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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. ER-2022-0337

SURREBUTTAL TESTIMONY

OF

CRAIG BROWN

OF 1898 & CO.

ON

BEHALF OF

UNION ELECTRIC COMPANY

d/b/a Ameren Missouri

St. Louis, Missouri
March, 2023

TABLE OF CONTENTS

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OF

CRAIG BROWN

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Q. Please state your name and business address.

A. My name is Craig Brown. My business address is 9400 Ward Parkway, Kansas City, Missouri 64114.

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

A: I am employed by 1898 & Co., a division of Burns & McDonnell Engineering Company, Inc. (hereinafter called "1898 & Co."), as a Senior Project Manager in the Financial Analysis and Rate Design department. 1898 & Co. is a business, technology and security solutions consulting firm serving multiple industries, including the electric power industry.

Q. On which party's behalf are you testifying?

A. I am testifying on behalf of Union Electric Company, d/b/a Ameren Missouri ("Ameren Missouri" or "Company").

Q. Have you previously testified before the Missouri Public Service Commission?

A. Yes, I previously testified before the Missouri Public Service Commission on behalf of Evergy, Inc. in its rate proceedings for its Missouri jurisdictions (ER-2022-0129 and ER-2022-0130).

Q. What is your professional experience?

A. For the past 19 years, I have worked as a consultant, project manager, witness, and analyst on utility financial analysis, ratemaking, and regulatory projects. Since

joining Burns & McDonnell in 2019 I have focused primarily on cost of service, rate design, and regulatory consulting for electric utilities. Prior to joining Burns & McDonnell, I worked for 15 years in the Rate and Regulatory practice at Black & Veatch Management Consulting, where I was a Principal Consultant and Rate and Regulatory Team Lead, consulting on projects for electric, gas, water, and wastewater utilities. Prior to joining Black & Veatch in 2004 I was employed as an accountant and small business consultant at independent firms in Overland Park, Kansas and Phoenix, Arizona.

I. PURPOSE OF TESTIMONY

Q. What is the purpose of your surrebuttal testimony in this proceeding?

A. The purpose of my surrebuttal testimony is to respond to topics related to the Company's Class Cost of Service ("CCOS") study and supporting analyses and issues raised in rebuttal testimony by Commission Staff ("Staff") witness Sarah L.K. Lange. I will also respond to the rebuttal testimony of Missouri Industrial Energy Consumers ("MIEC") witness Maurice Brubaker.

Q. Please summarize your surrebuttal testimony.

A. 1. I find the overall results of Ameren Missouri's CCOS study presented in this case to be reasonable and also find that it follows industry accepted cost allocation methods based on cost causation.

2. Staff's requests for a non-existent level of detail in fixed asset accounts on a voltage- and customer-specific basis is unreasonable and the data used in the Company's CCOS study is consistent with similar electric utilities.

3. The Company's use of an Average and Excess 4 Non-coincident Peak ("A&E-4NCP") allocator for allocation of production demand costs is appropriate because it is an energy-weighted method that considers both energy and demand factors in the allocation of production demand costs.

4. Staff's allocation methodologies for production and distribution demand costs are outside of industry-accepted standards and are based on new unsupported allocation methods based on energy instead of demand for demand related costs. Staff's approach fails to reflect cost causative factors that are critical to achieving the goals of a CCOS study.

II. AMEREN MISSOURI'S CCOS STUDY

Q. Staff witness Lange claims that the Company's CCOS study is "wholly unreasonable."[1] Have you reviewed the Company's CCOS study in order to weigh in on witness Lange's allegation?

A. While I have not reviewed every single allocation decision in the study, I have reviewed the methodologies used and discussed the model with Company witness Thomas Hickman, along with conducting a review of his supporting testimony.

Q. Do you agree with Staff's conclusion that the Company's CCOS study is unreasonable?

A. Absolutely not. The Company's CCOS study follows the same industry accepted methodologies that I use in the CCOS studies that I conduct. The methodologies are generally consistent with the guidelines in the Electric Utilities Cost Allocation Manual published by the National Association of Regulatory Utility

[1] File No. ER-2022-0337, Sarah L.K. Lange Rebuttal Testimony, p. 22, l. 4.

