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Case No.: EO-2023-0136

SURREBUTTAL TESTIMONY

OF

JORDAN SEAVER

Submitted on Behalf of the Office of the Public Counsel

UNION ELECTRIC COMPANY
D/B/A AMEREN MISSOURI

CASE NO. EO-2023-0136

May 30, 2024

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Union Electric Company d/b/a Ameren Missouri

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I. INTRODUCTION

Q. What is your name and what is your business address?

A. My name is Jordan Seaver, and my business address is 200 Madison Street, Governor Office Building, Suite 650, Jefferson City, MO 65102.

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

A. I am employed by the Office of the Public Counsel ("OPC") as a Policy Analyst.

Q. Have you previously testified before the Missouri Public Service Commission ("The Commission")?

A. Yes, I have previously testified before the Missouri Public Service Commission. See Schedule JS-S-1 for my past pre-filed testimony and memoranda.

Q. What are your work and educational backgrounds?

A. I have been employed as a Policy Analyst by the OPC since January 2022. I have attended Michigan State University's Institute of Public Utilities ("IPU") Accounting and Ratemaking Course, as well as the National Association of Regulatory Utility Commissioners ("NARUC") Rate School. I previously worked as a Legal Assistant for Cascino Vaughan Law Offices for 7 years. I have a Master of Arts in Philosophy from the University of Wyoming, and a Bachelor of Arts in Philosophy from the University of Illinois at Chicago.

Q. What is the purpose of your surrebuttal testimony?

A. The purpose of this testimony is to respond to the rebuttal testimony of Ameren Missouri witnesses Steve Wills and Matt Michels, and Staff witness Brad Fortson regarding the use of counterfactuals to make conclusions about MEEIA and avoided supply side costs. My testimony is separated into 2 sections. The first concerns the issues surrounding the analysis of counterfactual statements used to support the position that a 4th MEEIA cycle is warranted. Referring to some aspects of philosopher David Lewis' theory of

counterfactuals, I show that Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "the Company") is mistaken about just what MEEIA in general should be expected to do. I will also use Lewis' theory to show how we should reason about the Company's claims about MEEIA.

The second section of my testimony deals with issues discussed in the testimony of Staff witness Brad Fortson. In this section, I respond to Mr. Fortson's argument regarding the Company's planned supply-side generation buildout in the Preferred Resource Plan ("PRP") from the 2023 Integrated Resource Plan ("IRP"). While agreeing with Mr. Fortson's argument, I also tie it to objections made in the testimony of both Mr. Wills and Ameren Missouri witness Matt Michels.

II. COUNTERFACTUALS

Q. What does the Company witness Mr. Steve Wills, on page 13 of his rebuttal testimony, say about the presumed difference between the system peak load in megawatts ("MW") with MEEIA (the actual world) and the system peak load without MEEIA (a possible world) from 2013 to 2021[1]?

A. Mr. Wills discusses the Company's recent solar generation additions and claims that the generation that would have been needed without previous MEEIA cycles is more than what has actually been added. He asserts Ameren Missouri's generation additions would have been much more in a possible world where MEEIA doesn't exist.

[1] This difference in system peak load is shown in Figure 2 on p. 11 of Steven Wills, Rebuttal Testimony, EO-2023-0136.

Q. Referring to these solar additions, Mr. Wills states explicitly that "to have the same energy position that we will have when these [CCN[2]] projects [from case No. EO-2023-0286] go into service under the assumption that MEEIA programs had not existed, we would have needed additional generation resources with sufficient expected energy output to more than double the energy output of projects that we have already pursued." Do you agree with Mr. Wills' formulation of this counterfactual statement?

A. No, I do not. The counterfactual implicit in Mr. Wills' testimony at this page appears to be the following:

MEEIA$_1$ counterfactual

> *If it **were** the case that MEEIA cycle 4 were not implemented, then it **would** be the case that additional generation would be built.*

This seems to me to be a good representation of the counterfactual that Mr. Wills in particular, and Ameren Missouri's case in general, is putting forward. I will refer to this as the "MEEIA$_1$ counterfactual" from here on out. One of the problems with Mr. Wills' reasoning about this and other counterfactuals is that he doesn't recognize an important aspect of counterfactuals, viz., the fact that their truth value is determined by an assignment of close possible worlds based on similarity to the actual world.[3]

[2] Certificate of Convenience and Necessity.

