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BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSIOURI

In the matter of Union Electric Company d/b/a Ameren Missouri's 4th Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA.	))))	File No. EO-2023-0136

DIRECT TESTIMONY OF STACY L. SHERWOOD

ON BEHALF OF

NATURAL RESOURCES DEFENSE COUNCIL

March 1, 2024

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I. INTRODUCTION & QUALIFICATIONS

Q. Please state for the record your name and business address.

A. My name is Stacy L. Sherwood. My business address is 10298 Route 116, Hinesburg, VT 05461.

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

A. I am a Principal at Energy Futures Group ("EFG"), a consulting firm that provides specialized expertise on energy efficiency and renewable energy markets, program design, power system planning, and energy policy. I provide technical assistance to energy efficiency organizations, environmental advocates, utilities, and nonprofit organizations to design, develop and implement policies and programs that maximize the benefits of demand-side management ("DSM").

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of the Natural Resources Defense Council ("NRDC").

Q. Please describe your educational background.

A. I received a Bachelor of Arts degree in Accounting, Business Administration, and Economics from McDaniel College in 2009.

Q. Please describe your professional background.

A. I have 15 years of experience in the energy sector, related specifically to the review and development of energy efficiency and demand response programs and policies. In October 2021, I joined Energy Futures Group as a Managing Consultant and became a principal of the firm in 2024. Since 2022, I have served as the Lead Technical Consultant to the Connecticut Energy Efficiency Board to support the state's energy efficiency programs.

Prior to joining EFG, I was employed for six years by Exeter Associates, Inc., as a Senior Analyst where I provided technical support and analysis to state and federal clients on energy efficiency, distributed resources, demand response, and renewable energy. I have testified or provided comments before the public service commissions of Kansas, Kentucky, Louisiana, and Maryland and the public utility commissions of Pennsylvania and Rhode Island on automated metering infrastructure, energy efficiency, and demand response. I have also participated in the review of utility rate cases in Maine, New Jersey, Pennsylvania, and Rhode Island. From 2009 through 2015, I worked at the Maryland Public Service Commission as a staff member with a focus on the regulatory review of Maryland's energy efficiency programs, known as EmPOWER Maryland. A copy of my curriculum vitae is attached as Exhibit NRD-1.

Q: Have you previously filed expert witness testimony in other proceedings before the Commission or before other regulatory commissions?

A: While I have not filed before this Commission previously, I have filed testimony before Commissions in Kansas, Kentucky, Louisiana, Maine, Maryland, Pennsylvania, and Rhode Island regarding automated metering infrastructure, energy efficiency programs, revenue requirement and adequacy of service.

II. TESTIMONY OVERVIEW

Q. What is the purpose of your testimony?

A. My testimony addresses the Union Electric Company d/b/a Ameren Missouri ("Ameren" or "Company") proposed electric Missouri Energy Efficiency Investment Act ("MEEIA") 2025-2027 Demand -Side Management ("DSM") Portfolio (referred to herein as "DSM

Plan" or "Plan"), which will serve as the fourth plan. Specifically, my testimony will address: (1) the projected energy savings under the Plan; (2) inclusion of lighting in the residential portfolio; and (3) year-round demand response participation and inclusion of small business customers.

Q. Please provide an overview of the plan.

A. Over the three-year Plan period, Ameren has proposed a portfolio of 17 programs projected to achieve a cumulative 822 gigawatt-hours ("GWh") in net energy savings and a cumulative 517 megawatts ("MW") of demand reduction over the three-year period. While the energy savings is consistent from year to year, the demand savings drops off after 2025 from a projected 126 MW to 93 and 94 MW in 2026 and 2027, respectively. To achieve this level of savings, the Company projects that it will invest $370 million over the three years, or an average of $123 million per year.

Q. Please summarize your recommendations.

A. The Plan offers a wide variety of programs and measures, including income-eligible programs for single family, multifamily, and businesses, education and workforce training, as well as a dedicated small business program. All of which allow for greater participation opportunities for those that contribute towards the Energy Efficiency Investment Charge ("EEIC"). Ameren's Plan, if approved, would be a continuation of its MEEIA portfolio and as noted in the Company's Integrated Resource Plan ("IRP"), can result in the deferral of supply-side needs. Overall, the Plan has good attributes and should be approved by the Commission, but as with any plan there is room for improvement. The areas of enhancement are as follows:

- The Plan should be expanded to reach a minimum of one percent annual energy savings.
- Residential lighting should be limited to direct installation in income eligible properties and have a measure life assumption of one-year to reflect that LEDs are the baseline.
- Expand the residential demand response program to offer winter demand response opportunities and to include small business customers.