Commissioners ("NARUC"). I find the overall results of the Company's CCOS study reasonable and consistent with cost causation principles. As I will discuss later, it is Staff's study that strays far afield of industry standard practices, ignores basic principles of cost causation, and results in overall allocations that simply should not be relied upon.

Q. Why is the principle of cost causation important?

A. Cost causation is the key element to selecting an allocation factor. This has been the standard by which an allocation method is evaluated in the industry for decades, and it continues to be the most appropriate standard for assessing cost allocation.

Q. Staff and the Company have presented widely divergent CCOS results, and both contend they follow cost causation principles. How can this be?

A. It can't. The Company's CCOS study follows industry accepted methodologies supported by sound cost causation. Staff's allocation methodologies include numerous examples of "new" methodologies that seem to increasingly shift toward the utilization of energy based allocations for what are clearly demand-related costs, which tends to systematically shift costs from the residential class to the larger classes in a manner that does not reflect the underlying cost causation of the system.

III. APPROPRIATE DETAIL FOR A CCOS STUDY

Q. What is your opinion on the level of detail used by the Company in conducting its CCOS study?

A. There appears to be contention between the Company and Staff related to an appropriate level of detail to be used in a CCOS study. Based on conversations

with the Company, the Company's continuing property record ("CPR") that maintains plant balances and historic activity does not contain the location-specific, customer-specific, or voltage-specific detail that Staff indicates should be available. In my experience, the level of detail requested by Staff is not consistent with the level of detail most utilities track.

Q. If the Company began to track distribution system assets by location, customer, and voltage level, will the results of future CCOS study be improved?

A. It is unlikely that the results will be improved, at least not in a meaningful way, and not for a very long time. Further, I expect that the cost of such detailed tracking would be prohibitive and may result in unnecessary cost increases for all utility customers. Beginning to track assets at an extreme level of detail now won't change the fact that the entire CPR up to this point cannot be converted back to this level of detail. So, for long-lived assets such as distribution plant that generally have average service lives of 30 to 40 years with some assets lasting 60 years or longer, it would take decades before even potentially useful data would be complete for the Company's system.

Q. In your experience, how does the level of detail used by the Company compare to other electric utilities?

A. The level of detail maintained by the company in its CPR is very similar to my experience with other regulated electric utilities' CPRs in Missouri and across the United States.

Q. Why do you think most regulated electric utilities maintain a similar level of detail?

A. Regulated electric utilities generally follow the accounting procedures outlined in the Federal Energy Regulatory Commission ("FERC") Uniform System of Accounts ("USoA").[2] Using the Electric Plant Account definition for Account 365 Overhead Conductors and Devices as an example, the USoA states:

> This account shall include the cost installed of overhead conductors and devices used for distribution purposes.
>
> ITEMS
>
> 1. Circuit breakers.
> 2. Conductors, including insulated and bare wires and cables.
> 3. Ground wires, clamps, etc.
> 4. Insulators, including pin, suspension, and other types, and tie wire or clamps.
> 5. Lightning arresters.
> 6. Railroad and highway crossing guards.
> 7. Splices.
> 8. Switches.
> 9. Tree trimming, initial cost including the cost of permits therefor.
> 10. Other line devices.
>
> NOTE: The cost of conductors used solely for street lighting or signal systems shall not be included in this account but in account 373, Street Lighting and Signal Systems.

Note that there are no instructions or requirements indicating that the utility should record overhead conductor by voltage level or location. And as an item of mass property, the USOA specifically exempts this category of property from location requirements. Ameren Missouri, like other regulated utilities, cannot be expected to produce a level of detail in fixed asset records that cannot be reasonably expected to exist in the first place.

[2] https://www.govinfo.gov/content/pkg/CFR-2011-title18-vol1/pdf/CFR-2011-title18-vol1-part101.pdf

Q. Have any other witnesses addressed Staff's requests for extremely specific asset data?

A. Yes, Company witness Hickman addresses Staff's intention to directly assign distribution assets to certain customers or classes in his rebuttal testimony on page 7. The footnote on page 7 reads:

> "Note, Staff's focus on customer-specific infrastructure is tied to Staff's recommendation that the Company be ordered to provide a study of the customer-specific infrastructure, by account, by rate schedule, by voltage, and Staff's request for the Commission to order the Company study and present data related to the use of radial transmission facilities by customer."