[3] The terminology I'm using here about possible worlds comes from David Lewis' *Counterfactuals*. It is not crucial to fully understand the theory in order to grasp the importance of talking about counterfactuals this way. The possible worlds that are being discussed are the worlds at which the counterfactuals are true, or false as it may be. The reason that Lewis (and I after him) talk about "closeness" has to do with the way that he addresses the problem of which worlds are to be looked at. Some worlds are irrelevant to using and reasoning about counterfactuals because they are too different from the circumstances that we are trying to consider. Setting the context of counterfactuals too broadly makes them useless. But, on the other hand, setting the context too narrow makes them just as useless, because we are talking about differences in the actual world and what would have occurred as a result of those differences. Thus, the counterfactual context cannot be construed so narrowly as to make them merely ordinary conditional sentences (i.e., sentences that talk about what is the case).

Q. Do the comments Mr. Wills makes about the above counterfactual, and the reasoning he employs to reach this counterfactual as a conclusion seem persuasive to you?

They do not. I believe that there are some misunderstandings about what counterfactuals are and about how we should reason about them. These misunderstandings are, at the very least, present in Mr. Wills' testimony, but are also present in the entirety of the discussion favoring a MEEIA cycle 4 for the Company. In order to convey these misunderstandings, I will repeat an example used by philosopher David K. Lewis[4] to highlight the distinction between counterfactual conditionals and normal conditionals[5]. It is my intention with this example to show why the Company's reasoning about counterfactual conditionals is slightly mistaken and leads them to unacceptable conclusions. Consider the following sentences:

If Oswald did not kill Kennedy, then someone else did.

If Oswald had not killed Kennedy, then someone else would have.[6]

The first one is true (no matter what you think about the Warren Commission's conclusions), because it is effectively about the identity of John F. Kennedy's ("JFK") killer; if it wasn't Oswald, then it must have been someone else, because JFK actually was killed. But the second conditional is saying something very different than the first: if Oswald *had not* killed Kennedy, then someone else *would have* killed Kennedy. This, in the plainest interpretation (without addressing complexities of questions about the Warren Commission's conclusions), is false: if the person who actually killed Kennedy hadn't killed Kennedy, then possibly no one would have killed Kennedy that day in Dallas.

Returning to our $MEEIA_1$ counterfactual, we can see that it has a similar issue as it is stated. The conditional says that absent MEEIA cycle 4, there *would have* to be additional

[4] David Lewis, *Counterfactuals*, Blackwell Publishers (1973).
[5] Conditionals are simply "if…, then…" statements. The statement, "if my engine is clacking while running, then there is a problem with the lifters," is an example of a conditional. There are many varieties of conditionals, but here I'll only be talking about ordinary conditionals (like the one above) and counterfactual conditionals.
[6] These two conditionals come from Ernest Adams, "Subjunctive and Indicative Conditionals", *Foundations of Language 6* (1970), pp. 89-94.

generation built. This counterfactual conditional depends on a different but related counterfactual conditional:

MEEIA$_2$ Counterfactual

> *If it **were** the case that MEEIA cycle 4 were not implemented, then it **would** be the case that load increases (at the same or greater rate as before).*

I do not believe that the consequent[7] in the MEEIA$_2$ counterfactual is correct. Let me use a helpful sentence from David Lewis to explain:

> *If kangaroos had no tails, they **would** topple over.*[8]

This counterfactual seems true. Even though there are "possible worlds where kangaroos walk around on crutches, and stay upright that way,"[9] those worlds are far too distant, or, in other words, much too different than ours. A world in which kangaroos had no tails, and everything else was the same (including that they didn't topple over), would be a world in which kangaroos had no tails but their tracks in the sand included tail marks. This would require more differences than our world, meaning that this world could not be in all respects the same as ours excepting the absence of kangaroo tails. In the words of David Lewis, "And so it goes; respects of similarity and difference trade off. If *we* try too hard for exact similarity to the actual world in one respect, we will get excessive differences in some other respect."[10] But this same worry does not apply to possible (as opposed to necessary) counterfactual conditionals.

Our MEEIA$_2$ counterfactual, then, should be analyzed in a similar way as the kangaroo counterfactual: in all the worlds that are closest to our own (all those that "matter"), where MEEIA cycle 4 is not implemented, there is also an increase in load (at the same or a greater rate). It is easy to see that this cannot be.

