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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. EO-2018-0211

DIRECT TESTIMONY

OF

CRAIG P. AUBUCHON

ON

BEHALF OF

UNION ELECTRIC COMPANY

d/b/a Ameren Missouri

St. Louis, Missouri

July 2, 2021

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Craig P. Aubuchon and my business address is One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

Q. By whom are you employed and in what capacity?

A. I am the Senior Manager of Energy Efficiency Operations, within the Energy Solutions group at Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company"). In this role, I am broadly responsible for the Company's demand side management ("DSM") portfolio. This includes implementation; evaluation, measurement and verification ("EM&V"); and regulatory planning and compliance.

Prior to my promotion in February 2021, I served as the Manager of Energy Analytics. In that role, I was responsible for overseeing annual EM&V activities. I was directly responsible for managing our work related to the Market Potential Study ("MPS"). The MPS provides key inputs into the Integrated Resource Plan ("IRP") and provides estimates of the maximum achievable and realistic achievable potential of demand side management. In both my prior and current role, I collaborated closely with our resource planning team throughout the IRP process, particularly regarding evaluation of DSM portfolios and sensitivities.

Q. Please describe your educational background and employment experience.

A. I received a Bachelor of Arts in Economics summa cum laude from Washington University in St. Louis in 2006.

I started my career with the Federal Reserve Bank of St. Louis as a research associate in 2007, where I worked in increasing levels of responsibility until 2010. During that period, I was

responsible for supporting two PhD researchers with quantitative and qualitative analyses on issues of macroeconomic policy and regional economic conditions, trade, and banking policy. I co-authored several peer reviewed publications during this period, with various colleagues on these topics.

I returned to graduate school in 2010, to the School of Public and Environmental Affairs at Indiana University Bloomington. I received a Masters of Public Administration and a Masters of Environmental Science in 2012.

I started with the economic consulting firm, Analysis Group, Inc. in 2012 as an associate, where I worked until 2017. During that time, I was promoted to Manager. At Analysis Group, Inc., I specialized in energy and environmental issues, with a particular focus on electricity markets. I managed several teams and supported expert testimony on a wide range of issues, including rate design, prudence reviews, and competitive resource solicitations. Clients included utilities, independent power producers, clean energy groups, and ratepayer advocates such as the Massachusetts Attorney General's Office. Many of my projects required the use and review of detailed production cost models, to estimate the long term costs and benefits of various generator retirement or clean energy policy proposals. Of particular note, I managed the team that served as the independent consultant to the New York Independent System Operator for the 2017-2021 Demand Curve Reset ("DCR") project. The DCR project defines the relevant parameters for the capacity market. That project required a detailed analysis of the cost of new entry ("CONE"), net energy and ancillary service revenues, and the appropriate cost of capital and associated financial parameters. We presented our results through multiple stakeholder workshops over an 18-month period, co-authored a final report and filed an affidavit before the Federal Energy Regulatory Commission ("FERC"). I also served as a co-author on a number of widely read and publicly

available reports, supporting clean energy and consumer policies. This included several reports in support of the federal Clean Power Plan, which were cited in a FERC technical conference and used as the basis for testimony by my co-author in front of the U.S. Congress.

Between 2017 and 2018, I worked as a sub-contractor to Analysis Group, Inc., and led the analysis of long term greenhouse gas emission reduction plans for a municipal electric provider. In 2018, I joined the U.S. Bank Community Development Corporation in St. Louis, as an Asset Manager in the renewables division. In that role, I was responsible for the daily oversight of an $850 million tax equity portfolio of more than 1 gigawatt of wind and solar capacity throughout the United States.

In 2019, I accepted the opportunity to join Ameren Missouri as described above.

II. PURPOSE OF TESTIMONY

Q. Please summarize your testimony.

A. Ameren Missouri seeks a second extension of its existing Missouri Energy Efficiency Investment Act ("MEEIA") programs within File No. EO-2018-0211. Specifically, Ameren Missouri proposes another one year extension for its core programs in the residential, business, demand response, and low income portfolios. The Company is seeking an additional extension of its programs, given the state and scope of issues related to the Company's pending electric and natural gas rate reviews and the 2020 IRP and.

In my testimony, I describe the rationale and purpose of this request. In addition, I describe the proposal as it relates to the overall portfolio budget, savings targets, EM&V framework, and earnings opportunity. The current extension largely relies on, and remains consistent with, the framework developed through the Unanimous Stipulation and Agreement for Program Year 2022 ("PY22"), which was approved by the Commission on August 5, 2020. Throughout my testimony,

I provide additional detail on any key changes from that framework. For example, savings targets in Program Year 2023 ("PY23") are updated to reflect a pending federal code and standard change regarding central air conditioners. Accordingly, the baseline for savings reflects a seasonal energy efficiency ratio ("SEER") 14 unit as opposed to a SEER 13 unit. As described later in my testimony, Ameren Missouri would expect to codify these changes in a PY22 update to the Technical Resource Manual ("TRM"), to be effective January 1 2023. In addition, I also describe a proposal to proactively use EM&V efforts in PY22 and PY23 to inform planning for future MEEIA cycles.

Tim Via, Manager of Low Income Programs, provides additional testimony regarding the design and evolution of the low income program portfolio, including targets for the single family and multifamily programs.

