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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. ER-2021-0240

REBUTTAL TESTIMONY

OF

THOMAS HICKMAN

ON

BEHALF OF

UNION ELECTRIC COMPANY

D/B/A AMEREN MISSOURI

**St. Louis, Missouri
October 15, 2021**

TABLE OF CONTENTS

I. INTRODUCTION 1

II. STAFF'S ATTEMPT TO REVAMP CCOS FOR DISTRIBUTION PLANT IS
RIDDLED WITH FLAWED ASSUMPTIONS, OVER-SIMPLIFICATIONS, AND
MISUNDERSTANDINGS 2

III. BRIEF RESPONSES TO STAFF'S, MECG'S, AND MIEC'S PRODUCTION
COST ALLOCATION METHODS 22

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FILE NO. ER-2021-0240

1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Thomas Hickman. My business address is One Ameren Plaza,
4 1901 Chouteau Ave., St. Louis, Missouri.

5 **Q. Are you the same Thomas Hickman that submitted direct testimony in**
6 **this case?**

7 A. Yes, I am.

8 **Q. To what testimony or issues are you responding?**

9 A. My rebuttal testimony responds to Staff's Class Cost of Service Report ("CCOS
10 Report" or "Report"), and more specifically, Staff's skewing of Class Cost of Service Study
11 ("CCOSS") results and/or confusion of data that underlies the Company's CCOSS. Company
12 witness Steven Wills is also filing rebuttal testimony in response to Staff's CCOSS — Mr. Wills,
13 among other things, is refuting Staff's allegations of non-compliance with stipulated
14 commitments from the Company's prior electric rate review (File No. ER-2019-0335); In
15 addition to addressing Staff's CCOSS, my rebuttal testimony includes a brief response to Staff's,
16 the Midwest Energy Consumers Group's ("MECG"), and the Missouri Industrial Energy
17 Consumers' ("MIEC") production cost allocation methods or results.

1 **II. STAFF'S ATTEMPT TO REVAMP CCOS FOR DISTRIBUTION PLANT**
2 **IS RIDDLED WITH FLAWED ASSUMPTIONS, OVER-SIMPLIFICATIONS,**
3 **AND MISUNDERSTANDINGS**

4 **Q. In Staff's Report, Staff outlines a number of points about the Company's**
5 **distribution system and the accounting for those assets. Do you disagree with their**
6 **characterizations?**

7 A. Yes, I do, especially as it relates to poles, conductors, and assets used by only a
8 single customer. First, Staff's illustrations and descriptions do not consider the fact that a single
9 pole (in areas with overhead secondary distribution) can often be used to carry both primary and
10 secondary conductor. In a basic example, a line transformer which is transforming primary
11 voltage to secondary voltage may exist on a pole. There may be service cables run directly from
12 that point of transformation to a customer's meter, but there is also likely to be some secondary
13 conductor running from that pole mounted transformer to additional poles. A service cable
14 would then be run from that secondary conductor at that additional pole to the customer's meter.
15 This causes a more efficient distribution system in that a single transformer and a few pole to
16 pole spans of secondary conductor may accomplish what would otherwise require multiple
17 transformers due to the physical placement of the distribution system and customer service
18 points. Staff uses these illustrations to frame its CCOSS and provide rationale for the new
19 methods that it is trying to introduce in this case. However, the oversimplifications of the system
20 in Staff's illustrations fail to accurately represent the significant complexity of how the grid
21 actually operates. Staff's failure to recognize the incredible complexity of the grid, and its
22 subsequent belief that it can associate the system components to customers and classes in an
23 extremely granular fashion is a key point in understanding why Staff's recommendation for the
24 Company to undertake data collection related to costs of the distribution system is unreasonable.

1 Second, the Report contains a number of oversights in how to interpret specific assets
2 being accounted for in specific accounts. The Report states, "Specifically, these examples will
3 illustrate instances when the line dedicated to a customer would be recorded to a service line
4 account (369.1 for Overhead, 369.2 for Underground) and when the line dedicated to a customer
5 would be recorded to Account 365, Overhead Conductors & Devices and Account 364, Poles,
6 Towers, & Fixtures (For underground facilities, the analogous accounts are Account 367,
7 Underground Conductors & Devices, and Account 366, Underground Conduit)."¹ Staff's
8 illustration appears to be comparing the service cable of a secondary customer to the service
9 cable, pole, and conductor of a primary customer. As was described previously, a pole may also
10 contain secondary overhead conductor. This secondary overhead conductor (and by association,
11 pole) may be shared among multiple customers or it may be exclusively used by a single
12 customer whose service cable is attached. It is not appropriate to equate the exclusive use of
13 service cable to a secondary customer with an exclusive use of service cable, overhead or
14 underground conductors, poles, and even transformers of a primary customer.

15 **Q. Staff alleges a number of complications loosely related to Smart Energy**
16 **Plan ("SEP") capital projects in developing a more accurate CCOSS. Please summarize**
17 **them.**

18 A. Staff alleges three primary complications.

19 1. Ameren Missouri has placed an additional \$190 million of distribution assets into
20 service between January 1, 2021 (which was the basis of the Company's direct case) and the
21 May 1, 2021 data provided to Staff.

¹ ER-2021-0240, Staff's Class Cost of Service Report, at p. 12, lines 6-11.

1 2. There is approximately \$210 million of investment reflected in the distribution
2 accounts that is non-unitized in the continuing property records ("CPR") utilized in the
3 Company's direct filing.