[7] The sentence that follows 'then' in the conditional is called the "consequent"; the sentence that precedes 'then' is called the "antecedent".
[8] Lewis, *Counterfactuals*, p. 1.
[9] *Ibid.*, p. 9.
[10] *Ibid.*

There are many possible worlds, close to ours, at which MEEIA cycle 4 does not happen, but load growth does not increase: worlds in which extremely deadly diseases spread and kill half the population of Missouri; worlds at which the United States is drawn into a war with China, Russia, or both, and energy use is diverted from unnecessary pursuits to production of wartime goods and many men leave the State to fight (thus reducing residential use); worlds at which load shedding in Ameren Missouri's service territory happens due to an unreliable grid; worlds in which multiple substations in Missouri are damaged or destroyed; and so on and so forth. These examples should be enough to convince the reader that our $MEEIA_2$ counterfactual, like the Oswald-Kennedy counterfactual (the second sentence above) must be false. I propose to replace the $MEEIA_2$ counterfactual with the $MEEIA_3$ counterfactual:

$MEEIA_3$ counterfactual

> *If it **were** the case that MEEIA cycle 4 were not implemented, then it **might** be the case that load increases (at the same or greater rate as before).*

The only difference between $MEEIA_3$ counterfactual and $MEEIA_1$ counterfactual is that $MEEIA_3$ is a ***possible*** counterfactual conditional, as opposed to a ***necessary*** counterfactual conditional like the original. The $MEEIA_2$ counterfactual is true at only certain close possible worlds, and not all.

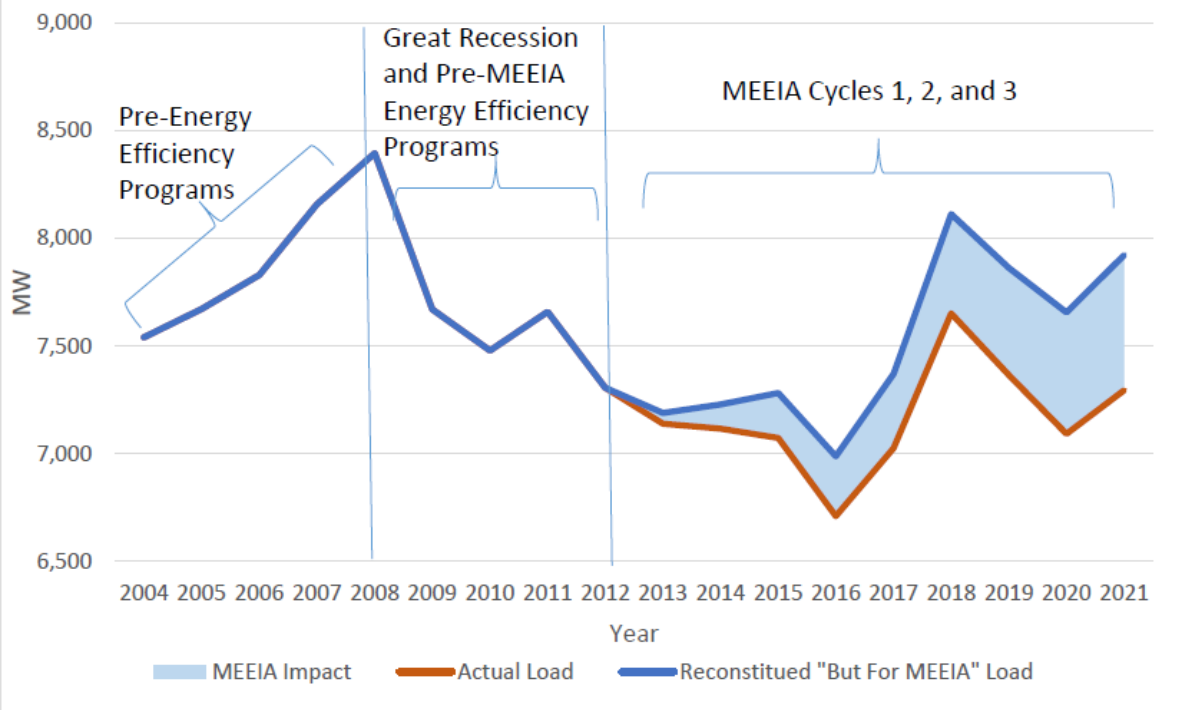
Q. When you say that the $MEEIA_2$ counterfactual is the correct one to use, what implications does that have for Mr. Wills' rebuttal testimony regarding the effects of MEEIA and the proposed MEEIA cycle 4 application?

