final QA, but a supervisor or a peer conducts the final QA. This generates superior quality deliverables as it reduces biases that may exist in reviewing self-work as a final deliverable. The white-box approach means that not only the inputs and outputs of the analysis are reviewed by the reviewer, but also a full trace through of the calculation is performed. This is a far superior approach to a black box path, where only the inputs and outputs are reviewed. This approach to QA helped ICF deliver high quality results.

SECTION 5: DEMAND-SIDE PROGRAM COST EFFECTIVENESS

(5) The utility shall describe and document its evaluation of the cost effectiveness of each potential demand-side program developed pursuant to section (3) and each potential demand-side rate developed pursuant to section (4). All costs and benefits shall be expressed in nominal dollars. —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to include the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. ICF identified top 20 emerging technology measures from over 100 measures and refined to analyze the top 10 measures on the list.

Each measure was characterized with energy and demand savings, incremental cost, effective useful life, and other performance factors, drawing upon data from ICF's measure database and well-vetted national and regional sources. An economic screening was performed on each measure, which serves as the basis for developing the economic and achievable potential, utilizing the measure information along with Evergy Missouri West's avoided cost data.

ICF performed the industry standard cost-effectiveness tests to gauge the economic merits of the measures, programs and portfolio. Each test compares the benefits of a DSM program to its costs using its own unique perspectives and definitions. All measures were screened for cost effectiveness using the Total Resource Cost (TRC) test. All programs were screened for cost effectiveness using the Societal Test, the TRC test, the Utility Cost Test (UCT), the Participant Cost Test (PCT), and the Ratepayer Impact Measure (RIM) test. Benefits and costs used in these tests are consistent with Missouri

Public Service Commission rules. The primary benefit-cost test is the TRC. The definitions for the four standard tests most commonly used are described below.

- *Total Resource Cost Test (TRC)* measures the net costs and benefits of an energy efficiency program as a resource option based on the total costs of the measure, including both the participant's and the utility's costs. This test represents the combination of the effects of a program on both participating and non-participating customers.
- *Utility Cost Test (UCT)* measures the net costs of a measure as a resource option based on the costs incurred by the program administrator, excluding any net costs incurred by the participant.
- *Participant Cost Test (PCT)* quantifies the benefits and costs to the customer due to program participation.
- *Rate Impact Measure Test (RIM)* measures what happens to a customer's rates due to changes in utility revenues and operating costs.

Only measures that are cost-effective were included in economic and achievable measure-level potential. An initial economic screening process based on the Total Resource Cost (TRC) test was used to assess cost-effectiveness and filter out any measures with a benefit-cost ration below one. For measures that were not cost-effective on a TRC basis, a second level screening was conducted using the Utility Cost Test (UCT). If the measure had a UCT of one or greater, the measure was included in the economic potential. Since the UCT uses the incentive costs and excludes the remainder of the measure incremental cost, which is the cost covered by the program participant, , it was appropriate to use the UCT to screen measures that were not deemed initially cost-effective with the TRC.

The sole non-energy benefit (NEB) included in the measure TRC test for the purpose of estimating economic potential was avoided probable environmental compliance costs, which is the only category of NEB currently approved by the Missouri Public Service Commission. To account for changing economics over time, the cost-effectiveness of

each measure was assessed in each year of the forecast period. Therefore, if a measure was not found to be economic until 2032, then it was not included in economic potential estimates until 2032.

Each economic potential estimate was based on the most efficient, cost-effective measure available for a given baseline opportunity. Exceptions to this rule were made for two measure types: low-income measures and measures within general education programs. This is because neither of these programs are subject to cost-effectiveness screening per Missouri Electric Utility Resource Planning regulations.[4]

The programs were developed by considering and bundling the measure-level analysis–energy efficiency, demand response, demand-side rates, and combined heat and power–in an integrated and holistic manner to ascertain the total potential savings, costs, and delivery structure of an actual and realizable portfolio of DSM resources. Details of all DSM resources evaluated in the potential study including program descriptions, energy and demand saving estimates, program characteristics as well as implementation strategy can be found in Appendix 5D.

Specifically, when translating from the measure-level potential to program-level potential, ICF applied the following adjustments:

- Allocated measures to one or more programs, considering measure bundling.
- Assigned incentive and administrative program costs consistent with bundles and delivery mechanisms
- Reviewed marginally cost-effective measures (TRC benefit-to-cost ratio close to 1.0). A second level screening was conducted using the Utility Cost Test (UCT). If the measure had a UCT of one or greater, the measure was included in the economic potential while other measures may be removed to improve program and portfolio cost-effectiveness.

[4] Missouri Energy Efficiency Investment Act (MEEIA) (4 CSR 240-20.094 subsections (3)(A)4., (4)(J), and (6)(B)) https://s1.sos.mo.gov/cmsimages/adrules/csr/current/4csr/4c240-20.pdf

- Excluded measures with small potential or that are challenging to implement (e.g., residential electronic equipment).