4 3. This case reflects a \$429 million addition to distribution investment related to SEP
5 projects that Staff supposes are driven by causes other than the number of customers and size
6 of customer demands being served.

7 **Q. Do you agree that the summarized items create complications in**
8 **developing an accurate CCOSS?**

9 A. I do not, and I will address each point individually.

10 1. Staff highlighted that the concept of additional distribution investment occurring
11 between the date of CPR information in the Company's direct filing and the date of update
12 information provided (as stated in alleged complication number 1 above) is not new in this case.
13 In fact, they recognize that the CCOSS is at least somewhat out of sync with the final revenue
14 requirement routinely in rate review cases. Yet, Staff appears to stress the importance of the
15 higher value of incremental investment during that time period in this case as a reason that this
16 is a more significant complication in this case. This dynamic would only ever be a complication
17 with any significant consequence to the extent that two facts were true. First, the composition
18 of the plant addition between the two periods would need to be different from that of the initial
19 plant. That is because, practically speaking, the incremental distribution investment after the test
20 year end is allocated based on the assumption that the composition of the plant is similar to that
21 which was reflected in the test year analysis.

22 Second, that difference would need to be material enough when taken against the base
23 level of investment as of the original test year to create a material difference in allocation. Using

1 the \$190 million as an example, since the distribution capital in the Company's direct filing was
2 approximately \$6.783 billion, if the \$190 million's compositional difference from the \$6.783
3 billion meant that a class's allocation of the \$190 million should be higher or lower by 1% than
4 that of the \$6.783 billion investment the actual allocation factors are based on, the actual percent
5 change in that class's allocated costs relative to all distribution investment, not just the
6 incremental \$190 million of investment, would be approximately 0.028% (twenty-eight one-
7 thousandths of a percent). Due to the size of this additional investment relative to the beginning
8 balance, it is completely reasonable to rely upon factors calculated using the beginning balance
9 and it should not be viewed as a complication, at all. Said another way, it is totally reasonable
10 to use analysis performed on an approximate \$6.783 billion balance as the basis to allocate an
11 incremental investment of \$190 million (or about 2.8% of the total balance prior to the
12 incremental investment).

13 2. Staff also highlights the fact that there is a non-unitized balance of approximately
14 \$210 million in FERC Accounts 364 – 373.2. The concept of non-unitized property is not new.
15 Similar to the discussion on capital spend between two periods in the point above, the non-
16 unitized balance is higher in this case than in prior cases due to the rate at which capital spending
17 is occurring in order to execute the Company's Smart Energy Plan. So, understanding this not
18 to be a new concept, I assume Staff is concerned with the relative size of the non-unitized
19 balance. The impact, however, is essentially the same as that of the incremental capital spend
20 between two periods. The same two facts as above would need to be true of this balance to
21 reasonably be considered a complication: the balance of the SEP projects has a different
22 composition than the unitized balance, and that different composition was material in the
23 context of the overall distribution allocations.

1 Using the \$210 million as an example, since the unitized distribution capital for the
2 relevant accounts in the Company's direct filing was approximately \$5.272 billion, if the \$210
3 million's compositional difference from the \$5.272 billion meant that a class's allocation of the
4 \$210 million should be higher or lower by 1% than that of the \$5.272 billion, the actual percent
5 change relative to all distribution, not just the \$210 million, would be approximately 0.04%
6 (four one-hundredths of a percent). Due to the size of this non-unitized balance relative to the
7 unitized balance, it seems completely reasonable to rely upon factors calculated using the
8 unitized balance and this should not be viewed as a complication. Said another way, I believe it
9 is totally reasonable to use analysis performed on an approximate \$5.272 billion unitized
10 balance to allocate a non-unitized balance of \$210 million (or about 4% of the total balance
11 prior to unitizing the incremental investment).

12 3. Staff identified \$429 million of SEP projects as having a cause other than the number
13 of customers (or geographic dispersion of) or energy demands of those customers. There are a
14 number of flaws in Staff's line of thinking. The first and most obvious is that some measure of
15 costs incurred on those projects would have been incidental to the project justification. For
16 example, during the installation of some specific asset that might have a specific SEP-related
17 justification, other nearby assets are identified as needing to be replaced due to apparent age or
18 wear and tear. A decision is made to replace those other nearby items (say a pole and some
19 conductor in need of replacement). The justification for replacing those items may not relate
20 exactly to the SEP-related justification for the project and primary purpose for being there, and
21 the cause for those items' existence would be no different than the cause for other similar poles
22 and conductors located elsewhere on our system.

1 Second, and potentially more importantly, there are countless things that influence costs
2 but which are not generally considered to be primary drivers of CCOSS allocations. This is due
3 to the nature of how measurable and assignable they are. Consider the use of primarily wooden
4 poles on our system. Is it possible a less expensive material than wood could be used to serve
5 the same purpose? Yes. Is it likely, or at least reasonable, that this less expensive material would
6 result in an electric distribution system which is less safe and reliable? Yes. Is it possible to carve
7 out the cost component of a wooden pole that relates to the selection of a wooden pole over a
8 less expensive material pole while simultaneously measuring how the safe and reliable
9 component of selecting a wood pole should be assigned to an individual customer or customer
10 group? Not in any reasonable or practical way. As a result, the fact that SEP Projects have a
11 varied number of justifications, which are not exactly number of customers served (or
12 geographic location of) or the demands of those customers, simply does not create any level of
13 complication in CCOSS allocations that did not already exist.