Q. Is the Company proposing to update its tariffs to reflect a new naming convention for the proposed modification?

A. No. The current Energy Efficiency Investment Charge ("EEIC") Tariff defines "MEEIA 2019-21 Plan" as the plan approved in File No. EO-2018-0211 "as may be amended."[1] Ameren Missouri wishes to keep this proposed modification to the existing plan as simple as possible. Therefore, since Ameren Missouri is simply proposing a modification, or amendment of its current plan as contemplated by the tariffed language there is no need to revise the naming convention throughout its tariffs. This is consistent with the approach that the Company and stakeholders took with respect to the PY22 extension.

[1] "'MEEIA 2019-21 Plan' means Company's '2019-21 MEEIA Energy Efficiency Plan' approved in File No. EO-2018-0211 as may be amended." Ameren Missouri Tariff Sheet No. 91.14, Rider EEIC, Energy Efficiency Investment Charge for MEEIA 2019-21 Plan.

III. RATIONALE FOR THE EXTENSION

Q. Why is the Company proposing an extension of its current MEEIA programs at this time?

A. Ameren Missouri seeks another extension of its current MEEIA programs, while the Company and stakeholders begin to consider the Company's currently pending electric and natural gas rate reviews and continue to work through the 2020 IRP planning process currently underway.

First, note that the Company currently has both an electric and natural gas rate review before the Commission. Completing a rate review requires tremendous resources and attention from all parties involved. Even if the Company could develop and file a MEEIA plan in late 2021, it would be extremely difficult for all parties to dedicate sufficient time and resources to this topic, given the current needs of the ongoing rate reviews.

The ongoing rate reviews notwithstanding, it is not possible for the Company to develop a full MEEIA plan in late 2021. Development of a DSM portfolio requires multiple planning steps and is significantly interrelated with the IRP planning process that is currently underway.

As a first step, an MPS is required to define all cost-effective DSM resources. Then, the IRP uses an integrated financial and risk analysis to evaluate various combinations of these cost-effective DSM resources alongside other supply-side resources to identify the preferred plan. The IRP also defines the avoided costs that should be used in the future implementation and evaluation of DSM resources, to remain consistent with the preferred plan as identified in the IRP. Simply

put, given the many inter-dependencies of the IRP and DSM resources, it is not feasible to develop a long-term MEEIA plan while the IRP proceeding is still pending.[2]

Q. Did Ameren Missouri consider the Commission's recent policy guidance when developing its plan for another extension?

A. Yes. Robust DSM programs developed consistent with the MEEIA framework provide for cost-effective investments that help meet the current and long-term resource needs of customers. And as noted by the Commission, DSM programs also provide additional benefits for customers, with respect to health, safety, jobs, and overall satisfaction. [3]

Another one year extension best recognizes these multiple needs. An extension provides for an additional year of program operations for the benefit of customers at existing program levels and creates certainty for contracts and ensures seamless program delivery.

Another one year extension allows eases the potential resource burdens on stakeholders, while the Company and stakeholders make progress on several high profile cases at the same time.

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[2] Within the 2020 IRP, the Company identified that investment in the realistic achievable potential ("RAP") level of DSM investments would lead to the lowest present value revenue requirement and best serve customers as part of its preferred resource plan. However, stakeholders submitted comments and raised concerns regarding the selection and implementation of the preferred plan including but not limited to consideration of greater and lower levels of DSM investments; appropriate definition of relevant avoided costs to use in future resource filings and cost-effectiveness evaluations; and considerations regarding specific measures and program design regarding implementation of the DSM portfolio.

I note that the Company submitted a joint filing in File No. EO-2021-0021 on June 18 2021, regarding its plan to remedy some of the alleged deficiencies and concerns as set forth in that case. This represents an important first step. However, as discussed above, even if the Company were to begin developing its next MEEIA plan immediately, it would not be possible to file with the Commission with sufficient time to achieve approval before January 1, 2023.

[3] In File No. EO-2019-0132, the Commission noted in its final Report and Order dated December 11 2019 that: "[u]tilities should be endeavoring to increase customer participation in energy efficiency programs" (¶ 36) and recognized that "benefits from a reduction in a customer's bill is not the only benefit to customers. There are also societal benefits, such as improved health and safety, investment in local economies, and local job creation." (¶¶ 39-40)

Taken together, the benefits of another one year extension at this time will best allow the Company to remain consistent with Commission guidance regarding DSM implementation.

Q. What are the risks to not extending the current MEEIA programs?

A. Given the current state of discussions regarding the ongoing rate reviews and the IRP, failure to approve an extension would put the operation of PY23 programs at risk.

From initial inception to filing, it can take up to 12 months to develop a MEEIA plan. This amount of time is required for the Company to design relevant programs that are responsive to customer demand and current market conditions, seek relevant Request for Proposals ("RFP") as needed, and satisfy internal risk and governance control processes. Historically, after filing, it has taken up to an additional 12 months to obtain regulatory approval.

Simply put, it is not possible for the Company to begin long term planning for a future MEEIA cycle while important questions are outstanding on its IRP.[4] If the IRP concludes at the end of its 11 month cycle, then the earliest that the Company could begin planning for its next MEEIA cycle would be late 2021 or early 2022. Using historical precedent as a guideline, this would allow for a filing in late 2022 or early 2023. This does not leave enough time to work with stakeholders and obtain regulatory approval prior to the start of the PY23 year, which will occur on January 1, 2023. As noted above, this is particularly true given the current electric and natural gas rate reviews pending before the Commission.