- As appropriate, considered multiple efficiency levels for technologies that may not have been part of measure-level results. For example, measure-level potential selects one Seasonal Energy Efficiency Rating (SEER) level of residential central air conditioners to maximize absolute energy savings, but the program potential includes several SEER levels to provide a more customer-friendly set of choices and options.

- Evaluated program cost-effectiveness incorporating delivery, administration and EM&V costs. The program-level potential relied primarily on the TRC test to determine cost-effectiveness.

5.1 CUMULATIVE BENEFITS

(A) In each year of the planning horizon, the benefits of each potential demand-side program and each potential demand-side rate shall be calculated as the cumulative demand reduction multiplied by the avoided demand cost plus the cumulative energy savings multiplied by the avoided energy cost. These calculations shall be performed both with and without the avoided probable environmental costs. The utility shall describe and document the methods, data, and assumptions it used to develop the avoided costs. —

5.1.1 AVOIDED DEMAND COST

1. The utility avoided demand cost shall include the capacity cost of generation, transmission, and distribution facilities, adjusted to reflect reliability reserve margins and capacity losses on the transmission and distribution systems, or the corresponding market-based equivalents of those costs. The utility shall describe and document how it developed its avoided demand cost, and the capacity cost chosen shall be consistent throughout the triennial compliance filing. —

The technology costs were updated through discussion with engineering firms and outside parties in order to ensure the values represent current market conditions. Following is a brief discussion of these three components that make up the avoided cost:

1. **Capital cost** includes two components – the cost of the power plant construction and the cost of the transmission interconnection. A levelized fixed charge rate is applied to these capital costs to arrive at an annual cost for the plant and the related transmission interconnection. This levelized fixed charge rate accounts for the weighted cost of capital, capturing the cost of debt, equity, and preferred equity, as well as the impact of deferred taxes, depreciable lives, income taxes, and property taxes.

2. The **FOM cost** assumptions are provided by an outside vendor and, as such, are considered proprietary information available only to those under license. The FOM cost includes items such as operating labor for plant personnel, maintenance costs for different sections of the plant, and overhead charges for administrative and support labor. An annual FOM cost is calculated and then divided by the size of the power plant to arrive at an annual FOM cost/kW-Yr.

3. The **cost of firm gas transportation** represents the cost of pipeline upgrades to ensure that natural gas supplies are available when needed at the power plant. These capital cost estimates are highly confidential cost projections provided by gas pipeline companies and can vary due to the proximity of existing feed lines. These estimates are converted to an annual cost/kW-Yr, similar to the FOM costs.

The sum of the levelized annual capital cost, the FOM, and the firm gas transportation cost are combined to arrive at a total avoided cost on a dollar per kilowatt-year basis.

A market-based approach drawn from the Commission approved MEEIA 3 plan is being used while Evergy is projected to be long on capacity. Evergy has developed a probability weighted approach to calculate the avoided capacity cost when the IRP projects that a capacity shortfall will occur. The approach models eight scenarios taking account for the possibility of unit retirements as well as two potential large upcoming

new customer loads (there are also another two potential new loads that are less certain that are not included). For each scenario, the market-based approach above is used when the scenario is long capacity and the avoided cost of a CT is used beginning in the year that the individual scenario becomes short on capacity. The avoided capacity cost ($/kW-year) can be found in Appendix 5E section C. The calculation of avoided demand cost for the DSM Potential Study can be found in Workpaper “CT Value for Avoided Capacity Cost (CONFIDENTIAL).xlsx”.

5.1.2 AVOIDED ENERGY COST

2. The utility avoided energy cost shall include the fuel costs, emission allowance costs, and other variable operation and maintenance costs of generation facilities, adjusted to reflect energy losses on the transmission and distribution systems, or the corresponding market-based equivalents of those costs. The utility shall describe and document how it developed its avoided energy cost, and the energy costs shall be consistent throughout the triennial compliance filing. —

The energy price forecast used for the DSM Potential Study was based on the expected value of all market price scenarios from the 2020 IRP Annual Updates. For the 2020 IRP Annual Updates, there were a total of six different energy price curves used in the evaluation of each Alternative Resource Plan, which represented a high, mid and low gas price coupled with and without a CO_2 cost. In the IRP analysis, these six price curves are combined with high, mid and low load uncertainties to derive the 18 endpoint scenarios used to measure the expected value of revenue requirement for plan rankings.

Table 23: Eighteen Endpoint Scenarios

Endpoint	Load Growth	Natural Gas	CO_2	Endpoint Probability
1	High	High	Yes	3.8%
2	High	High	No	2.5%
3	High	Mid	Yes	7.5%
4	High	Mid	No	5.0%
5	High	Low	Yes	3.8%
6	High	Low	No	2.5%
7	Mid	High	Yes	7.5%
8	Mid	High	No	5.0%
9	Mid	Mid	Yes	15.0%
10	Mid	Mid	No	10.0%
11	Mid	Low	Yes	7.5%
12	Mid	Low	No	5.0%
13	Low	High	Yes	3.8%
14	Low	High	No	2.5%
15	Low	Mid	Yes	7.5%
16	Low	Mid	No	5.0%
17	Low	Low	Yes	3.8%
18	Low	Low	No	2.5%

The corresponding energy costs by year are provided in Appendix 5E section C.