14 **Q. Relating to a number of distribution accounts, Staff alleges that the**
15 **Company's classification and allocators "failed to account for circuits that serve**
16 **individual primary and HV customer."**² **For Account 365 – Overhead Conductors and**
17 **Devices and Account 367 – Underground Conductors and Devices, Staff attempted to**
18 **directly allocate some of the value of these assets to Primary and High-Voltage ("HV")**
19 **customers. Do you agree with Staff's characterization and the approach it took?**

20 A. I disagree with both Staff's characterization and the approach it took. Identifying
21 assets used by individual primary and HV customers is an extremely complex task with a system
22 of cost records built on mass property and group depreciation, which inherently means that asset

² ER-2021-0240, Staff's Class Cost of Service Report, at p. 25, lines 18-19.

1 records are not detailed enough to be used to identify attributes and costs of specific individual
2 items. Further, while on one level Staff's analysis is already unwieldy because of how complex
3 it is, the reality is that it is only one small piece of a much larger and much more complex world
4 of analysis that would be required to perform direct assignment of mass property assets.

5 Focusing on primary and HV customers, and Staff's attempt at making some level of
6 direct assignment in its development of classification and allocators, first consider how the
7 development of allocators can be simplified, in many cases, to a numerator and a denominator.
8 The costs (or a representation of those costs) are generally the numerator, and the cost causer
9 (such as kilowatt-hours ("kWh") of energy, kilowatts ("kW") of demand, or number of
10 customers) is the denominator. Staff identified approximately \$400,000 worth of overhead
11 conductor and \$1,200,000 worth of underground conductor as being directly assignable to
12 primary voltage classes of customers. Staff removed these dollars from the respective numerator
13 (or total cost) of the respective costs. Staff then assigned those costs directly to primary classes.
14 Staff made a critical oversight, however, in that no consideration appears to have been given to
15 the fact that the assets representing those dollars would have at least met some measure of the
16 service requirements of the cost causer. Some adjustment to the denominator, which the
17 remaining costs of assets that were not identified as serving specific primary customers are being
18 allocated across, should be made. This is a complex notion, as whether the allocation
19 denominator is number of customers or kW of demand, some percentage of that individual
20 customer or demand's requirements of the distribution system has been met by assets already
21 directly assigned to it. However, due to the fact that absolutely no consideration to this notion
22 appears to have been given, Staff's application seems short-sighted and incorrect. The
23 complexity of analysis required to even reasonably attempt to perform direct assignment on

1 mass property, such as poles and conductors is the exact reason I do not see value in it, and is
2 probably why I am unaware of any instances in which direct assignment has been utilized in
3 other jurisdictions or by other utilities in the manner imagined by Staff.

4 A second critical point is the lack of an attempt to quantify or even acknowledge that
5 some measure of distribution poles and conductors at the primary level serve only secondary
6 customers. Consider that Staff's attempts are not really directly assigning the cost of the asset to
7 an individual customer, but rather the customer class (and more accurately, the primary level of
8 service) as a whole. In an equal and potentially offsetting manner, any pole or conductor
9 carrying primary voltage throughout a residential subdivision but for which not a single primary
10 customer is taking service or benefiting in any way, should be identified as directly assignable
11 to customers served at secondary voltage. Staff once again, however, did not attempt to
12 acknowledge that certain primary voltage assets only serve secondary class customers. The fact
13 that assets like that exist would serve to provide some mitigation to Staff's otherwise asymmetric
14 attempt to account for the fact that not all customers and assets exist equally. The facts presented
15 serve to illustrate how incredibly complex such an analysis would be to perform. I would re-
16 characterize what Staff mischaracterized as the Company's failure to consider assets only
17 serving individual primary and high voltage customers, as Staff's failure to fully explore the
18 concepts and the Company's successful attempt to develop a reasonable study generating
19 reasonable allocators.

1 **Q. Relating to a number of distribution plant accounts, Staff alleged that the**
2 **Company's classification and allocators "failed to retain the calculated minimum when**
3 **applied to the account balance."³ Do you agree with Staff's characterization?**

4 A. I disagree with Staff's characterization. The reason the calculated cost of the
5 minimum system differs from absolute dollars of the total investment reflected in the total
6 distribution account balance that are identified as pertaining to the minimum system is timing.
7 This is similar to previous discussions relating to the timing of investment and non-unitized
8 property. The Company's approach is to treat incremental investment with unknown
9 compositions as if they are composed similar to the known investment upon which the analysis
10 is based. While this may be unlikely to produce analysis with perfect accuracy when compared
11 to analysis taken once the composition of those balances is fully known, the purpose is to
12 provide a reasonable basis for allocation. Staff's approach is to treat every incremental dollar of
13 investment with an unknown composition as if the composition of that additional investment
14 has zero customer-related costs included. To illustrate the difference in approach, consider the
15 earlier example of incremental investment. To simplify, assume the original minimum system
16 study was conducted on a plant balance of \$6 billion and resulted in 50% of those costs being
17 determined to be customer-related. Assume that an incremental investment of \$200 million is
18 made. Staff's approach would assume the customer-related portion of the \$6.2 billion of total
19 distribution investment is \$3 billion (50% of the original balance on which the study was
20 conducted). The Company's approach would assume the customer-related portion of the \$6.2
21 billion of total distribution investment is \$3.1 billion (50% of the total distribution investment
22 including the incremental \$200 million). Staff's approach is incredibly unreasonable. Staff's own

³ ER-2021-0240, Staff's Class Cost of Service Report, at p. 25, lines 19-20.

