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|---|---|
| *Exhibit No.:* | |
| *Issue(s):* | *Class Cost of Service* |
| | *Rate Design* |
| *Witness:* | *Sarah L.K. Lange* |
| *Sponsoring Party:* | *MoPSC Staff* |
| *Type of Exhibit:* | *Direct Testimony* |
| *Case No.:* | *ER-2022-0337* |
| *Date Testimony Prepared:* | *January 24, 2023* |

# MISSOURI PUBLIC SERVICE COMMISSION

## INDUSTRY ANALYSIS DIVISION

## TARIFF/RATE DESIGN DEPARTMENT

## DIRECT TESTIMONY
## Class Cost of Service/Rate Design

## OF

## SARAH L.K. LANGE

## UNION ELECTRIC COMPANY,
## d/b/a AMEREN MISSOURI

## CASE NO. ER-2022-0337

***Jefferson City, Missouri***
***January 2023***

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**DIRECT TESTIMONY OF**

**SARAH L.K. LANGE**

**UNION ELECTRIC COMPANY,**
**d/b/a AMEREN MISSOURI**

**CASE NO. ER-2022-0337**

# DIRECT TESTIMONY OF

# SARAH L.K. LANGE

# UNION ELECTRIC COMPANY,
# d/b/a AMEREN MISSOURI

# CASE NO. ER-2022-0337

## EXECUTIVE SUMMARY

Q. Please state your name and business address.

A. My name is Sarah L.K. Lange, and my business address is 200 Madison Street, Jefferson City, MO 65102.

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

A. I am employed by the Missouri Public Service Commission ("Commission") as an Economist for the Tariff/Rate Design Department, in the Industry Analysis Division.

Q. Please describe your educational and work background.

A. Please see Schedule SLKL-d1.

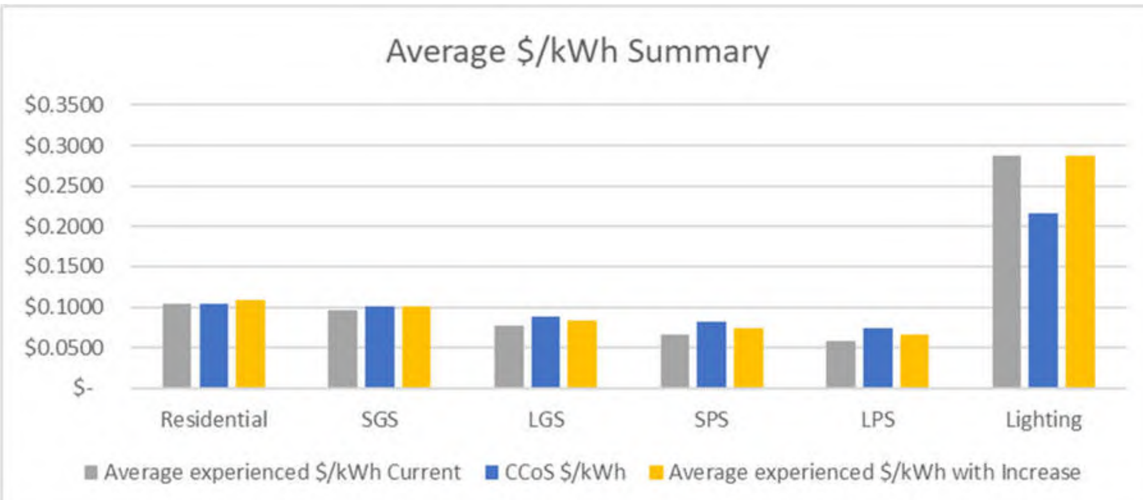
Q. What areas will you be addressing in this testimony?

A. I provide an overview of the functionalized cost of service of Ameren Missouri, describe Staff's Class Cost of Service (CCoS) study and results, provide Staff's recommended revenue requirement for each customer class (interclass revenue responsibility), and provide Staff's rate design recommendations (intraclass revenue responsibility). I will also discuss the extent to which Ameren Missouri has complied with obligations related to these subjects and provide recommendations for improving the alignment of cost causation and revenue responsibility going forward.

**Summary of Recommendations**

Q. Could you provide a summary of the results of the CCoS Study and recommended interclass revenue responsibility?

A. Yes. The graph below illustrates on an average dollar per kWh basis the current revenue provided by rate class, the cost of service calculated for each rate class, and the recommended revenue requirement for each rate class:




Q. Could you summarize your rate design recommendations in this case?

A. Yes. For residential customers I recommend continued deployment of the Time of Use ("ToU") "training wheel" rates that was begun two rate cases ago. However, I recommend that customers transition to ToU rates within a month of receipt of an Advance Metering Infrastructure (AMI) meter, without the current six month delay.

For non-residential non-lighting customers, I recommend creation of time-based rate schedules for each existing rate class that would be the default rate for customers with an AMI meter not already served on a time-based service. All customers with an AMI meter would be required to receive service on a time-based service or the new rate schedule. The new time-based rate schedule will retain current rate elements, adjusted to maintain revenue neutrality with a ToU overlay.

My detailed recommendations are summarized below:

**Miscellaneous Recommendations**

Q. In addition to those set out above and discussed in greater detail throughout this testimony, what other tariff changes should be made in compliance with the Commission's order in this case?

A. Staff recommends the Missouri Energy Efficiency Invest Act (MEEIA) margin rates and Standby Service Rider rates be updated consistent with the underlying rate schedules

Q. Are you recommending any updates concerning community solar schedules?

A. Yes. Staff recommends:

1. That Rider Community Solar Pilot Program (CSPP) facilities charges for Residential and Small General Service (SGS) customers set out at tariff sheet 158.4 be increased by the percentage increase applicable to residential energy charge elements and SGS energy charge elements, respectively.

2. That Rider Community Solar Program (CSP) facilities rates for Residential and SGS customers set out at tariff sheet 89.4 be increased by the percentage increase applicable to residential energy charge elements and SGS energy charge elements, respectively.

3. That the billing for community solar rate schedules be updated so that charges on a given customer's bill are prorated by season consistent with the application of seasonal rates for that customer on their standard rate schedule as reflected in the company's revenues.

Q. Did you specifically review the revenue sufficiency of programs such as community solar, electric vehicle charging, or other programs?

A. No.

Q. Is this testimony intended to address changes in the Low-Income pilot program rates?

A. No.

**SPECIAL NOTICE TO THOSE CONCERNED WITH THE RATE STRUCTURES APPLICABLE TO NON-RESIDENTIAL CUSTOMERS**

Q. Should interveners representing non-residential customers, including those representing the interests of non-residential customers, work with their customers to the extent they believe necessary to inform them of the potential of this rate structure being ordered by the Commission in this case?

A. Yes. Further, Ameren Missouri should be working to inform customers of potential rate structures that it may oppose on the basis of lack of customer information.

Q. Should the delay in implementation of time-based rates caused by the utility and intervener failures to work with customers in the recent Evergy rate cases, File Nos. ER-2022-0129 and ER-2022-0130, be repeated here?

A. No. Willful failure to inform customers of potential changes in rate structures should not excuse reasonable adjustments to rate structure.

**FUNCTIONALIZED COST OF SERVICE**

Q. Why is an understanding of the gross cost of service and other revenues of Ameren Missouri necessary in a discussion of class cost of service?

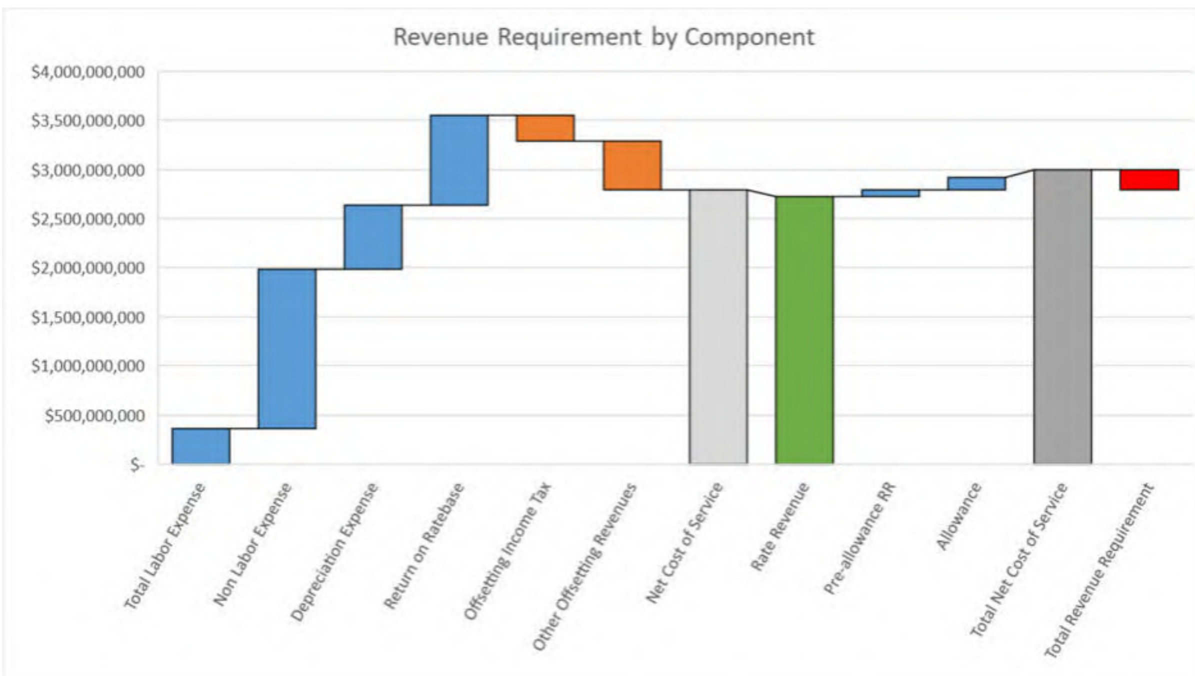
A. For CCoS purposes, it is important to be mindful of the totality of costs allocated, as well as the totality of offsetting revenues allocated.

Q. What is the cost of service and revenue requirement for Ameren Missouri?

A. It is my understanding that Staff will be filing revised Accounting Schedules which will differ from those submitted in EFIS on January 10, 2023. Based on these revised Accounting Schedules, at Staff's recommended overall rate of return of 6.862%, without offset for deferred income tax balances or proceeds from sales of energy, Ameren Missouri's gross cost of service is approximately $3.5 billion. Revenues and the revenue requirement value of deferred income tax balances are approximately $761 million, resulting in a net revenue requirement of $2,791,918,149. Annualized and normalized revenues from Ameren Missouri's regulated retail customers are $2,720,261,926,[1] resulting in a "revenue requirement" of $71,656,223.[2] Staff's direct filing includes an allowance for true-up revenue requirement changes of $127,600,000. Together, Staff's estimated revenue requirement including true-up is $199,256,223. This is an increase of approximately 7.32% of retail revenues.

Q. Could you provide perspective on these amounts?

A. Please observe the waterfall chart provided below:




[1] This includes sales to Metropolitan Sewer District and revenues from customers on all rate schedules, net of any discounts and most riders. However, this does not include revenue associated with Rider FAC, Rider DSIM, or Rider RESRAM.

[2] This is the terminology used in the Staff Accounting Schedules for the difference between current revenues and the total cost of service. Some Class Cost of Service materials use the term "revenue requirement" to refer to the total cost of service.

In this waterfall chart, the blue columns illustrate the relative magnitude of the expenses (including capital expenses) that comprise the Ameren Missouri cost of service. The orange columns indicate the offsets (deferred income tax balances and revenues such as those associated with sales of energy through the integrated energy market, or rental of pole space to cable and internet companies) that yield the net cost of service, illustrated in light gray. The current revenues from ratepayers are illustrated as the green column. The hard to see difference between the light gray and green columns is illustrated in the column "Pre-allowance RR."[3] The true-up allowance is illustrated next. These two amounts, summed with the net cost of service from earlier, are illustrated as the "Total Net Cost of Service," in dark gray. The difference between current rate revenues and the expected total net cost of service[4] constitutes the "Total Revenue Requirement," illustrated as the final column, in red

Q. Why is an understanding of these amounts relevant to consideration of class cost of service studies?

A. It is important to consider these gross values first to align offsetting values to promote fundamental fairness in allocations. In recent rate cases Staff became aware of a mismatch in the allocation of wind energy production costs and the allocation of revenue from wind generation.

A second consideration prompting the inclusion of this information is to enable enhanced perspective on the limits of accuracy of a class cost of service study. When literally billions of dollars are set against each other, even tiny errors or inaccuracies can result in large apparent discrepancies in CCoS results.

[3] The "pre-allowance RR" represents the Staff calculated Revenue Requirement prior to inclusion of the true-up allowance placeholder.
[4] Which will be modified as needed based upon the information provided for true-up.

Q. What is functionalization?

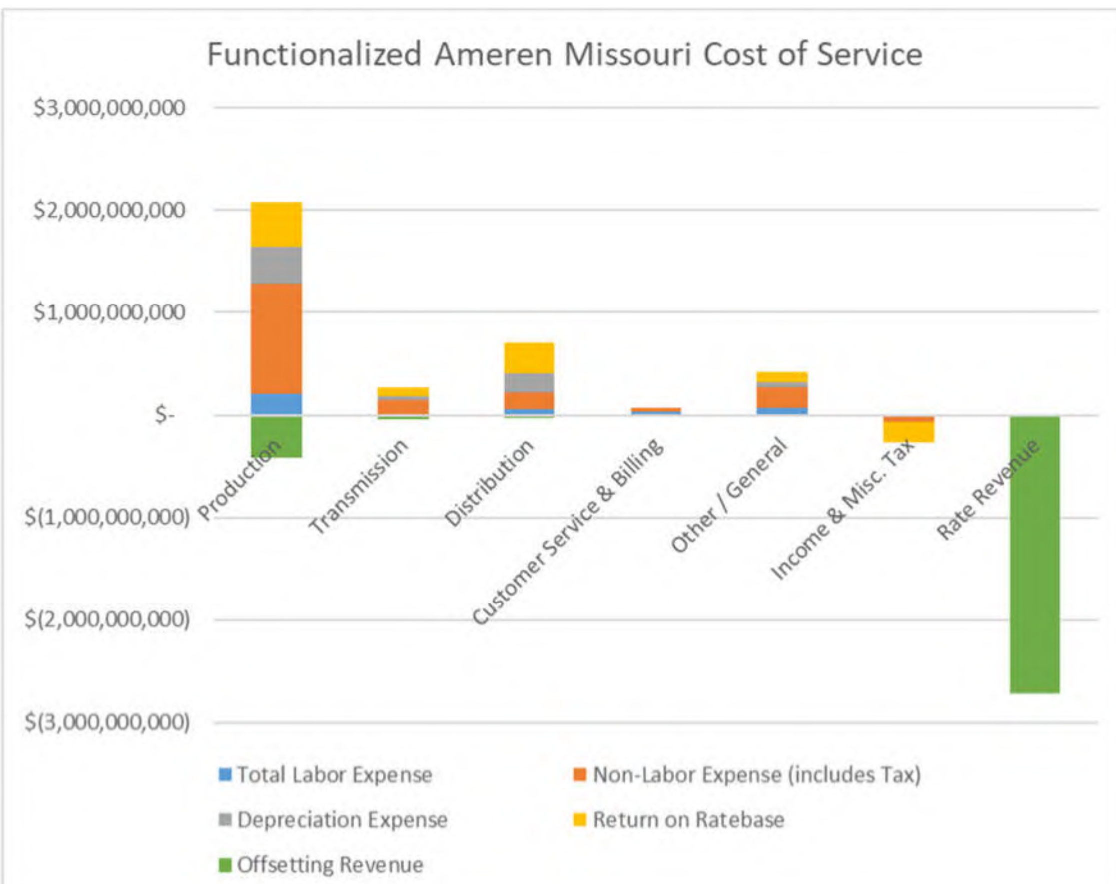
A. ***Functionalization*** is the description of a portion of cost of service by its function, such as Production, Transmission, Distribution, and Customer, though various levels of detail of these categories exist.

Q. Do all costs and expenses fit neatly into one of those functional categories?

A. No. Staff included a function for income tax, and an "Other / General" function.

Q. Could you illustrate the proportion of the cost of service and offsetting revenues as functionalized in Staff CCoS Study?

A. Yes.



**STAFF'S CLASS COST OF SERVICE STUDY**

Q. What is the difference between assignment, direct allocation, and indirect allocation, as used in a CCoS Study?

A. ***Assignment*** refers to placing responsibility for a cost of service component directly into a studied class. For example, if the utility has an account to which meters are recorded, and in that account the meters used by residential customers can be identified as distinct from the meters used by SGS customers and customers in other classes, then it would be reasonable to assign the cost of service for those meters to the residential class. Direct Assignment is also referred to as "Exclusive Use," in the 1992 NARUC Cost Allocation Manual.[5]

***Direct allocation*** refers to placing responsibility for a cost of service component into a studied class pro rata with some factor directly associated with the specified cost of service component. For example, if the utility has an account to which meters are recorded, but the same meters can be used to serve SGS customers and Residential customers, then it could be reasonable to allocate the costs for those meters to SGS and to Residential based on the number of customers in each of those classes. Direct allocation is synonymous with "primary allocation."

***Indirect allocation*** refers to reliance on an underlying direct allocation or assignment to allocate a responsibility for a cost of service component. For example, when allocating "meter expense" it may or may not be reasonable to rely on the allocation of the meter accounts. There can be multiple layers of indirect allocation. For example, it may or may not be

[5] NARUC Manual at page 88 "Direct assignment or 'exclusive use' costs are assigned directly to the customer class or group which exclusively uses such facilities. The remaining costs are then classified to the respective cost components."

reasonable to allocate administrative and general expense based on the allocation of production, transmission, distribution, and customer service expense. Indirect allocation is synonymous with "secondary allocation," although multiple layers of indirect allocation may occur, which may be properly considered tertiary and quaternary allocation and so on.

Q. What sources of data were used for allocations?

A. Some allocators are derived from demands and annual sales data which have been developed from Staff's revenue and billing determinants process. Hourly loads, based on both samples and load research data were also received from the company in response to Staff Data Request (DR) Nos. 0200 and 0201. Staff relied on Ameren Missouri's allocators for many accounts.

Q. What is meant by subfunctionalization?

A. ***Subfunctionalization*** is a refinement of functionalization, in which an account is sorted into sub-functions such as Generation-Related, Networked Distribution, and Customer-Specific Distribution. Further, traditionally, CCoS Studies for Missouri utilities have typically included a subfunctionalization by voltage when studying the distribution plant accounts.

Q. What is meant by classification?

A. ***Classification*** is the description of a portion of revenue requirement by its underlying causation or by its desired recovery charge type, typically Demand, Energy, and Customer.

**Distribution**

Q. Is it reasonable to functionalize Ameren Missouri's distribution accounts?

A. Generally, yes. Most of the Ameren Missouri distribution accounts include more than one of the sub-functions indicated above. For example, in its response to Staff DR No. 0211, Ameren Missouri indicated that over $600,000 of plant associated with four solar generation facilities was recorded to various distribution accounts.

Q. Is it appropriate to sub-functionalize the distribution accounts by voltage where sufficient reliable information exists to do so?

A. Historically, yes. Ameren Missouri and many other utilities have customers served from 120/240 volts, up to 25kV, with all levels in between. Customers who are served at 25kV have not been required to pay for the costs of lower-voltage infrastructure on the assumption that those customers aren't using the lower-voltage infrastructure. Customers served at 13.2 kV have not been required to pay for the costs of secondary-voltage infrastructure on the premise that they aren't using that infrastructure.

Q. Do these assumptions related to voltage and cost-causation remain reasonable?

A. As the distribution system becomes more complex, these assumptions become less reasonable. For example, if a device operating at primary voltage is able to trip and be remotely reset, it may operate to avoid an outage that would otherwise occur on an adjacent sub-transmission voltage circuit. Further, it has proven difficult to quantify the values of the portions of the system that are assumed to operate at various voltages as Ameren Missouri does not maintain plant records or account balance information by voltage.