A. For starters, it affects how we should think about what MEEIA really does. The $MEEIA_3$ counterfactual says, basically, that MEEIA cycle 4 won't *necessarily* reduce load. At the very least, it might, but it might not. And it isn't even necessary to debate counterfactuals to see that MEEIA may have no impact on reducing total system peak load.

Q. Do you rely on anything else to reach your conclusion that Ameren Missouri's MEEIA cycle 4 may not reduce load?

A. Yes, I do. Mr. Wills' Figure 2, on page 11 of his rebuttal testimony is provided as evidence that MEEIA, and energy efficiency programs in general, have done much to reduce the Company's system peak load. I have reproduced Figure 2 below.

Figure 2 – 2004 – 2021 System Peak Load with and without MEEIA Programs



The graph in this figure is of the MW of system peak load plotted over time, with special note of periods of energy efficiency. MEEIA cycles 1, 2, and 3 cover the time period of 2013 to 2021 in the graph. But during this time, there are increases and decreases of load that seemingly don't align with energy efficiency measures. For instance, there is a large dip from 2015 to 2016, a very large increase (at a higher rate than the compound annual growth rates Mr. Wills notes from 2004 to 2008) from 2016 to 2018, then another large and steep dip from 2018 to 2020, with a slightly slower rate of increase beginning at the

front end of 2020 again. This graph is not helpful in determining what, if any, effect MEEIA cycles have on system peak load for Ameren Missouri. It isn't helpful in this way precisely because these increases and decreases in load during times when energy efficiency programs are implemented are not obviously caused by said programs. We could just as easily say that this graph shows that energy efficiency programs increase load.

Q. But doesn't Mr. Wills say that the graph shows the "reconstituted 'but for' MEEIA load?" Is this not an indication that MEEIA programs reduce the system peak load by that amount—the shaded portion—shown in the graph?

A. The graph does include a departure for the counterfactual (in the divergence between the actual load line and the possible non-MEEIA line). It shows the system peak load for the possible world with no MEEIA from 2013 to 2021. The problem is that this counterfactual load is all assumed, and not actually perceived. The capacity savings have not been observed and measured, because much of what they claim is avoided demand is at best wishful thinking based on assumptions about, e.g., the average hours of use of a light bulb, or the reduction in MWs required to heat a home to a certain temperature in a certain time (all highly idealized facets of the assumption).

The graph basically says that MEEIA is assumed to reduce the load by some amount, but nothing more than this, which is already an assumption (as seen in $MEEIA_2$ counterfactual). It is, in my opinion, begging the question[11] to say that MEEIA reduces load because the support for the reduced load is simply the assumption that it will be reduced. The Company reasons the following way: "MEEIA reduces load, and we know this because the point of MEEIA is to reduce load. So, we made a graph showing our

[11] "Begging the question" is a term that identifies the logical fallacy of assuming the conclusion is already supported by the argument that is supposed to be used to support it. It is very similar to circular reasoning, where the conclusion of an argument is used as one of the premises of the argument meant to support the conclusion. The difference is that when one begs the question, one doesn't necessarily use the conclusion as a premise in its own argument. Instead, one assumes that the conclusion is already correct or supported by the argument that is meant to support it, when said argument obviously does not, because said argument relies on the same support that the conclusion would need.

assumed load data compared to collected load data, and: voila! The load was indeed reduced, just like we assumed." But, the support for the reduced load is simply the assumption that it will be reduced, hence it begs the question.[12]

Q. Are you saying that there are no MEEIA programs that would reduce load at all?

A. No, I am not saying that. For example, the demand response programs have the potential to decrease load, and decrease it by a fairly measurable amount. Imagine the following scenario: all Wal-Marts in Ameren Missouri's service territory shut off their HVAC systems at 5:00pm and turn them back on at 6:00pm every day for 3 years. This would presumably reduce the system load during that time,[13] and since every Wal-Mart does it at the same time every day, it could be calculated how much the system peak load would have been had they not done this after the actual data was collected for the 3-year period.