[4] I note that the Company submitted a joint filing in File No. EO-2021-0021 on June 18 2021, regarding its plan to remedy some of the alleged deficiencies and concerns as set forth in that case. This represents an important first step. However, even if the Company were to begin developing its next MEEIA plan immediately, it would not be possible to file with the Commission with sufficient time to achieve approval before January 1, 2023.

Yes, the Company could begin planning earlier. But if those plans are based on output of the IRP or planning assumptions that are in question, then future MEEIA filings will need to re-visit those concerns, leading to a duplication of effort and/or a longer approval process. Again, this does not leave enough time to work with stakeholders and obtain regulatory approval prior to January 1, 2023. Failure to obtain regulatory approval would lead to a disruption to program delivery. In addition to the loss of customer benefits, a disruption creates additional challenges related to the supply and delivery of program operations (e.g., related to procurement, contracting, and training) and to customer satisfaction and participation.

In contrast, another one-year extension does allow the Company and stakeholders a path forward. By approving program budgets and program designs that maintain existing DSM resources, the Company and stakeholders can seek greater alignment on both the IRP and the rate review, before developing plans for the next MEEIA cycle. For example, the Company can begin planning its next MEEIA cycle in late 2021, file in late 2022, and potentially receive approval in 2023 – with sufficient time to execute contracts and implement data tracking systems, for a successful Program Year 2024 ("PY24") program launch on January 1, 2024.

IV. OVERVIEW OF PROPOSED 2023 BUDGETS

Q. How did Ameren Missouri determine the budget for the proposed modifications in 2023?

A. Ameren Missouri seeks a base portfolio budget of $75.2 million, plus a one percent contingency, for PY23. Given previously approved commitments for low income programs, this represents a net new approval request of $64.2 million.

Table 1: PY23 Total Budget Approval ($Millions)

Value	$ millions
Total 2023 budget (without contingency)	$75.2
EO-2018-0211 Approvals	$11.0
Net New approval	**$64.2**

To develop the PY23 budgets, Ameren Missouri relied on the approved budgets and programs identified in the PY22 Stipulation and Agreement as its starting point. Ameren Missouri proposes a continued focus on the core residential and business programs that deliver robust savings opportunities for participating customers. And in response to discussions held during the Program Year 2019 ("PY19") evaluation and based on the findings of the 2020 MPS market research, Ameren Missouri will continue to operate its lighting program as a dedicated low income offering. This is designed to address existing inequities in the penetration and saturation of LED technologies for low income homes.

The proposed budgets do include a 7.5 percent increase relative to PY22. This increase is primarily within the low income and demand response resource portfolios.

Q. Does the portfolio budget include a contingency?

A. Yes. The Company proposes a 1 percent variance contingency to the $75.2 million budget described above. The contingency is to be used for managing variations in the budget. This is the same variance contingency as approved with the PY22 framework.

Q. How does the proposed 2023 portfolio compare to the preferred plan currently identified and proposed in the 2020 IRP, and as identified in the most recent potential study?

A. The 2020 MPS estimated an $85 million budget for the RAP portfolio in 2023. Estimated portfolio budgets grow to approximately $100 million by 2025. The current budget of $75.2 million is 11.5 percent lower than the 2023 RAP budget.

The RAP portfolio included a wide mix of all cost-effective measures across a range of end-use categories. This included measures that maximize savings per customer as well as measures that help maximize customer participation. In particular, the RAP portfolio includes a general lighting program and other behavioral program options. Consistent with the PY22 framework, and for the purposes of this one-year extension, those programs are excluded from the current filing.

Q. Why is that a reasonable approach for the proposed modification to the already approved plan?

A. While current budgets and savings are below RAP, an extension maintains current program momentum and keeps the Company on a path to developing DSM resources for future needs.

The IRP also evaluated two Dynamically Optimized Portfolio Extension ("DOPE") portfolios, at the request of stakeholders. The DOPE portfolio focused on the continuation of the low income and demand response portfolios, while pausing core residential and business programs until 2028. The DOPE portfolios were developed to vary the timing of implementation in order to just meet the first identified resource need. The Company evaluated two DOPE portfolios, with 2023 budgets of $19 million and $39 million, respectively.

It is important to note that the 2020 IRP found that the preferred plan (which includes the RAP portfolio) leads to a total present value revenue requirement ("PVRR") that is nearly $700 to $750 million lower than the same resource plan with the DOPE portfolio.

Again, a key motivation of the current filing and extension of existing programs is to allow the Company and stakeholders to resolve outstanding issues in the IRP before developing the next MEEIA plan. The current plan, which extends PY22 budgets, represents a reasonable approach and balance of the various resource plans included in the current IRP.

Q. Please describe how the budget is allocated between the high level portfolios?

A. Again, the proposed budgets are largely consistent with the budgets and budget allocation approved in the PY22 extension. The total budget for core Residential and Business programs is $46.8 million, as compared to $45.8 million in PY22. Budgets continue to focus on the core programs identified in PY22, including:

- Residential: Heating, ventilation, and air conditioning ("HVAC"), efficient products, multifamily market rate, and Pay-As-You-Save® ("PAYS®")
- Business: Standard, Custom, Small Business Direct Install, and Retro-Commissioning

For PY23, the Company proposes a slight increase in both the low income and demand response portfolios. With respect to PAYS®, the Company proposes to offer up to an additional $10 million of customer funding, consistent with the PY22 program. Both of these topics are discussed in greater detail below.