III. PROJECTED ENERGY SAVINGS

Q. What is the percentage of savings compared to the Company's retail sales and retail demand?

A. As indicated by the Company, the average annual net energy savings compared to retail sales is 0.8 percent and the average annual net demand reduction compared to retail demand is 2.2 percent.[1]

Q. How did the Company determine the projected level of savings?

A. The Company's Integrated Resource Plan ("IRP") process evaluated various scenarios and levels of energy efficiency and demand response, including the results of the Market Potential Study ("MPS"). Ultimately, the IRP recommended the adoption of the Realistic Achievable Potential ("RAP") scenario from the MPS.

[1] Direct Testimony of Antonio M. Lozano, Schedule AML-D1 page 10.

Q. Do you have any concerns about the reliance on the MPS' RAP scenario to determine the level of savings?

A. Yes. I have concerns about the projected level of annual energy savings for the Plan. The level of forecasted annual energy savings is lower for the 2025-2027 Plan than was achieved in 2021, 0.8 percent compared to 0.99 percent, respectively.[2] The projected demand reduction savings is also declining from prior years on an annual basis. Due to the Company's reliance on RAP, there may be cost-effective annual energy savings that have not been considered as part of the design of the Plan.

The limitations of potential studies have been well-documented by organizations such as American Council for an Energy Efficient Economy ("ACEEE"), the Regulatory Assistance Project, Lawrence-Berkeley National Laboratory, as well as others, have studied the correlation of between potential study estimates and actual savings achievements.[3] ACEEE, for example, reviewed "45 publicly available studies published since 2009" with the intent to "better understand the nuts and bolts of these studies and how their various methodological approaches and assumptions influence energy efficiency potential estimates."[4] The report concludes, among other things, that

> given the inaccuracy of models and the generally conservative approach of these studies, there is likely a great deal of additional cost-effective potential available beyond what is

[2] "2023 Utility Energy Efficiency Scorecard," Mike Specian, Weston Berg, Sagarika Subramanian, and Kristen Campbell, August 2023, https://www.aceee.org/sites/default/files/pdfs/U2304.pdf, page 51.

[3] *See, e.g.*, David B. Goldstein, *Extreme Efficiency: How Far Can We Go If We Really Need to?,* ACEEE Summer Study on Energy Efficiency in Buildings, 10-44 through 10-56 (2008), https://www.aceee.org/files/proceedings/2008/data/papers/10_435.pdf; Philip Mosenthal, *Do Potential Studies Accurately Forecast What is Possible in the Future? Are We Mislabeling and Misusing Them?: Presentation for ACEEE Energy Efficiency as a Resource Conference*, Optimal Energy, Inc. (Sept. 21, 2015), https://www.aceee.org/sites/default/files/pdf/conferences/eer/2015/Philip_Mosenthal_Session2D_EER15_9.21.15.pdf; and Chris Kramer & Glenn Reed, *Ten Pitfalls of Potential Studies*, Regulatory Assistance Project (2012), https://www.raponline.org/wp-content/uploads/2016/05/energyfutures-kramerreed-tenpitfalls esdraft2-2012-oct-24.pdf.

[4] Neubauer Report at iv.

> identified. . . . Moreover, given the fact that most studies base their customer-participation models on economics, even short-term forecasts of market dynamics are murky. This is because studies tend to downplay the impact of program design elements such as marketing and education, as well as the non-energy justifications for investing in energy efficiency.[5]

Therefore, there may be potential for the Company to achieve savings beyond the RAP scenario in the MPS, perhaps closer to that projected by the Commission's MEEIA demand-side savings goals, which for program year nine and later is established at 1.9 percent of annual energy savings and 1 percent of annual peak demand savings.[6] While the peak demand reduction forecasted exceeds the Commission's target, I provide a recommendation below to expand the current demand response offerings to potentially achieve higher reductions in Section V below.

Q. Is there evidence of other utilities achieving higher percentages of net energy savings compared to retail sales?

A. Yes. In the 2023 Utility Scorecard, ACEEE evaluated the 53 largest electric utilities based upon retail sales volume, including Ameren Missouri.[7] As part of the evaluation, the scorecard evaluates each of the utilities on the spending on energy efficiency and demand response programs as a percentage of revenue, the net savings achieved as a percentage of retail sales, and peak demand reduction as a percentage of total peak demand, among other items. These percentages allow for a comparison and ranking across the utilities. Reviewing only the net savings as a percentage of retail sales, 20 of the 53 utilities achieved

[5] *Id*. at 39.
[6] Missouri Code Regulations 20 CSR 4240-20.094(2)(A)9.
[7] "2023 Utility Energy Efficiency Scorecard," Mike Specian, Weston Berg, Sagarika Subramanian, and Kristen Campbell, August 2023, https://www.aceee.org/sites/default/files/pdfs/U2304.pdf. Although this report was released in 2023, the data assessed in the report is from 2021.

more than one percent savings, ranging from 1.04 percent to 3 percent. This shows that higher savings are achievable from utility energy efficiency programs.