Q. What steps did Staff take in its CCoS Study to subfunctionalize and classify the distribution capital accounts?

A. Staff began with the continuing property record ("CPR") provided in response to DR No. 0125.1. Note, Ameren Missouri's response to DR No. 0257 acknowledges that the current Ameren Missouri CPR includes "irregularities," and "anomalies," that result from "efficient and timely processing of large volumes of transactions and dollars related to the many distribution jobs that Ameren Missouri performs."[6]

1. Staff identified assets associated with generation pursuant to Ameren Missouri's response to Staff DR No. 0211. Staff sub-functionalized these assets as generation-related.[7] Based on the data available at this time, approximately $742,785 of plant related to solar generation is recorded in the distribution accounts. Note, this is based on the average value of the retirement units Ameren Missouri identified in its DR responses.

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[6] No. MPSC 0257: Please explain the following related to the continuing property record: 1. What does a net negative activity quantity for a given retirement unit within a given account indicate? 2. What does a net negative activity cost indicate where the net activity quantity is positive for a given retirement unit within a given account? 3. What situations would cause there to be a net positive activity quantity and a net negative activity cost?
Prepared By: Paul Mertens
Title: Manager Plant Accounting
Processing mass assets through blanket work orders can cause irregularities in a given month. Blanket work orders are used for projects that are under $100,000 and have a quick construction period, less than thirty days. Blanket work orders place all dollars and quantities into service the month the dollars and quantities hit the project. This allows for efficient and timely processing of large volumes of transactions and dollars related to the many distribution jobs that Ameren Missouri performs.
This treatment, while efficient, can lead to anomalies. If quantities returned in a given month are greater than issues, a negative quantity will result. If labor to install assets relate to quantities issued in a previous month, labor dollars will be in the current month but the associated quantities will be in a previous month, causing a mismatch. These scenarios cause negative quantities with positive dollars, and vice versa. It can also lead to higher or lower than expected average costs if the net quantity issued in a month is a small number. Looking at a larger range of data yields a more consistent and accurate per unit cost.

[7] Ameren Missouri's response indicated multiple non-unitized zero cost zero quantity assets are recorded in the CPR associated with this installations. This means that at this time there are costs associated with the installations that are recorded in the CPR as non-unitized, which should eventually be distributed to these assets that were indicated in the DR Response. Further, the Ameren Missouri response indicated that "Lambert Community Solar Center and Solar Partnership – BJC HealthCare project interconnection work was performed under Standard Work Orders and as such, were unitized with the costs from all jobs charged to them in a given quarter or year. The costs of these projects are blended with the costs of other jobs and therefore a breakout of those specific costs does not exist." Therefore, Staff relied upon the property descriptions for those installations as provided in response to DR No. 0211 and average values determined from the CPR to value the distribution assets associated with these installations.

This process is detailed in Schedule SLKL-d2 "Distribution System – Generation Function." Staff recommends Ameren Missouri be ordered to create subaccounts within distribution accounts and transmission accounts (plant and reserve) for recording infrastructure related to utility-owned generation.[8]

2. Staff reviewed Ameren Missouri's responses to Staff DR Nos. 0183 et seq, 0203 et seq., and DR Nos. 0204 – 0207. Staff classified and segregated representative assets that are recorded to the distribution accounts but are within the exclusive use of individual customers. Staff sub-functionalized these assets as Customer-Specific. This process is detailed in Schedule SLKL-d3 "Distribution System – Customer Specific Classification."

   Staff recommends in future cases, Ameren Missouri provide a study of the customer-specific infrastructure, by account, by rate schedule, by voltage.

3. In response to DR No. 0203 Ameren Missouri identified radial circuits and the associated mileage of radial circuit by voltage, overhead/underground, and customer name.

4. Staff allocated the remaining amounts in Accounts 346, 365, 366, and 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.

5. Given the relative unavailability of reliable data at this time, Staff generally relied on Ameren Missouri's allocation results to allocate the remaining

[8] Or infrastructure related to generation other than net-metering or parallel generation, if for example, an IPP or other entity not directly controlled by Ameren Missouri operates generation for which distribution or transmission infrastructure is installed.

distribution accounts. Staff does not endorse the methods used in these calculations.[9]

Q. Did Staff classify the property in accounts 364 – 366 by voltage?

A. No. Ameren Missouri has installed significant rate base to develop system resiliency and to enable what has been called "self-healing" properties. This increased integration as well as refinement of the customer-specific assignments described above have rendered the concept of severable levels of service obsolete. For example, secondary meters connected to secondary voltage power lines are used to alert service personnel to outages impacting customers of all voltages. Switches operating at primary voltage can reroute energy flows to maintain service to Transmission voltage customers with no more than a momentary interruption.

Q. Even if the grid were not as fully integrated at this point in time as described above, is it reasonable to attempt to classify accounts 364-368 by voltage in this case?

A. No. Staff has become aware of significant shortcomings in Ameren Missouri's CPR, which is the data set used for such classifications. Further, while in past cases Staff has largely deferred to Ameren Missouri's classifications, Staff is unable to verify or corroborate the information Ameren Missouri relied upon to perform its classifications. Information that could be used to corroborate this information would include miles of circuits (including secondary) operating at various voltages, and average cost or materials per line mile.

Q. Did Staff classify non-customer specific portions of accounts 364-368 as customer-related, such as through use of a minimum distribution system study?

[9] For example, Staff would prefer direct assignment to the appropriate rate classes of the revenue requirement associated with substations and related facilities that are exclusively used by groups of individual customers defined by characteristics set out in the tariff as the basis for a charge or discount.

A. No. The increasingly integrative nature of Ameren Missouri's distribution system and the limited reliability of the underlying data indicate it was reasonable in this case to rely on each class's proportionate contribution to each hour's utilization of the distribution system rather than a simple customer count for allocation of the revenue requirement of non-customer specific distribution infrastructure.

Q. How did Staff allocate distribution expenses?

A. In the absence of data to directly allocate distribution expenses, Staff relied on the allocation of plant to the customer classes to indirectly allocate distribution expenses.

Q. Could you provide the overall allocation of the distribution system to the customer classes?

A. Yes. The rate base, approximate revenue requirement, and dollars per customer for the Network Distribution, Customer-Specific, and Meters & Services distribution components are provided below:[10]

| | Residential | SGS | LGS | SPS | LPS | Lighting |
|---|---|---|---|---|---|---|
| Distribution Network Return on Ratebase: | $ 101,621,002 | $ 23,543,539 | $ 53,762,454 | $ 16,912,184 | $ 19,849,566 | $ 937,486 |
| Customer Specific Return on Ratebase: | $ 20,751,849 | $ 7,481,140 | $ 5,943,498 | $ 18,408,973 | $ 6,909,668 | $ 9,373,997 |
| Metering & Services Return on Ratebase: | $ 7,078,676 | $ 2,157,555 | $ 1,482,181 | $ 94,870 | $ 91,343 | $ 155,484 |
| D.N. Approximate Revenue Requirement: | $ 228,364,092 | $ 52,598,243 | $ 118,634,830 | $ 39,069,019 | $ 44,092,842 | $ 2,238,956 |
| C.S. Approximate Revenue Requirement: | $ 39,203,929 | $ 15,474,065 | $ 12,437,297 | $ 43,267,073 | $ 16,264,395 | $ 20,357,220 |
| M&S Approxmiate Revenue Requirement: | $ 32,030,550 | $ 7,773,063 | $ 4,350,736 | $ 262,572 | $ 252,812 | $ 430,333 |
| Distribution Network $/Customer: | $ 211 | $ 385 | $ 11,115 | $ 58,312 | $ 699,886 | $ 40 |
| Customer Specific $/Customer: | $ 36 | $ 113 | $ 1,165 | $ 64,578 | $ 258,165 | $ 368 |
| Metering & Services $/Customer: | $ 30 | $ 57 | $ 408 | $ 392 | $ 4,013 | $ 8 |
| Total Distribution $/Customer: | $ 277 | $ 556 | $ 12,688 | $ 123,282 | $ 962,064 | $ 416 |

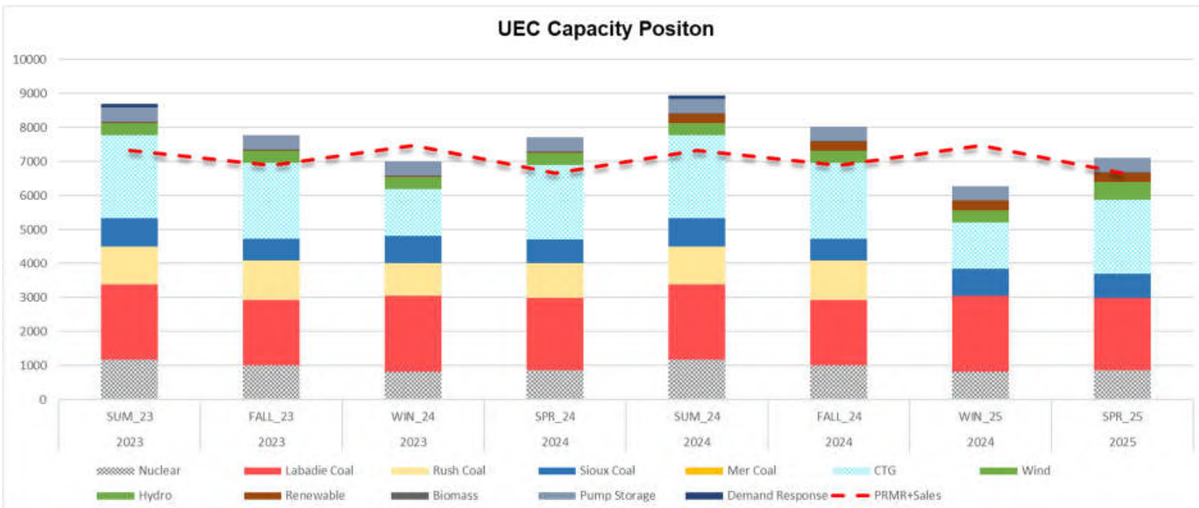
[10] Approximately $115 thousand of revenue requirement was subfunctionalized to Production Type 2.

**Production**

**Changes to MISO Capacity Requirements and Capacity Cost Causation**

Q. On November 30, 2021, MISO submitted proposed revisions to its Open Access Transmission, Energy and Operating Reserve Markets Tariff to establish Resource Adequacy Requirements on a seasonal basis for each of the Summer, Fall, Winter and Spring Seasons, and to implement an availability-based Seasonal Accredited Capacity ("SAC") methodology for resources participating in MISO's (Midcontinent Independent System Operator, Inc.) annual Planning Resource Auction ("PRA"). What considerations related to this tariff change should be taken into account in allocating production net revenue requirement in this case?

A. In response to part d of Staff's DR No. 0198.5, Ameren Missouri indicated that "Speaking specifically of Ameren Missouri's anticipated seasonal positions, which include resources and load obligations distributed in both Zones 4 and 5, the positions vary significantly by season. The annual position, calculated under the historic MISO capacity construct, would be very similar to the Summer seasonal position. As indicated in the capacity report file referenced in part C, the Company is initially projecting a long capacity position in the Summer 2023 season of 1,368MW. Note that the Summer Planning Reserve Margin (PRM) is 7.4%. The Fall 2023 long position of 895 MW is impacted by its seasonal resource accreditation and higher PRM of 14.9%. The Winter and Spring PRMs are notably higher at 25.5% and 24.5%, respectively. These higher PRMs, along with accreditation impacts, result in a forecasted short Winter 2023- position of -471MW. The Company's Spring 2024 position is forecast to be long 1,055MW." Ameren Missouri's graphic summary of the referenced "part c" information is reproduced below:[11]




Q. How should this change in how Ameren Missouri evaluates its capacity needs be recognized?

A. At this time, the most reasonable approach is recognition of these seasonal requirements in the allocation of stable-revenue requirement production cost of service, based on the level of kW exhibited by each class during the identified Resource Adequacy ("RA") hours for the test period, as updated. In "mpsc 00198.5 mpsc eo-2022-0215 otr final.pdf," provided in response to Staff DR No. 0198.5 part E, Ameren Missouri represented that "Ameren [is] exploring options to address winter supply, post RIEC closure."[12]

[11] The narrative response to part c included the clarification that "These SAC values are subject to change, as MISO will not publish final 2023/24 SAC values until later this year. The accreditation values in this model are based on information provided by MISO, and not necessarily independently modeled by the Company."
[12] "RIEC" refers to "Rush Island Energy Center."

**Production Allocation in Staff CCoS Study**

Q. What restrictions are placed by statute on the Commission's reliance on CCoS Studies?

A. Section 393.1620 RSMo requires that "[i]n determining the allocation of an electrical corporation's total revenue requirement in a general rate case, the commission shall only consider class cost of service study results that allocate the electrical corporation's production plant costs from nuclear and fossil generating units using the average and excess method or one of the methods of assignment or allocation contained within the National Association of Regulatory Utility Commissioners 1992 manual or subsequent manual."[13]

[13] The terms "average demand," "non-coincident peak demand," "peak load," and "system load factor" are not defined by the statute. In the context of CCoS studies, "average demand" means the level of usage that would occur in each hour if a studied class used the same amount of energy in every hour of a year. "Non-coincident peak demands" means the highest hour of a studied class's usage in a given month. "Peak load" means either a month with the highest usage in a given hour, a month with the most usage throughout the month, or a month expected to cause peaks when system load planning occurs. "System load factor" means the percent of the system peak demand that is met in each hour if the system used the same amount of energy in each hour.

§393.1620. 1. For the purposes of this section, the following terms shall mean:

(1) "Average and excess method", a method for allocation of production plant costs using factors that consider the classes' average demands and excess demands, determined by subtracting the average demands from the non-coincident peak demands, for the four months with the highest system peak loads. The production plant costs are allocated using the class average and excess demands proportionally based on the system load factor, where the system load factor determines the percentage of production plant costs allocated using the average demands, and the remainder of production plant costs are allocated using the excess demands;
(2) "Class cost of service study", a study designed to allocate a utility's costs to each customer class on the basis of which customer class causes the costs;
(3) "Commission", the Missouri public service commission;
(4) "Electrical corporation", the same as defined in section 386.020, but shall not include an electrical corporation as described in subsection 2 of section 393.110;
(5) "Production plant costs", fixed costs reflected on the electrical corporation's accounting books for the applicable test period, as updated or trued-up, associated with the production or purchase of electricity.
2. In determining the allocation of an electrical corporation's total revenue requirement in a general rate case, the commission shall only consider class cost of service study results that allocate the electrical corporation's production plant costs from nuclear and fossil generating units using the average and excess method or one of the methods of assignment or allocation contained within the National Association of Regulatory Utility Commissioners 1992 manual or subsequent manual.
3. This section shall expire on August 28, 2031.

The National Association of Regulatory Utility Commissioners ("NARUC") cost allocation manual from 1992 describes over 18 different production cost allocation methods, many of which have multiple variations. The Commission rarely (if ever) orders approval of a specific allocation method because the appropriate method will vary from case to case based on the utility's characteristics and available data.

Q. What is the most reasonable allocation of the net revenue requirement associated with generation resources in this case?

A. It is most reasonable to use different allocation methods for fundamentally different generation resources. Staff subfunctionalized generation resource assets and expenses as Production Type 1 Variable Revenue Requirement Components, Production Type 1 Stable Revenue Requirement Components, and Production Type 2 Revenue Requirement Components. The revenue generated from assets classified as Type 1 and Type 2 also must be allocated.

Q. What was the first step in Staff's generation allocation study?

A. Staff followed the steps outlined below:

1. Subfunctionalized generation assets as Type 1 (significant variable costs of operation which are avoidable if the unit is offline, fully dispatchable with limited exceptions) and Type 2 (no or minimal variable costs of operation, dispatch often limited by weather conditions or other factors beyond control of utility, many eligible for compliance with Missouri's Renewable Energy Standard);
2. Identified discrete lines of plant, expense, and other rate base to Production Type 1 Variable Revenue Requirement Components, Production Type 1 Stable Revenue Requirement Components,

Production Type 2 Revenue Requirement Components, and "Production Sales and Revenues" subfunctions.

3. Allocated the revenue requirement components (net rate base, net expense, other revenue, and taxes) to the Ameren Missouri rate classes.

Q. What method is most reasonable for allocation of the Production Type 1 Variable Revenue Requirement, and the Production Type 1 Stable Revenue Requirement to the Ameren Missouri rate classes under the circumstances in place at this time?

A. Given the introduction of the MISO Seasonal Capacity construct, it is most reasonable to allocate these revenue requirements to the customer classes using the NARUC "All Peak Hours Approach," described at page 47 of the 1992 NARUC Manual, on the basis of each class's contributions to the identified MISO Resource Adequacy hours, offset by that class's allocation of the hourly generation of Production Type 2 assets.

Q. What method is most reasonable for allocation of the Production Type 2 Revenue Requirement to the Ameren Missouri rate classes under the circumstances in place at this time?

A. These resources have zero or minimal avoidable variable costs of operation, and Ameren Missouri is generally unable to reliably dispatch the full capacity of these resources in all RA hours. It is therefore most reasonable under the circumstances in place at this time to allocate the revenue requirement to the customer classes using the partial energy weighting method described at page 49 of the 1992 NARUC Manual.[14] This approach allocates the production plant costs to the classes on the basis of the energy loads, but does not classify the

[14] This treatment is most reasonable in general, but also particularly in light of the operation of the Fuel and Purchase Power Adjustment Clause.

costs as "energy-related," in that these costs are not expected to vary with the level of generation produced or consumed.

Q. What method is most reasonable for allocation of the production sales and purchases net revenue requirement to the Ameren Missouri rate classes under the circumstances in place at this time?

A. The net revenue requirement for production sales and purchases are most reasonably allocated to the customer classes using the following process:[15]

1. Identify the value of energy consumed by each class based on each class's load in each hour and the cost of energy in each hour;
2. Identify the value of energy generated by the assets allocated to each class;
3. Use the relative values identified to create a composite allocator so that each class is responsible for the cost of the energy that class uses in a year, as offset by the value of the energy generated by the assets and variable costs allocated to each class as described above.

Q. What are the revenue requirements associated with each of the subfunctions described above?

A. The derivation of the revenue requirements for each subfunction are provided in the table below:

[15] This treatment is most reasonable in general, but also particularly in light of the operation of the Fuel and Purchase Power Adjustment Clause.

| | Net Rate Base | Total Labor Expense | Non-Labor Expense (includes Tax) | Depreciation Expense | Revenue | Net Revenue Requirement |
|---|---|---|---|---|---|---|
| Production Type 1 | $ 4,717,107,754 | $ 171,620,929 | $ 716,577,931 | $ 299,451,097 | $ - | $ 1,511,337,892 |
| Production Type 2 | $ 1,619,523,190 | $ 8,938,364 | $ 32,330,704 | $ 61,402,399 | $ - | $ 213,803,147 |
| Production Revenue & Purchases | $ 2,360,379 | $ 20,884,368 | $ 336,166,345 | $ - | $ 412,127,803 | $ (54,915,120) |

Q. How is the production function allocated to the customer classes in Staff's study?

A. The allocation of the production function and the resulting allocation per customer and per kWh at meter are provided in the table below:

| | Residential | SGS | LGS | SPS | LPS | Lighting |
|---|---|---|---|---|---|---|
| Net Rate Base | $ 2,932,168,778 | $ 691,173,802 | $ 1,467,852,675 | $ 636,216,279 | $ 597,940,840 | $ 14,029,812 |
| Total Expense | $ 953,050,035 | $ 216,716,264 | $ 347,068,277 | $ 82,266,251 | $ 57,042,876 | $ (8,731,290) |
| Other Revenue | $ 400,577,069 | $ 85,504,662 | $ 57,454,355 | $ (49,882,875) | $ (68,983,935) | $ (12,541,472) |
| Functionalized Net Revenue Requirement: | $ 753,678,387 | $ 178,639,949 | $ 390,337,973 | $ 175,806,288 | $ 167,057,512 | $ 4,772,907 |
| # of Customers: | 1,079,892 | 136,459 | 10,673 | 670 | 63 | 55,322 |
| kWh @ Meter: | 13,289,139,065 | 3,155,016,584 | 7,286,727,089 | 3,618,557,872 | 3,561,666,306 | 142,952,729 |
| $/Customer | $ 698 | $ 1,309 | $ 36,572 | $ 262,397 | $ 2,651,707 | $ 86 |
| $/kWh | $ 0.05671 | $ 0.05662 | $ 0.05357 | $ 0.04858 | $ 0.04690 | $ 0.03339 |

**Transmission**

Q. Is assignment and allocation of customer-specific infrastructure to the customer groups using those facilities appropriate, even if that infrastructure has been recorded to an account that has historically been allocated to all customers?