Appendix A provides the current approved budget totals for the PY2019-21 cycle, including PY22 and the low income totals already approved for PY23 and Program Year 2024 ("PY24"). For simplicity of reporting, the current version of Appendix A includes a new sub-total

for demand response programs, as opposed to showing values in the Residential and Business portfolios, respectively.

Q. Why does the Company propose a slight increase in the low income and demand response portfolios?

A. The increased demand response budget serves two purposes. First, the program has experienced increased marginal costs for both initial and annual incentives. This is driven, in part, by slightly lower savings per participant, relative to forecast. Because demand response goals are cumulative, this impact carries forward through to current budgets to maintain the existing resource. Second, the increased budgets allow for the modest but continued growth of this program and resource through new customer acquisition.

For example, demand response customers can choose – at any time – to de-enroll in the program.[5] Customer satisfaction and continued engagement is paramount to maintaining the aggregate value of the demand response resource. Customers sign up for the program and make the initial capital investment for a thermostat (residential) or a meter (business) with the expectation that they will be able to receive demand response incentives over multiple years. Continuation of these programs sends a clear signal to the market that we will continue to encourage participation.

Similarly, the low income programs are designed, in part, to help Ameren Missouri's most vulnerable customers with the highest energy burden. The 2020 MPS reviewed various scenarios to help comprehensively serve the low income sector. Simply put, that study found that the need

[5] The PY20 Evaluation Reports found a program de-enrollment rate of only 7% over the first two years of the program, which indicates "sustained participation and participant satisfaction." Vol 4, p.28.

is extensive and persistent. A modest increase in annual budgets sends a strong commitment signal to both customers and the neighborhood and community based organizations that help support this work. Mr. Via provides further detail on the low income portfolio design and goals.

Q. Please describe the PY23 PAYS® proposal.

A. As approved in the PY22 Unanimous Stipulation and Agreement, the Company is authorized to target up to $15 million of financing in PY21 and PY22, with a target of $5 million and $10 million, respectively.

As a starting point, I feel that it is important to recognize that the Company is only halfway through the first year of its PAYS® implementation. This is the first PAYS® program being offered in Missouri and one of the first nationally by an investor owned utility as well.

From the Company's perspective, it is important to understand how to best accurately identify, market, and recruit the subset of high energy use and high energy use intensity customers that are expected to make up the majority of PAYS® potential customers. An additional challenge is fully understanding the actual rates at which Ameren Missouri customers participate (convert) at different copay levels.

Given this, a key question is to what extent (at this scale) the PAYS® program is a broad tactic to provide a broad set of measures to a broad set of customers, or, given the PAYS® tariff criteria, it is a more targeted tactic to provide a specific set of measures to a specific set of customers. The best way to answer this question is through actual program implementation, with feedback from customers and evaluation, in conjunction with additional market research and ongoing conversations with stakeholders, implementers, and customers. Answering this question will also help inform the overall strategy and role of the PAYS® program within the state of Missouri.

Q. Why is finding an answer to this question important?

A. There are two key assumptions in our calculation of the Total Resource Cost ("TRC") test: the total savings per home (which is a function of both the qualifying package of measures and the relevant baseline used to determine savings) and the conversion rate of customer leads to accepted projects. A customer's energy use intensity is expected to impact both. A more broadly targeted outreach will bring in customers with more moderate energy use intensities and those customers will trend towards higher copays. Higher copays would have the dual effects of lowering conversion rates and lowering the average savings per customer. This strategy will likely require enrolling more customers, at a higher administrative cost. This is important, given the overall budget levels. Simply put the more broadly this program is marketed to customers, regardless of their likelihood to qualify against the tariff requirements, the higher administrative costs per dollar of financed projects.

It is also important to note that for the PAYS® program, the Company developed its cost-effectiveness analysis assuming a generic savings per participant, based on feedback from the implementation team and their experience in other jurisdictions. This is appropriate given the current phase of implementation; future values will be updated based on actual program performance. This average savings per participant represents savings relative to the customer's existing equipment. Thus, HVAC measures funded through the PAYS® program are best thought of (implicitly) as an early replacement measure. Expansion of a PAYS® program to serve a broad range of customer for a broad range of measures, including a broader reach of central air conditioners, would need to carefully evaluate this assumption and its implications on overall cost effectiveness as measured against the TRC. I discuss the early replacement distinction in greater detail below.

Q. Why is an additional $10 million in funding reasonable?

A. The proposed PY23 budget seeks to maintain the PY22 design and offer up to an additional $10 million in funding to qualifying customers. Based on average project size and conversion rates to date, the Company conservatively forecasts that the current proposed budget would result in $6.2 M of customer funding for qualifying customers.

The Company remains committed to the success of these programs – and lessons learned during the first year of implementation will be critical to future success. Approving an additional year of funding for the PAYS® program will create additional certainty and stability for implementers and contractors. It sends a strong signal that investment will continue in Missouri and should allow all parties to begin developing long term resources to best meet the needs of the program.