Q. Why is Staff's request to have a study of customer-specific infrastructure, by account, by rate schedule, by voltage unreasonable?

A. Beyond the previously discussed issue that the data cannot be reasonably expected to exist, nor does it exist today, it goes beyond the purpose of a cost allocation study in the first place. Staff seems to want to directly assign costs to each customer at a level that is unreasonable.

Q. Why is an over-reliance on direct assignment inappropriate and potentially not feasible?

A. The reality of a distribution system is that it's an extremely complex network of assets consisting of millions of individual components including poles, conductor, circuit breakers, switches, communication devices, and transformers. Most of these components are shared among different numbers and types of customers and customer classes, and many of them impact service at a variety of voltage levels and phases. The key point being the distribution grid is designed to, and operates as, a network, and not as a series of radial spurs serving individual customers. So

even though a customer may have a small segment of conductor that serves only them, or they may be the only customer connected to a line transformer, that does not mean the power they use does not travel through a significant portion of the shared network before it gets to the point of isolation. The distribution network is designed to provide both reliability and redundancy for all customers. The shared nature of the overwhelming majority of this network demands that reasonable allocations be employed to reflect the costs to the customers in an equitable manner reflective of the causation of the costs. The allocations that are used by the Company are consistent with those outlined in the Electric Utilities Cost Allocation Manual prepared by NARUC. Staff seems focused on directly assigning individual assets to individual customers, which undermines the purpose of conducting a cost allocation study in the first place.

Q. Does direct assignment have a role in a CCOS study?

A. Yes, it does, but it is a much more limited role than Staff seems to suggest. When customers require unique and readily identifiable facilities dedicated to their service, the costs should be either directly assigned or paid for in advance through contributions in aid of construction. The key for direct assignment is that the facilities are used only by the customer to which they are directly assigned.

Q. Does it make sense in the context of a CCOS study to identify every isolated radial end point in the distribution system and directly assign the cost to a specific class or customer?

A. No, it does not, because the level of effort required to identify every isolated end point is neither reasonable nor productive. Staff spends significant time presenting

rationale for directly assigning assets to large customers, but fail to realize there are also significant parts of the system that could similarly be identified as serving only residential customers, such as all the infrastructure serving an isolated residential subdivision. Staff has made no attempt to directly assign these costs to the residential class and therefore is being inconsistent with its methodology. Staff's approach to this clearly biases its cost allocations by making large customers directly bear the cost of infrastructure that only serves them, but then fully including those same large customers' energy and demand characteristics in the allocation factors that allocate class specific investments that only serve residential and other smaller customer classes. This simply cannot be considered a fair allocation methodology.

IV. ALLOCATION OF PRODUCTION COSTS

Q. In Staff witness Sarah Lange's rebuttal testimony, Staff suggests that the Company's use of the A&E 4NCP allocator is not reasonable.[3] Do you support the Company's use of an A&E-4NCP allocator for production demand costs?

A. Yes, I do. The A&E method is an appropriate allocator for the Company because it recognizes that some production decisions are made based on energy requirements, but there is still the underlying fact that the Company's generation capacity is sized to serve the system peak demand. The A&E method is an appropriate balance of both of these considerations.

[3] File No. ER-2022-0337, Sarah L.K. Lange Rebuttal Testimony, at pp. 25 – 26.

Q. If you were conducting the CCOS study, would you have used A&E-4NCP?

A. I likely would have selected a slight derivation of the A&E method and used 4CP as a basis for excess demand instead of 4NCP, which was my recommendation for Evergy in its 2022 rate case. Both are acceptable methods and subject to the preference of the analyst conducting the study. The results of both methods are very comparable. This is a significant point. It is often said that reasonable CCOS studies can disagree on the details of allocation. They can and do. I would perhaps make some different nuanced decisions about allocations than the Company would, and studies with either of those sets of decisions may be considered reasonable. But what reasonable studies cannot do is rely on allocation factors that are structurally biased or completely divorced from a reasonable assessment of cost causative factors, as is the case with Staff's CCOS study.