A. Yes. While dedicated services for secondary customers are recorded in Account 269, services, customer-specific facilities for larger customers are not discretely booked. However, as noted in the NARUC Manual at page 74, "Radial transmission facilities represent those facilities that are not networked with other transmission facilities, but are used to serve specific loads directly. For cost of service purposes, these facilities may be directly assigned to specific customers on the theory that these facilities are not used or useful in providing service to customers not directly connected to them."

Q. Was Staff able to acquire sufficient data from Ameren Missouri to subclassify the transmission plant accounts in the manner described above?

A. No. In the absence of data related to the value of customer-specific facilities, Staff relied on a 12 CP allocator for transmission net rate base, expenses, and revenues.

Q. Should Ameren Missouri be ordered to study and present data related to the use of radial transmission facilities including substation components in its next rate case?

A. Yes. Staff recommends Ameren Missouri be ordered to provide data concerning the level of rate base and expense associated with radial transmission facilities including substation components, by customer. Ameren Missouri should also be prepared to aggregate such customers into groups of customers set out by characteristics to be described in a tariff such as voltage level, distance from substation, annual demand, or other characteristics. Ameren Missouri should also provide potential determinants associated with such groupings for development of new rate elements or refinement of existing elements such as customer charges and credits associated with Riders B & C.

**Customer Service and Administrative Costs**

Q. How were customer service, administrative, and other costs allocated?

A. Given the information available in this case, Staff generally relied on Ameren Missouri's metering, billing, and customer cost allocations. Staff functionalized items related to advertising, general plant, administrative activities, and overhead-type costs and expenses as "Other / General." For its CCoS in this case, Staff used each class's relative cost of service to indirectly allocate the Other / General function.

Q. How did Staff allocate functionalized income tax and related assets?

A. For purposes of this case, Staff allocated income tax expenses and assets to the classes based on each class's net rate base.

**CCoS Study Results**

Q. What were the results of the CCoS Study?

A. The table below illustrates the class allocations and study results:[16]

| Allocated | Residential | SGS | LGS | SPS | LPS | Lighting |
|---|---|---|---|---|---|---|
| Net Rate Base | $ 2,543,153,875 | $ 620,260,091 | $ 1,176,326,634 | $ 638,841,366 | $ 506,854,824 | $ 155,699,563 |
| Total Expense | $ 337,367,794 | $ 72,772,466 | $ 132,213,779 | $ 70,022,539 | $ 55,897,374 | $ 15,645,507 |
| Other Revenue | $ 37,036,410 | $ 8,017,963 | $ 17,300,983 | $ 7,710,765 | $ 7,328,116 | $ 240,629 |
| | | | | | | |
| **Allocated with Production** | | | | | | |
| Net Rate Base | $ 5,475,322,652 | $ 1,311,433,893 | $ 2,644,179,309 | $ 1,275,057,645 | $ 1,104,795,664 | $ 169,729,375 |
| Total Expense | $ 1,290,417,829 | $ 289,488,731 | $ 479,282,056 | $ 152,288,790 | $ 112,940,251 | $ 6,914,217 |
| Other Revenue | $ 437,613,479 | $ 93,522,624 | $ 74,755,338 | $ (42,172,110) | $ (61,655,819) | $ (12,300,844) |
| | | | | | | |
| **After Gross up for Other** | | | | | | |
| Net Rate Base | $ 6,138,809,875 | $ 1,470,350,488 | $ 2,964,594,981 | $ 1,429,566,249 | $ 1,238,672,305 | $ 190,296,797 |
| Total Expense | $ 1,456,674,819 | $ 326,786,359 | $ 541,032,591 | $ 171,909,626 | $ 127,491,434 | $ 7,805,042 |
| Other Revenue | $ 441,955,712 | $ 94,450,605 | $ 75,497,100 | $ (42,590,564) | $ (62,267,601) | $ (12,422,899.03) |
| | 45.70% | 10.95% | 22.07% | 10.64% | 9.22% | 1.42% |
| **After Gross up for Income Tax** | **Residential** | **SGS** | **LGS** | **SPS** | **LPS** | **Lighting** |
| Net Rate Base | $ 4,780,414,768 | $ 1,144,991,510 | $ 2,308,589,762 | $ 1,113,232,002 | $ 964,579,047 | $ 148,187,945 |
| Total Expense | $ 1,427,917,262 | $ 319,898,430 | $ 527,144,800 | $ 165,212,752 | $ 121,688,812 | $ 6,913,587 |
| Other Revenue | $ 441,955,712 | $ 94,450,605 | $ 75,497,100 | $ (42,590,564) | $ (62,267,601) | $ (12,422,899) |
| Net Expense: | $ 985,961,550 | $ 225,447,825 | $ 451,647,700 | $ 207,803,316 | $ 183,956,413 | $ 19,336,486 |
| System Average Return on Rate Base: | $ 328,032,061 | $ 78,569,317 | $ 158,415,429 | $ 76,389,980 | $ 66,189,414 | $ 10,168,657 |
| Allowance for Known & Measurable Changes | $ 60,053,904 | $ 13,894,600 | $ 27,881,926 | $ 12,988,584 | $ 11,432,501 | $ 1,348,484 |
| Rate Revenue: | $ 1,372,438,719 | $ 303,286,530 | $ 558,350,473 | $ 239,386,090 | $ 205,776,421 | $ 41,023,694 |
| Revenue Available for RoR: | $ 326,423,265 | $ 63,944,105 | $ 78,820,847 | $ 18,594,189 | $ 10,387,506 | $ 20,338,724 |
| RoR: | 6.83% | 5.58% | 3.41% | 1.67% | 1.08% | 13.72% |
| Revenue Requirement at System Average RoR: | $ 1,374,047,515 | $ 317,911,742 | $ 637,945,056 | $ 297,181,881 | $ 261,578,328 | $ 30,853,627 |
| (Under)/Over Contribution | $ (1,608,797) | $ (14,625,213) | $ (79,594,582) | $ (57,795,791) | $ (55,801,908) | $ 10,170,067 |
| % change to Achieve System Average RoR: | 0.12% | 4.82% | 14.26% | 24.14% | 27.12% | -24.79% |

Q. How do you interpret these results?

A. The line "Revenue Available for RoR" indicates that each studied class is providing revenues in excess of the direct and indirect expense allocated to that class. Thus, no "subsidy" exists. However the line "RoR" indicates that some classes are providing very little revenue in excess of allocated expenses to contribute towards the return on investment. Specifically, the Residential, SGS (including the Metropolitan Sewer District), and Lighting

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[16] Note, the overall revenue requirement impact of the income tax functionalization is negative due to the Accumulated Deferred Income Tax (ADIT) rate base balances.

aggregate classes are providing an above-average contribution to return on investment, while the Large General Service (LGS), Small Primary Service (SPS), and Large Primary Service (LPS) are providing below-average contributions to return on investment.

Q. Should the Commission order shifts in class revenue responsibility to exactly match these indicated class-level revenue requirements?

A. No.

## RECOMMENDED REVENUE REQUIREMENT ALLOCATION

Q. What is Staff's general approach to implementing revenue responsibility shifts and the precision of CCoS results?

A. In general, Staff will not recommend any class receive a reduction in a general rate proceeding with a positive net revenue requirement; and Staff will not recommend adjustment to study results unless those results indicate one or more classes' percent change to bring class rate revenue to the studied cost of service exceeds 5% in one direction AND another class or classes' indicated change exceeds 5% in the opposite direction.[17]

Q. Have you reviewed the CCoS results to determine any exceedance of this 10% band?

A. Yes. The results of this review are provided below:

[17] Revenues not collected due to statutory economic development incentive discounts have been reallocated among all customer classes.

| | Residential | SGS | LGS | SPS | LPS | Lighting | Total |
|---|---|---|---|---|---|---|---|
| Net Rate Base | $ 4,780,414,768 | $ 1,144,991,510 | $ 2,308,589,762 | $ 1,113,232,002 | $ 964,579,047 | $ 148,187,945 | $ 10,459,995,033 |
| Total Expense | $ 1,427,917,262 | $ 319,898,430 | $ 527,144,800 | $ 165,212,752 | $ 121,688,812 | $ 6,913,587 | $ 2,568,775,644 |
| Other Revenue | $ 441,955,712 | $ 94,450,605 | $ 75,497,100 | $ (42,590,564) | $ (62,267,601) | $ (12,422,899) | $ 494,622,354 |
| Net Expense: | $ 985,961,550 | $ 225,447,825 | $ 451,647,700 | $ 207,803,316 | $ 183,956,413 | $ 19,336,486 | $ 2,074,153,290 |
| System Average Return on Rate Base: | $ 328,032,061 | $ 78,569,317 | $ 158,415,429 | $ 76,389,980 | $ 66,189,414 | $ 10,168,657 | $ 717,764,859 |
| Pre-Allowance Revenue Requirement: | $ 1,313,993,611 | $ 304,017,142 | $ 610,063,130 | $ 284,193,296 | $ 250,145,827 | $ 29,505,143 | $ 2,791,918,149 |
| Allowance for Known & Measurable Changes | $ 60,053,904 | $ 13,894,600 | $ 27,881,926 | $ 12,988,584 | $ 11,432,501 | $ 1,348,484 | $ 127,600,000 |
| Rate Revenue: | $ 1,372,438,719 | $ 303,286,530 | $ 558,350,473 | $ 239,386,090 | $ 205,776,421 | $ 41,023,694 | $ 2,720,261,926 |
| Revenue Available for RoR: | $ 326,423,265 | $ 63,944,105 | $ 78,820,847 | $ 18,594,189 | $ 10,387,506 | $ 20,338,724 | $ 518,508,636 |
| RoR Provided at Current Revenues: | **6.83%** | **5.58%** | **3.41%** | **1.67%** | **1.08%** | **13.72%** | **4.96%** |
| Revenue Requirement at Current Average RoR: | $ 1,282,983,668 | $ 296,100,386 | $ 593,967,896 | $ 275,975,522 | $ 243,203,714 | $ 28,030,741 | $ 2,720,261,926 |
| *(Under)/Over Contribution $ at Current Average RoR:* | $ 89,455,051 | $ 7,186,144 | $ (35,617,422) | $ (36,589,433) | $ (37,427,293) | $ 12,992,953 | $ - |
| *(Under)/Over Contribution % at Current Average RoR:* | 6.97% | 2.43% | -6.00% | -13.26% | -15.39% | 46.35% | 0.00% |
| Revenue Requirement at System Average RoR: | $ 1,374,047,515 | $ 317,911,742 | $ 637,945,056 | $ 297,181,881 | $ 261,578,328 | $ 30,853,627 | $ 2,919,518,149 |
| *(Under)/Over Contribution $ at System Average RoR:* | $ (1,608,797) | $ (14,625,213) | $ (79,594,582) | $ (57,795,791) | $ (55,801,908) | $ 10,170,067 | $ (199,256,223) |
| *(Under)/Over Contribution % at System Average RoR:* | -0.12% | -4.60% | -12.48% | -19.45% | -21.33% | 32.96% | -6.82% |
| Revenues at System Average Increase: | $ 1,472,968,360 | $ 325,501,938 | $ 599,249,037 | $ 256,920,860 | $ 220,849,319 | $ 44,028,635 | $ 2,919,518,149 |
| *(Under)/Over Contribution $ with System Average Increase:* | $ 98,920,845 | $ 7,590,195 | $ (38,696,018) | $ (40,261,021) | $ (40,729,009) | $ 13,175,008 | $ - |
| *(Under)/Over Contribution % with System Average Increase:* | 7.20% | 2.39% | -6.07% | -13.55% | -15.57% | 42.70% | 0.00% |
| *% change to Achieve System Average RoR:* | 0.12% | 4.82% | 14.26% | 24.14% | 27.12% | -24.79% | 7.32% |

Q. Should CCoS results be the only factor in setting rate class revenue requirements?

A. No. CCoS studies serve as a guide to setting rate class revenue requirements and should not be solely relied upon for establishing each class' revenue requirement because they are not precise, and are not updated for changes from the studied revenue requirement and billing determinants to the ordered revenue requirement and billing determinants.[18]

Policy considerations, such as rate continuity, rate stability, revenue stability, minimization of rate shock to any one-customer class, meeting of incremental costs, and consideration of promotional practices are also taken into account in Staff's recommendation of Ameren Missouri's class revenue recovery through rate design. Staff endeavors to provide methods to promote revenue stability and efficiency when implementing any Commission-ordered overall change in customer revenue responsibility in rates. Staff must

[18] CCoS studies are based on a direct-filed revenue requirement, and the allocation of that revenue requirement among specific accounts, using a specific rate of return. Unless that study is updated, or unless the Commission approves that exact set of accounting schedules as well as the direct-filed billing determinants in setting the revenue requirement in a particular case, there is an inherent disconnect between the CCoS study results used in providing a party's class cost of service and rate design recommendations, and the actual class cost of service that would result at the conclusion of a case.

also balance this, to the extent possible, with retaining existing rate schedules, rate structures, and important features of the current rate design that reduce the number of customers that switch rates looking for the lowest bill, and mitigate the potential for rate shock. Rate schedules should be understood by all parties, customers, and the utility as to proper application and interpretation.

With the above parameters in mind, Staff endeavors to provide the Commission with a rate design recommendation based on each customer class's relative cost-of-service responsibility and yield the total revenue requirement to all classes in a fair manner avoiding undue discrimination. This includes methods to recover both fixed and variable costs in a timely manner. This ensures Ameren Missouri receives an amount above its marginal costs on sales of electricity, and each class is providing a contribution to cover fixed costs.

Q. How should the revenue responsibility for the cost of service ordered in this case be recovered from the customer classes?[19]

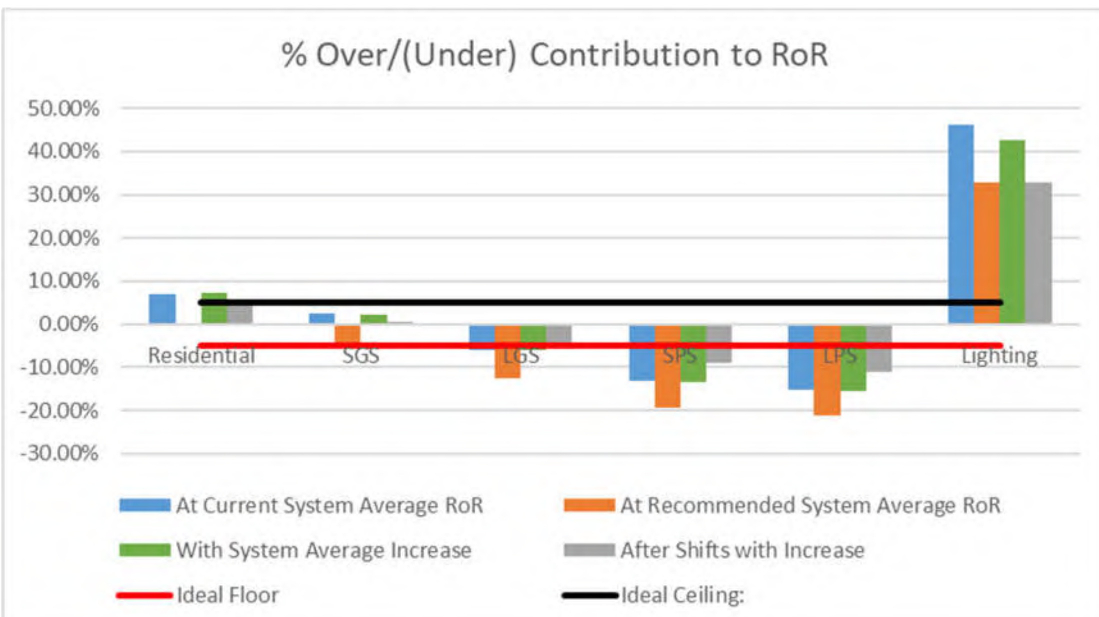
A. The revenue responsibility of the Lighting class should be held at the current level. The LGS class should receive an initial increase in its revenue responsibility of approximately 3.75%, and the SPS and LPS classes should receive an increase in revenue requirement responsibility of approximately 7.50%. Then, the remaining increase should be applied as an equal percent increase to the Residential, SGS, LGS, and LPS classes. This process is illustrated below:

[19] The allocation of revenue responsibility among customer classes is also referred to as ***interclass revenue responsibility***, while the pricing of elements of a given class's rate structure can be referred to as ***intraclass revenue responsibility***, or also as ***rate design***.

| | Residential | SGS | LGS | SPS | LPS | Lighting | Total |
|---|---|---|---|---|---|---|---|
| Treatment: | Equal | Equal | Above | Above+ | Above+ | Hold | Revenue Requirement Allocated |
| **Step 1** | $ - | $ - | $ - | $ 17,953,957 | $ 15,433,232 | $ - | $ 33,387,188 |
| (Under)/Over Contribution $: | $ (1,608,797) | $ (14,625,213) | $ (79,594,582) | $ (39,841,835) | $ (40,368,676) | $ 10,170,067 | |
| (Under)/Over Contribution %: | -0.12% | -4.60% | -12.48% | -13.41% | -15.43% | 32.96% | |
| **Step 2** | $ - | $ - | $ 20,938,143 | $ - | $ - | $ - | $ 20,938,143 |
| (Under)/Over Contribution $: | $ (1,608,797) | $ (14,625,213) | $ (58,656,440) | $ (39,841,835) | $ (40,368,676) | $ 10,170,067 | |
| (Under)/Over Contribution %: | -0.12% | -4.60% | -9.19% | -13.41% | -15.43% | 32.96% | |
| **Step 3** | $ 74,240,792 | $ 16,406,002 | $ 30,203,448 | $ 12,949,367 | $ 11,131,283 | $ - | $ 144,930,892 |
| (Under)/Over Contribution $: | $ 72,631,995 | $ 1,780,789 | $ (28,452,992) | $ (26,892,467) | $ (29,237,393) | $ 10,170,067 | |
| (Under)/Over Contribution %: | 5.29% | 0.56% | -4.46% | -9.05% | -11.18% | 32.96% | |
| **Overall Recommended Increase $:** | $ 74,240,792 | $ 16,406,002 | $ 51,141,591 | $ 30,903,324 | $ 26,564,515 | $ - | $ 199,256,223 |
| **Overall Recommended Increase %:** | 5.41% | 5.41% | 9.16% | 12.91% | 12.91% | 0.00% | 7.32% |
| **Class Level Ending RoR:** | **8.38%** | **7.02%** | **5.63%** | **4.45%** | **3.83%** | **13.72%** | **6.862%** |

Q. Could you provide an illustration of the relative over/under contributions of the classes with and without the recommended shifts?

A. Yes.



## RATE DESIGN RECOMMENDATIONS

### Market Cost of Energy

Q. What is the average cost of energy at generation voltage and at metered voltage by rate schedule for Ameren Missouri's load?