1 analysis of historical distribution poles, conductors and devices shows customer-related costs
2 are included, but when it comes to incremental investment in those associated accounts, Staff
3 makes a blanket assumption that they have no customer-related costs. I would re-characterize
4 what Staff identified as the Company's failure to retain the calculated minimum when applied
5 to the account balance as Staff's failure to reflect that some amount of the incremental
6 investment would be customer-related and the Company's successful attempt to reasonably
7 reflect that fact.

8 **Q. Relating to a number of distribution accounts, Staff alleges that the**
9 **Company's classification and allocators "failed to reasonably recognize the various**
10 **voltages at which devices operate."⁴ How do you respond?**

11 A. While devices do operate at a range of voltage and it would not be unreasonable
12 to enhance the minimum system analysis to give some consideration of that fact, any such
13 analysis should be conducted on more of a device by device basis than Staff appears to have
14 done. For example, in Account 365 – Overhead Conductors and Devices, there are 6 different
15 retirement units for reclosers. Of those 6 retirement units, 4 have a quantity of 6 or less. The
16 remaining 2 retirement units have quantities of 8,535 and 384. In this specific case, I would
17 absolutely not use the 4 retirement units with quantities of 6 or less to quantify the minimum
18 sized device used on the system, as there is no way those are representative of a total of the
19 approximately 8,900 reclosers on the system. However, that is exactly what Staff did.

20 It would be far more reasonable to focus the analysis on the two retirement units that
21 represent over 99.7% of the total quantity of reclosers on the system. The average book value
22 of these higher quantity reclosers is \$10,031.50 and \$79,479.07, respectively. The 384 reclosers

⁴ ER-2021-0240, Staff's Class Cost of Service Report, at p. 26, line 14.

1 with the higher average book value approaching \$80,000 per device clearly relate to a higher
2 voltage per the retirement descriptions. In this case, I would have used the lower book value
3 associated with the low-volume retirement units to price the customer-related component of
4 those reclosers with average book values less than \$10,031.50, and priced the customer-related
5 component of reclosers with an average book value of \$10,031.50 or greater at \$10,031.50. This
6 modification would have changed the customer-related component of reclosers from \$20.4
7 million per Staff's analysis to \$89.5 million. So, while I agree that the Company could make an
8 incremental improvement to its allocation of devices, I also believe that Staff's attempt to do so
9 was not reasonable. A more robust analysis that individually considers types of devices would
10 be required.

11 **Q. Relating to a number of distribution accounts, Staff alleged that the**
12 **Company's classification and allocators "over-allocated customer-based costs for**
13 **customer classes taking service at secondary voltage."⁵ For the relevant accounts, Staff**
14 **then created a weighting factor for different types of customers. Do you agree with Staff's**
15 **characterization, and the approach it took?**

16 A. I do not agree with Staff's characterization or approach. Staff further clarified
17 the purpose of its adjustment as follows: "Because the minimum system that is the basis of the
18 Ameren Missouri classification would operate at primary voltage...."⁶ As I will go into later in
19 this testimony, the minimum system is not a primary system, so Staff's initial premise is flawed.
20 Further, the weighting factors created by Staff utilize diversity factors which are a ratio of non-
21 coincident peak load to coincident peak load. Accordingly, these diversity factors are derived
22 from demand measures. The purpose of a minimum system study is to differentiate costs which

⁵ ER-2021-0240, Staff's Class Cost of Service Report, at p. 26, lines 16-17.

⁶ *Id.* at p. 28, lines 20-21.

1 are driven by the number of customers (customer-related) from costs which are driven by
2 demands (demand-related). To identify a cost as customer-related but to then weight the number
3 of customers based on a factor created from demands undermines the entire point of the study.
4 I therefore do not agree with the approach Staff used, nor do I believe it to be a reasonable
5 method of weighting customer counts.

6 The NARUC manual states the following relating to the allocation of customer-related
7 costs:

8 The allocation of the customer-related portion of the various plant accounts is
9 based on the number of customers by classes of service, with appropriate
10 weightings and adjustments. Weighting factors reflect differences in
11 characteristics of customers within a given class, or between classes. Within a
12 class, for instance, we may want to give more weighting of a certain plant
13 account to rural customers, as compared to urban customers. The metering
14 account is a clear example of an account requiring weighting for differences
15 between classes. A metering arrangement for a single industrial customer may
16 be 20 to 80 times as costly as the metering for one residential customer.

17 While customer allocation factors should be weighted to offset differences
18 among various types of customers, highly refined weighting factors or detailed
19 and time consuming studies may not seem worthwhile. Such factors applied in
20 this final step of the cost study may affect the final results much less than such
21 basic assumptions as the demand-allocation method or the technique for
22 determining demand-customer classifications.⁷

23 I do not believe Staff's attempt to apply weighting factors to the number of customers
24 was justified given its apparent lack of an appropriate understanding of the Company's
25 underlying study. I also do not believe Staff's attempt was reasonably or appropriately calculated
26 given the attempt to incorporate demand-based weightings on a customer-related expense, nor
27 was it likely, if performed reasonably, to impact the final results in a way that would be
28 "worthwhile."