5.1.3 AVOIDED ENVIRONMENTAL COST

3. The avoided probable environmental costs include the effects of the probable environmental costs calculated pursuant to 20 CSR 4240-22.040(2)(B) on the utility avoided demand cost and the utility avoided energy cost. The utility shall describe and document how it developed its avoided probable environmental cost. —

The probable environmental costs were developed as described in the response to 20 CSR 4240-22.040(2)(B) and are included in the calculation of avoided energy costs.

5.2 TOTAL RESOURCE COST TEST (TRC)

(B) The total resource cost test shall be used to evaluate the cost effectiveness of the potential demand-side programs and potential demand-side rates. In each year of the planning horizon —

5.2.1 DEMAND-SIDE PROGRAM COSTS

1. The costs of each potential demand-side program shall be calculated as the sum of all incremental costs of end-use measures that are implemented due to the program (including both utility and participant contributions) plus utility costs to administer, deliver, and evaluate each potential demand-side program; —

The TRC costs include the incremental participant cost and utility administrative costs associated with the program.

5.2.2 DEMAND-SIDE RATE COSTS

2. The costs of each potential demand-side rate shall be calculated as the sum of all incremental costs that are due to the rate (including both utility and participant contributions) plus utility costs to administer, deliver, and evaluate each potential demand-side rate; and —

The TRC costs include the incremental participant cost and the utility administrative costs associated with the program.

5.2.3 COSTS NOT TO INCLUDE

3. For purposes of this test, the costs of potential demand-side programs and potential demand-side rates shall not include lost revenues or utility incentive payments to customers. —

The TRC costs do not include lost revenues or incentive payments to customers.

5.3 UTILITY COST TEST (UCT)

(C) The utility cost test shall also be performed for purposes of comparison. In each year of the planning horizon —

5.3.1 TEST COSTS

1. The costs of each potential demand-side program and potential demand-side rate shall be calculated as the sum of all utility incentive payments plus utility costs to administer, deliver, and evaluate each potential demand-side program or potential demand-side rate; —

The UCT costs include the utility's incentive and administrative costs.

5.3.2 COSTS NOT TO INCLUDE

2. For purposes of this test, the costs of potential demand-side programs and potential demand-side rates shall not include lost revenues; and —

The UCT costs do not include lost revenues.

5.3.3 RATE OF RETURN OR INCENTIVE COSTS

3. The costs shall include, but separately identify, the costs of any rate of return or incentive included in the utility's recovery of demand-side program costs. —

The analysis did not assume a rate of return or utility incentive.

5.4 TRC MUST BE GREATER THAN ONE

(D) The present value of program benefits minus the present value of program costs over the planning horizon must be positive or the ratio of annualized benefits to annualized costs must be greater than one (1) for a potential demand-side program or potential demand-side rate to pass the utility cost test or the total resource cost test. The utility may relax this criterion for programs that are judged to have potential benefits that are not captured by the estimated load impacts or avoided costs, including programs required to comply with legal mandates. —

Except for the low-income programs, the DSM programs were designed to be cost-effective. The ratio of annualized benefit to annualized costs were greater than one. ICF designed a wide range of energy efficiency, demand response programs and demand-side rates. Only cost effective programs were included in the achievable potential scenarios. However, in the maximum achievable potential scenario, the cost-effective screening was changed from program level to sector level.

5.5 TRC AND UCT TEST RESULTS

(E) The utility shall provide results of the total resource cost test and the utility cost test for each potential demand-side program evaluated pursuant to subsection (5)(B) and for each potential demand–side rate evaluated pursuant to subsection (5)(C) of this rule, including a tabulation of the benefits (avoided costs), demand-side resource costs, and net benefits or costs. —

The TRC and UCT results for each potential DSM program and demand-side rate are presented in the workpaper “Evergy MO West 2021 IRP Exhibits.xlsx”. Avoided capacity cost and avoided energy cost can be found in Appendix 5E section C.

5.6 OTHER COST BENEFIT TEST RESULTS

(F) If the utility calculates values for other tests to assist in the design of demand-side programs or demand-side rates, the utility shall describe and document the tests and provide the results of those tests. —

ICF also analyzed cost-effectiveness for the following standard tests:

- *Participant Cost Test (PCT).* The benefits include lost utility revenues (i.e. the lifetime value of retail rate savings). The costs include the participant incremental measure costs minus the value of incentives.
- *Rate Impact Measure Test (RIM).* The test measures what happens to customer's rates due to changes in utility revenues and operating costs. Therefore, if the benefits are greater than the costs, rates will decrease on average and subsidies will be minimized or avoided. The benefits are the same as the TRC benefits and the costs include all utility costs associated with the program, including lost utility revenue as well as incentive and administrative costs.
- *Societal Cost Test (SCT).* It is the Total Resource Cost test (TRC) with the addition of non-energy benefits.