But, doing this would be cheaper for ratepayers if third party aggregators of retail customers ("ARCs") and demand response companies were doing the curtailing and incentive payments, and not Ameren Missouri. Thus, even though an aspect of MEEIA may be a cause of load reduction (to however small a degree), it is not necessarily beneficial to ratepayers in all respects.

[12] Dr. Geoff Marke addresses the OPC's position on Evaluation, Measurement and Verification ("EM&V") in his Direct, Rebuttal, and Surrebuttal Testimony in this case. Because EM&V is itself a modeling exercise, its product is often an exaggeration, a misrepresentation, or, as I've tried to show above, the exposition of the modeler's assumptions in a persuasive format.

[13] The choice of 5:00 pm to 6:00 pm is incidental. I chose the time period of one hour daily to stress that the reduction in demand could be quantified with such a scheme, because all of the relevant information would be available to calculate roughly how much load was avoided, at what time, what amount of load for each Wal-Mart, etc. I am not implying that the chosen time period would be the time period chosen in reality. I will also note that such a DR program would not necessarily result in a completely quantifiable reduction in load. There are still issues that could affect, or even negate the demand response. For example, if at least one Wal-Mart said, at 6:01 pm on July 20th, "Wow, it's hot in here, crank that AC!" then the reduction in demand during the hour from 5:00 to 6:00 may not result in a reduction in load overall because the Wal-Mart location used more than it would have to simply maintain the temperature in the building during that hour. Other examples include situations where a business is assumed to have reduced load because they are not operating, but the time of non-operation was already planned in advance, and the business wouldn't have been operating even without the demand response.

Q. Considering what you describe above, viz., calculating the system peak load difference in the possible world reached by the MEEIA$_1$ counterfactual, is what Mr. Wills has done in his graph in Figure 2, correct?

A. That is not correct. The graph presented by Mr. Wills in Figure 2 on page 11 of his rebuttal testimony in this case shows what the assumed savings for MEEIA are. These savings are in some cases estimates, in some cases actual attempts at measurements, and in some cases are merely what the Company assumed it would save with certain programs. The cases in which measurements may be able to be made (e.g., business demand response) are small reductions in demand relative to the "reconstituted" possible MEEIA load shown in Figure 2. What I am talking about above is a situation where the Company has made most of its programs tied to actual, directly recorded decreases in load.

III. SUPPLY-SIDE GENERATION AND 2023 INTEGRATED RESOURCE PLAN

Q. What was Staff witness Brad Fortson's response to Ameren Missouri witnesses' declarations regarding the MEEIA application?

A. Mr. Fortson's rebuttal testimony takes issue with Ameren Missouri's Integrated Resource Plan ("IRP") projections for supply-side additions and investment. From pages 11 to 14 of his rebuttal testimony, Mr. Fortson discusses the changes across the IRPs from 2014 to 2023 (the most recent). The changes that he highlights are changes to the amount of generation the Company is planning to add in each IRP. He compares the preferred resource plans ("PRP") to the "No-DSM" plans from the prior IRPs to see what, if any, generation is actually avoided in the planning from IRP to IRP. Mr. Fortson shows that there are no avoided generation additions when comparing the PRPs to the previous IRP No-DSM plans.

Q. Do you agree with Mr. Fortson's points?

A. I do agree with Mr. Fortson. I agree with the inductive argument presented here by Mr. Fortson, that with each IRP there is an increase, not a decrease, in the amount of supply-side investment Ameren Missouri has planned. From these past instances we should conclude that the next IRP will also show more, and not less, supply-side investment,

because the likelihood of greater planned generation is increased by the past instances already observed. What the inductive argument implies is that, because there is no meaningful or significant avoidance of supply-side investment, MEEIA creates no meaningful or significant avoidance of costs to customers. I find this argument persuasive.

The only way that the Company could make me think otherwise is if, in their IRP modeling, when they include MEEIA and DSM, they make their generation additions, capacity additions, and current capacity and generation portfolio only able to meet the demand and the reserve margin for load minus MEEIA and DSM's projected energy and demand savings. That would make me reject the inductive argument, but it would instead make me worried about the possibility that the Company would not be able to meet its load if customer load increases despite MEEIA and DSM or that some unexpected increase in load beyond the presumed MEEIA and DSM savings occurs.