⁷ National Association of Regulatory Utility Commissioners (NARUC), *Electric Utility Cost Allocation Manual*, at p. 98 (1992).

1 **Q. Relating to a number of distribution accounts, Staff alleged that the**
2 **Company's classification and allocators "double-allocated system costs associated with**
3 **lower voltages and the minimum system."**⁸ **Relating to poles and conductors, Staff stated**
4 **"Because the 'minimum' system as determined by Mr. Hickman is actually a primary**
5 **system, it is appropriate to remove that portion of the system valuation from Mr.**
6 **Hickman's estimated secondary system valuation and Mr. Hickman's estimated primary**
7 **system valuation."**⁹ **Staff then made an apparent attempt to adjust for this in its allocators.**
8 **Do you agree with Staff's characterization and the approach it took?**

9 A. Again, I disagree with both Staff's characterization and the approach it took.
10 First, Staff's rationale that the "minimum" system I calculated is a primary system
11 misunderstands my analysis. Consider that poles do not exactly operate at a unique voltage.
12 While a major driver in 40-foot wood poles may be the attachment of primary conductor and
13 devices, they also can have a mixed use. As described above, a 40-foot wood pole may have
14 primary conductor and/or devices attached to it, but it may also have secondary conductor and/or
15 devices also attached to it. I also believe trying to characterize the "minimum" system as having
16 specific operational characteristics may not be appropriate. The "minimum" size study is an
17 attempt at dividing the costs of certain assets between unique cost drivers. To illustrate, think of
18 a single 100-foot wood pole that has an average book value of approximately \$22,000. The
19 Company's study takes the average book value of a 40-foot wood pole, approximately \$1,200,
20 and subtracts that value from the value of the 100-foot pole. As a result \$1,200 of the cost of the
21 100-foot pole are determined to be customer-driven, and the remaining \$20,800 of cost are
22 determined to be demand-driven. The study is absolutely not saying that the system can operate

⁸ ER-2021-0240, Staff's Class Cost of Service Report, at p. 25, line 20-21.

⁹ *Id.* at p. 26, ll. 5-9.

1 with a 40-foot pole in the place of a 100-foot pole. All the study is doing is identifying what
2 portion of costs are driven by what element. Also consider that the Company's study includes
3 poles with an average book value of less than that of a 40-foot pole at their own respective
4 average book value. The costs of the "minimum" system as identified in the study include the
5 cost of 25-, 30-, 35-foot wood poles at their respective actual average book cost. To the extent
6 any of these poles serve exclusively secondary voltages, they are fully considered within the
7 costs of the "minimum" system. My "minimum" system is simply not exclusively a primary
8 system.

9 As it relates to conductors, the identified minimum size conductors are more likely to
10 operate exclusively at a primary voltage. Despite that, my study is only applying the cost of the
11 minimum size conductor to system feet of primary conductor. The length of the secondary
12 overhead system is currently not fully tracked in the Company's records in a manner that could
13 be utilized in this study, but through mapping efforts we hope to be able to better identify this
14 data point in the future. As a result, I conservatively excluded the entire impact of the secondary
15 overhead system from my allocation study. With more robust information, a length of secondary
16 system at a minimum secondary conductor cost could be included. Staff's notion that the
17 minimum primary system needs to be removed from the estimated secondary system valuation
18 appears to be driven by this fundamental misunderstanding of my study.

19 Despite what I believe to be misinterpretations of my study, I do not think that the
20 Minimum System method is perfect, nor that Staff's effort to look for opportunities for
21 incremental improvement in allocations is unreasonable. The NARUC Manual states, "Cost
22 analysts disagree on how much of the demand costs should be allocated to customers when the
23 minimum-size distribution method is used to classify distribution plant. When using this

1 distribution method, the analyst must be aware that the minimum-size distribution equipment
2 has a certain load-carrying capability, which can be viewed as a demand-related cost."¹⁰ I
3 believe this is the issue that Staff attempted to address in its allocations. That said, I think it is
4 worthwhile to step back and look at the impact of Staff's attempts in a broader context. Please
5 see the following table, which compares and contrasts the allocation of certain distribution plant
6 accounts that arise from application of a variety of methods.

7 **Table 1**

	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%
2021 Staff - Min System as Adjusted	58.21%	12.86%	25.10%	2.13%	1.69%

8 Table 1 shows, by rate class, the percentage allocation of net book value for FERC
9 Accounts 364 – 368 resulting from four different studies. These accounts were selected as they
10 are the accounts to which the minimum distribution system methodology was applied. The four
11 different studies are Staff's 2016 Direct Filed Cost of Service Study,¹¹ Ameren Missouri's 2021
12 Direct Filed Study (from this case), Ameren Missouri's 2021 Direct Filed Study modified to use
13 Zero Intercept¹² factors instead of the Minimum Distribution System factors, and Staff's 2021
14 Direct Filed Study (which relies on Ameren Missouri's Minimum Distribution study but makes
15 a number of "adjustments"). Please note, the 2016 Staff study was selected as the last direct

¹⁰ NARUC *Electric Utility Cost Allocation Manual*, at p. 95 (1992).

¹¹ From File No. ER-2016-0179.

¹² The zero-intercept method is the other method identified in the NARUC manual, along with the minimum system method, to allocate distribution costs to the customer and demand classifications. At various points in the past, both Staff and the Company have employed the zero-intercept method.