Q. Are there any significant changes to the PAYS® program?

A. The PAYS® program will include estimated gas savings when calculating customer benefits. Going forward for any newly approved programs, the owners of the PAYS® trademark have made the use of bill savings from all major fuels sources in qualifying a project under the criterion that project cost is equal or less that 80% of the estimated post upgrade cost savings over 80% of the upgrade estimated life a required program element. This tariff modification will better allow the company to serve existing customers and allow customers to recognize (and monetize) a wider range of benefits provided by energy efficiency upgrades. An exemplar tariff illustrating this change is included with my testimony as Attachment 4.

Note that this change will likely result in new or expanded cost-effective upgrades relative to an assessment completed without these benefits. For example, this may include furnace systems when that furnace is paired with an AC as part of a rated HVAC system. Therefore, and prior to

the start of the PY23 year, it will be important for the Company and stakeholders to adequately define what measures can be attributed to and allocated to an electric PAYS® program. With respect to co-delivery scenarios, the Company and stakeholders will need to define the appropriate allocation factors that can be used in the co-delivery of shared electric and gas measures, such as insulation, and more specific electric or gas measures, such as the furnace described above. In scenarios without co-delivery, the Company will need to define – and likely limit -- applicable measures within a qualifying package. For example, it would be inappropriate to include the financing and payment of a new natural gas furnace upgrade on a customer's electric bill. This situation may arise if the inclusion of natural gas savings and associated customer benefits found that the measure would qualify under the PAYS® tariff. Finally, additional work will need to be addressed regarding how to coordinate billing to customers as well. In short, including gas savings in the PAYS® program represents a significant change that will require participation from multiple parties to address.

Q. Is the Company proposing any changes to existing programs in 2023?

A. Yes. The residential demand response program now includes additional incentives for electric water heaters. The current plans forecast approximately 1,000 units. This is an important continued improvement opportunity for the program. It expands participation options for customers. From a resource standpoint, electric water heaters also provide a greater impact to winter peak than summer peak conditions. Therefore, this incremental investment will allow the Company to better test winter demand response capabilities. This type of information will be important to understand the future evolution of demand response programs. I discuss this in greater detail at the end of my testimony.

V. OVERVIEW OF PROPOSED PROGRAM YEAR 2023 SAVINGS TARGETS

Q. What are the proposed savings targets for the proposed $75.2 million budget?

A. For PY23, Ameren Missouri forecasts gross first year energy savings of approximately 190,000 mega-watt hours ("MWh") and 93 mega-watts ("MW").

Appendix A provides additional detail by program. A detailed submittal tool is also provided with the work papers to this filing. The submittal tool provides additional detail on the assumed measure mix and savings per measure.

Q. How do these savings targets compare to the MEEIA 2019-21 Plan?

A. The savings targets are largely consistent with, but slightly lower than, the savings targets developed for the PY22 plan. Program budgets continue to support core programs with a focus on deep savings per customer. The lower savings are driven, in part, by higher baseline assumptions, a general and continued shift away from lighting measures towards greater HVAC measures, and an increased focus on low income and demand response customers.

The PY23 plan continues to provide significant benefits to customers. Table 2 provides the net benefits for the original PY19-21 plan, the 2019-22 plan, and the cumulative benefits for the full portfolio including PY23. Table 2 shows that the current TRC for the portfolio, including the PY23 extension, remains a robust 1.59 with net lifetime benefits to customers in excess of $300 billion.

Table 2: Portfolio Cost Effectiveness ($2019)

	2019-2021		2019-2022		2019-2023	
	Utility Cost Test	Total Resource Cost	Utility Cost Test	Total Resource Cost	Utility Cost Test	Total Resource Cost
Benefits	$592,338,018	$592,338,018	$755,739,933	$755,739,933	$877,088,429	$877,088,429
Costs	$242,054,545	$347,690,162	$307,062,031	$438,453,249	$363,196,760	$511,072,471
Earning Opportunity	$25,916,228	$25,916,228	$33,420,870	$33,420,870	$41,725,859	$41,725,859
Net Benefits	$324,367,245	$218,731,628	$415,257,032	$283,865,815	$472,165,810	$324,290,099
UCT Benefits/Costs Ratio	2.21		2.22		2.17	
TRC Benefits/Costs Ratio		1.59		1.60		1.59

Q. Are there any changes to assumptions that impact the PY23 savings targets?

A. Yes, there are. First, I describe changes in the residential portfolio. Second, I describe changes within the business portfolio. I conclude with changes in the demand response portfolio.

On the residential side, the Company has prospectively included a baseline change for certain HVAC measures, due to expected changes in federal codes and standards. On January 1, 2023 new standards for central air conditioners are expected to be in effect that will move the baseline from a SEER 13 unit to a SEER 14 unit. Similar adjustments have been made for heat pumps.

While federal standards may change on a specific day, in practice, SEER 13 units will remain in the market. Actual baselines take time to adjust, as the market works through existing inventory. It is important to note that Ameren Missouri does not currently incentivize SEER 13 or SEER 14 units. Instead, the purpose of the program is to focus on market transformation and adoption of higher SEER units by customers. However, by explicitly accounting for this assumption during the goal setting process, the Company and stakeholders can proactively develop resource targets. It is equally important that the Company and stakeholders agree on how to

account for this assumption in the intervening evaluations. Ameren Missouri would expect to file updated TRM for this code in the fall of 2022 to be effective January 1, 2023. Evaluation efforts would continue to rely on the federal standard and baseline assumption that is in effect during the time of program implementation.