Q. Doesn't the Company argue that they do exactly what you're describing here?

A. Yes, the Company does claim to be doing this. But, as I said above, I believe that this is mainly an assumption on their part and not a finding. Furthermore, there are reasons to believe that any significant or accurately measurable savings from MEEIA are temporary and not perpetual. The savings that the Company could claim from giving LED lighting to businesses and to retail outlets, for example, is no longer a potential avenue for savings. The source of the savings is now fully saturated, and there is no longer any way that the Company can fill that. Similarly, there are diminishing returns from efficient HVAC installations, or from weatherization upgrades, because as more and more households are fitted with energy efficient HVACs or, e.g., insulation, there are fewer opportunities to achieve demand or energy savings (not to mention the competition of these enterprises by federal subsidies and incentives, which may be regarded as the true cause of upgrades to energy efficient HVAC systems).[14]

[14] These questions of measurement deal with issues of the EM&V analysis and reporting for the Company's MEEIA. Dr. Geoff Marke addresses the OPC's position on EM&V in his Direct, Rebuttal, and Surrebuttal Testimony in this case.

Q. On page 15 of Mr. Wills' rebuttal testimony, he discusses the "historic generation transition" of coal plants to renewables. Does this transition of coal plants to renewables relate at all to the purported deferral of supply-side resources?

A. Yes, I believe that the "energy transition" will mute any potential effects of MEEIA on supply-side resource additions. Not only have past MEEIA cycles shown minimal avoidance of expansive planned generation buildout in IRPs, but since at least the 2014 IRP Ameren Missouri has been looking at retiring (early, in some cases[15]) all of its coal plants. Since the 2020 IRP, Ameren Missouri has explicitly pledged to retire all of its coal plants. Furthermore, Ameren Missouri has, since 2021 at the latest, aligned its own goals with the goals of the UN 2030 Agenda.[16]

One of the 2030 Agenda's relevant goals for the Company is the achievement of net-zero carbon emissions by 2050. In Ameren Missouri's most recent IRP (the 2023 IRP), it has become even more ambitious than the 2030 Agenda goal of net-zero carbon emissions by 2050 and projected that it will have net-zero generation by 2042.[17] Because of its decisions to retire coal plants and its decision to achieve net-zero carbon emissions, Ameren Missouri *must* build significant amounts of generation in the 20-year savings time horizon for this proposed fourth MEEIA cycle.

[15] It is difficult to determine which plants are being retired early and which are not, due to the changing view on this issue by the Company and the larger, national conversation about climate projections and emissions. At least one plant—Rush Island—is known by all to be retiring early. Sioux's date of retirement is listed in the 2023 IRP as 2032, but was listed as 2033-2034 in the 2014 IRP preferred resource plan, and as 2028 in the 2020 IRP preferred resource plan. Similarly, in its 2011 IRP, the Company was considering the effects of retiring Meramec in 2015, 2022, and 2042 (see page 14 of my Schedule JS-S-2). I believe this shows that more coal plants than just Rush Island have been or are being retired early.

[16] The full name for Agenda 2030 is "The United Nations Sustainable Development Goals". See https://www.ameren.com/company/environment-and-sustainability for Ameren Missouri's statement about Agenda 2030.

[17] The "Generation Transformation Timeline" for the 2023 IRP can be found on page 2 of my Schedule JS-S-3. Since the chart from which this information is drawn is ambiguous, it is possible that the Company is planning for its generation to be net-zero by 2045 and not by the earlier date of 2042 stated above. The last retirement date provided for a coal plant in Ameren's fleet is 2042, which is the planned retirement date of the last two units of the Labadie coal plant. Whether 2045 or 2042 is the date the Company plans to have net-zero carbon emissions does not affect my argument.

Q. But Mr. Wills goes on to say on that same page 15 that "the much higher level of loads that we would have to serve under 'no-MEEIA' future would be that much more difficult to meet with an appropriate mix of timely-deployed supply-side resources." Does the "appropriate mix" of resources have any effect on the 2023 PRP and thus on supply-side additions?