The PCT, RIM and SCT results for each potential DSM program and demand-side rate are presented in the workpaper "Evergy Missouri West 2021 IRP Exhibits.xlsx".

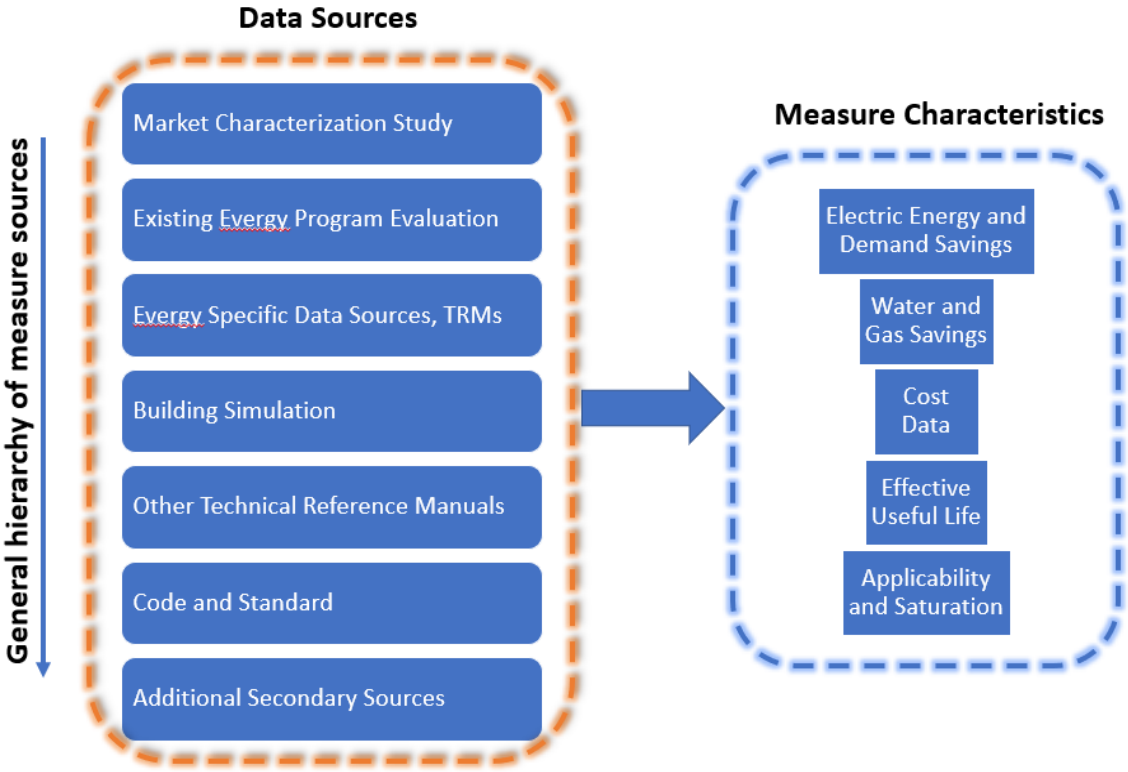
5.7 DESCRIBE AND DOCUMENT COST EFFECTIVENESS TESTS

(G)The utility shall describe and document how it performed the cost effectiveness assessments pursuant to section (5) and shall describe and document its methods and its sources and quality of information. —

Evergy Missouri West engaged ICF Resources LLC to conduct a DSM Potential Study. A comprehensive list of energy efficiency and demand response measures was developed for each customer sector, drawing upon Evergy Missouri West's current programs, ICF's measure database, and measure lists developed from previous studies. The list of measures covers all major types of end-use equipment, as well as devices and actions to reduce energy consumption. Special focus was given to including the latest available data on emerging technologies from ICF's in-depth research and participation in technical working groups all over the nation. ICF identified top 20 emerging technology measures from over 100 measures and refined to analyze the top 10 measures on the list. This includes Energy Recovery Ventilator, Data Center Air Flow Management, Efficient UPS, Modular Data Center and Web-Enabled Power Monitoring for Small and Medium-Sized Business.

Each measure was characterized with energy and demand savings, incremental cost, effective useful life, and other performance factors, drawing upon data from ICF's measure database and well-vetted national and regional sources. An economic screening was performed on each measure, which serves as the basis for developing the economic and achievable potential, utilizing the measure information along with Evergy Missouri West's avoided cost data. Figure 17 represents ICF's energy efficiency measure assessment process.

Figure 17: Measure Assessment Process



All measures were screened for cost effectiveness using the Total Resource Cost (TRC) test. All programs were screened for cost effectiveness using the Societal Test (SCT), the TRC test, the Utility Cost Test (UCT), the Participant Cost Test (PCT), and the Ratepayer Impact Measure (RIM) test. Benefits and costs used in these tests are consistent with Missouri Public Service Commission rules. The primary benefit-cost test is the TRC.