With respect to the business programs, gross savings targets represent a continued trend toward a greater mix of HVAC and other custom measures and away from lighting. HVAC projects typically have a higher peak demand coincident reduction ("PDCR") factor, with greater demand savings and fewer energy savings, relative to a similar sized lighting project. Business programs have also been adjusted to reflect realization rates. For PY23, the Company has presented gross savings targets using a 95 percent realization rate; in this sense, gross values represent the expected evaluated ex post gross savings.[6]

Finally, I note that demand response targets reflect an increasing marginal cost per MW to both acquire new customers and maintain existing customers, relative to initial filing assumptions from 2018. This affects both the incremental and the cumulative costs. Demand savings are reported as ex post totals, consistent with prior years. A key assumption in the residential demand response program is the average savings per participant. This is necessary to estimate the total resource capability for a given number of enrolled thermostats. This value has been updated to the current capability as determined from the PY20 EM&V reports.

[6] Ex post gross savings represent the evaluated gross savings, based on the final installed measures. This differs from the ex ante gross savings which relies entirely on deemed values for forecasted gross savings.

Q. Why are these changes necessary?

A. These changes are necessary to establish an appropriate portfolio-wide savings target. From a planning perspective, it is important that Ameren Missouri, stakeholders, and to some extent, evaluation contractors agree on certain key assumptions and methodologies – before setting an earnings opportunity framework. Ensuring that key assumptions are consistent with both portfolio planning and portfolio evaluation will allow parties to focus on the measurement and verification of program implementation and ensure continuous improvement for the benefit of customers.

Q. Are there any other assumptions that impact savings targets that are not accounted for here?

A. Yes, there are several. One of the most timely and important is within the HVAC program, specifically regarding the ratio of early replacement ("ER") and replace on fail ("ROF") projects.

In PY21, the Company, stakeholders, and EM&V contractors will continue to discuss what should be the appropriate method used to measure the proportion of ER and ROF.

Historically, evaluations have relied on a technical definition of failure, as measured and reported by contractor measurements of temperature drop across the coil. In contrast, current evaluation research work underway is assessing whether it is possible, and if so how, to instead measure and define ER based on the customer's intent at the time of purchase.[7] In this framework, an ER distinction becomes both an economic and technical definition of failure.

[7] The Company uses a conservative assumption here, for the purposes of planning; such an assumption is not an endorsement of what the correct answer is or should be. Indeed, the Company has serious concerns about the ability to accurately assess customer intent at the time of purchase, given contractor influence, counterfactual response bias, and other challenges inherent with customer surveys.

Q. Why should the Company and stakeholders focus on this issue at this time?

A. This distinction matters because it is used to determine the appropriate baseline against which savings are measured. For ROF systems, the current federal standard, as defined in the TRM, is used as the baseline. As described above, for a central air conditioner ("CAC") this will be a SEER 14 unit. In contrast, the appropriate baseline in an ER scenario is the efficiency rating of the existing system. For many customers, this could be a SEER 8-12 unit. ER savings at the old baseline are assumed to last for 6 years before reverting to the current federal standard. Said another way, the average ER is completed 6 years before the final system failure. Thus, an ER will have higher first year energy and demand savings than a comparable ROF.

Note that in PY23, Ameren Missouri will continue to operate the same programs, with the same contractors, as approved for PY19-22. Thus, what is changing are the methodological assumptions used to estimate gross savings.

In setting the portfolio goals for PY19-21, the Company assumed an ER/ROF assumption of approximately 90/10 ratio, based on historical evaluated results using the technical, engineering based definition of ER. For PY20, the Company and stakeholders agreed to deem an 85/15 value for the purposes of evaluation. As part of the PY22 filing, the Company conservatively assumed a 60/40 ratio when setting portfolio goals. This assumption does not represent a determination or point of view that this is the correct value; instead, it was a conservative assumption used to account for the possibility of future changes. In PY23, the Company has again assumed a 60/40 split, for consistency with the PY22 framework.

Q. What is the expected impact from changes in this assumption?

A. Table 3 illustrates the impact of the ER/ROF assumption on first year energy and demand savings.

Table 3: Illustration of Early Replacement and Replace on Fail values on Cost Effectiveness and Program Savings

	85% ER - 15% ROF 13 SEER Baseine	85% ER - 15% ROF 14 SEER Baseine	60% ER - 40% ROF 14 SEER Baseine	35% ER - 65% ROF 14 SEER Baseine	15% ER - 85% ROF 14 SEER Baseine
Program Level TRC	1.95	1.78	1.61	1.41	1.24
Program Level UCT	2.67	2.43	2.06	1.69	1.39
Net Energy Savings	32,226,344	32,005,237	26,571,004	21,136,771	16,789,384
Net Demand Savings	20,756	20,492	15,607	10,721	6,813
Gross Energy Savings	42,974,189	42,679,340	35,432,729	28,186,119	22,388,831
Gross Demand Savings	27,679	27,327	20,812	14,297	9,085
			* Used in this filing		

As shown above, the impact of this methodological change is significant. If portfolio goals are set using one methodology, definition and set of assumptions, but then later changed to another methodology, definition and set of assumptions during evaluation, it would become unrealistic and functionally unachievable for the Company to meet portfolio earnings incentive targets. Or, the Company would need to re-align budgets to other programs to maximize demand savings. Neither is a desirable outcome and does not match the overall design or intent of the portfolio – which is to provide value to customers across a range of measures and channels. Aligning on key assumptions now ensures that the Company will be able to offer its proposed plan as intended.