Q. In her rebuttal testimony, Ms. Lange states that the A&E method is fully irrelevant due to MISO's adoption of its new Resource Adequacy model.[4] Do you agree?

A. No, I do not. While I will not repeat Mr. Brubaker's responses regarding the use of Resource Adequacy hours on pages 3 and 4 of his rebuttal testimony, I do agree with his conclusions: they are not appropriate for cost allocation purposes or capacity responsibility allocation purposes.

Q. What other conclusions have you drawn regarding Staff's subdivision of generation resources into Type 1 or Type 2 categories?

[4] *Id.,* p. 8, ll. 8 – 11.

A. Ms. Lange separates out Type 2 generation, which is defined as having little or no variable costs, with the dispatch often limited by weather conditions or other factors beyond the control of the utility, or generally wind and solar assets. These assets are allocated on a "Partial Energy Weighting" method, which I am not familiar with as an accepted method of allocating production demand costs. It appears to me that it is effectively an energy allocation of costs that are classified as demand.

Q. Is this appropriate?

A. No, if it were appropriate to allocate the costs on an energy basis, the costs would have been classified as energy in the first place. To have an allocation that is completely or heavily weighted on energy for a demand-classified cost is not sound allocation practice and should be rejected.

Q. Do you agree that some generation investment decisions of the Company have an energy component to the decision making process?

A. Yes, I do and the example of Missouri's renewable energy standards is a good example that some decisions have an energy component. This is precisely why the A&E methodology is appropriate for the Company. The A&E method is an "energy-weighting" method as defined in the NARUC manual (p. 49). The Company correctly identifies that energy loads are a determinant of production plant costs and appropriately considers this in its allocation of production demand costs. In fact, over half (52.054%) of the Company's production demand allocation is on an energy basis. The reality is that the Company is still a vertically integrated company that has invested billions in various types of generation to serve primarily the peak demand needs of its customers. The A&E method appropriately considers

the peak demand and energy factors that go into building and maintaining a fleet of generation resources. Staff's assertions that the Company's involvement in the MISO integrated market changes this dynamic are false.

Q. Does a customer's kWh usage impact the output of Type 2 resources?

A. No, energy production from solar and wind generating resources is non-dispatchable. Whether a customer is using energy or not is irrelevant to the output of wind and solar. So, while energy to meet renewables goals may be part of the decision to build solar and wind, there is not a direct link to customer usage patterns. Therefore, from a cost causation standpoint, the timing of a customer's energy needs are not related to the energy produced by wind and solar.

V. ALLOCATION OF DISTRIBUTION COSTS

Q. Staff witness Lange's rebuttal testimony levels several criticisms of the Company's distribution cost allocations. Have you reviewed the Company's classification and allocation of distribution costs?

A. Yes, I have. Similar to the CCOS studies I conduct, Company witness Hickman uses the minimum size method for classification of distribution costs between demand and customer components.

Q. Does Mr. Hickman's minimum size study follow the methodology outlined in the NARUC manual?

A. Yes, it does, with one adaptation. I can see Staff's point that devices such as lightning arrestors and switches should be considered demand related and are part of "balance of plant."

Q. Does this limit the validity of the Company's minimum size study?

A. No, it does not. Mr. Hickman has supported his methodology and decision-making process. Much like the previous discussion of A&E-4CP versus A&E-4NCP for production demand allocation, cost analysts can disagree on certain points and how they apply the guidance in the NARUC manual. The Commission should compare the classification methodology and results of all parties and determine which is the most reasonable.

Q. Have you made such a comparison to inform your view that this minor issue you take with a specific detailed allocation decision the Company made does not make the Company's study unreasonable?

A. The evidence the Company provided in rebuttal testimony gives me confidence to say that the distribution allocations in its study are far more reasonable than Staff's. Recall witness Hickman's presentation comparing the trends in distribution allocations over time in both Staff and Company studies. As evidenced by Table TH-2, which is reproduced just below, the Company's results have exhibited reasonable stability over time, with allocation factors that are in line with my expectations based on my extensive experience in the industry.