Many sources of data were used to characterize the energy efficiency measures. ICF used the market characterization study performed for this potential study, existing Evergy programs evaluations, Evergy specific data source and TRM, building simulation, other technical reference manuals such as IL and MO TRMs, code and standard as well as additional second data source to fill the gaps. The entire data sources utilized to perform the potential study can be found in workpaper “Evergy Inputs Sources DSM Measure Lists.xlsx”.

ICF performed the industry standard cost-effectiveness tests to gauge the economic merits of the measures, programs and portfolio. Each test compares the benefits of a DSM program to its costs using its own unique perspectives and definitions. The definitions for the four standard tests most commonly used are described below.

- *Total Resource Cost Test (TRC)* measures the net costs and benefits of an energy efficiency program as a resource option based on the total costs of the measure, including both the participant's and the utility's costs. This test represents the combination of the effects of a program on both participating and non-participating customers.
- *Societal Cost Test (SCT).* It is the Total Resource Cost test (TRC) with the addition of none energy benefits.
- *Utility Cost Test (UCT)* measures the net costs of a measure as a resource option based on the costs incurred by the program administrator, excluding any net costs incurred by the participant.
- *Participant Cost Test (PCT)* quantifies the benefits and costs to the customer due to program participation.
- *Rate Impact Measure Test (RIM)* measures what happens to a customer's rates due to changes in utility revenues and operating costs.

Measures were first screened for cost-effectiveness within ICF's DSRPM (Demand Side Resources Potential Model) for inclusion in the economic and achievable potential scenarios. Then it utilized the TRC test for measure-level cost-effectiveness screening (i.e., a TRC benefit-cost ratio of at least 1.0). The DSRPM performs this screening dynamically, taking into account changing savings and cost data over time. Thus, some measures pass the economic screen for some–but not all–years in the projection.

Measures that were cost-effective on a stand-alone basis were bundled into programs and re-screened for cost-effectiveness. The programs were developed by considering

and bundling the measure-level analysis–energy efficiency, demand response, demand-side rates, and combined heat and power–in an integrated and holistic manner to ascertain the total potential savings, costs, and delivery structure of an actual and realizable portfolio of DSM resources.

Specifically, when translating from the measure-level potential to program-level potential, ICF applied the following adjustments:

- Allocated measures to one or more programs, considering measure bundling.
- Assigned incentive and administrative program costs consistent with bundles and delivery mechanisms
- Reviewed marginally cost-effective measures (TRC benefit-to-cost ratio close to 1.0). For measures that were not cost-effective on a TRC basis, a second level screening was conducted using the UCT.
- Excluded measures with small potential or that are challenging to implement (e.g., residential electronic equipment).
- As appropriate, considered multiple efficiency levels for technologies that may not have been part of measure-level results. For example, measure-level potential selects one SEER level of residential central air conditioners to maximize absolute energy savings, but the program potential includes several SEER levels to provide a more customer-friendly set of choices and options.
- Evaluated program cost-effectiveness incorporating delivery, administration and EM&V costs. The program-level potential relied primarily on the TRC test to determine cost-effectiveness.

ICF considered multiple design scenarios including the program realistic achievable potential (RAP) and program maximum achievable potential (MAP) and Missouri Energy Efficiency Investment Act (MEEIA) as well as two additional scenarios extrapolated based on the program-level RAP portfolios in order to provide Evergy Missouri West with a more

diverse set of planning cases. Two Stand-Alone scenarios were also evaluated to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program RAP: is the reference case forecast. It is the basis of all other achievable scenarios. It reflects a world in which Evergy continues only operating its current energy efficiency programs without substantial changes. RAP accounts for known state and Federal updates to minimum energy performance standards (MEPS) for lighting and appliances as well as energy performance standards for new buildings and major retrofits

- Program RAP-: Evergy continues operating only its current programs, but savings levels are lower than what Evergy historically achieved with reduced cost.

- Program RAP+: Similarly, Evergy continues operating only its current programs, but savings levels are higher than what Evergy historically achieved with increased cost.

- Program MAP: is a theoretical scenario where all customer incentives are set to 100% of measure incremental costs. The other important change in this scenario is that the cost-effectiveness threshold is changed from the program level to the sector level. This would give Evergy more flexibility to adjust programs to meet overall savings targets. Emerging technologies as well as added programs are also evaluated in MAP.

- Program MEEIA: There are many changes in the MEEIA scenario from RAP scenarios. New economic measures are added to current programs, and the performance of current programs is increased above RAP+ levels based on benchmarking and ICF expert input. Additionally, entire new programs and economic measures are added to achieve. MEEIA goal (20 CSR 4240-20.094(2).

- Program DR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program DSR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

SECTION 6: TOTAL RESOURCE COST TEST

(6) Potential demand-side programs and potential demand-side rates that pass the total resource cost test including probable environmental costs shall be considered as demand side candidate resource options and must be included in at least one (1) alternative resource plan developed pursuant to 20 CSR 4240-22.060(3). —

Potential demand-side programs and demand-side rates that passed the total resource cost test (a benefit-cost ratio of at least 1.0) were considered as a demand-side candidate resource option.