Q. How does the Company propose to resolve this issue?

A. Given the importance of the ER/ROF assumption on portfolio goals, the Company proposes to prospectively develop a deemed ER/ROF throughout the PY21 evaluation process and then file an amended portfolio savings goal for PY22 and PY23 using that final value, in advance of the PY22 implementation.

Such an update is warranted, so long as the program continues to be cost-effective. If instead, changes in baseline assumptions or ER/ROF framework indicated that the program was

no longer cost effective, the Company would work to develop a new HVAC program design, which would be included in future MEEIA filings.

I discuss the need for prospective alignment on certain EM&V assumptions in greater detail, below.

VI. EARNINGS OPPORTUNITY TARGET AND EMV&V FRAMEWORK

Q. Please describe the proposed Earnings Opportunity framework.

A. Ameren Missouri proposes to rely on the same earnings opportunity ("EO") framework that will be used in PY22. The target or "core" EO will be determined as a percent of program spending, relative to various floor and cap thresholds for each program. For the proposed budget, the target EO will range from $9.1 million (at spending floors) to $11.55 million (at spending caps, excluding contingency). Consistent with PY22, the EO will be reduced by $1 million for each spending floor that is missed. In addition the spending floors, the earnings for spending on the multifamily low income program will be subject to a requirement that the Company achieve or exceed 15 percent savings per participating all electric property, subject to a $250,000 penalty. Mr. Via describes this EO requirement in greater detail.

The spending floors are as follows:

- Residential: $14,000,000 (with a minimum of $750,000 for PAYS®)
- Business: $20,000,000
- Low Income: $12,000,000 (with an $18,000,000 cap)
- Demand response: $12,000,000

The core EO will vest at $59 million of actual spend. The formula for core EO will be equal to $11.55 million * (actual spending / $75.25 million), and will be capped at $11.55 million.

In addition to the core EO, and consistent with the PY22 framework, the Company proposes two EO performance bonus categories related to portfolio savings targets and demand response performance.

- ***Portfolio savings***: up to $750,000 is available for exceeding the portfolio-wide gross MW performance target. Payout is defined as $11.55 million * (actual ex post gross first year demand savings / target ex post gross first year demand savings). There is no performance bonus (or penalty) if the Company does not achieve the target ex post gross first year demand. The portfolio savings target is equal to cumulative demand response capabilities plus incremental annual first year MW savings from residential, business and low income programs.
- ***Demand response performance***: a maximum of $510,250 is available for ten qualifying residential demand response events ($51,250 per event), as compared to a cap of 8 events in PY22. For the purposes of calculating a bonus, no more than 5 test events will be included, unless those test events are specifically called for a) locational demand purposes or b) off-peak capability, such as a winter peaking period. Process evaluation findings from these additional test events will be described in annual EM&V reports. The Company will call all of the enrolled participants for each event with the exception of those identified in the evaluation strategy as the control group for each event. Note that a triggered demand response event will depend on actual system conditions in 2023. The Company may or may not be able to call the remaining non-test events to hit the performance cap, depending on actual system resource conditions and needs.

Combined, the total target EO opportunity (e.g., core + bonus) is equal to $12.8 million.

Q. How does the Company propose to determine the throughput disincentive?

A. Again, for simplicity and consistency, the Company proposes to use the PY22 framework with respect to the determination of the throughput disincentive ("TD"). TD will continue to be calculated using a deemed 82.5% net-to-gross ratio. There will be no TD true-up for net to gross. The Company will continue to complete a TD true up based on actual ex post realization rates.

As described below, EM&V would verify the measure counts and that deemed savings were applied correctly. The results of the PY22 and PY23 EM&V would then be used to prospectively update the TRM to be used in the following program year.

Q. Please describe the proposed EM&V framework.

A. Again, the Company proposes to use the same PY22 framework. The PY23 evaluation will focus on just the measurement and verification ("M&V") of ex post gross savings, limited to updating deemed savings verification. In PY23, there will be no new net-to-gross evaluation and no process evaluation for existing programs.

Deemed net-to-gross values will be used for the purposes of cost-effectiveness testing. Deemed values will be defined in the PY23 evaluation plan, which is shared with and reviewed by stakeholders.

Q. Why is that a reasonable EM&V framework?

A. Again, consistent with PY22, the Company proposes that administrative and incentive budgets will be monitored at the Residential/Business/Demand Response/Low Income level and need to stay within a 15 percentage point variance of the filed targets. This ensures that the programs will continue to be delivered in a manner consistent with prior years. The Company

has offered these programs for more than a decade. Prior evaluations have consistently found these programs to be cost-effective, to the benefit of customers.