Q. Is it fair to only compare net energy savings?

A. No. In addition to the net savings, it is important to understand the level of spending on energy efficiency and demand response compared to revenues, both on a percentage basis and in actual dollars. To provide that comparison, Table 1 below shows the utilities summarized in the report that spent 2-2.99 percent of their revenue on energy efficiency and demand response programs. Along with the spending as a percentage of revenue, Table 1 depicts the total spending in dollars, the net savings achieved as a percentage of retail sales and the peak savings as a percentage of total peak demand.

Table 1. 2023 ACEEE Utility Scorecard Comparison of Energy Efficiency Programs – Spending is 2 Percent of Revenue[8]

Utility	Spending as a % of Revenue	Total Spending	Net Savings as a % of Retail Sales	Peak Savings as % of Total Peak Demand
National Grid New York	2.19%	$58,477,003	1.36%	0.82%
Pacific Gas and Electric	2.21%	$328,442,954	2.14%	1.87%
Public Service Enterprise Group	2.36%	$98,931,397	0.92%	0.34%
Ameren Missouri	**2.45%**	**$70,244,926**	**0.99%**	**1.55%**
PECO	2.46%	$54,820,000	0.60%	0.23%
Xcel Colorado	2.50%	$76,193,395	1.58%	1.19%
Los Angeles Department of Water and Power	2.59%	$107,297,471	1.21%	0.85%
Entergy Arkansas	2.64%	$49,691,064	1.38%	1.14%
PacificCorp Utah	2.95%	$62,067,389	1.14%	0.84%

The metrics pertaining to Ameren Missouri's energy efficiency programs are bolded. In 2021, Ameren spent approximately $70 million, which is 2.45 percent of revenue that year.

[8] This table was created based upon information in the 2023 ACEEE Utility Scorecard. Ibid.

At that spending level, Ameren achieved 0.99 percent net savings compared to retail sales and 1.55 percent peak savings compared to total peak demand. In comparison, several utilities that spent similar dollar amounts and within the same percentage range of revenue were able to achieve significantly higher energy reductions, including National Grid New York, Xcel Colorado, Entergy Arkansas, and PacificCorp Utah. Those geographically diverse utilities achieved annual net savings reductions ranging from 1.14 – 1.58 percent, and except for Xcel Colorado, spent less than Ameren Missouri did in 2021.

In terms of demand reduction, Ameren Missouri significantly outperformed those same utilities in reducing peak demand. This is commendable but also begs the question of whether net savings or peak demand reductions should be prioritized or whether there is funding available for both.

Q. Ameren is projecting an increase in annual spending from 2021, do you believe they should be achieving a higher percentage of savings?

A. Not necessarily. Since 2021, there have been several factors which influence the level of saving achieved per dollar spent. Factors can include, but are not limited to inflation, varying measure mix, different program offerings, adjustments to savings assumptions in the Technical Resource Manual ("TRM"), comprehensive and deeper retrofits, and the loss of low-hanging fruit. Therefore, it is reasonable to see Ameren forecasting a lower net savings goal despite projecting a higher level of spending.

Q. What level of net energy savings would you like to see proposed as part of the portfolio?

A. To put Ameren in line with its historical achievement in 2021 and with other utilities, Ameren should propose a plan that achieves at least one percent of annual net energy

savings be achieved compared to retail sales. Currently, the Plan is projected to be equivalent to 3.7 percent of 2023 revenues for Ameren.[9] This is a higher level of spending, which leads to the conservative recommendation that the Plan should be designed to achieve one percent of annual net energy savings, while maintaining a similar level of demand reduction. This can be achieved by scaling the current Plan to achieve higher levels of participation.

IV. RESIDENTIAL LIGHTING

Q. Does the Company plan to include residential lighting as part of its portfolio?

A. Yes. Based upon review of the revised filing, there appears to be several opportunities for lighting measure offerings in the residential sector program. These opportunities include:

- Efficient Products program will discount on high efficiency lighting through in-store or online offers.[10]
- Direct install in the Single Family Income-Eligible Program, Multifamily Income-Eligible, and Multifamily Market Rates.[11]

Q. Do you have any concerns related to inclusion of residential lighting?

A. Yes. The Energy Independence and Security Act of 2007 ("EISA") established that all general service lamps be required to meet the LED standard of 45 lumens per watt with enforcement by July 1, 2023. With LEDs serving as the baseline, the Company should not be rebating or discounting lighting as part of its program. Beyond discounts, the