A. The average cost of energy to serve Ameren Missouri's load per kWh are provided below, by rate class.

| | Residential | SGS | LGS | SPS | LPS | Lighting |
|---|---|---|---|---|---|---|
| Cost of Energy | $ 755,464,647 | $ 175,170,135 | $ 394,558,530 | $ 185,232,285 | $ 176,821,534 | $ 7,369,379 |
| kWh at Generation | 14,776,896,239 | 3,453,790,811 | 8,003,655,199 | 3,796,879,185 | 3,683,583,973 | 156,270,452 |
| $/kWh at Generation | $ 0.051125 | $ 0.050718 | $ 0.049297 | $ 0.048785 | $ 0.048003 | $ 0.047158 |
| kWh at Meter | 13,675,778,475 | 3,193,379,724 | 7,400,184,355 | 3,610,967,388 | 3,554,080,831 | 144,488,689 |
| $/kWh at Meter | $ 0.055241 | $ 0.054854 | $ 0.053317 | $ 0.051297 | $ 0.049752 | $ 0.051003 |

Note, because the LPS class includes customers served at various voltages, it is appropriate to break down this class by voltage.

| | LPS Primary | LPS Sub Transmission | LPS Transmission |
|---|---|---|---|
| Cost of Energy | $ 66,150,151 | $ 92,037,201 | $ 17,782,504 |
| kWh at Generation | 1,384,539,956.77 | 1,916,602,463 | 366,282,087 |
| $/kWh at Generation | $ 0.047778 | $ 0.048021 | $ 0.048549 |
| kWh at Meter | 1,326,556,575 | 1,866,182,652 | 361,341,604 |
| $/kWh at Meter | $ 0.049866 | $ 0.049318 | $ 0.049212 |

Q. What is the relevance of these values to rate design?

A. No energy rate should be less than the average cost of obtaining the energy at meter applicable to that class as reflected in Staff's various rate design recommendations.

Q. What if the rate is a Time of Use ("ToU") rate or otherwise reflects the time-value of energy?

A. A ToU rate could be designed to collect the average cost of the energy to serve load in the relevant time period. Other designs, such as hours use, lack the assurance that the energy is actually used in a time of below-average energy cost.

**Customer Charge Cost Study**

Q. Did you study the costs classifiable to the customer charge?

A. Yes. The cost study results for all classes are provided below; note these values are based on class averages and may not be reasonable for imposition upon all customers in all classes:

| | Residential | SGS | LGS | SPS | LPS | Lighting |
|---|---|---|---|---|---|---|
| Net Rate Base | $ 407,476,245 | $ 141,109,693 | $ 108,698,541 | $ 270,757,931 | $ 102,444,701 | $ 139,522,126 |
| Depreciation Expense | $ 27,581,932 | $ 7,770,581 | $ 5,010,841 | $ 13,285,563 | $ 5,052,116 | $ 5,729,304 |
| NonLabor Expense | $ 15,408,719 | $ 3,146,928 | $ 2,968,364 | $ 5,280,890 | $ 2,147,199 | $ 1,671,684 |
| Labor Expense | $ 13,837,240 | $ 2,964,127 | $ 2,462,763 | $ 2,205,013 | $ 950,001 | $ 2,381,875 |
| RoR | $ 27,961,020 | $ 9,682,947 | $ 7,458,894 | $ 18,579,409 | $ 7,029,755 | $ 9,574,008 |
| Approx. Income Tax | $ 2,914,086 | $ 1,009,153 | $ 777,363 | $ 1,936,338 | $ 732,638 | $ 997,799 |
| Functionalized RR: | $ 87,702,997 | $ 24,573,736 | $ 18,678,225 | $ 41,287,213 | $ 15,911,709 | $ 20,354,670 |
| # of Customers: | 1,079,892 | 136,459 | 10,673 | 670 | 63 | 55322 |
| # of Charges: | 12,958,704 | 1,637,514 | 128,076 | 8,040 | 756 | 663,864 |
| $/Customer/Month: | $ 6.77 | $ 15.01 | $ 145.84 | $ 5,135.23 | $ 21,047.23 | $ 30.66 |
| Gross up for Other/Misc. | $ 7.68 | $ 17.04 | $ 165.57 | $ 5,830.23 | $ 23,895.78 | $ 34.81 |

Q. What revenue requirement elements are included in this calculation?

A. This calculation is an expansive view of the Basic Customer approach to customer charge estimation. Staff included those costs which more or less vary with the addition of a customer. Specifically, Staff included the following plant items, Distribution - Customer Specific-Poles, Towers, & Fixtures – DP, Distribution - Customer Specific-Overhead Conductors & Devices – DP, Distribution - Customer Specific-Underground Conduit – DP, Distribution - Customer Specific-Underground Conductors & Devices – DP, Line Transformers – DP, Services - Overhead – DP, Services - Underground – DP, Meters – DP, AMI Meters, Meter Installations – DP, Street Lighting and Signal Systems – DP, and the following expense items, Distribution - Customer Specific-Overhead Line Expenses – DE, Line Transformer Expenses – DE, Distribution - Customer Specific-Underground Line Expenses – DE, Underground Transformer Expenses, Street Lighting & Signal System Expenses – DE, Meters – DE, Customer Install – DE, Distribution - Customer Specific-Overhead Lines Maintenance, Distribution - Customer Specific-Underground Lines Maintenance, Line Transformers Maintenance, Street Light & Signals Maintenance, Meters Maintenance, Meter Reading Expenses – CAE, and Customer Assistance Expenses – CSIE.

Q. What is a reasonable customer charge for residential customers in this rate case?

A. The customer charge for all residential rate schedules should be retained at the current level, $9.00/month. The high end of the reasonable range for the residential class is under $8.00 per month. However, Staff does not recommend reducing the current charge as it will increase the non-uniformity of customer impacts in this case.

**Residential Rate Design**

Q. What is your residential rate design recommendation?

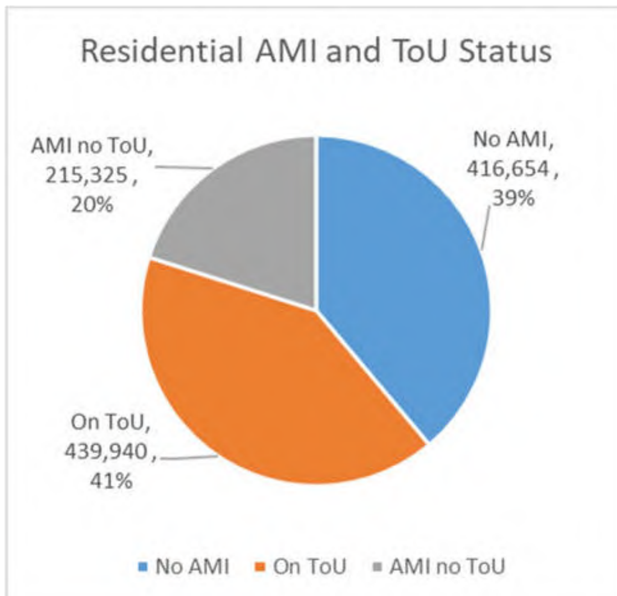
A. Staff recommends that the Evening/Morning Savers[20] be the default rate schedule for all residential customers equipped with an AMI meter. Customers should be able to opt into a different time-based rate schedule if they choose after adequate education, but the "Anytime" rate schedule should no longer be available for customers equipped with an AMI meter. The "Anytime" rate schedule will remain available for customers without AMI meters

[20] This is the ToU overlay rate schedule described in prior cases as "ToU training wheels."

through the duration of the AMI meter deployment process, and thereafter for customers who have opted out of AMI metering.

Q. What percent of residential customers have an AMI meter and what percent of residential customers are on ToU?

A. The breakdown and percents are provided below:




Q. What percent of residential customers that have an AMI meter are on a ToU rate?

A. 67% of residential customers with an AMI meter are on a ToU rate.

Q. What is the current deployment practice?

A. The “Availability” section of the Evening/Morning Savers schedule provides:

> New customers or new accounts with an advanced meter, or existing accounts that have had an advanced meter for six months, shall be placed directly on the Daytime/Overnight rate at the beginning of their next bill cycle. Customers will have the option to request all other eligible rate options subject to the term of use and provisions of those rates and can return to this rate at any time.

Q. Should this provision be modified?

A. Yes. Staff recommends that the Evening/Morning Savers rate schedule be modified so that the lead-in time of six months should be eliminated and customers should begin receiving service on the schedule starting the first billing month after they are equipped with an AMI meter. This change is (1) consistent with the modernization of rate structures in Missouri (2) serves to educate customers who may not currently be cognizant of the times in which they consume energy, and (3) improves the relationship of cost causation and revenue responsibility for Ameren Missouri's residential customers Staff also recommends that the name of the rate schedule as referenced in the "Availability" section of the Evening/Morning Savers schedule be consistent with the name of the rate schedule. (Staff is of the opinion that "Daytime/Overnight" is more understandable than the "Savers" nomenclature, but will not relitigate that issue here.)

Q. What change should be made to the Anytime rate schedule?

A. Staff recommends revision in the applicability of the Anytime rate schedule to default customers to the Evening/Morning Savers tariff and/or to encourage customers exercising the optionality of service on a higher-differential time-based rate schedule, consistent with recent Commission action. Anytime rate schedule should state that it is not available to customers equipped with an AMI meter, except to conclude the customer's then-current billing month at time of meter installation.

Q. How should increases to the residential class revenue responsibility be implemented in this case?

A. Staff recommends the residential non-customer charge rates should be increased on an equal percentage basis, except that the current differentials in the Evening/Morning Savers schedule should be preserved at this time.

**Non-Residential Rate Schedules**

**Lighting Rate Design**

Q. How should the lighting rates be modified in this case?

A. Staff's primary recommendation is to hold the revenue responsibility of the lighting rate schedules constant, and leave the rates there-in unmodified. In the event the revenue responsibility of the lighting rate schedules is not held constant in this case, Staff recommends any changes be made as an equal percent adjustment to each charge there-in.

**Existing Non-Residential Rate Structural Elements**

Q. What is an hours use rate structure?

A. An hours use rate structure divides the energy consumed in a given month into blocks based on the relationship between the total amount of energy used and the amount of energy used in the highest 15 minutes of energy consumed in that month unless otherwise defined.

Q. What are base usage and seasonal usage?

A. The SGS tariff sheet 55.1 includes the following provision:

> The winter seasonal energy use shall be all kWh in excess of 1,000 kWh per month and in excess of the lesser of a) the kWh use during the preceding May billing period, or b) the kWh use during the preceding October billing period, or c) the maximum monthly kWh use during any preceding summer month.

In the LGS and SPS rate schedules, base and seasonal energy charges are defined by the relationship between energy consumed and base and seasonal demand within each applicable hours use block.

Q. What are base demand and seasonal demand?

A. Base demand is used to calculate hours use blocks on the LGS and SPS rate schedules. Seasonal demand is also used in the LGS and SPS rate schedules to apportion kWh subject to the discounted seasonal energy charge. Base and Seasonal Billing Demands are defined in these schedules, as provided below:

> <u>Base Billing Demand</u>
>
> The monthly Base Billing Demand, used only to apportion kilowatt-hours during the Company's winter billing season, shall be the Total Billing Demand during customer's immediately preceding May, October or maximum summer billing month, or customer's current winter month's Total Billing Demand, whichever is less.
>
> <u>Seasonal Billing Demand</u>
>
> The monthly Seasonal Billing Demand, used only to apportion kilowatt-hours during the Company's winter billing season, shall be the portion of customer's current month's Total Billing Demand in excess of customer's Base Billing Demand.

Q. What is Rider I?

A. Rider I provides:

> SECONDARY SERVICE OFF-PEAK DEMAND PROVISIONS
> * A. The monthly billing demand of any non-residential customer who is taking secondary service shall, upon their request or upon installation of an advanced meter, be determined as follows:
> The billing demand in any month will be the highest demand established during peak hours or 50% of the highest demand established during off-peak hours, whichever is highest during the month, but in no event less than 100 kW.
>
> Peak hours and off-peak hours are defined as follows:

Peak hours - 10:00 A.M. to 10:00 P.M., Monday through Friday.

Off-peak hours - 10:00 P.M. of Monday through Thursday to 10:00 A.M. of the following day, and from 10:00 P.M. Friday to 10:00 A.M. Monday.

- The entire 24 hours of the following days: New Year's Day Thanksgiving Day Good Friday Thanksgiving Friday Memorial Day Christmas Eve Day Independence Day Christmas Day Labor Day

All times stated above apply to the local effective time.

B. If advanced metering is not installed, Customer shall pay for all metering equipment necessary for the application of the provisions of this Rider at the charges specified in Section IV.B - Additional Metering.
* C. This Rider, if requested by customer without advanced metering, shall remain in effect for an initial period of three (3) years and shall be terminable thereafter on three (3) days' notice if an advanced meter is not present.
** D. Customers with advanced metering installed will automatically have the provisions under Rider I applied without request.

Q. Does Rider I impose a time-based variation in energy charges?

A. No.

Q. What time periods are subject to "Optional Time-of-Day Adjustments" on Ameren Missouri's non-residential rate schedules?

A. The SGS "Legacy Optional Time-of-Day Rate" includes an apparent inconsistency in that on sheet 55.1 the following provisions are included:

(4) During all days and periods, the on-peak hours are 6:00 A.M. to 10:00 P.M. and the off-peak hours are 10:00 P.M. to 6:00 A.M.

(5) On-peak and Off-peak hours applicable herein shall be as specified in Rider I, paragraph A.

Note, the off-peak provisions of Rider I include the entire weekend, and an enumerated list of 9 holidays.

The LGS "Optional Time-of-Day Adjustments" provisions refer to Rider I.

The SPS "Optional Time-of-Day Adjustment" provisions include a definition of on-peak and off-peak hours that appears identical to the provisions of Rider I, though it is set out differently.

The LPS "Optional Time-of-Day Adjustments" provisions are consistent with those of the SPS rate schedule.

Q. Do these elements remain reasonable?

A. Increasingly, no. The seasonal/base energy distinction as well as the hours use structure in general were work-arounds for the unavailability of hourly usage data for each customer. As AMI metering is growing ubiquitous among Ameren Missouri customers, use of actual hourly usage to bill customers is far more reasonable and far more transparent to customers than the cumbersome and convoluted legacy rate structures.

Q. Has Ameren Missouri provided information supporting the cost basis of these elements?

A. No.

Q. Did you review the average cost of energy by rate schedule by time period as defined above?

A. Generally. As noted, there are differences in whether holidays and weekends are excluded from a given rate schedule's on peak definition. Generally however, the average kWh per time period and calculations for a cost-based differential are provided below:

| *Legacy Time of Day Energy Cost Study* | Residential | SGS | LGS | SPS | LPS | Lighting |
|---|---|---|---|---|---|---|
| **Around the clock average cost of energy:** | $ 0.0511 | $ 0.0507 | $ 0.0493 | $ 0.0488 | $ 0.0480 | $ 0.0472 |
| **On-Peak average cost of energy:** | $ 0.0536 | $ 0.0532 | $ 0.0526 | $ 0.0529 | $ 0.0524 | $ 0.0550 |
| **Off Peak average cost of energy:** | $ 0.0495 | $ 0.0489 | $ 0.0471 | $ 0.0463 | $ 0.0455 | $ 0.0453 |
| **On-Peak Premium:** | $ 0.0025 | $ 0.0025 | $ 0.0033 | $ 0.0041 | $ 0.0044 | $ 0.0078 |
| **Off Peak Discount:** | $ (0.0041) | $ (0.0044) | $ (0.0056) | $ (0.0066) | $ (0.0069) | $ (0.0097) |

Note, these time periods are not consistent with those selected for the recommended ToU overlay.

Q. For purposes of this case, should the relationship between these elements within rate schedules be maintained?

A. Yes. The inclusion of a time-based overlay in the rate structures of non-residential non-lighting classes for customers equipped with AMI metering should be the priority in this rate case. For the current non-ToU SGS, LGS, SPS, and LPS rate schedules, Staff recommends minimization of intraclass revenue responsibility changes for the non-residential non-lighting classes in order to mitigate unexpected bill volatility as the Staff's recommended ToU overlay is introduced. Specifically, Staff recommends that all rate elements for the SGS, LGS, SPS, and LPS rate schedules be adjusted uniformly within each rate class, except for the Reactive kVar charges which should be adjusted consistent with the overall increase applicable to non-residential non-lighting classes, but held consistent across rate schedules. Finally any changes related to the Low Income charges should be implemented.

For the new ToU overlay rate schedules, separately for SGS, LGS, SPS, and LPS, a second set of charges will then be developed. First, the revenue impact of the ToU overlay will be calculated for each class as though it were billed on all customers in that class. Then, starting with the rates determined as described above, each rate element will be adjusted to reflect the net impact of the ToU Overlay to achieve revenue neutrality. These rate schedules would be the default rate schedules for customers equipped with AMI metering.

The determinants developed from the ToU overlay can be relied upon in a future case after AMI has been fully deployed so that hours use rate structures and base/seasonal energy and demand elements can be phased out, and time-based elements be redesigned to reflect current periods of demand relevance and contemporary cost causation.

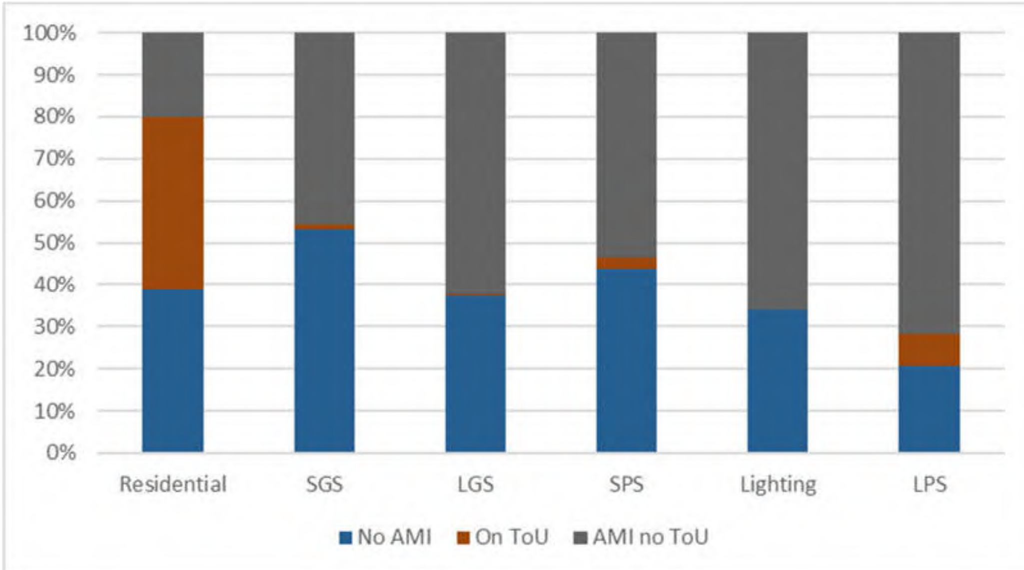
**Introduction of Time of Use Overlay to SGS, LGS, SPS, and LPS Rate Structures**

Q. What is your overall recommendation for non-residential non-lighting rate structures?

A. As discussed in greater detail below, Staff recommends the Commission order in this case that customers with AMI metering be billed time based rates through the introduction of a revenue neutral ToU Overlay to be introduced into a parallel rate structure for each non-residential non-lighting rate class.

Q. What is the current level of AMI deployment and ToU adoption?

A. As illustrated below, over half of non-residential customers are currently equipped with an AMI meter, depending on rate class. However, only a fraction of customers with an AMI meter take service on time-based rate structures.




| | Total | # with AMI | # on ToU | % with AMI | % with AMI on ToU | % of Total on ToU |
|---|---|---|---|---|---|---|
| Residential | 1,071,919 | 655,265 | 439,940 | 61% | 67.14% | 41.04% |
| SGS | 129,424 | 60,454 | 1,622 | 47% | 2.68% | 1.25% |
| LGS | 10,069 | 6,311 | 51 | 63% | 0.81% | 0.51% |
| SPS | 539 | 303 | 15 | 56% | 4.95% | 2.78% |
| Lighting | 1,395 | 921 | - | 66% | 0.00% | 0.00% |
| LPS | 39 | 31 | 3 | 79% | 9.68% | 7.69% |
| Total | 1,213,385 | 723,285 | 441,631 | 60% | 61.06% | 36.40% |

Q. Did you review the appropriate ToU overlay design to order as the default rate for non-residential customers upon receipt of an AMI meter?