A. Yes, it does. Because Ameren Missouri has elected to align its goals with the UN's 2030 Agenda and, in fact, achieve net-zero generation by 2042, the types of generation that it can replace its coal and some of its gas fleet with are constrained. The options available to the Company for most of its generation fleet are wind, solar, geothermal, hydroelectric turbines, battery storage systems, and nuclear reactors. The latter, in traditional configurations as large-scale pressurized water reactors or boiling water reactors, are not economically feasible if the Company is pursuing, as it has said on many occasions, sources of generation with the lowest levelized cost of energy ("LCOE"). Geothermal and hydroelectric sources of generation are more difficult to acquire because of the constraint on siting and limited sites to choose from. Further, because the lowest LCOE is a top priority for the Company when choosing generation, the options that are most attractive and therefore make up most of the additions in its most recent IRP are solar and wind facilities.[18]

Q. Do renewable resources carry particular risks as replacements for Ameren Missouri's coal fleet?

A. I believe that they do. Let me explain.

I believe that the Midcontinent Independent System Operator's ("MISO") change to seasonal accreditation and the new accreditations given to wind and solar show that there will not likely be any ratepayer savings due to any retirement of coal plants.

[18] I note in passing that LCOE is not the best measure of the actual, lifelong cost of a generating facility. The cost of a solar facility may be cheaper initially than a combined cycle gas plant, but the issues of lower capacity accreditation at the market level, the need for a MW for MW backup in dispatchable generation, the potential for greatly increased cost of transmission to connect the plant, and so on are all reasons to think that LCOE doesn't capture the full cost.

Between 2024 and 2042, Ameren Missouri is retiring all of its remaining coal plants. These make up roughly 4,522 MW of capacity, which is about 51% of Ameren Missouri's entire generating capacity. Replacing this capacity with primarily solar and wind facilities, which is what the Company is proposing, will mean bringing online more MW of solar and wind than the previous 4,522 MW from coal. MISO has changed how it accredits capacity on its grid. These changes have effectively lowered the accredited capacity that can be applied to wind and solar facilities specifically, because the accreditation changes focus on how a type of generation affects reliability of the grid. MISO has determined, because of the fixed timing of generation by wind and solar facilities (i.e., they are tied to when the wind and sun are available), and the differences in their ability to generate in different seasons, that they will be given different capacity accreditation than thermal resources (e.g., coal and gas). For simplicity I will use just the example of the capacity accreditation percentages for solar and wind for winter 2024. The accredited capacity for wind beginning in winter 2024 is 40.3%, and the accredited capacity for solar beginning in winter 2024 is 5%.[19]

So, if the Company builds and connects a wind facility with a nameplate capacity of 200 MW, the most it will be accredited in the time period of winter 2024 to spring 2025 is 80.6 MW. If the Company builds and connects a solar facility with nameplate capacity of 150 MW_{ac}, the most it will be accredited in the same timeframe is 7.5 MW. So, from the 200 MW and 150 MW_{ac} facilities, the Company will have 88.1 MW of accredited capacity with MISO. That's a reduction of 269.1 MW from nameplate capacity, or a roughly 75% reduction in capacity. This accreditation scheme will continue into the future, with decreasing percentages for each following year. The Company, therefore, must plan to build much more than the capacity lost to retirements. In order to get a sense of the amount,

[19] It is more complicated than this, as each season has been assigned different percentages, and in each year the percentages decline. So, from 2025 to 2040, for example, the accredited capacity percentage for wind will decrease by almost 10%. Inversely, the percentages for the MISO planning reserve margins increase year over year. See Schedule JS-S-4, the "Highlights" section on the first page of the pdf, and JS-S-5 pp. 6-7 for the exact percentages by year and by season.

one must look particularly at the accredited capacity for the seasons of winter and summer[20], both of which have demand peaks.

Based on Ameren Missouri's 2023 IRP preferred resource plan ("PRP"), in the next six-years, the Company will be installing 1,800 MW of solar and 1,000 MW of wind. Keeping our example in the winter season, the capacity accreditation percentages for solar and wind in winter 2030 are 5% and 36.4%, respectively.[21] These facilities will thus be accredited 90 MW and 364 MW, respectively. This means an *accredited* capacity of 454 MW from all the plants making up the *nameplate* capacity of 2,800 MW for winter 2030. This is an 83% reduction in capacity. Ameren Missouri will hopefully have other generation in its fleet to contribute to its accredited capacity, but this example shows how much renewable generation needs to be installed to help meet the needs for the peak seasons of summer and winter.