1 filing study in which Staff applied a purely zero intercept based approach. In the Company's
2 2019 electric rate review case, Staff used a hybrid of minimum distribution factors as calculated
3 by the Company and some Zero Intercept factors of their own.

4 The argument of lower voltage system costs being double-allocated is an argument
5 unique to Minimum Distribution Studies. Conceptually, the issue that gives rise to the potential
6 concern about double-counting in the minimum system method simply does not exist at all with
7 zero-intercept studies. As the results within the table show, however, the first three lines which
8 are a mix of purely minimum distribution studies and purely zero-intercept studies. Those
9 studies' results all fall within a few percentage points of each other.

10 It is noteworthy, too, that the residential allocation of distribution costs is actually lower
11 using the minimum size method than it is using the zero-intercept method. I say this is
12 noteworthy because the nature of double-counting that Staff is alleging, if it existed, would
13 almost certainly apply most significantly to the residential class, inflating the allocation to
14 residential customers relative to a methodology, like zero-intercept, that does not have the
15 purported flaw. If the Company's minimum system analysis had significant issues that resulted
16 in over-allocation to residential customers, it would almost certainly result in the total allocated
17 distribution costs to the residential class exceeding the allocation under the zero-intercept
18 methodology. The fact that the residential allocation is lower under the minimum system
19 method is the first clue that double counting is not a significant issue here.

20 Regardless of the direction of difference between the methods though, the close
21 alignment of results between minimum size and zero-intercept would seem to imply that the
22 issue of minimum sized assets having some load-carrying capabilities is either an issue that is
23 not very impactful to the allocators, or the issue is somehow offset in its application relative to

1 the Company's study. For example, the theoretical concern with minimum system suggests that
2 any dollar of minimum size system on a per account basis that exceeds the dollars calculated
3 using a zero-intercept approach is assumed to have some load-carrying capability that must be
4 accounted for. Staff approached this in its CCOSS analysis by both calculating a minimum for
5 each account and applying zero intercept percentages to them. In the case of poles, the minimum
6 exceeded the zero intercept value. Staff's approach was to allocate these incremental dollars that
7 are associated with the minimum system to Secondary voltage customers and then up to
8 Primary, to offset any demand-related costs. This resulted in all Secondary demand-related costs
9 and a portion of Primary demand-related costs being offset. In a second example, any costs
10 associated with the minimum size system on a per account basis that are below the costs
11 calculated using a Zero Intercept approach, should be thought to not have load-carrying
12 capabilities and should work in an opposite and offsetting fashion. In the case of conductors,
13 Staff's approach was to let this incremental deficit between the zero intercept value and the
14 minimum size value be spread proportionate to demand across Secondary, Primary, and High
15 Voltage. This does not appear to me to be an appropriate and offsetting approach. That
16 asymmetry in Staff's approach contributed to its study being the extreme outlier in the
17 comparison of different methods shown in Table 1.

18 Even setting aside the detail and nuance of the issue and without coming up with a
19 perfect way to address the issue, my review of Staff's allocations leads me to one simple
20 conclusion: Given the lack of much relative difference between 3 different analyses performed
21 with a mix of zero-intercept and minimum distribution system approaches, but a significant
22 relative difference in Staff's modified approach in this case, there must be some deficiencies in
23 how Staff has attempted to address its concerns with the minimum system in this case.

1 **Q. Staff's testimony states the following: "Similarly, Ameren Missouri failed**
2 **to provide a description or reasonable estimate of the voltages at which plant within**
3 **each account operate, and Staff had no option but to rely on the 'Vandas study' as**
4 **presented in Mr. Hickman's workpapers. Staff looks forward to Ameren Missouri's**
5 **cooperation to identify the plant that operates at each voltage by retirement unit and**
6 **asset value prior to the next rate review case."**¹³ **Do you agree with this statement?**

7 A. I do not agree. Staff is asserting that the Company provided no information to
8 estimate the voltage at which distribution plant operates. This is categorically false. This
9 statement makes clear to me that Staff is unaware of the detailed analysis that went in to the
10 "Vandas study," the same "Vandas study" that Staff had "no option but to rely on." The Vandas
11 study was an extremely detailed systematic analytic review of the contents of the Company's
12 distribution accounts and the assets within.

13 Under the Vandas study, individual retirement units were researched and placed into the
14 following three categories (up to the point where the retirement units reviewed encompassed
15 99% of each respective distribution account balance):

16 • Sample: For any retirement unit given a sample designation, statistical
17 sampling was used in conjunction with operational records to determine what
18 voltage each sampled unit operated at. For the purposes of this study, the
19 voltages studied were Secondary, Primary, and High Voltage (sometimes
20 referred to as sub-transmission). The results of that sample were statistically
21 applied to the population of remaining units within that retirement unit.

¹³ ER-2021-0240, Staff's Class Cost of Service Report, at p. 23, footnote no. 21.

- 1 • Exclusive: A unit given an exclusive designation was judgmentally identified
2 by engineering to relate to only a single voltage. For example, consider a 25-
3 foot wood pole. Engineering judgment was such that a 25-foot wood pole would
4 never be utilized for any voltage other than secondary, so 100% of the
5 population of the retirement unit "25-foot wood pole" was allocated as
6 secondary.
- 7 • Proportional: For any unit given a proportional designation, the voltage was
8 determined as being in proportion to the results of the sample and exclusive
9 designations. This applied to items beyond those that comprised the first 99%
10 of an account balance and also to items that could not be reasonably studied and
11 are used by all voltage classes, such as switches.