A. Yes. I reviewed Ameren Missouri's cost of obtaining energy to serve its load in the MISO DA energy market for the five years from January 2017 through December 2022. I did not remove entirely events like Storm Uri, but I normalized outlier energy costs. Specifically, I removed Locational Marginal Prices (LMPs) above a cap of $100 and below a floor of negative $35.00, replacing them with the cap values.

I next divided each of the five years into 24 periods of the first 14 days of each month, and day 15 through the end of each month. I then found the simple average LMP across the five years for each hour. For example, the average LMP for 1:00 AM on January 1 - January 14 of 2018, 2019, 2020, 2021, and 2022 is $25.88. Note, my initial analysis distinguished between weekdays and weekends, but did not indicate sufficient variation to maintain this distinction.

I then organized the data by season.[21] I then found the simple average LMP for the "Summer" and "NonSummer" seasons.

To identify time periods and reasonable differentials, I identified which hours in a given season fell outside of a band around that average. For Summer, I used 0.85 & 1.15, and for Non Summer, I used 0.9 & 1.1.

The hours and average $ per kWh associated with each time period are provided below:

| | Off Peak | Regular | On Peak |
|---|---|---|---|
| **Summer** | 12 -9 AM | All Other | 1 - 9 PM |
| **NonSummer** | 11 PM - 6 AM | All Other | 7-9 AM, 5-9 PM |

| | Off Peak | Regular | On Peak |
|---|---|---|---|
| **Summer** | $ 0.02739 | $ 0.04196 | $ 0.04784 |
| **NonSummer** | $ 0.02615 | $ 0.03535 | $ 0.03968 |

The absolute resulting discounts and premiums are provided below:

| | Off Peak | Regular | On Peak |
|---|---|---|---|
| **Summer** | $ (0.01457) | $ - | $ 0.00587 |
| **NonSummer** | $ (0.00920) | $ - | $ 0.00433 |

[21] The seasons used in my study consisted of Actual Winter, Shoulder, and Summer. While this seasonal distinction is more reasonable than the current Ameren Missouri seasonal definition, for this case I included this element only for review purposes, and recommend maintaining existing rate seasons of Summer and NonSummer in this case.

The discounts, adjusted to improve customer understandability and implementation are provided below:[22]

| | Off Peak | Regular | On Peak |
|---|---|---|---|
| Summer | $ (0.01500) | $ - | $ 0.00500 |
| NonSummer | $ (0.01000) | $ - | $ 0.00500 |

Q. How should these changes in rate structure be implemented in this case?

A. Staff recommends creation of a parallel rate schedule for each non-residential non-lighting rate class which includes a time-based overlay applicable to all customers equipped with an AMI meter. When calculating compliance rates for each of these time-based rate schedules, each distinct rate element will require adjustment to ensure that application of the ToU overlay retains revenue neutrality within the rate schedule. The amounts applicable to each class are identified in the section "Customer Bill Changes Related to Recommended ToU Overlay." Because all customers are not currently equipped with AMI metering, it is necessary to have two sets of rates for each non-residential rate element in the tariffs promulgated in compliance with the Commission's order in this case. One set will reflect the adjustment to preserve revenue neutrality and will include the ToU Overlay in its structure. The other set will not include the ToU Overlay and will not be adjusted for the ToU Overlay.

Q. Should existing optional rate codes that include time or proxies for time as a factor in billing be retained at this time?

[22] Note, the specific values indicated are calculated at generation voltage. However, for initial customer understandability, Staff recommends the adjusted overlay be billed at the specified rates for service across voltages. In future cases after customers have gained familiarity with the concept, it would be appropriate to voltage-adjust the overlay.

A. At this time, Staff is not opposed to retention of existing rate structures that include time or proxies for time as a factor, including Rider I, Optional Time-of-Day Adjustments, and the Legacy SGS Optional Time-of-Day Rate for customers on the non-ToU Overlay rate schedule. However, such structures should likely be phased out or significantly redesigned as rates are modernized to incorporate more accurate time based elements upon completion of AMI deployment.

**Customer Bill Changes Related to Recommended ToU Overlay**

Q. Have you calculated the determinants for the ToU Overlay for each non-residential non-lighting rate schedule?

A. Yes. I found the determinants associated with each time period using Ameren Missouri's load research hourly loads. Then I adjusted these determinants uniformly to the normalized and annualized level of usage at the meter. The results are provided in kWh below:

| | SGS | LGS | SPS | LPS |
|---|---|---|---|---|
| Summer-Off Peak | 317,082,563.63 | 865,223,659.24 | 466,896,397.24 | 477,640,562.33 |
| Summer-Regular | 363,273,616.37 | 820,138,760.83 | 392,679,450.39 | 381,783,079.79 |
| Summer-On Peak | 472,612,526.58 | 1,023,550,565.47 | 458,764,861.65 | 443,366,909.62 |
| Non-Summer-Off Peak | 504,520,542.82 | 1,174,369,697.22 | 623,697,892.38 | 641,599,459.63 |
| Non-Summer-Regular | 996,645,392.15 | 2,221,249,851.16 | 1,093,869,507.48 | 1,048,789,485.20 |
| Non-Summer-On Peak | 500,881,942.14 | 1,182,194,555.47 | 582,649,763.00 | 568,486,809.09 |

Q. Have you estimated the net impact of the ToU Overlay for each non-residential non-lighting rate schedule?

A. Yes. I multiplied the determinants provided above by the recommended overlay values. The results by class and by time period are provided below:

| | SGS | LGS | SPS | LPS |
|---|---|---|---|---|
| Summer-Off Peak | $ (4,756,238) | $ (12,978,355) | $ (7,003,446) | $ (7,164,608) |
| Summer-Regular | $ - | $ - | $ - | $ - |
| Summer-On Peak | $ 2,363,063 | $ 5,117,753 | $ 2,293,824 | $ 2,216,835 |
| Non-Summer-Off Peak | $ (5,045,205) | $ (11,743,697) | $ (6,236,979) | $ (6,415,995) |
| Non-Summer-Regular | $ - | $ - | $ - | $ - |
| Non-Summer-On Peak | $ 2,504,410 | $ 5,910,973 | $ 2,913,249 | $ 2,842,434 |
| Net Revenue Impact | (4,933,972) | (13,693,326) | (8,033,352) | (8,521,334) |

Q. What do the negative values for "net revenue impact" indicate?

A. The negative values indicate that the ToU overlay will provide more off-peak discounts to each class than they will collect extra on-peak charges.

Q. On a class-level basis, will incorporating the ToU overlay into these rate structures increase or decrease the bills paid by customers?

A. On a class-level basis, the restructured rate schedules for the ToU overlay will be adjusted to achieve revenue neutrality. In other words, the class average bill for a given class without the ToU overlay and the class average bill for a given class with the ToU overlay will be the same dollar value, as illustrated below:

| | SGS | LGS | SPS | LPS |
|---|---|---|---|---|
| Current Average $/kWh | $ 0.09665 | $ 0.07699 | $ 0.06648 | $ 0.05809 |
| Adjustment due to Overlay per kWh | $ 0.00156 | $ 0.00188 | $ 0.00222 | $ 0.00239 |
| Adjusted Average $/kWh | $ 0.09821 | $ 0.07887 | $ 0.06870 | $ 0.06048 |
| Value of Overlay/kWh | $ (0.00156) | $ (0.00188) | $ (0.00222) | $ (0.00239) |
| Net Average $/kWh | $ 0.09665 | $ 0.07699 | $ 0.06648 | $ 0.05809 |
| Net Impact by Class | $ - | $ - | $ - | $ - |

Q. By class, what will be the difference in current rate elements for customers subject to the overlay versus the same element for customers not subject to the overlay because they do not yet have an AMI meter?

A. Based on Staff's current Accounting Schedules, the percentages applicable to each class are illustrated below, pre-rate increase. The rate increases resulting from the pending rate request will make the overall percentages of difference smaller.

| | SGS | LGS | SPS | LPS |
|---|---|---|---|---|
| Current Revenues | $ 304,922,940 | $ 561,028,072 | $ 240,561,062 | $ 206,880,052 |
| Adjustment for Overlay | 4,933,972 | 13,693,326 | 8,033,352 | 8,521,334 |
| Non-Overlay Revenue Requirement | $ 309,856,912 | $ 574,721,398 | $ 248,594,414 | $ 215,401,386 |
| % Change in Non-Overlay Revenue Requirement, Pre-Overlay | 1.618% | 2.441% | 3.339% | 4.119% |

Q Combining the impact of the revenue-neutral adjustment to the current non-overlay rate elements, and the impact of the overlay itself, if a customer used every single kWh it consumed on peak throughout the year, could you provide the estimated bill impact?

A. Yes. The values provided in the row "Change in Average $/kWh" indicate the change per kWh a customer would experience if every single kWh of energy consumed was consumed on peak, year round.

| | SGS | LGS | SPS | LPS |
|---|---|---|---|---|
| Current Average $/kWh | $ 0.09665 | $ 0.07699 | $ 0.06648 | $ 0.05809 |
| Adjusted Average $/kWh | $ 0.09821 | $ 0.07887 | $ 0.06870 | $ 0.06048 |
| All Energy Used On Peak | $ 0.00500 | $ 0.00500 | $ 0.00500 | $ 0.00500 |
| New Average $/kWh | $ 0.10321 | $ 0.08387 | $ 0.07370 | $ 0.06548 |
| Change in Average $/kWh | $ 0.00656 | $ 0.00688 | $ 0.00722 | $ 0.00739 |
| % Change | 6.79% | 8.93% | 10.86% | 12.73% |

Note, a customer using every single kWh of energy consumed on peak would have an above average experienced $/kWh in that they would have a higher-than-average demand charge for their level of usage, and would not be eligible for the reduced per kWh charges of subsequent hours use blocks or seasonal energy or demand reduced rates. Thus, while the dollar value indicated is the approximate value for all customers in a given class, the "% change" will vary based on the experienced average $/kWh of a given customer.

Q Combining the impact of the revenue-neutral adjustment to the current non-overlay rate elements, and the impact of the overlay itself, if a customer used every single kWh it consumed off peak throughout the year, could you provide the estimated bill impact?

A. Yes. The values provided in the row "Change in Average $/kWh" indicate the change per kWh a customer would experience if every single kWh of energy consumed was consumed off peak, year round, with the "% Change" row results subject to the same considerations noted above.

| | SGS | | LGS | | SPS | | LPS | |
|---|---|---|---|---|---|---|---|---|
| Current Average $/kWh | $ | 0.09665 | $ | 0.07699 | $ | 0.06648 | $ | 0.05809 |
| Adjusted Average $/kWh | $ | 0.09821 | $ | 0.07887 | $ | 0.06870 | $ | 0.06048 |
| All Energy Used On Peak | $ | (0.01167) | $ | (0.01167) | $ | (0.01167) | $ | (0.01167) |
| New Average $/kWh | $ | 0.08654 | $ | 0.06721 | $ | 0.05703 | $ | 0.04881 |
| Change in Average $/kWh | $ | (0.01010) | $ | (0.00979) | $ | (0.00945) | $ | (0.00927) |
| % Change | | -10.45% | | -12.71% | | -14.21% | | -15.97% |

Q. Are customers likely to fall into either of these extremes?

A. No. The changes illustrated are the very limits of the $/kWh impact applicable to a given customer due to Staff's recommended first step in rate structure modernization for non-residential non-lighting rate schedules, namely, inclusion of a revenue-neutral ToU overlay in the rate structure of each rate schedule.

Q. Have you attempted to identify the bill changes customers can expect from service on the restructured SGS, LGS, SPS, and LPS rates that incorporates the ToU overlay, based on actual customer usage?

A. Yes. I obtained hourly customer usage for 100 customers in each of the classes SGS, LGS, and SPS, as well as for all LPS customers. I approximated each customer's current bills.[23] Then, using each customer's hourly loads for the test period, I found the net bill value of the ToU overlay. Next, I grossed up each customer's bill for the increase in class revenue needed to preserve class-level revenue neutrality. Finally, I netted the bill value of the ToU overlay with the grossed-up current bill to determine the net impact on each customer of movement to the restructured ToU rate schedule.

For each rate class, provided below are the largest bill decrease, the average bill change by customer count, and the largest bill increase, both in terms of dollar value and percent of customer bill. Note, the dollar value and percent for a given class may not be related to the same customer.

| **LPS** | **$** | **%** |
|---|---|---|
| Largest bill decrease: | $(39,231) | -1.05% |
| Average bill change by customer count: | $ 7,744 | 0.29% |
| Largest bill increase: | $106,939 | 1.43% |
| **SPS** | **$** | **%** |
| Largest bill decrease: | $(19,873) | -1.66% |
| Average bill change by customer count: | $ 230 | 0.56% |
| Largest bill increase: | $ 17,059 | 2.91% |
| **LGS** | **$** | **%** |
| Largest bill decrease: | $ (6,791) | -1.17% |
| Average bill change by customer count: | $ (360) | 0.09% |
| Largest bill increase: | $ 2,930 | 2.50% |
| **SGS** | **$** | **%** |
| Largest bill decrease: | $ (24) | -2.17% |
| Average bill change by customer count: | $ 28 | 0.93% |
| Largest bill increase: | $ 180 | 3.48% |

[23] Due to computing limitations and lack of 15 minute demand data, the bill calculation was simplified.

The right column of the following frequency distribution plot provides the total number of customers (out of the sample studied) experiencing the annual dollar per kWh of average bill change indicated in the left column.

| $/kWh | Number of Customers |
|---|---|
| $ (0.002) | 1 |
| $ (0.001) | 27 |
| $ - | 196 |
| $ 0.001 | 94 |
| $ 0.002 | 38 |
| $ 0.003 | 4 |
| $ 0.004 | 2 |
| $ 0.005 | 1 |

The full study results are attached as Schedule SLKL-d4.

**Discounts for Non-Residential Customers Related to Customer-Specific Infrastructure**

Q. What is Rider B?

A. Rider B provides:

> DISCOUNTS APPLICABLE FOR SERVICE TO SUBSTATIONS OWNED BY CUSTOMER IN LIEU OF COMPANY OWNERSHIP
> Where a customer served under rate schedules 4(M) or 11 (M) takes delivery of power and energy at a delivery voltage of 34kV or higher, Company will allow discounts from its applicable rate schedule as follows:
> *1. A monthly credit of $1.24/kW of billing demand for customers taking service at 34.5 or 69kV.
> *2. A monthly credit of $1.47/kW of billing demand for customers taking service at 115kV or higher.

Q. Did you study the relationship of cost causation and revenue sufficiency associated with the discounts provided to certain customers under Rider B?

A. No. As discussed in the following section I did not have information sufficient to study the cost causation of these discounts or the reasonableness of these charges.

Q. What is Rider C?

A. Rider C provides:

> RIDER C ADJUSTMENTS OF METER READINGS FOR METERING AT A VOLTAGE NOT PROVIDED FOR IN RATE SCHEDULE
> Where service is metered at a voltage other than the voltage provided for under the applicable rate schedule, an adjustment in both the kilowatt-hour (kWh) and kilowatt (kW) meter readings for the applicable service will be made as follows:
> For customers on rate schedule 2(M) or 3(M) taking delivery at secondary voltage:
> 1. Metered at Primary Voltage or higher, meter readings (kWh and kW) will be decreased by 0.68%. For customers on rate schedule 4(M) or 11(M):
> 2. Metered at 34kV or higher, meter readings (kWh and kW) will be decreased by 0.68%
> 3. Metered at Secondary voltage, meter readings (kWh and kW) will be increased by 0.68%
> 4. Delivered at 34 kV or higher, served through a single transformation to secondary voltage, and metered at secondary voltage, no Rider C adjustment will apply.
> *5. Served at transmission voltage, metered kWh will be increased to account for the energy line losses from the use of a transmission system other than Company's, if any.
> Company shall not be required to provide any distribution facilities beyond the metering point except when required for engineering or other valid reasons.

Q. Did you study the relationship of cost causation and revenue sufficiency associated with the discounts provided to certain customers under Rider C?

A. No. As discussed in the following section, I did not have information sufficient to study the cost causation of these discounts or the reasonableness of these charges.

Q. What is the recommended treatment of these adjustments?

A. Staff recommends that credits offered under Riders B & C be held constant in the absence of information to evaluate their reasonableness.

**Recommended Rate Structure Modernization**

Q. Could you outline a reasonable rate structure for Ameren Missouri's non-residential customers, moving forward?

A. Yes. As Ameren Missouri completes its installation of AMI metering, it is reasonable to require Ameren Missouri to prepare information to develop modern rate structures for potential implementation in its next rate case. Specific elements to consider are described below:

1. Customer and facilities charges related to customer annual NCP to recover customer-related costs and the cost of customer-specific infrastructure, with related determinants.
2. CP demand charges to collect remaining distribution and transmission costs, with related determinants. Staff suggests that CP periods of 12:01 pm – 8:00 pm are appropriate for the months May, June, July, August, September, and October, and that CP periods of 6:01 am – 10:00 am, and 4:00 pm – 8:00 pm are reasonable periods for the initial study of appropriate determinants and charges, subject to refinement.
3. ToU-based energy charges and determinants, where the differential of such charges is approximated to the difference in the average DA LMP across the time periods, but also recovers the costs of variable and stable revenue requirement production. Staff suggests that the time periods outlined below, subject to refinement, are

reasonable periods for the initial study of appropriate determinants and charges, subject to refinement. In particular, Staff recommends the study and potential introduction of shoulder seasons to replace a portion of the existing "winter" season of 8 months.

| | Off Peak | Regular | On Peak |
|---|---|---|---|
| Summer | 12 -9 AM | All Other | 1 - 9 PM |
| NonSummer | 11 PM - 6 AM | All Other | 7-9 AM, 5-9 PM |

4. Any revisions to the design and structure of the Reactive Demand charge that may be appropriate, with relevant determinants.

Q. Is it necessary for rates developed using the above process to be developed separately for rate classes such as "Small General," and "Large General," or "Small Primary," and "Large Primary?"

A. No. Rate classes have historically been a stand-in for assumptions about the timing and level of use by a given customer, based on the characteristic of a large number of customers. While the structure of rates described above will require adjustment for the differences in metered voltage, class distinctions would not be necessary.

Q. Are further calculations or adjustments necessary for the next Ameren Missouri rate case?

A. Yes. The cost-causation and rates of Riders B & C should be fully evaluated and updated as appropriate. The derivation of customer and facilities charges to recover customer-related costs and the cost of customer-specific infrastructure should facilitate much of this work. It would be reasonable to consider collapsing Riders B & C into such a calculation, such as providing a different facilities charge rate for customers with and without substation equipment included in utility ratebase.

Q. Is Staff recommending creation of thousands of separate customer or facility charge rates to account for every possible situation?

A. No. The monthly customer charge should be based on the Basic Customer charge calculation described in the 2019 Regulatory Assistance Project ("RAP") "Electric Cost Allocation for a New Era" manual, by Jim Lazar, Paul Chernick, William Marcus, and Mark LeBel.[24] This could likely be reasonably designed to vary based on the voltage at which customers are served, which Staff understands to consist of approximately 10 levels, 120/208, 120/240, 277/480, 4KV, 12KV, 13.2KV, 13.8KV, 25KV, 34kV, 65kV.

The facilities charge would be a per-kW charge. If sufficient data and evidence exists to vary the charge by voltage, it may be reasonable to create a different per-kW charge level for each of the voltage levels identified above, or some subset, such as "secondary," "primary," "subtransmission," and "transmission."

## COMPLIANCE AND BEST PRACTICES

Q. Did the Report and Order in ER-2021-0240 address plans to restructure the Large General Service and Small Primary Service rate schedules?

A. Yes. In the Report and Order at pages 29 – 31, the Commission addressed the issue "Should the Commission approve MECG's recommendation to require the Company to present analyses of alternatives to the hours-use rate design by 2025?" The decision paragraph at page 31 states:

[24] RAP Manual https://www.raponline.org/knowledge-center/electric-cost-allocation-new-era/

> The Commission agrees that the Large General Service and Small Primary Service rates should be redesigned to make them more comprehensible for customers. That redesign process can begin now with Ameren Missouri gathering information and insight from customers who are already being served by AMI meters. The Commission will establish, by separate order, a working case to facilitate the collaboration between Ameren Missouri, Staff, Public Counsel, and the affected customers in redesigning these rates.