[9] The 2023 revenues for Ameren Missouri are from "Ameren Announces 2023 Results and Issues Guidance for 2024 Earnings and Long-Term Growth," https://s21.q4cdn.com/448935352/files/doc_financials/2023/q4/Q4-2023-Earnings-Release-FINAL.pdf, page 6.
[10] Direct Testimony of Antonio M. Lozano, Schedule AML-D1 page 27.
[11] Direct Testimony of Antonio M. Lozano, Schedule AML-D1, Revised Appendix D – Incentive Ranges

offering of lighting through direct-install should be limited to hard-to-reach markets, such as income eligible programs. Since LEDs are the baseline product available, the measure life of direct-install lighting should be revised as part of the TRM. Currently the measure life of residential lighting is 19 years.[12] I recommend that due to the ease of replacement, the measure life assumption should be limited to one year.

Q. What is your recommendation for residential lighting?

A. Residential lighting should be limited to direct installation in income eligible properties and have a measure life assumption of one-year to reflect that LEDs are the baseline. In terms of the measure life, at a minimum, the TRM should be revised to reflect a more reasonable lifetime given the current baseline and to revise the program applicability.

V. DEMAND RESPONSE

Q. Please detail the residential demand response program.

A. The residential demand response program is designed to reduce demand during an event. Participants receive compensation in the for of a one-time credit for enrolling and an annual credit for continued participation. Residential customers can enroll eligible Wi-Fi connected thermostats that are connected to heat pumps and central air conditioners, as well as have a direct load control switch installed on equipment such as heat pumps, air conditioners, electric water heaters, electric vehicles, and pool pumps. The program is currently designed to call load reduction events from May through September.

[12]Direct Testimony of Antonio M. Lozano, Schedule AML-D1, Revised Appendix I – TRM Volume 3 Residential Measures, page 97.

Q. Do you have any recommended enhancements to the demand response program?

A. Yes, I have two recommendations. One, the residential demand response program should be expanded to provide winter demand reduction. Second, the residential demand response thermostat enrollment should be expanded to include small businesses.

Q. Please explain the winter demand response effort?

A. Currently the residential demand response program calls events between May and September. Demand reductions in the winter can be achieved through the same thermostat that is enrolled in the summer demand response program; however, it would limit the enrollment to equipment that can provide reductions, such as heat pumps. This can be done by providing a higher incentive to customers that enroll their heat pumps to provide winter demand reductions in addition to summer reductions. Georgia Power currently offers this program design to heat pump participants through its program called Temp Check.[13] The program can call a maximum of 10 events each season, with summer running from June 1 through September 30 and winter is from December 1 through March 31. Ameren should explore expanding the summer demand response program to include winter months, with appropriate equipment, to provide more system flexibility.

Q. Please explain your recommendation for the small business program.

A. While there is a business demand response program, it's unclear how small business customers can participate in that model or how likely they will participate in the current offering. Many small businesses can likely participate in a program similar to the residential demand response by enrolling their thermostats or installing direct load control

[13] https://www.georgiapowertempcheck.com/

switches on their heat pumps and air conditioners. Therefore, the Company should consider the expansion of the residential demand response program to include small businesses. While the program may be an expansion of the residential demand response program, the marketing and naming of the program should be specifically designed for small businesses and answer questions that a small business customer may have in terms of opting out of events and expectations.

Q. Could these recommendations be implemented in the Plan?

A. Yes. While both demand response recommendations will require the Company to design the incentives and marketing surrounding the programs, these recommendations are not new program designs. The Company will be able to rely on other utility models and could implement full-fledged program offerings within the first year of the Plan.

VI. CONCLUSION

Q. Please summarize your recommendations.

A. My recommendations are as follows:

- The Plan should be expanded to reach a minimum of one percent annual energy savings.
- Residential lighting should be limited to direct installation in income eligible properties and have a measure life assumption of one-year to reflect that LEDs are the baseline.
- Expand the residential demand response program to offer winter demand response opportunities and to include small business customers.

Q. Does that conclude your testimony?

A. Yes.

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AFFIDAVIT

Pursuant to Missouri Public Service Commission requirements I, Stacy L Sherwood, hereby state:

1. My name is Stacy L Sherwood. I am principal at Energy Futures Group. My business address is 10298 Route 115, Hinesburg, Vermont 05461.

2. Attached hereto and made part hereof for all purposes is my Direct Testimony on behalf of Natural Resources Defense Council, including my resume, which has been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that based upon my personal knowledge, the facts stated in the Direct Testimony are true. In addition, my judgement is based on my professional experience, and the opinions and conclusions stated in the testimony are true, valid, and accurate.

Under penalty of perjury, I declare the preceding to be true and correct to the best of my knowledge and belief.

(signature)
Stacy L Sherwood (Name)

Date: March 1, 2024