12 All of this detailed retirement unit by retirement unit analysis was compiled in to a
13 simple representative allocator that could be applied to the account balance to split the demand-
14 related balance in to the three classes of voltage studied. This study was incredibly robust, time-
15 consuming, and well thought out. The results of the Vandas study are utilized to
16 subfunctionalize distribution plant assets to voltage levels in both the minimum size study and
17 the full CCOSS analysis of distribution plant that I conducted for this case, as reflected in the
18 workpapers supporting those studies. Curiously, in response to DR 842, which is provided in
19 Schedule TH-R1, Staff stated the following when asked whether Staff is aware of an electric
20 utility rate review case in any jurisdiction wherein a utility or any stakeholder performed a
21 CCOSS based on sufficient detail to result in reasonable allocations (emphasis added):

22 To the extent Mr. Vandas accurately represents his study method in his
23 testimony, it appears generally consistent with the RAP manual
24 recommendation at pages 142-143, providing "Some plant accounts and
25 associated expenses are easily subfunctionalized. Substations (which are all

1 primary equipment) have their own FERC accounts (plant accounts 360 to 362,
2 expense accounts 582 and 592). In addition, distribution substations take power
3 from transmission lines and feed it into the distribution system at primary
4 voltage. All distribution substations deliver only primary power and therefore
5 should be subfunctionalized as 100% primary. However, many other types of
6 distribution investments pose more difficult questions. The FERC accounts do
7 not differentiate lines, poles or conduit between primary and secondary
8 equipment, and many utilities do not keep records of distribution plant cost by
9 voltage level. This means any subfunctionalization requires some sort of special
10 analysis, such as the review of the cost makeup of distribution in areas
11 constituting a representative sample of the system," in that Mr. Vandas
12 represents that he did a detailed review of the cost makeup of distribution in an
13 area he determined constituted a representative sample of the system. ***Thus, for***
14 ***purposes of classification of the distribution system investment by voltage, this***
15 ***study appears to result in "reasonable allocations" to the classifications.*** Staff
16 has not performed a recent review of the reasonableness of any other aspect of
17 this study, and Staff who reviewed this study at the time of its filing are
18 deceased.

19 This data request response was provided subsequent to Staff's CCOS Report filing. It
20 directly conflicts with statements made in the Report. Setting them side-by-side is helpful:

CCOS Report	Response to DR 842
"Ameren Missouri failed to provide a description or reasonable estimate of the voltages at which plant within each account operate, and Staff had no option but to rely on the 'Vandas study' as presented in Mr. Hickman's workpapers."	"Thus, for purposes of classification of the distribution system investment by voltage, [the Vandas] study appears to result in 'reasonable allocations' to the classifications."

21 Instead of the Company "fail[ing] to provide a description or reasonable estimate of the
22 voltages at which plant within each account operate" as alleged by Staff, the Company
23 successfully provided reasonable allocations and perhaps Staff failed to understand the
24 reasonableness of what it was provided and has historically relied upon.

1 **III. BRIEF RESPONSES TO STAFF'S, MECG'S, AND MIEC'S**
2 **PRODUCTION COST ALLOCATION METHODS**

3 **Q. Did you note any errors in Staff's production allocation workpapers?**

4 A. I did. Staff calculated a range of potential production allocators and included a
5 table of the results in its report. It appears, however, that an error was made in its calculation of
6 its 1 coincident peak ("CP") allocator. Staff's formulas determine the highest CP by class
7 looking at maximum of the 12 monthly CPs by class. A 1 CP allocator should use the single
8 highest monthly CP across all 12 months for the system and utilize the individual values for
9 each class from that single month. Had the appropriate method been used, the 1 CP line of Staff's
10 table at page 42 of its CCOS Report should have contained the following.

	Residential	SGS/MSD	LGS/SPS	LPS	Lighting
1 CP @ Gen.	55.509%	8.815%	28.381%	7.295%	0.000%

11 **Q. MIEC witness Steve Chriss noted that the Company's proposed Average**
12 **and Excess 4 non-coincident peak ("A&E 4 NCP") allocator differs from that specified in**
13 **Section 393.1620.1(1), RSMo. Do you agree?**

14 A. I partly agree with Mr. Chriss's statement. First, I would like to note that the
15 statutory section referenced was not in effect at the time that the Company filed its direct
16 testimony. That fact notwithstanding, I acknowledge that the section includes a specific
17 definition of A&E 4NCP consistent with Mr. Chriss's testimony. Please note, however, that the
18 definition of the months used in the statute differs from the classic definition of NCP per the
19 NARUC Manual. The NARUC Manual defines Class Non-coincident Demand (class peak) as
20 the maximum demand of a rate class, regardless of when it occurs.¹⁴ By restricting the time
21 period of demand to the four months with highest peak loads, you would not be selecting NCP

¹⁴ NARUC *Electric Utility Cost Allocation Manual*, at p. 167 (1992).

1 demands consistent with the definition of the NARUC Manual. I do not contend that Mr.
2 Chriss's application is not allowed under the statute, as I believe it would be given the way the
3 statute is written. I do contend though that an alternative method of selecting the NCPs more
4 consistent with the NARUC Manual definition is also allowed by the statute as the basis of a
5 production analysis eligible to be considered by the Commission. While both approaches are
6 allowed to be considered by the Commission, I believe that the method which uses the more
7 traditionally accepted definition of NCP contained in the NARUC Manual is more reasonable.