Q. Has the referenced working case been established?

A. Not to my knowledge.

Q. Is information available to undertake that redesign in whole or in part in this case?

A. Complete customer hourly information is not yet available. Staff recommends proceeding with restructuring of these rate schedules for customers equipped with AMI meters, with customers to transition to these restructured rate schedules as AMI metering is installed for the remainder of the customers in each class.

Q. Did the Report and Order in ER-2021-0240 address study of the reasonableness and design of Rider B credits for customers who are billed at primary rates, but who own their own substation equipment?

A. Yes. In the Report and Order at pages 31 – 34, the Commission addressed whether it should require "Performance of a study of the reasonableness of the calculations and assumptions underlying Rider B to be filed as part of the Company's direct filing in its next general rate case?" The decision paragraph at pages 33-34 states:

> The Commission will not suspend the Rider B credits, but it believes the question of the proper calculation of those credits should be further addressed in Ameren Missouri's next rate case. Therefore, the Commission will direct Ameren Missouri to study the reasonableness of the calculations and assumption underlying Rider B and to file the results of that study as part of its direct filing in its next general rate case.

Q. Has Ameren Missouri prepared a study of the reasonableness of the calculations and assumptions underlying Rider B and filed those results in its direct filing in this rate case?

A. No.

Q. In the "Second Unanimous Stipulation and Agreement" filed 12/6/2021, in ER-2021-0240, Ameren Missouri agreed to "Rider C: The Company will conduct an engineering review of the Rider C loss rates by December 31, 2022 and will update the Rider C loss rates in its first electric general rate case filed after December 31, 2022 if the engineering review indicates an update of those loss rates is needed." Has Ameren Missouri conducted this engineering review?

A. Staff propounded a Data Request concerning the specified engineering review on January 5, 2023. No response has been received as of the time of this writing. The response due date for this request is January 25, 2023.

Q. In the Unanimous Stipulation and Agreement filed 11/24/2021, in ER-2021-0240, Ameren Missouri agreed at page 13 that "Company agrees to undertake reasonable data collection to facilitate allocation or assignment of labor and non-labor distribution expenses in future cases on a more detailed basis than application of the plant allocators, in good faith collaboration with Staff." Has this occurred?

A. No. Through a series of data requests, objections, responses, and supplemental responses Ameren Missouri has conceded that "The Company has not "retained" other information as of July 1, 2022, that it did not possess as of July 1, 2021…."[25] Responses and supplemental responses (when applicable) to DR Nos. 0198, 0198.1, 0198.3, and 0198.4 are

[25] DR No. 0198 with initial October 3, 2022 response and supplemental October 11 response, note, response dates on Ameren Missouri documents do not correspond with dates Ameren Missouri submitted DR responses into EFIS in all instances.

attached as Schedule SLKL-d5? Note, spreadsheets provided November 7, 2022 in response to DR No 0198.4 are omitted.

Q. What does the Commission need to order in this case to improve the reliability of CCoS studies and cost-based rate designs going forward?

A. Staff recommends continuation of the ordered studies and reviews discussed in this testimony, and the retention of data that is sufficient and appropriate for the rate modernization discussed here-in.

Q. Are there further recommendations related to improving Ameren Missouri's rate schedules?

A. Yes. Staff continues to recommend that Ameren Missouri make active progress toward billing customers based on the actual usage of customers within a given month or season to the extent that the charge applicable varies by season.

## CONCLUSION

Q. Does this conclude your direct 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 SARAH L.K. LANGE**

STATE OF MISSOURI )
) ss.
COUNTY OF COLE )

**COMES NOW CONTESSA KING** and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing *Direct Testimony of Sarah L.K. Lange*; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Sarah L.K. Lange

**SARAH L.K. LANGE**

**JURAT**

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 20th day of January 2023.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070

D. Suzie Mankin
Notary Public

## Sarah L.K. Lange

I received my J.D. from the University of Missouri, Columbia, in 2007, and am licensed to practice law in the State of Missouri. I received my B.S. in Historic Preservation from Southeast Missouri State University, and took courses in architecture and literature at Drury University. Since beginning my employment with the MoPSC I have taken courses in economics through Columbia College and courses in energy transmission through Bismarck State College, and have attended various trainings and seminars, indicated below.

I began my employment with the Commission in May 2006 as an intern in what was then known as the General Counsel's Office. I was hired as a Legal Counsel in September 2007, and was promoted to Associate Counsel in 2009, and Senior Counsel in 2011. During that time my duties consisted of leading major rate case litigation and settlement, and presenting Staff's position to the Commission, and providing legal advice and assistance primarily in the areas of depreciation, cost of service, class cost of service, rate design, tariff issues, resource planning, accounting authority orders, construction audits, rulemakings and workshops, fuel adjustment clauses, document management and retention, and customer complaints.

In July 2013 I was hired as a Regulatory Economist III in what is now known as the Tariff / Rate Design Department. In this position my duties include providing analysis and recommendations in the areas of RTO and ISO transmission, rate design, class cost of service, tariff compliance and design, and regulatory adjustment mechanisms and tariff design. I also continue to provide legal advice and assistance regarding generating station and environmental control construction audits and electric utility regulatory depreciation. I have also participated before the Commission under the name Sarah L. Kliethermes.

### Presentations

*Midwest Energy Policy Series – Impact of ToU Rates on Energy Efficiency* (August 14, 2020)

*Billing Determinants Lunch and Learn* (March 27, 2019)

*Support for Low Income and Income Eligible Customers, Cost-Reflective Tariff Training, in cooperation with U.S.A.I.D. and NARUC, Addis Ababa, Ethiopia* (February 23-26, 2016)

*Fundamentals of Ratemaking at the MoPSC* (October 8, 2014)

*Ratemaking Basics* (Sept. 14, 2012)

Participant in Missouri's Comprehensive Statewide Energy Plan working group on Energy Pricing and Rate Setting Processes.

## Relevant Trainings and Seminars

*Regional Training on Integrated Distribution System Planning for Midwest/MISO Region* (October 13-15, 2020)

*"Fundamentals of Utility Law"* Scott Hempling lecture series (January – April, 2019)

*Today's U.S. Electric Power Industry, the Smart Grid, ISO Markets & Wholesale Power Transactions* (July 29-30, 2014)

*MISO Markets & Settlements* training for OMS and ERSC Commissioners & Staff (January 27–28, 2014)

*Validating Settlement Charges in New SPP Integrated Marketplace* (July 22, 2013)

PSC Transmission Training (May 14 – 16, 2013)

Grid School (March 4–7, 2013)

Specialized Technical Training - Electric Transmission (April 18–19, 2012)

*The New Energy Markets: Technologies, Differentials and Dependencies* (June 16, 2011)

Mid-American Regulatory Conference Annual Meeting (June 5–8, 2011)

*Renewable Energy Finance Forum* (Sept. 29–Oct 3, 2010)

*Utility Basics* (Oct. 14–19, 2007)

## Testimony and Staff Memoranda

| Company | Case No. |
|---|---|
| | |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust its Revenues for Electric Service | ER-2022-0337 |
| NextEra Energy Transmission Southwest, LLC<br>In the Matter of the Application of NextEra Energy Transmission Southwest, LLC for a Certificate of Public Convenience and Necessity to Construct, Install, Own, Operate, Maintain, and Otherwise Control and Manage a 345 kV Transmission Line and associated facilities in Barton and Jasper Counties, Missouri | EA-2022-0234 |
| Spire Missouri, Inc.<br>In the Matter of Spire Missouri Inc.'s d/b/a Spire Request for Authority to Implement a General Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas | GR-2022-0179 |
| Evergy Missouri West, Inc. dba Evergy Missouri West<br>In the Matter of Evergy Missouri West, Inc. dba Evergy Missouri West for a Financing Order Authorizing the Financing of Extraordinary Storm Costs Through an Issuance of Securitized Utility Tariff Bonds | EF-2022-0155 |
| Evergy Metro, Inc. dba Evergy Missouri Metro<br>Evergy Missouri West, Inc. dba Evergy Missouri West<br>In the Matter of Evergy Metro, Inc. dba Evergy Missouri Metro's Request for Authority to Implement a General Rate Increase for Electric Service.<br>In the Matter of Evergy Missouri West, Inc. dba Evergy Missouri West's Request for Authority to Implement a General Rate Increase for Electric Service. | ER-2022-0129<br>ER-2022-0130 |
| The Empire District Electric Company d/b/a Liberty<br>In the Matter of the Petition of The Empire District Electric Company d/b/a Liberty to Obtain a Financing Order that Authorizes the Issuance of Securitized Utility Tariff Bonds for Energy Transition Costs Related to the Asbury Plant | EO-2022-0193 |
| The Empire District Electric Company d/b/a Liberty<br>In the Matter of the Petition of The Empire District Electric Company d/b/a Liberty to Obtain a Financing Order that Authorizes the Issuance of Securitized Utility Tariff Bonds for Qualified Extraordinary Costs | EO-2022-0040 |
| Ameren Transmission Company of Illinois<br>In the Matter of the Application of Ameren Transmission Company of Illinois for a Certificate of Convenience and Necessity Under Section 393.170 RSMo Relating to Transmission Investments in Southeast Missouri | EA-2022-0099 |
| The Empire District Electric Company d/b/a Liberty<br>In the Matter of the Request of The Empire District Electric Company d/b/a Liberty for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in its Missouri Service Area | ER-2021-0312 |

| Company | Case No. |
|---|---|
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust its Revenues for Electric Service | ER-2021-0240 |
| Ameren Transmission Company of Illinois<br>In the Matter of the Application of Ameren Transmission Company of Illinois for a Certificate of Public Convenience and Necessity to Construct, Install, Own, Operate, Maintain, and Otherwise Control and Manage a 138 kV Transmission Line and associated facilities in Perry and Cape Girardeau Counties, Missouri | EA-2021-0087 |
| Evergy Affiliates<br>In the Matter of the Application of Evergy Metro, Inc. d/b/a Evergy Missouri Metro and Evergy Missouri West, Inc. d/b/a Evergy Missouri West for Approval of a Transportation Electrification Portfolio | ET-2021-0151 |
| Spire Missouri, Inc.<br>In the Matter of Spire Missouri Inc.'s d/b/a Spire Request for Authority to Implement a General Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas | GR-2021-0108 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of the Request of Union Electric Company d/b/a Ameren for Approval of its Surge Protection Program | ET-2021-0082 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of the Request of Union Electric Company d/b/a Ameren Missouri to Implement the Delivery Charge Adjustment for the 1st Accumulation Period beginning September 1, 2019 and ending August 31, 2020 | GT-2021-0055 |
| The Empire District Electric Company<br>In the Matter of The Empire District Electric Company's Tariffs Approval of a Transportation Electrification Portfolio for Electric Customers in its Missouri Service Area | ET-2020-0390 |
| The Empire District Electric Company<br>In the Matter of The Empire District Electric Company's Tariffs to Increase Its Revenues for Electric Service | ER-2019-0374 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of of Union Electric Company d/b/a Ameren Missouri's Tariffs to Decrease Its Revenues for Electric Service | ER-2019-0335 |
| KCP&L Greater Missouri Operations Company<br>In the Matter of KCP&L Greater Missouri Operations Company Request for Authority to Implement Rate Adjustments Required by 4 CSR 240-20.090(8) And the Company's Approved Fuel and Purchased Power Cost Recovery Mechanism | ER-2019-0413 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of of Union Electric Company d/b/a Ameren Missouri's Tariffs to Increase Its Revenues for Natural Gas Service | GR-2019-0077 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri Revised Tariff Sheets | ET-2019-0149 |

| Company | Case No. |
|---|---|
| The Empire District Electric Company<br>In the Matter of The Empire District Electric Company's Revised Economic Development Rider Tariff Sheets | ET-2019-0029 |
| The Empire District Electric Company<br>In the Matter of a Proceeding Under Section 393.137 (SB 564) to Adjust the Electric Rates of The Empire District Electric Company | ER-2018-0366 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and a Certificate of Public Convenience and Necessity Authorizing it to Construct a Wind Generation Facility | EA-2018-0202 |
| Kansas City Power & Light Company<br>KCP&L Greater Missouri Operations Company<br>In the Matter of Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service | ER-2018-0145<br>ER-2018-0146 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of Efficient Electrification Program | ET-2018-0132 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of 2017 Green Tariff | ET-2018-0063 |
| Laclede Gas Company<br>Laclede Gas Company d/b/a Missouri Gas Energy<br>In the Matter of Laclede Gas Company's Request to Increase Its Revenue for Gas Service, In the Matter of Laclede Gas Company d/b/a Missouri Gas Energy's Request to Increase Its Revenue for Gas Service. | GR-2017-0215<br>GR-2017-0216 |
| Kansas City Power & Light Company<br>In the Matter of Kansas City Power & Light Company's Demand Side Investment Rider Rate Adjustment And True-Up Required by 4 CSR 240-3.163(8) | ER-2017-0316 |
| Kansas City Power & Light Company<br>In the Matter of Kansas City Power & Light Company's Demand Side Investment Rider Rate Adjustment And True-Up Required by 4 CSR 240-3.163(8) | ER-2017-0167 |
| KCP&L Great Missouri Operations Company<br>In the Matter of KCP&L Greater Missouri Operations Company's Annual RESRAM Tariff Filing | ET-2017-0097 |
| Grain Belt Express Clean Line, LLC<br>In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing It to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an Interconnection on the Maywood - Montgomery 345 kV Transmission Line | EA-2016-0358 |
| Kansas City Power & Light Company<br>In the Matter of Kansas City Power & Light Company's Demand Side Investment Rider Rate Adjustment And True-Up Required by 4 CSR 240-3.163(8) | ER-2016-0325 |

| Company | Case No. |
|---|---|
| Kansas City Power & Light Company<br>In the Matter of Kansas City Power & Light Company's Request for Authority to Implement A General Rate Increase for Electric Service | ER-2016-0285 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of Union Electric Company d/b/a Ameren Missouri for Permission and Approval and a Certificate of Public Convenience and Necessity Authorizing it to Offer a Pilot Subscriber Solar Program and File Associated Tariff | EA-2016-0207 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Electric Service | ER-2016-0179 |
| KCP&L Great Missouri Operations Company<br>In the Matter of KCP&L Greater Missouri Operations Company's Request for Authority to Implement a General Rate Increase for Electric Service | ER-2016-0156 |
| Empire District Electric Company<br>In the Matter of The Empire District Electric Company's Request for Authority to Implement a General Rate Increase for Electric Service | ER-2016-0023 |
| Ameren Transmission Company of Illinois<br>In the Matter of the Application of Ameren Transmission Company of Illinois for Other Relief or, in the Alternative, a Certificate of Public Convenience and Necessity Authorizing it to Construct, Install, Own, Operate, Maintain and Otherwise Control and Manage a 345,000-volt Electric Transmission Line from Palmyra, Missouri to the Iowa Border and an Associated Substation Near Kirksville, Missouri | EA-2015-0146 |
| Ameren Transmission Company of Illinois<br>In the Matter of the Application of Ameren Transmission Company of Illinois for Other Relief or, in the Alternative, a Certificate of Public Convenience and Necessity Authorizing it to Construct, Install, Own, Operate, Maintain and Otherwise Control and Manage a 345,000-volt Electric Transmission Line in Marion County, Missouri and an Associated Switching Station Near Palmyra, Missouri | EA-2015-0145 |
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of Union Electric Company d/b/a Ameren Missouri's 2nd Filing to Implement Regulatory Changes in Furtherance of Energy Efficiency as Allowed by MEEIA | EO-2015-0055 |
| Kansas City Power & Light Company<br>In the Matter of Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service | ER-2014-0370 |
| Empire District Electric Company<br>In the Matter of The Empire District Electric Company for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area | ER-2014-0351 |
| Union Electric Company d/b/a Ameren Missouri<br>City of O'Fallon, Missouri, and City of Ballwin, Missouri, Complainants v. Union Electric Company d/b/a Ameren Missouri, Respondent | EC-2014-0316 |

| **Company** | **Case No.** |
|---|---|
| Union Electric Company d/b/a Ameren Missouri<br>In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariff to Increase Its Revenues for Electric Service | ER-2014-0258 |
| Union Electric Company d/b/a Ameren Missouri<br>Noranda Aluminum, Inc., et al., Complainants, v. Union Electric Company d/b/a Ameren Missouri, Respondent | EC-2014-0224 |
| Grain Belt Express Clean Line, LLC<br>In the Matter of the Application of Grain Belt Express Clean Line LLC for a Certificate of Convenience and Necessity Authorizing It to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and an Associated Converter Station Providing an Interconnection on the Maywood - Montgomery 345 kV Transmission Line | EA-2014-0207 |
| KCP&L Great Missouri Operations Company<br>In the Matter of KCP&L Greater Missouri Operations Company's Application for Authority to Establish a Renewable Energy Standard Rate Adjustment Mechanism | EO-2014-0151 |
| Kansas City Power & Light Company<br>In the Matter of Kansas City Power & Light Company's Filing for Approval of Demand-Side Programs and for Authority to Establish A Demand-Side Programs Investment Mechanism | EO-2014-0095 |
| Veolia Energy Kansas City, Inc.<br>In the Matter of Veolia Energy Kansas City, Inc. for Authority to File Tariffs to Increase Rates | HR-2014-0066 |

**DISTRIBUTION SYSTEM – GENERATION FUNCTION**

***Staff DR 211 requested,*** "For each generation facility owned by Ameren Missouri or from which Ameren Missouri purchases power which is interconnected directly to the Ameren Missouri distribution system, please describe all infrastructure associated with interconnecting that generation to the distribution system. Please provide the installed cost of such infrastructure, and please indicate the engineering in-service date of all such infrastructure, the account to which such infrastructure has been recorded, and the retirement unit names associated with such infrastructure."

***On October 18, 2022, Ameren Missouri responded in pertinent part, stating as follows:*** Ameren identified 6 projects that fall under this request:

O'Fallon Renewable Energy Center

South St. Louis Renewable Energy Center

Montgomery Community Solar Center

Cape Girardeau Renewable Energy Center

Lambert Community Solar Center

Solar Partnership – BJC HealthCare

For descriptions of the infrastructure associated with interconnection of the generation to the distribution planning system, please see the attached Interconnection Study Reports:

O'Fallon Renewable Energy Center—see attached pdf titled DG37 - Belleau Solar PV Connection Study - Rev 0

South St. Louis Renewable Energy Center—see attached pdf titled DG90 - Habitat_Generation Interconnection Study Report-Final

Montgomery Community Solar Center—see attached pdf titled Solar Phase II PV Connection Study - Rev 3

Cape Girardeau Renewable Energy Center—see attached pdf titled DG93 - Cape Girardeau REC Connection Study Report - Rev 0

Lambert Community Solar and Solar Partnership with BJC occurred before interconnection study reports were performed in the manner attached. Please see the general description of the equipment used in the interconnections for these two projects below:

Lambert Community Solar Center - The district installed (1) 1000kVA pad mount transformer and ~160 ft of #2AL cable. The cable was pulled into 4" PVC conduit and terminated at a new 35'-1 wood pole and fused with (3) 50T fuses.

Solar Partnership – BJC HealthCare - The district removed (1) 300kVA pad mounted transformer and installed (1) 2000kVA pad mount transformer. 20 feet of #2Al, 15kV primary cable was pulled through existing concrete encased 5" EB35 conduit and terminated at a Type 6 non-DA SWGR with 100E SLW fusing.

For Plant Accounting data related to the interconnection, including installed costs, engineering in-service dates, accounts, and retirement units for the following 4 Projects:

O'Fallon Renewable Energy Center

South St. Louis Renewable Energy Center

Montgomery Community Solar Center

Cape Girardeau Renewable Energy Center

Please see attachment "MPSC DR 0211".