6.1 BUNDLING OF PORTFOLIOS

(A) The utility may bundle demand-side candidate resource options into portfolios, as long as the requirements pursuant to section (1) are met and as long as multiple demand side candidate resource options and portfolios advance for consideration in the integrated resource analysis in 20 CSR 4240-22.060. The utility shall describe and document how its demand-side candidate resource options and portfolios satisfy these requirements. —

Evergy Missouri West engaged ICF LLC to conduct a DSM Potential Study. Measures that were cost-effective on a stand-alone basis were bundled into programs and re-screened for cost-effectiveness. The programs were developed by considering and bundling the measure-level analysis–energy efficiency, demand response, demand-side rates, and combined heat and power–in an integrated and holistic manner to ascertain the total potential savings, costs, and delivery structure of an actual and realizable portfolio of DSM resources.

Specifically, when translating from the measure-level potential to program-level potential, ICF applied the following adjustments:

- Allocated measures to one or more programs, considering measure bundling.

- Assigned incentive and administrative program costs consistent with bundles and delivery mechanisms.

- Reviewed marginally cost-effective measures (TRC benefit-to-cost ratio close to 1.0). For measures that were not cost-effective on a TRC basis, a second level screening was conducted using the UCT.

- Excluded measures with small potential or that are challenging to implement (e.g., residential electronic equipment).

- As appropriate, considered multiple efficiency levels for technologies that may not have been part of measure-level results. For example, measure-level potential selects one SEER level of residential central air conditioners to maximize absolute energy savings, but the program potential includes several SEER levels to provide a more customer-friendly set of choices and options.

- Evaluated program cost-effectiveness incorporating delivery, administration and EM&V costs. The program-level potential relied primarily on the TRC test to determine cost-effectiveness.

- ICF considered multiple design scenarios including the program realistic achievable potential (RAP) and program maximum achievable potential (MAP) and Missouri Energy Efficiency Investment Act (MEEIA) as well as two additional scenarios extrapolated based on the program-level RAP portfolios in order to provide Evergy Missouri West with a more diverse set of planning cases. Two Stand-Alone scenarios were also evaluated to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program RAP: is the reference case forecast. It is the basis of all other achievable scenarios. It reflects a world in which Evergy continues only operating its current energy efficiency programs without substantial changes. RAP accounts for known state and Federal updates to minimum energy performance standards (MEPS) for

lighting and appliances as well as energy performance standards for new buildings and major retrofits

- Program RAP-: Evergy continues operating only its current programs, but savings levels are lower than what Evergy historically achieved with reduced cost.

- Program RAP+: Similarly, Evergy continues operating only its current programs, but savings levels are higher than what Evergy historically achieved with increased cost.

- Program MAP: is a theoretical scenario where all customer incentives are set to 100% of measure incremental costs. The other important change in this scenario is that the cost-effectiveness threshold is changed from the program level to the sector level. This would give Evergy more flexibility to adjust programs to meet overall savings targets. Emerging technologies as well as added programs are also evaluated in MAP.

- Program MEEIA: There are many changes in the MEEIA scenario from RAP scenarios. New economic measures are added to current programs, and the performance of current programs is increased above RAP+ levels based on benchmarking and ICF expert input. Additionally, entire new programs and economic measures are added to achieve. MEEIA goal (20 CSR 4240-20.094(2).

- Program DR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program DSR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

6.2 LOAD IMPACT ESTIMATES

(B) For each demand-side candidate resource option or portfolio, the utility shall describe and document the time-differentiated load impact estimates over the planning horizon at the level of detail required by the supply system simulation

model that is used in the integrated resource analysis, including a tabulation of the estimated annual change in energy usage and in diversified demand for each year in the planning horizon due to the implementation of the candidate demand-side resource option or portfolio. —

The time-differentiated load impacts for each demand-side candidate resource option are detailed in the workpaper “MO West DSM Modeling 2021 IRP - All Scenarios 6.2B.xlsx”.

6.3 UNCERTAINTY OF LOAD IMPACT ESTIMATES

(C) The utility shall describe and document its assessment of the potential uncertainty associated with the load impact estimates of the demand-side candidate resource options or portfolios. The utility shall estimate —

1. The impact of the uncertainty concerning the customer participation levels by estimating and comparing the maximum achievable potential and realistic achievable potential of each demand-side candidate resource option or portfolio; and —

The potential uncertainty associated with the load impact estimates of the demand-side candidate resource options was accounted for with the seven scenarios developed by ICF for demand response programs and demand-side rates to address the impact of uncertainty concerning the customer participation levels.