Q. How do you reconcile this reasoning and these changes in the MISO capacity market with the statement from Ameren Missouri witness Matt Michels that "Ameren Missouri's analysis of plans with [MEEIA] (Plan C) and without [MEEIA] (Plan I) show that customers can expect to save over $4 billion dollars [sic] over the next 20 years"?

A. I would reiterate that the inductive argument discussed above should lead us to believe that significant investment will continue, and potentially increase beyond current and expected levels. I would also point out that world of $MEEIA_3$ counterfactual *could* result in a lower load without MEEIA simply on the basis that there will be significant costs to customers due to the replacement of coal plants with renewable and gas plants.

Those costs alone will be significant, and I will attempt to show just how significant below.

Using the supply-side resource projections from the 2023 IRP, I calculate that the Company will incur costs of around $13.2 billion by 2043[22]. This is using 2023 dollars, which would

[20] The situation with summer is similar: 18.1% capacity for wind and 50% of capacity for solar for the summer of 2024. Using our nameplate capacities from above, we get a total of 36.2 MW accredited capacity for wind and 75 MW_{ac} for solar. This is a total of 111.2 MW, which is a reduction of 238.8 MW of capacity from these two plants for winter, and a roughly 68% reduction in nameplate capacity.
[21] Again, this information can be found on pp. 6-7 of Schedule JS-S-5.
[22] See my workpapers for the data used to reach these dollar figures.

not capture the total since many of these projects would begin financing and construction later than 2023. I also believe that the Company will need to build more than their 2023 PRP shows, because, as discussed above, the MISO capacity market changes will make it necessary to have more renewable generation than is planned. In addition, there will need to be much more dispatchable generation than planned for in the PRP. This dispatchable generation functions as backup in case the renewable facilities fail at any time to generate the energy required to meet demand. Recall the conclusion of the inductive argument—that it is more likely than not the Company will plan more supply-side additions than currently projected in future IRPs—and note that it predicts what I am saying here. The Company is likely already aware that its current PRP does not project enough renewable supply-side additions given the current and future situations at MISO and in the country as a whole.

This increase in supply-side additions will increase the $13.2 billion figure significantly. And I reiterate that the costs of the "energy transition" will possibly be enough of a burden to customers that they reduce their energy use because of the bill impacts of this supply-side buildout. Thus, system peak load would be reduced without the need to implement energy efficiency programs merely because the costs borne by ratepayers to replace the fleet of coal plants are so large.

At the same time Ameren Missouri is completing its replacement of coal with solar, wind, and gas facilities, most if not all of the utilities in the MISO footprint and the country as a whole will be doing the same. Almost all, if not all, of the utilities in the MISO footprint will be replacing their coal plants with wind, solar, and gas facilities. If what is happening in Germany happens in the US, then the country will begin deindustrializing[23], thus reducing economic output and likely causing costs of goods to rise. A rise in prices for all goods at the same time as bills for Ameren Missouri customers increase drastically will likely lead to

[23] On this topic see, e.g., https://www.forbes.com/sites/jimvinoski/2024/02/29/german-deindustrialization-is-a-wake-up-call-for-us-manufacturers/?sh=34b719277c0c, https://www.nationalreview.com/corner/deindustrialization-watch-a-warning-from-germany/, and https://www.manhattancontrarian.com/blog/2023-8-29-congratulations-to-germany-on-achieving-more-than-50-of-its-electricity-production-from-renewables.

further reductions in energy use, thus even greater reductions in system peak load, all without the need for MEEIA programs.

Q. Does this conclude your testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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	)))))	Case No. EO-2023-0136

AFFIDAVIT OF JORDAN SEAVER

STATE OF MISSOURI)
) **ss**
COUNTY OF COLE)

Jordan Seaver, of lawful age and being first duly sworn, deposes and states:

1. My name is Jordan Seaver. I am a Policy Analyst for the Office of the Public Counsel.

2. Attached hereto and made a part hereof for all purposes is my surrebuttal testimony.

3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.

Jordan Seaver
Policy Analyst

Subscribed and sworn to me this 29th day of May 2024.

TIFFANY HILDEBRAND
NOTARY PUBLIC - NOTARY SEAL
STATE OF MISSOURI
MY COMMISSION EXPIRES AUGUST 8, 2027
COLE COUNTY
COMMISSION #15637121

Tiffany Hildebrand
Notary Public

My Commission expires August 8, 2027.