Table TH-2

	Allocated Percentage of Net Book Value (Accounts 364-368)				
	Residential	SGS	LGS/SPS	LPS	Lighting
2016 Staff - Zero Intercept	69.17%	11.10%	15.20%	1.90%	2.62%
2021 Ameren - Min System	68.91%	11.90%	15.56%	1.39%	2.24%
2021 Ameren - Zero Intercept	70.50%	11.84%	13.83%	1.34%	2.49%
2022 Ameren - Min System	**68.31%**	12.28%	15.46%	**1.62%**	2.35%
2021 Staff - Min System as Adjusted	58.21%	12.86%	25.10%	2.13%	1.69%
2022 Staff	**41.65%**	10.92%	36.06%	**10.75%**	0.62%

However, what this table also demonstrates is Staff's extreme change in methodology from case to case, where the allocation to the residential class from 2016 to 2021 to 2022 has decreased from 69% to 58% to 42%, while in the same timeframe the LPS allocation has increased from 2% in 2016 and 2021, then suddenly jumps to 11% in 2022.

Q. Are you aware of any significant changes to the Company's distribution assets that would lead to such an extreme change from precedent?

A. No, based on my conversations with Mr. Hickman regarding the rationale for allocating distribution costs, the Company continues to size distribution facilities based on the expected non-coincident peak on the distribution system. That is also consistent with my experience with electric utilities that I have worked with. While investments in the system occur and can cause allocation factors to evolve over time, there is simply no basis in my opinion to believe that such radical changes could happen so quickly given the massive scope and scale of historical investment that is still present on the system, and will be for decades to come. For example, it is simply unreasonable to accept that the LPS class's share of distribution costs

have quintupled in one year and Residential's cost responsibility has been nearly halved over five years.

Q. What is causing this extreme change in cost allocation?

A. A major factor that concerns me is discussed by Mr. Hickman on page 9 of his rebuttal testimony, where he identifies that *"Staff allocated most of the cost associated with Accounts 364 through 367 "proportionate to each class's contribution to the system requirements in each hour, and proportionate to each hour's utilization of the distribution system."*

As Mr. Hickman goes on to demonstrate, this methodology results in an allocation factor that effectively mimics Staff's energy allocator (see Table TH-3 on page 12 of Mr. Hickman's rebuttal testimony).

Q. Do the costs of building and operating a distribution network vary by the hour?

A. No, they do not. It is accepted practice that distribution costs are driven by non-coincident peak demand and customer factors, neither of which vary by the hour.

Q. Is there any validity to Staff's allocation method?

A. No, there is not. In fact, it's borderline absurd. I would think that any cost analyst that would invent a new allocation method would realize once the study was compiled that the new allocator mimics the energy allocator and realize that is a huge red flag and most likely a flawed methodology. Contrarily, Staff demonstrates a pattern of arbitrary energy allocations with an apparent targeted result of shifting costs away from the Residential class to large customer without supporting cost causation.

VI. CONCLUSIONS

Q. What are your conclusions regarding Staff's CCOS study methodologies?

A. Staff's CCOS study should be rejected by the Commission in this case on the basis of using non-standard and technically inaccurate allocation methodologies that arbitrarily shift costs from small to large customers without supporting cost causation.

Q. What are your conclusions regarding Staff's request for additional data in this and future rate cases?

A. Staff's requests for additional data should be rejected as currently requested or moderated to a level of detail where the incremental benefits to the cost allocation process exceed the cost of compiling the data.

Q. What are your conclusions regarding the Company's CCOS study?

A. The Company's CCOS study is reasonable and follows industry-accepted cost allocation methodologies based on cost causation and should be relied upon in this case for rate design decisions.

Q. Does this conclude your surrebuttal 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 Tariffs to Adjust Its Revenues for Electric Service.	**)** **)** **)**	Case No. ER-2022-0337

AFFIDAVIT OF CRAIG BROWN

STATE OF MISSOURI **)**
) ss
CITY OF ST. LOUIS **)**

Craig Brown, being first duly sworn states:

My name is Craig Brown, and on my oath declare that I am of sound mind and lawful age; that I have prepared the foregoing *Surrebuttal Testimony*; and further, under the penalty of perjury, that the same is true and correct to the best of my knowledge and belief.

/s/ Craig Brown
Craig Brown

Sworn to me this 13th day of March, 2023.