- Program RAP-: Alternative portfolio designed have 75% of the steady-state maximum market shares as compared to RAP levels
- Program RAP+: Alternative portfolio designed to a participation level between RAP and MAP and to reflect the variations in levels of participation that generate a lower and upper bound on realistically achievable numbers.
- Program RAP: Participation levels for existing programs were calibrated to the existing participation levels to ensure a gradual uptake, while participation in new program started out at pilot levels and gradually reached the steady-state maximum market shares by 2042.
- Program MEEIA: Alternative portfolio designed to meet MEEIA goals and was modeled at RAP+ participation level except for Smart Thermostats program whose participation level is the average of Program RAP and MAP.
- Program MAP: the participation levels reflect the maximum possible participation, providing an upper bound on achievable participation and potential.

- Program DR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program DSR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

In addition, ICF performed sensitivity and uncertainty analysis on the RAP scenario and it was also an attempt to assess the impact of the current Covid-19 pandemic on Evergy programs. For this study, the variables selected were avoided energy cost, avoided capacity cost, discount rate, and participation. Once the values were selected, the boundaries for each of these variable as well as the distribution for sampling within those boundaries was defined. Once these were defined a sampling algorithm was used to generate a full set of program inputs. For this analysis, 250 iterations were done to populate the full set of samples. The model was then run using each sample of the variables, with the results for the key program indicators recorded. Once all iterations were complete, the results from across the full set of samples were plotted and evaluated

For the avoided energy cost, the bounds were based on scenarios used in the latest Evergy Missouri IRP with a uniform distribution for sampling. For the avoided capacity cost, the bounds were varied over time. The bound started at 50% to 100% of the baseline for the first three years, followed by 75% to 100% of the baseline for the next three years, and finally at 75% to 125% for all the rest of the years. During all boundary periods a uniform distribution was used for sampling. For the discount rate, the bounds were between 3.5% and 4.5% with a uniform distribution for sampling.

For participation, the boundaries were set independently for each program, with the maximum reduction in the first year. Large reductions were close to complete reductions, while medium and low reductions in participation were equal to three quarters and half of the participation of the RAP scenario, respectively. The sampling used a distribution skewed towards the status. The boundaries were developed based on data and insight from the program implementation teams. After the first year, the participation increased, gradually returning to the RAP baseline by the fifth year.

While the variation in the avoided costs and the discount rate result in a wide variation in the Total Resource Cost (TRC) test and the Utility Cost Test (UCT), the portfolio remains cost effective in most cases when measures use the TRC and all cases when measures use the UCT. In the long, the portfolio is expected to perform quite similarly to the RAP scenario. Participation reductions used to estimate the impacts of COVID-19 are more significant for the commercial and industrial sectors than the residential sector, but the impacts estimated through 2028 are only modest. In addition, energy savings and cost-effectiveness vary independently of each other indicating that the main drivers behind the cost-effectiveness are the avoided costs and discount rate, and not the energy savings.

A comprehensive sensitivity and uncertainty analysis can be found in Appendix 5C, section III.

The annual incremental and cumulative energy and demand impacts and budgets for each scenario are presented in the workpaper "Evergy Missouri West 2021 IRP Exhibits.xlsx".

2. The impact of uncertainty concerning the cost effectiveness by identifying uncertain factors affecting which end-use resources are cost effective. The utility shall identify how the menu of cost-effective end-use measures changes with these uncertain factors and shall estimate how these changes affect the load impact estimates associated with the demand-side candidate resource options. —

The potential uncertainty concerning cost-effectiveness was accounted for with five achievable scenarios and two stand-alone scenarios developed by ICF.

- Program RAP-: Evergy continues operating only its current programs, but savings levels are lower than what Evergy historically achieved with reduced cost.

- Program RAP+: Similarly, Evergy continues operating only its current programs, but savings levels are higher than what Evergy historically achieved with increased cost.

- Program MAP: is a theoretical scenario where all customer incentives are set to 100% of measure incremental costs. The other important change in this scenario is that the cost-effectiveness threshold is changed from the program level to the sector level. This would give Evergy more flexibility to adjust programs to meet overall savings targets. Emerging technologies as well as added programs are also evaluated in MAP.

- Program MEEIA: There are many changes in the MEEIA scenario from RAP scenarios. New economic measures are added to current programs, and the performance of current programs is increased above RAP+ levels based on benchmarking and ICF expert input. Additionally, entire new programs and economic measures are added to achieve. MEEIA goal (20 CSR 4240-20.094(2)).

- Program DR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

- Program DSR Stand-Alone: is aimed to provide the absolute maximum potential if the programs were implemented independently and individually.

In addition, ICF performed sensitivity and uncertainty analysis on the RAP scenario. It was address in 6.3.1. A comprehensive sensitivity and uncertainty analysis can be found in Appendix 5C, Section III.

SECTION 7: DEVELOPMENT OF EVALUATION PLANS

(7) For each demand-side candidate resource option identified in section (6), the utility shall describe and document the general principles it will use to develop evaluation plans pursuant to 20 CSR 4240-22.070(8). The utility shall verify that the evaluation costs in subsections (5)(B) and (5)(C) are appropriate and commensurate with these evaluation plans and principles. —

Program evaluation supports the need for public accountability, oversight, validation of program performance and cost-effective program improvements. The performance of DSM portfolios in regulated jurisdictions is almost universally evaluated by third-party independent contractors. Evergy Missouri West has designated approximately 5% of its portfolio budget for Evaluation, Measurement and Verification (EM&V) activities.