8 **Q. Are there any other issues in other parties' testimony relating to**
9 **production costs you would like to address?**

10 A. Yes. MIEC witness Maurice Brubaker disagrees with Ameren Missouri's
11 treatment of the non-labor component of production non-fuel operations and maintenance
12 ("O&M") expenses. He believes that these costs do not vary in any appreciable way with
13 the number of kilowatt-hours generated, and allocates them on the basis of demand.¹⁵

14 **Q. Do you agree with this approach?**

15 A. I do not agree with this approach for a few reasons. Mr. Brubaker highlights
16 the fact that maintenance on coal and nuclear generation units is scheduled based on the
17 passage of time. I think focusing on how maintenance is scheduled misses the bigger point
18 of how much non-labor material is used during each maintenance period, and what causes
19 the need for maintenance in the first place. The fact that maintenance occurs is a significant
20 driver of labor costs, and the Company has classified the labor portion as fixed. The extent
21 of maintenance performed is variable in nature and can vary significantly with the amount
22 of time and extent to which a plant has run. Further, the need for this regularly scheduled

¹⁵ Rate Design Direct Testimony of Maurice Brubaker on behalf of MIEC, at p. 33.

1 maintenance is related to utilization of the unit – the wear and tear that occurs as energy is
2 generated, making the energy-related allocator consistent with cost causation.

3 In our production operations, there are components of non-labor O&M expense
4 which are actually budgeted based on anticipated plant generation. Our engineers have
5 identified a number of specific examples where this is the case, including but not limited
6 to: conveyers, coal mills, chemicals, and the limestone in scrubbers. To the extent we are
7 even budgeting costs on the basis of kilowatt-hours generated, it seems hard to justify these
8 costs being allocated by a different means. For these reasons, I continue to support the
9 Company's classification of these costs.

10 **Q. Does this conclude your rebuttal testimony?**

11 **A. Yes, it does.**

Missouri Public Service Commission

Respond Data Request

Data Request No.	0842
Company Name	MO PSC Staff-(All)
Case/Tracking No.	ER-2021-0240
Date Requested	9/21/2021
Issue	General Information & Miscellaneous - Other General Info & Misc.
Requested From	Jeff Keevil
Requested By	Teneisha Perry
Brief Description	Class Cost of Service
Description	Is Staff aware of any electric utility or any stakeholder intervened in an electric utility rate case in any jurisdiction that has performed a class cost of service study that was based on sufficient detail that it resulted in "reasonable allocations" of distribution plant accounts to customers or customer classes based on the Staff's standard expressed in this case? If so, please identify, for each such circumstance, the utility that was the subject of the class cost of service study, the jurisdiction, the docket number, and the sponsoring party of the study.
Response	<p>It is unclear whether the distribution system study presented in the Direct Testimony of Ameren witness Michael E. Vandas in Case No. EO-96-15 attempted to address Staff's concern related to customer-specific infrastructure included in the poles, conduits, and conductors accounts as discussed within the RAP manual at page 156 stating "11.3.6 Direct Assignment of Distribution Plant Direct cost assignment may be appropriate for equipment required for particular customers, not shared with other classes, and not double-counted in class allocation of common costs. Examples include distribution-style poles that support streetlights and are not used by any other class; the same may be true for spans of conductor to those poles. Short tap lines from a main primary voltage line to serve a single primary voltage customer's premises may be another example, as they are analogous to a secondary distribution service drop." These Vandas results were represented by Ameren witness Wilbon L. Cooper to have been incorporated into the Class Cost of Service Study he provided in direct testimony in Case No. EO-96-15. To the extent Mr. Vandas accurately represents his study method in his testimony, it appears generally consistent with the RAP manual recommendation at pages 142-143, providing "Some plant accounts and associated expenses are easily subfunctionalized. Substations (which are all primary equipment) have their own FERC accounts (plant accounts 360 to 362, expense accounts 582 and 592). In addition, distribution substations take power from transmission lines and feed it into the distribution system at primary voltage. All distribution substations deliver only primary power and therefore should be subfunctionalized as 100% primary. However, many other types of distribution investments pose more difficult questions. The FERC accounts do not differentiate lines, poles or conduit between primary and secondary equipment, and many utilities do not keep records of distribution plant cost by voltage level. This means any subfunctionalization requires some sort of special analysis, such as the review of the cost makeup of distribution in areas constituting a representative sample of the system," in that Mr. Vandas represents that he did a detailed review of the cost makeup of distribution in an area he determined constituted a representative sample of the system. Thus, for purposes of classification of the distribution system investment by voltage, this study appears to result in "reasonable allocations" to the classifications. Staff has not performed a recent review of the reasonableness of any other aspect of this study, and Staff who</p>

reviewed this study at the time of its filing are deceased. Sarah Lange
(sarah.lange@psc.mo.gov)

Objections

NA

The attached information provided to **Missouri Public Service Commission** Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the **Missouri Public Service Commission** if, during the pendency of Case No. **ER-2021-0240** before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information. If these data are voluminous, please (1) identify the relevant documents and their location (2) make arrangements with requestor to have documents available for inspection in the **MO PSC Staff-(All)** office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g. book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title number, author, date of publication and publisher, addresses, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to **MO PSC Staff-(All)** and its employees, contractors, agents or others employed by or acting in its behalf.

Security : Public
Rationale : NA