Lambert Community Solar Center and Solar Partnership – BJC HealthCare project interconnection work was performed under Standard Work Orders and as such, were unitized with the costs from all jobs charged to them in a given quarter or year. The costs of these projects are blended with the costs of other jobs and therefore a breakout of those specific costs does not exist." ***Three study documents and an Excel spreadsheet were also provided. This response was provided after an objection and further discussion clarifying that Staff was not seeking information related to net metered customers.***

***Step-through of Staff Analysis***

1. Staff relied on the information for Accounts 364-373 in Ameren Missouri's response to Staff DR 211 in the spreadsheet MPSC DR 0211.
2. Staff relied on the information for Accounts 364-373 in the Continuing Property Record provided by Ameren Missouri in response to Staff DR 125.
    a. Staff used the "pivot table" functionality of Excel to find the average price for each retirement unit contained in each of these accounts across vintage.
    b. Staff relied on the quantities of each retirement unit identified in the narrative portion of Ameren Missouri's response to DR 211 reproduced above multiplied by the average price of each indicated retirement unit to reasonably estimate related rate base associated with each solar installation which was recorded to a distribution account.
3. Staff's study was impaired by the data limitations noted below.

***Data Limitations and Recommendations***

1. Identify the appropriate asset by asset number for Lambert Community Solar Center and Solar Partnership – BJC HealthCare because Ameren Missouri represents that the interconnection work was performed under Standard Work Orders and as such, were unitized with the costs from all jobs charged to them in a given quarter or year.

Staff recommends Ameren Missouri be ordered to create subaccounts within distribution accounts and transmission accounts (plant and reserve) for recording infrastructure related to utility-owned generation.

***Results of Staff Analysis***

Prior to proceeding with its distribution system allocations, Staff classified the following plant values as customer-specific, to the indicated classes and voltages:

| Row Labels | Sum of Activity Cost | |
|---|---|---|
| 1364000-Poles-Towers-Fixtures | $ | 220,091 |
| 1365000-Overhead Conductor & Device | $ | 380,689 |
| 1366000-Underground Conduit | $ | 281 |
| 1367000-Undergrd Conductor & Device | $ | 141,128 |
| 1369002-Services - Underground | $ | 2 |
| 1373000-Street Lighting & Signal Sy | $ | 595 |
| **Grand Total** | **$** | **742,785** |

Staff adjusted its working version of the updated CPR for the retirement unit quantities associated with these plant values in conjunction with its application of the customer-specific infrastructure adjustment described below.

**<u>DISTRIBUTION SYSTEM – CUSTOMER SPECIFIC CLASSIFICATION.</u>**

***Staff DR 183 requested,*** "For each voltage at which service is provided to large primary service (Rate Schedule 11M) customers, or at which three or more customers which are not large primary service customers are served, please identify (1) the retirement units and quantities associated with providing one span of overhead (and the equivalent distance of underground) infrastructure including devices, and (2) the typical meter(s) and related installations. If these items vary with usage characteristics of customers, please provide items (1) and (2) for a minimum of high, medium, and low infrastructure customers. Please specify the distance assumed for a span length for each voltage, or assume a length of 100' if an average span length is not available. Please clarify the number of conductors assumed in each part one and two. Please make any assumptions necessary to respond to this request to the extent that further specifications are necessary to provide the information requested, stating such assumptions in the response." ***On 10/3/2022 Ameren Missouri responded:***

1. Secondary spans are assumed to be roughly 120 feet. Primary spans could be up to 200 feet. The number of conductors would be two for single phase, three for two phase, and four for three phase. The phase would be on a case-by-case basis.

4.16 KV

- Serving 11(M) customers – Generally by 34/4 KV substations on the customer's property
- Serving 4(M) and secondary customers – last span either 1/0 AAAC or 556 AA.
- Being built at same standards as 12 KV. Has a higher number of pieces of equipment per mile than 12 KV because of greater number of circuits, less capacity, fewer customers per mile

o Typical Pole prior to customer primary metering

▪ 50 class 1 Pole - POLE,WOOD,50'

▪ Fiberglass 10 ft Arm Assembly – CROSSARM,7'-11'

▪ Loopover Pole Top Insulator – Minor Material

• Pole top Pin Insulator – Minor Material

• Vice Top Insulator – Minor Material

• Deadend Insulator (qty 2) – Minor Material

• Guy Strain Insulator (qty 2) – Minor Material

▪ 1/0 AAAC or 556 AAC conductor – WIRE,1/0,ALUMINUM or WIRE,556.5MCM,ALUMINUM

o If deemed necessary, group operated switch installed (on pole between first and customer pole)

▪ Sometimes needed due to meter pole access

▪ 50 class 1 Pole – POLE,WOOD,50' ▪ Group operated 15kV Switch – SWITCH,GANG-OPERATED,27000V & LESS

o Primary metering Pole provided by Customer

▪ Ameren metering provided and installed by Ameren

12.47 KV, 13.2 KV, 13.8 KV

• Serving 11(M) customers – customers in excess of 10MVA served by substations on the customer's property.

• Customers below 10MVA could be served from the general distribution system – last span either 1/0 AAAC or 556AA o Typical Pole prior to customer primary metering

▪ 60 class 1 Pole – POLE,WOOD,60'

▪ Fiberglass 10 ft Arm Assembly – CROSSARM,7'-11'

▪ Loopover Pole Top Insulator – Minor Material

• Pole top Pin Insulator – Minor Material

• Vice Top Insulator – Minor Material

• Deadend Insulator (qty 2) – Minor Material

• Guy Strain Insulator (qty 2) – Minor Material

▪ 1/0 AAAC or 556 AAC conductor – WIRE,1/0,ALUMINUM or WIRE,556.5MCM,ALUMINUM

o If deemed necessary, group operated switch installed (on pole between first and customer pole)

▪ Sometimes needed due to meter pole access

▪ 50 class 1 Pole – POLE,WOOD,50'

▪ Group operated 15kV Switch – SWITCH,GANG-OPERATED,27000V & LESS

o Primary metering Pole provided by Customer ▪ Ameren metering provided and installed by Ameren

25 KV

• Used in limited locations on the system.

• Serving 11(M) – from general distribution system – last span 1/0 AAAC

• Serving 4(M) and secondary customers -last span 1/0 AAAC

- o Typical Pole prior to customer primary metering
  - ▪ Composite or Steel Pole 55 ft+ - POLE,PWR,COMPOSITE,60FT,FIBGLS
  - ▪ 1/0 AAAC or 556 AAC conductor – WIRE,1/0,ALUMINUM or WIRE,556.5MCM,ALUMINUM
- o If deemed necessary, group operated switch installed (on pole between first and customer pole)
  - ▪ Composite or Steel Pole 55 ft+ - POLE,PWR,COMPOSITE,60FT,FIBGLS
  - ▪ 34kV Load break group operated switch – SWITCH,GANGOPERATED,OVER 27,000V
  - ▪ 1/0 AAAC or 556 AAC conductor – WIRE,1/0,ALUMINUM or WIRE,556.5MCM,ALUMINUM
- o Primary metering Pole provided by Customer ▪ Ameren metering provided and installed by Ameren

Secondary Service Overhead

120/240V 3W

- • #2 triplex - CABLE,TRIPLEX,2-2 & 1-2 BARE MSGR,AL
- • 1/0 triplex - CABLE,TRIPLEX,2-1/0AA & 1/0 BARE MSGR,AL
- • 4/0 triplex - CABLE,TRIPLEX,4/0

Underground 120/240V 3W

- • 3/0 AL - CABLE,600V,2-3/0 X 1-1/0,AL
- • 350 AL - CABLE,600V,2-350MCM X 1-3/0,XLP

Overhead 120/208V & 277/480V 4W

• 1/0 quad - CABLE,QUADRUPLEX,600V,3-1/0AA & 1/0AA BARE MSGR,AL

• 4/0 quad - CABLE,QUADRUPLEX,4/0

2. Please refer to the Tom Hickman's workpaper "2022 Meter Allocators Final" in his direct testimony. The "2022" Tab contains information relative to the meter installations of all customers, broken down by rate class.

***On November 2, Ameren Missouri supplemented this response with 183s1, stating,*** "This supplemental response clarifies the original response to 183, specifically the section relating to Secondary Service. The original response indicated that "#2 triplex - CABLE,TRIPLEX,2-2 & 1-2 BARE MSGR,AL" and "3/0 AL - CABLE,600V,2-3/0 X 1-1/0,AL" would be assets used in providing a span of overhead at secondary. The assets represented by these two retirement unit descriptions would typically be used as services, not a span of overhead infrastructure, and should not have been included in the response to DR 183."

***Staff DRs 183.1 – 183.4 requested the account or accounts to which each retirement unit identified in Ameren Missouri's response to DR 183 was recorded.***

***Staff DR 183.5 requested,*** "(a) For each service voltage described in Ameren Missouri's response to DR 183, please identify the number of customers physically served at that voltage as of 6/30/2022. (b) For each service voltage described in Ameren Missouri's response to DR 183, please identify the number of customers served on each rate schedule at that voltage as of 6/30/2022 to the fullest extent information is available." ***On December 5, 2022 Ameren Missouri responded with the following information:***

| Rate Schedule | 120/208 | 120/240 | 12KV | 13.2KV | 13.8KV | 25KV | 277/480 | 4KV |
|---|---|---|---|---|---|---|---|---|
| 11M | 0 | 0 | 15 | 1 | 3 | 0 | 0 | 17 |
| 11M - TOU | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 |
| RES - Anytime | 10156 | 620889 | 1 | 0 | 0 | 0 | 932 | 1 |
| RES - Anytime (Legacy TOD) | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 |
| RES - Evening Morning Saver | 26592 | 410876 | 0 | 0 | 0 | 0 | 667 | 0 |
| RES - Smart Saver | 37 | 471 | 0 | 0 | 0 | 0 | 0 | 0 |
| RES - Overnight Saver | 74 | 690 | 0 | 0 | 0 | 0 | 6 | 0 |
| RES - Ultimate Saver | 8 | 485 | 0 | 0 | 0 | 0 | 1 | 0 |
| 2M | 24173 | 98863 | 28 | 0 | 3 | 0 | 4682 | 53 |
| 2M - TOU | 146 | 1430 | 0 | 0 | 0 | 0 | 46 | 0 |
| 3M | 4116 | 1018 | 28 | 0 | 4 | 0 | 4817 | 35 |
| 3M - TOU | 16 | 7 | 0 | 0 | 0 | 0 | 28 | 0 |
| 4M | 0 | 0 | 281 | 4 | 50 | 1 | 0 | 188 |
| 4M - TOU | 0 | 0 | 10 | 0 | 1 | 0 | 0 | 4 |
| 6M | 36 | 913 | 3 | 0 | 2 | 0 | 32 | 409 |

***Staff DR 203 requested,*** "Please identify each radial circuit operating at a primary, subtransmission, or transmission voltage having one end point at a substation and one end point at a customer facility, from which no other customer currently takes service. For each such circuit, please identify the name of the substation and the name of the customer."

***On October 3, 2022, Ameren Missouri responded*** "Please see the attached file "Ameren_mileage_by_circuit_Jan_2022". The "FeederALL" Tab includes information on Ameren's circuits in the form of an annual report created in January each year. Circuits currently serving one customer can be identified filtering column X to "1". There 124 such circuits at this time (including Primary and Subtransmission). Please note, many of these circuits may include open tie switches which could be used to provide service to other nearby customers in the event of an outage, so the exact customers being served by those circuits could change in an instant.

Please see "SingleCustomerNames" tab for a list of the customer names for the customers served by those circuits. Please note, 3 of the circuits do not have a customer name listed. This is due to timing from when the report is generated at the beginning of the year to the current time. Those circuits likely had a single customer being served but changes to the system between when this report was created and when the list of the names of those customers were being generated have caused that to no longer currently be the case."

***On October 2, 2022 Staff submitted DRs 203.1 and 203.2 to obtain the rate schedule information under which each customer identified in the response to DR 203 is billed. Ameren Missouri provided this information on November 2, 2022. This response caveated the information provided noting,*** "Please note, many of these feeders contain open tie switches. At any point in time, a tie switch may close resulting in additional customers receiving power from a feeder. Our ability to provide information about what feeders are serving what customers is limited to a point in time, because the opening and closing of tie switches may occur at any point in time which could create new electrical end points of a feeder, i.e., points at which power may enter or leave the feeder."[1] ***In response to this concern raised by Ameren Missouri, Staff submitted, DR 203.3 on November 8, 2022, requesting,*** "(a) Please identify by circuit number those circuits identified in response to DR 203 which include an open switch. (b) For each such circuit identified in part A, identify the interconnecting circuit and the end points of that circuit. (c) For each circuit identified in part A, describe the line that exists between the openable switch and the single customer, including but not limited to, the voltage, phase, and whether the line is located overhead or underground." ***Ameren Missouri objected to this request on November 18, 2022.***

***The information received from the 203 DR series is summarized below:***

[1] The response also noted use of lines to serve non-retail load, which Staff has not attempted to address in this study.

| Rate Schedule | SRC VOLTS CLASS | Sum of 1PH OH MILE | Sum of 3PH OH MILE | Sum of 1PH UG MILE | Sum of 3PH UG MILE |
|---|---|---|---|---|---|
| Non-Retail | 12KV | - | 0.15 | - | 0.11 |
| Non-Retail | 13.8KV | - | - | - | 1.29 |
| Non-Retail | 34.5KV | - | 34.68 | - | 3.20 |
| Non-Retail | 4KV | - | 0.06 | - | 4.20 |
| 4M - SPS | 12KV | 0.15 | 1.46 | 0.08 | 1.37 |
| 4M - SPS | 13.8KV | - | 0.01 | - | 0.41 |
| 4M - SPS | 2.4KV DELTA | - | 0.02 | - | - |
| 4M - SPS | 34.5KV | - | 317.59 | - | 23.03 |
| 4M - SPS | 4KV | - | 0.41 | - | 2.06 |
| 4M - SPS | 69KV | - | 39.13 | - | - |
| 2M - SGS | 12KV | - | 0.10 | - | 0.06 |
| 2M - SGS | 13.8KV | - | - | - | 2.79 |
| 2M - SGS | 34.5KV | - | 47.66 | - | 9.01 |
| 2M - SGS | 4KV | - | 0.29 | - | 1.66 |
| 3M - LGS | 12KV | - | - | - | 0.16 |
| 3M - LGS | 13.8KV | - | - | - | 3.59 |
| 3M - LGS | 34.5KV | - | 57.89 | - | 2.74 |
| 3M - LGS | 4KV | - | - | - | 1.11 |
| 1M - Residential | 12KV | 0.19 | - | - | - |
| 1M - Residential | 13.8KV | - | - | - | 3.09 |
| 1M - Residential | 34.5KV | - | 22.83 | - | - |
| 6M - Cust. Owned Lighting | 12KV | - | 0.52 | - | 0.15 |
| 11M - LPS | 13.8KV | - | 0.02 | - | 4.25 |
| 11M - LPS | 34.5KV | - | 85.61 | - | 37.55 |
| 11M - LPS | 69KV | - | 21.54 | - | 0.00 |
| **Grand Total** | | **0.34** | **629.96** | **0.08** | **101.83** |

***Step-through of Staff Analysis***

1. Staff relied on the information for Accounts 364-373 in the Continuing Property Record provided by Ameren Missouri in response to Staff DR 125.
2. Staff used the "pivot table" functionality of Excel to find the average price for each retirement unit contained in each of these accounts across vintage.
3. Staff relied on the quantities of each retirement unit identified in response to DR 183.1 et seq multiplied by the quantity of customers by rate schedule by voltage to reasonably estimate the number of retirement units and related rate base associated with each group of customers, by rate schedule, by voltage. This information is not assumed to be a reflection of the precise property involved in serving these customers, but rather a reasonable basis for an estimate of the property involved.

a. Where multiple options for a given retirement unit were provided, Staff prorated the quantities among the retirement units. For example, if a conductor could be Hypothetical Retirement Unit 1, or Hypothetical Retirement Unit 2, and the DR response indicated that 200' of conductor times 4 spans were required (800' total) Staff applied the requirement as 400' of Hypothetical Retirement Unit 1, and 400' of Hypothetical Retirement Unit 2.

b. Staff's study was impaired by the data limitations noted below.

4. Staff reviewed the data provided in response to DR 203 et seq to estimate the mileage of single and 3 phase circuits associated with each class, at each transmission voltage.

a. Because insufficient information was provided for underground investment in Ameren Missouri's response to DR 183 et seq, Staff relied on the cost information associated with overhead spans by distance as an imputed value for underground circuits. This is a conservative imputation in that undergrounding is typically more cost-intensive than overhead.

b. Staff relied on the 4kV values for 2.4kV customers due to lack of data.

c. Staff relied on the 25kV values for 34.5kV and 69kV customers due to lack of data.

d. Staff did not attempt to quantify substation assets or costs in its analysis at this time.

5. Given the level of assumptions necessary to complete this calculation, Staff prorated the values found over accounts 364 Poles, Towers, & Fixtures, 365 - Overhead Conductor & Devices, 366 – Conduit, and 367 - Underground Conductor & Devices.

***Data Limitations and Recommendations***

1. Staff was unable to correlate "Minor Materials" retirement units with CPR data to obtain pricing information.
2. For customers served at 4 kV and above, the response to DR 183 noted a substation is generally located on the customer's property. No information was provided concerning these substations.
3. Number of secondary services:
    a. Based on the update CPR, 1365000-Overhead Conductor & Device/CABLE,TRI,2-4&1-4 BARE MSGR,AL has a total quantity of negative 925 feet, or negative 8 services of 120' in length. Staff excluded this type from its analysis. Remaining 120/240 cable types are 1365000-Overhead Conductor & Device/CABLE,TRI,2-1/0AA&1/0 BARE MSGR,AL, with sufficient quantities for 528 services of 120' in length, and 1365000-Overhead Conductor & Device/CABLE,TRI,2-4&1-4 BARE MSGR,AL, with sufficient quantities for 178,944 services of 120' in length.
    b. Ameren Missouri's response to DR 183.5 indicated the number of total customers served at 120/240 voltage as 1,135,675. Staff identified the number of 120' services that could be associated with CABLE,600V,2-3/0 X 1-1/0,AL and CABLE,TRI,2-2&1-2 BARE MSGR,AL as reflected in the services accounts as 199,334.[2] The retirement units specified by Ameren as providing final span to customers at 120/240 volts are recorded in the update CPR in

[2] The Response to DR 318 indicated that service count information by class, voltage, and underground/overhead was not available.

sufficient quantities 378,806 final 120' spans. This is almost exactly 1/3 the number of secondary customers identified by Ameren Missouri as being served at 120/240 volts. Staff assumes this is indicative of multiple customers receiving service from one final span, or of errors in record keeping.

Staff recommends in future cases, Ameren Missouri provide a study of the customer-specific infrastructure, by account, by rate schedule, by voltage.