Q. How does EM&V fit into the Company's broader MEEIA planning process?

A. The purpose of EM&V is to help drive continuous improvement in programs, to the benefit of customers. Net savings estimates can vary year to year, based on the survey design and methodology employed, assumptions used to aggregate results, the attitudes and makeup of the sample population, and other methodological factors. In many instances, this annual variability has no bearing on the overall implementation strategy or cost-effectiveness of the programs.

From this perspective, EM&V is best thought of as the first step in the implementation plan and cycle, as opposed to the last step. Indeed, many states have increasingly moved toward a prospective evaluation framework as opposed to a backwards looking, reactive or retrospective framework. In approving PY 2022, Ameren Missouri believes important progress in this direction has been made.

Given any level of DSM budget and resources, the Commission must determine how much of that Ameren Missouri should to invest in implementation of programs and how much it should invest on EM&V. A forward looking, prospective evaluation framework allows stakeholders and the independent evaluator to identify the most important and pressing issues and then assess them on a going forward basis, rather than evaluating every issue every year. A forward looking framework also creates additional stability and certainty for the Company and its implementation contractors. This allows for more robust planning and reduced administrative expenses.

Q. Is the Company proposing any prospective research at this time?

A. Yes. The Company would propose adding $500,000 of budget to the PY22 EM&V budget. The purpose of this budget would be to complete additional and targeted prospective net-

to-gross research and finalize other key methodological assumptions related to baselines. This research is necessary to help inform future planning efforts for PY24 and beyond. Research would be completed in PY22 with results available in the first half of PY23. These updated values would be carried directly into the next MEEIA filing and be used prospectively in future cost-effectiveness testing. Completing the research now, allows the Company and stakeholders to make the best and most appropriate planning assumptions on the front end. Future evaluations will again focus on M&V and process, and ensure that programs are delivered as intended.

The proposed budget could be used to address any number of topics of interest. For example, with respect to the residential programs, the Company would propose to complete a net-to-gross evaluation for i) the HVAC program and ii) the residential products program, with a particular focus on smart thermostats. With respect to the business programs, the Company would propose to evaluate the net-to-gross for lighting and non-lighting projects within the standard and custom programs. However, final prospective PY22 EM&V research needs would be determined with stakeholders as part of the PY22 evaluation plan.

Q. Why are these studies needed at this time?

A. These studies are needed for several reasons. On the Residential side, the HVAC midstream program was just introduced in PY20. PY22 will represent its third year of operation. It is important to understand the net impact of this new delivery channel, so the Company and stakeholders can understand its relative impact and allocate budget dollars accordingly in future years. Midstream programs are still relatively new throughout the country, and EM&V efforts here will contribute significantly to the emerging body of literature. With respect to the efficient products category, it is important for the Company and stakeholders to prospectively understand customers' attitudes and intent related to smart thermostats, particularly as this technology matures

and adoption accelerates. Evaluation research will help define how and to what extent future programs should continue to incentivize this measure, or whether customer funds are better allocated to incentivizing continued participation in demand response programs enabled by this technology. Ameren Missouri does not use a market baseline in its TRM. However, at some point in the near future, net-to-gross values would be expected to decline as consumers adopt this technology in greater numbers independent of utility intervention. Prospectively identifying this inflection point will allow the Company and stakeholders to align on planning and evaluation assumptions to be used in future EO targets.

The PY19 and PY20 evaluations identified meaningful variability in the net-to-gross impacts of business programs, relative to prior years. This variability appears to be a function of several factors, including the introduction of a new evaluation methodology, the economic implications of the COVID pandemic, and changing attitudes toward lighting measures. Again, PY22 provides an important opportunity to prospectively evaluate these issues and develop future programs and plans that are responsive to these market changes.

VII. OTHER CONSIDERATIONS

Q. Is the Company making any other proposals as part of this filing?

A. Yes. During the past several years, the Company has appreciated the opportunity to prospectively collaborate with stakeholders on items of mutual interest. Given the breadth and depth of DSM programs, there can be a seemingly unlimited number of topics that require attention. Collaborative workshops have proven to be an effective method to focus on the most pressing current or emerging issues.

As part of this filing, the Company proposes to continue these discussions, and host another demand response collaborative. As a starting point, the Company suggests at least 3 workshops to

be held over an 18 month period between September 2021 and March 2023, approximately one meeting every three to six months. The purpose of another demand response collaborative would be to discuss several interrelated topics, including but not limited to:

- The impact of federal regulations, including FERC Orders 719 and 2222;
- Whether or how opt-out customers could participate in demand response programs;
- Potential program design considerations, related to winter and locational capabilities;
- More tailored and targeted performance incentives that recognize the full customer value stream.

Again, the Company would expect to use any lessons learned through these discussions in the development of future MEEIA plans, beginning in PY24.

VIII. CONCLUSION

Q. Does that conclude your testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

AFFIDAVIT OF CRAIG P. AUBUCHON

STATE OF MISSOURI)
)
CITY OF ST. LOUIS)

Craig P. Aubuchon, being first duly sworn on his oath, states:

1. My name is Craig P. Aubuchon. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri") as Manager of Energy Analytics.

2. Attached hereto and made a part hereof for all purposes is my Direct Testimony on behalf of Union Electric Company d/b/a Ameren Missouri consisting of 30 pages and no Schedules, all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. Further, under the penalty of perjury, I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

/s/ Craig P. Aubuchon
Craig P. Aubuchon

This 2nd day of July, 2021.