Evergy Missouri West will engage an EM&V contractor(s) to conduct process and impact evaluations of the DSM programs. The EM&V Contractor will meet with Evergy program staff to discuss evaluation objectives, establish a schedule of deliverables and set up a communications protocol. The EM&V Contractor will develop a high level timeline of evaluation activities and reporting.

Process Evaluations

Process evaluations ensure that a program is operating as intended and provides information necessary to evaluate the cost-effectiveness and that can enable improvements in both the program design and implementation. Each demand-side program that is part of the utility's preferred resource plan shall be subjected to an ongoing evaluation process which addresses at least the following questions about program design.

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

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

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

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

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

Process evaluations assess customer understanding, attitudes about, and satisfaction with the program and other educational activities. The EM&V contractor will assess the effectiveness of the marketing and outreach, trade ally involvement, and whether implementation milestones are met adequately and on schedule. These evaluations will use sales and promotion data maintained by the tracking system as well as customer survey data.

Evaluation Plans

The EM&V Contractor will develop evaluation plans for each program, identifying the program objectives, key researchable issues, data collection requirements, sampling plan, budget and timeline. The sampling plan will describe the sample design, interview methodology and stratification. The interview methodology will range depending on the market actor being interviewed, from on-site interviews, in-depth interviews, virtual or telephone interviews. The EM&V Contractor will identify key market actors, such as Evergy staff, third-party implementation contractors, participation trade allies, and participation customers. The sample size of each group will be calculated at a 90% confidence interval with ± 10% precision. The EM&V Contractor will provide a draft of the EM&V Plan for Evergy review, conduct a virtual meeting of that EM&V plan with Evergy, Evergy implementers, EM&V Auditor, and Missouri stakeholders' and incorporate their comments and suggestions in the final EM&V Plan.

Document Review

The EM&V Contractor will collect program materials, including, but not limited to, process flowcharts, third-party implementation contractor agreements (redacted as necessary), trade ally agreements, rebate applications, and marketing and outreach materials.

The EM&V Contractor will also evaluate the program tracking system(s), including initial data validation (application processing, measure and savings capture and validation, audit trail, and system location), security, and data granularity (types of data being captured, QA/QC processes, data thresholds and back-up data capture, refresh rate and automated validations).

Market Actor Interviews

Interviews with key market actors will focus on understanding the program history and objectives as well as program implementation, including, but not limited to:

- Marketing and outreach activities
- Third-party implementation contractor responsibilities and management, if applicable
- Customer acquisition and participation process
- Trade Ally participation
- Rebate application processing
- Program tracking and reporting

Interview questions will be based on portfolio- and program-level activities and achievements to identify process improvements to improve program efficiency.

Customer Surveys

Participating customer surveys will seek to understand the customer experience with the program and awareness of the Evergy portfolio. The surveys will identify barriers to participation, spillover, and areas of improvement.

Trade Ally Surveys/Interviews

Trade allies will be asked about clarity of program rules, support from KPC&L staff and/or third-party implementation contractor, marketing efforts, and rebate applications. The surveys/interviews will identify barriers to participation, free-ridership, spillover, and opportunities to improve program processes.

Non-Participating Customer and Trade Ally Interviews/Surveys

Where appropriate, interviews with non-participating customers and trade allies will be conducted to better understand the free ridership, spillover, barriers to participation and marketing messages.

Impact Evaluations

The EM&V Contractor will conduct impact evaluations annually according to Missouri requirements, and follow the rules in Section 20 CSR 4240-22.070 (8) (B). Impact evaluations estimate gross and net demand, energy savings and the cost-effectiveness of installed systems. These evaluations used to verify measure installations, identify key energy assumptions and provide the research necessary to calculate defensible and accurate savings attributable to the program.

The EM&V Contractor will develop evaluation plans that ensure the appropriate measurement of savings in compliance with the appropriate International Performance Measurement and Verification Protocol (IPMVP) Framework and Uniform Methods Project (UMP) as well as the State of Missouri EM&V protocols. The evaluation will verify measure installations and identify key assumptions for equipment life, incremental equipment cost, free ridership and spillover. The evaluation will also provide the necessary research to calculate defensible and accurate savings attributable to the program.

The EM&V Contractor will evaluate program cost-effectiveness using the standard tests including Total Resource Cost, Societal Cost Test, Participant Test, Utility Test and Rate Impact Measure Test.

SECTION 8: DEMAND-SIDE RESOURCES AND LOAD-BUILDING PROGRAMS

(8) Demand-side resources and load-building programs shall be separately designed and administered, and all costs shall be separately classified to permit a clear distinction between demand-side resource costs and the costs of load-building programs. The costs of demand-side resource development that also serve other functions shall be allocated between the functions served. —

Evergy West has provided its cost-benefit analysis for transportation electrification (TE) in its 2021 TE program portfolio filing Case No ET-2021-0269.