***Results of Staff Analysis***

Prior to proceeding with its distribution system allocations, Staff classified the following plant values as customer-specific, to the indicated classes and voltages:

| | 364 Poles, Towers, & Fixtures | 365 - Overhead Conductor & Devices | 367 - Underground Conductor & Devices | Total |
|---|---|---|---|---|
| **12.47,13.2,13.8 - 11M** | $ 58,194 | $ 109,778 | | $ 167,972 |
| **12.47,13.2,13.8 - 2M** | $ 85,905 | $ 162,053 | | $ 247,958 |
| **12.47,13.2,13.8 - 3M** | $ 88,677 | $ 167,280 | | $ 255,957 |
| **12.47,13.2,13.8 - 4M** | $ 958,815 | $ 1,808,720 | | $ 2,767,535 |
| **12.47,13.2,13.8 - 6M** | $ 13,856 | $ 26,138 | | $ 39,993 |
| **12.47,13.2,13.8 - Residential** | $ 2,771 | $ 5,228 | | $ 7,999 |
| **120/208 & 277/480 - 2M** | | $ 535,467 | | $ 535,467 |
| **120/208 & 277/480 - 3M** | | $ 165,487 | | $ 165,487 |
| **120/208 & 277/480 - 6M** | | $ 1,254 | | $ 1,254 |
| **120/208 & 277/480 - Residential** | | $ 709,231 | | $ 709,231 |
| **120/240 - 2M** | | $ 18,180,276 | $ 15,935,108 | $ 34,115,384 |
| **120/240 - 3M** | | $ 29,363 | $ 25,737 | $ 55,099 |
| **120/240 - 6M** | | $ 26,154 | $ 22,924 | $ 49,079 |
| **120/240 - Residential** | | $ 29,604,629 | $ 25,948,615 | $ 55,553,245 |
| **25kV - 11M** | $ 85,229 | $ 27,343 | | $ 112,572 |
| **4KV - 11M** | $ 49,881 | $ 94,095 | | $ 143,976 |
| **4KV - 2M** | $ 146,871 | $ 277,058 | | $ 423,929 |
| **4KV - 3M** | $ 96,990 | $ 182,963 | | $ 279,953 |
| **4KV - 4M** | $ 532,059 | $ 1,003,683 | | $ 1,535,742 |
| **4KV - 6M** | $ 1,133,397 | $ 2,138,053 | | $ 3,271,450 |
| **4KV - Residential** | $ 2,771 | $ 5,228 | | $ 7,999 |
| | $ 3,255,415 | $ 55,259,478 | $ 41,932,385 | $ 100,447,278 |

Staff adjusted its working version of the updated CPR for the retirement unit quantities associated with these plant values in conjunction with its application of the generation functionalization described above.

Staff did not incorporate its analysis related to DR 203 et seq into its working version of the updated CPR due to the number of assumptions made. The value of this portion of the classification and allocations are provided below:

| | Combined 1 phase | Total 1 Phase | Combined 3 phase | Total 3 Phase |
|---|---|---|---|---|
| **Non-Retail - 12KV** | **-** | $ - | **0.259** | $ 29,128 |
| **Non-Retail - 13.8KV** | **-** | $ - | **1.293** | $ 145,411 |
| **Non-Retail - 34.5KV** | **-** | $ - | **37.883** | $ 47,662,567 |
| **Non-Retail - 4KV** | **-** | $ - | **4.259** | $ 479,126 |
| **4M - SPS - 12KV** | **0.228** | $ 18,600 | **2.826** | $ 317,921 |
| **4M - SPS - 13.8KV** | **-** | $ - | **0.417** | $ 46,864 |
| **4M - SPS - 2.4KV DELTA** | **-** | $ - | **0.019** | $ 2,135 |
| **4M - SPS - 34.5KV** | **-** | $ - | **340.619** | $ 428,548,103 |
| **4M - SPS - 4KV** | **-** | $ - | **2.465** | $ 277,287 |
| **4M - SPS - 69KV** | **-** | $ - | **39.126** | $ 49,226,216 |
| **2M - SGS - 12KV** | **-** | $ - | **0.154** | $ 17,380 |
| **2M - SGS - 13.8KV** | **-** | $ - | **2.794** | $ 314,356 |
| **2M - SGS - 34.5KV** | **-** | $ - | **56.667** | $ 71,295,085 |
| **2M - SGS - 4KV** | **-** | $ - | **1.947** | $ 218,991 |
| **3M - LGS - 12KV** | **-** | $ - | **0.162** | $ 18,253 |
| **3M - LGS - 13.8KV** | **-** | $ - | **3.594** | $ 404,340 |
| **3M - LGS - 34.5KV** | **-** | $ - | **60.630** | $ 76,280,671 |
| **3M - LGS - 4KV** | **-** | $ - | **1.105** | $ 124,358 |
| **1M - Residential - 12KV** | **0.195** | $ 15,899 | **-** | $ - |
| **1M - Residential - 13.8KV** | **-** | $ - | **3.092** | $ 347,861 |
| **1M - Residential - 34.5KV** | **-** | $ - | **22.831** | $ 28,724,331 |
| **6M - Cust. Owned Lighting - 12KV** | **-** | $ - | **0.675** | $ 75,896 |
| **11M - LPS - 13.8KV** | **-** | $ - | **4.266** | $ 479,970 |
| **11M - LPS - 34.5KV** | **-** | $ - | **123.165** | $ 154,959,773 |
| **11M - LPS - 69KV** | **-** | $ - | **21.544** | $ 27,104,828 |
| **Total** | **0.422** | $ 34,499 | **731.792** | $ 887,100,849 |

| Class | Sample Customer # | Approximate current annual bill | Net impact of Overlay | % Change to Annual Bill | $/kWh Change |
|---|---|---|---|---|---|
| LPS | 1 | $ 1,915,258 | $ 1,808 | 0.09% | $ 0.00006 |
| LPS | 2 | $ 2,084,275 | $ 2,053 | 0.10% | $ 0.00006 |
| LPS | 3 | $ 2,426,240 | $ 4,364 | 0.18% | $ 0.00011 |
| LPS | 4 | $ 6,783,592 | $ 7,762 | 0.11% | $ 0.00007 |
| LPS | 5 | $ 4,866,422 | $ (20,576) | -0.42% | $ (0.00023) |
| LPS | 6 | $ 912,442 | $ 11,179 | 1.23% | $ 0.00107 |
| LPS | 7 | $ 3,307,878 | $ 13,246 | 0.40% | $ 0.00025 |
| LPS | 8 | $ 2,667,478 | $ 26,759 | 1.00% | $ 0.00072 |
| LPS | 9 | $ 3,380,243 | $ 15,123 | 0.45% | $ 0.00028 |
| LPS | 10 | $ 3,412,208 | $ 3,118 | 0.09% | $ 0.00006 |
| LPS | 11 | $ 2,250,156 | $ (9,350) | -0.42% | $ (0.00023) |
| LPS | 12 | $ 7,785,778 | $ (20,524) | -0.26% | $ (0.00015) |
| LPS | 13 | $ 1,660,755 | $ 5,275 | 0.32% | $ 0.00019 |
| LPS | 14 | $ 2,830,656 | $ (2,296) | -0.08% | $ (0.00005) |
| LPS | 15 | $ 3,362,550 | $ 30,780 | 0.92% | $ 0.00071 |
| LPS | 16 | $ 3,847,356 | $ 5,948 | 0.15% | $ 0.00010 |
| LPS | 17 | $ 3,088,914 | $ 4,785 | 0.15% | $ 0.00009 |
| LPS | 18 | $ 3,979,183 | $ 11,428 | 0.29% | $ 0.00018 |
| LPS | 19 | $ 2,745,114 | $ (7,587) | -0.28% | $ (0.00016) |
| LPS | 20 | $ 1,330,821 | $ 15,809 | 1.19% | $ 0.00080 |
| LPS | 21 | $ 10,795,978 | $ 32,296 | 0.30% | $ 0.00019 |
| LPS | 22 | $ 3,029,159 | $ 1,403 | 0.05% | $ 0.00003 |
| LPS | 23 | $ 1,386,189 | $ 4,043 | 0.29% | $ 0.00018 |
| LPS | 24 | $ 2,140,949 | $ 450 | 0.02% | $ 0.00001 |
| LPS | 25 | $ 2,172,034 | $ (3,304) | -0.15% | $ (0.00008) |
| LPS | 26 | $ 3,228,388 | $ (2,010) | -0.06% | $ (0.00004) |
| LPS | 27 | $ 10,352,257 | $ (24,636) | -0.24% | $ (0.00014) |
| LPS | 28 | $ 2,465,770 | $ 2,047 | 0.08% | $ 0.00005 |
| LPS | 29 | $ 3,614,993 | $ (9,205) | -0.25% | $ (0.00014) |
| LPS | 30 | $ 4,190,144 | $ (15,152) | -0.36% | $ (0.00020) |
| LPS | 31 | $ 3,046,469 | $ (13,291) | -0.44% | $ (0.00024) |
| LPS | 32 | $ 1,653,564 | $ (4,258) | -0.26% | $ (0.00016) |
| LPS | 33 | $ 3,734,114 | $ (39,231) | -1.05% | $ (0.00079) |
| LPS | 34 | $ 3,476,136 | $ (8,985) | -0.26% | $ (0.00015) |
| LPS | 35 | $ 7,837,356 | $ 106,939 | 1.36% | $ 0.00086 |
| LPS | 36 | $ 1,865,504 | $ 24,478 | 1.31% | $ 0.00097 |
| LPS | 37 | $ 1,368,873 | $ 1,435 | 0.10% | $ 0.00006 |
| LPS | 38 | $ 1,889,236 | $ 7,822 | 0.41% | $ 0.00027 |
| LPS | 39 | $ 2,854,927 | $ (25) | 0.00% | $ (0.00000) |
| LPS | 40 | $ 1,944,909 | $ (8,803) | -0.45% | $ (0.00024) |
| LPS | 41 | $ 10,623,983 | $ (22,047) | -0.21% | $ (0.00012) |
| LPS | 42 | $ 4,397,053 | $ (13,925) | -0.32% | $ (0.00018) |
| LPS | 43 | $ 2,008,672 | $ 13,231 | 0.66% | $ 0.00042 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| LPS | 44 | $ | 1,940,073 | $ | 19,070 | 0.98% | $ | 0.00066 |
| LPS | 45 | $ | 1,784,199 | $ | (2,287) | -0.13% | $ | (0.00008) |
| LPS | 46 | $ | 2,166,825 | $ | 24,199 | 1.12% | $ | 0.00076 |
| LPS | 47 | $ | 3,366,990 | $ | (13,757) | -0.41% | $ | (0.00022) |
| LPS | 48 | $ | 3,011,142 | $ | (1,575) | -0.05% | $ | (0.00003) |
| LPS | 49 | $ | 2,138,740 | $ | 4,145 | 0.19% | $ | 0.00011 |
| LPS | 50 | $ | 5,225,264 | $ | 19,587 | 0.37% | $ | 0.00023 |
| LPS | 51 | $ | 1,857,695 | $ | 11,213 | 0.60% | $ | 0.00039 |
| LPS | 52 | $ | 1,906,806 | $ | 6,769 | 0.36% | $ | 0.00022 |
| LPS | 53 | $ | 3,757,209 | $ | 6,341 | 0.17% | $ | 0.00010 |
| LPS | 54 | $ | 5,853,162 | $ | 44,903 | 0.77% | $ | 0.00053 |
| LPS | 55 | $ | 1,971,768 | $ | 13,439 | 0.68% | $ | 0.00044 |
| LPS | 56 | $ | 2,543,873 | $ | 36,338 | 1.43% | $ | 0.00113 |
| LPS | 57 | $ | 5,154,570 | $ | 43,171 | 0.84% | $ | 0.00054 |
| LPS | 58 | $ | 3,006,331 | $ | 24,102 | 0.80% | $ | 0.00055 |
| LPS | 59 | $ | 4,796,948 | $ | 34,420 | 0.72% | $ | 0.00049 |
| LPS | 60 | $ | 2,472,264 | $ | 15,875 | 0.64% | $ | 0.00041 |
| LPS | 61 | $ | 2,925,397 | $ | 17,557 | 0.60% | $ | 0.00037 |
| LPS | 62 | $ | 990,616 | $ | 10,749 | 1.09% | $ | 0.00093 |
| LPS | 63 | $ | 2,170,607 | $ | 25,789 | 1.19% | $ | 0.00099 |
| LPS | 64 | $ | 2,654,264 | $ | 23,162 | 0.87% | $ | 0.00068 |
| LPS | 65 | $ | 2,228,451 | $ | 11,775 | 0.53% | $ | 0.00033 |
| SPS | 1 | $ | 44,873 | $ | 436 | 0.97% | $ | 0.00072 |
| SPS | 2 | $ | 108,223 | $ | 1,228 | 1.13% | $ | 0.00081 |
| SPS | 3 | $ | 28,788 | $ | 11 | 0.04% | $ | 0.00003 |
| SPS | 4 | $ | 313,329 | $ | (3,841) | -1.23% | $ | (0.00084) |
| SPS | 5 | $ | 37,743 | $ | 733 | 1.94% | $ | 0.00177 |
| SPS | 6 | $ | 328,443 | $ | (1,465) | -0.45% | $ | (0.00031) |
| SPS | 7 | $ | 300,796 | $ | (1,014) | -0.34% | $ | (0.00022) |
| SPS | 8 | $ | 43,942 | $ | 858 | 1.95% | $ | 0.00149 |
| SPS | 9 | $ | 2,043,476 | $ | 462 | 0.02% | $ | 0.00002 |
| SPS | 10 | $ | 656,135 | $ | (6,728) | -1.03% | $ | (0.00072) |
| SPS | 11 | $ | 218,291 | $ | (789) | -0.36% | $ | (0.00024) |
| SPS | 12 | $ | 23,645 | $ | 115 | 0.49% | $ | 0.00040 |
| SPS | 13 | $ | 103,333 | $ | 310 | 0.30% | $ | 0.00022 |
| SPS | 14 | $ | 44,818 | $ | 524 | 1.17% | $ | 0.00095 |
| SPS | 15 | $ | 667,055 | $ | (273) | -0.04% | $ | (0.00003) |
| SPS | 16 | $ | 236,022 | $ | 584 | 0.25% | $ | 0.00017 |
| SPS | 17 | $ | 148,885 | $ | 473 | 0.32% | $ | 0.00022 |
| SPS | 18 | $ | 912,770 | $ | 3,203 | 0.35% | $ | 0.00024 |
| SPS | 19 | $ | 50,778 | $ | 34 | 0.07% | $ | 0.00005 |
| SPS | 20 | $ | 12,144 | $ | 74 | 0.61% | $ | 0.00068 |
| SPS | 21 | $ | 681,602 | $ | 4,647 | 0.68% | $ | 0.00048 |
| SPS | 22 | $ | 450,227 | $ | (791) | -0.18% | $ | (0.00013) |
| SPS | 23 | $ | 304,295 | $ | (30) | -0.01% | $ | (0.00001) |
| SPS | 24 | $ | 372,550 | $ | (1,611) | -0.43% | $ | (0.00029) |
| SPS | 25 | $ | 705,588 | $ | 318 | 0.05% | $ | 0.00003 |

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|---|---|---|---|---|---|---|---|---|
| SPS | 26 | $ | 680,783 | $ | 4,851 | 0.71% | $ | 0.00048 |
| SPS | 27 | $ | 56,654 | $ | 356 | 0.63% | $ | 0.00045 |
| SPS | 28 | $ | 486,630 | $ | (995) | -0.20% | $ | (0.00013) |
| SPS | 29 | $ | 29,959 | $ | 533 | 1.78% | $ | 0.00153 |
| SPS | 30 | $ | 9,048 | $ | 144 | 1.59% | $ | 0.00212 |
| SPS | 31 | $ | 59,464 | $ | 836 | 1.41% | $ | 0.00137 |
| SPS | 32 | $ | 298,666 | $ | 727 | 0.24% | $ | 0.00016 |
| SPS | 33 | $ | 166,517 | $ | (152) | -0.09% | $ | (0.00007) |
| SPS | 34 | $ | 179,938 | $ | 2,081 | 1.16% | $ | 0.00078 |
| SPS | 35 | $ | 342,187 | $ | 1,290 | 0.38% | $ | 0.00026 |
| SPS | 36 | $ | 405,643 | $ | (647) | -0.16% | $ | (0.00011) |
| SPS | 37 | $ | 416,019 | $ | 1,084 | 0.26% | $ | 0.00017 |
| SPS | 38 | $ | 400,614 | $ | 2,213 | 0.55% | $ | 0.00039 |
| SPS | 39 | $ | 396,495 | $ | (1,244) | -0.31% | $ | (0.00020) |
| SPS | 40 | $ | 103,645 | $ | 74 | 0.07% | $ | 0.00005 |
| SPS | 41 | $ | 47,682 | $ | 81 | 0.17% | $ | 0.00014 |
| SPS | 42 | $ | 221,703 | $ | 4,938 | 2.23% | $ | 0.00217 |
| SPS | 43 | $ | 570,916 | $ | 18 | 0.00% | $ | 0.00000 |
| SPS | 44 | $ | 1,295,391 | $ | (6,398) | -0.49% | $ | (0.00032) |
| SPS | 45 | $ | 635,792 | $ | 158 | 0.02% | $ | 0.00002 |
| SPS | 46 | $ | 99,673 | $ | 1,707 | 1.71% | $ | 0.00138 |
| SPS | 47 | $ | 102,673 | $ | 424 | 0.41% | $ | 0.00030 |
| SPS | 48 | $ | 139,062 | $ | 1,464 | 1.05% | $ | 0.00074 |
| SPS | 49 | $ | 707,627 | $ | 17,059 | 2.41% | $ | 0.00160 |
| SPS | 50 | $ | 294,690 | $ | 276 | 0.09% | $ | 0.00006 |
| SPS | 51 | $ | 204,776 | $ | 1,505 | 0.74% | $ | 0.00053 |
| SPS | 52 | $ | 178,103 | $ | (994) | -0.56% | $ | (0.00039) |
| SPS | 53 | $ | 464,766 | $ | 1,053 | 0.23% | $ | 0.00016 |
| SPS | 54 | $ | 710,472 | $ | 2,881 | 0.41% | $ | 0.00028 |
| SPS | 55 | $ | 118,819 | $ | 38 | 0.03% | $ | 0.00002 |
| SPS | 56 | $ | 70,377 | $ | 886 | 1.26% | $ | 0.00095 |
| SPS | 57 | $ | 643,731 | $ | (670) | -0.10% | $ | (0.00007) |
| SPS | 58 | $ | 48,353 | $ | 466 | 0.96% | $ | 0.00073 |
| SPS | 59 | $ | 1,199,504 | $ | (19,873) | -1.66% | $ | (0.00125) |
| SPS | 60 | $ | 92,087 | $ | 306 | 0.33% | $ | 0.00025 |
| SPS | 61 | $ | 83,253 | $ | (21) | -0.03% | $ | (0.00002) |
| SPS | 62 | $ | 51,699 | $ | 920 | 1.78% | $ | 0.00252 |
| SPS | 63 | $ | 50,505 | $ | 494 | 0.98% | $ | 0.00100 |
| SPS | 64 | $ | 86,089 | $ | 1,324 | 1.54% | $ | 0.00117 |
| SPS | 65 | $ | 200,773 | $ | 440 | 0.22% | $ | 0.00015 |
| SPS | 66 | $ | 1,375,963 | $ | (249) | -0.02% | $ | (0.00001) |
| SPS | 67 | $ | 99,698 | $ | 1,060 | 1.06% | $ | 0.00097 |
| SPS | 68 | $ | 1,016,664 | $ | 821 | 0.08% | $ | 0.00005 |
| SPS | 69 | $ | 588,493 | $ | (2,039) | -0.35% | $ | (0.00023) |
| SPS | 70 | $ | 85,924 | $ | 1,120 | 1.30% | $ | 0.00093 |
| SPS | 71 | $ | 860,148 | $ | 6,437 | 0.75% | $ | 0.00054 |
| SPS | 72 | $ | 19,252 | $ | 359 | 1.86% | $ | 0.00172 |

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|---|---|---|---|---|---|---|---|---|
| SPS | 73 | $ | 91,324 | $ | 1,150 | 1.26% | $ | 0.00098 |
| SPS | 74 | $ | 27,520 | $ | 571 | 2.07% | $ | 0.00190 |
| SPS | 75 | $ | 267,135 | $ | 53 | 0.02% | $ | 0.00001 |
| SPS | 76 | $ | 153,698 | $ | 876 | 0.57% | $ | 0.00041 |
| SPS | 77 | $ | 464,291 | $ | 367 | 0.08% | $ | 0.00006 |
| SPS | 78 | $ | 161,440 | $ | 670 | 0.41% | $ | 0.00029 |
| SPS | 79 | $ | 116,745 | $ | 2,235 | 1.91% | $ | 0.00383 |
| SPS | 80 | $ | 77,337 | $ | 1,656 | 2.14% | $ | 0.00165 |
| SPS | 81 | $ | 49,827 | $ | 1,448 | 2.91% | $ | 0.00224 |
| SPS | 82 | $ | 104,500 | $ | 925 | 0.89% | $ | 0.00068 |
| SPS | 83 | $ | 16,336 | $ | 254 | 1.56% | $ | 0.00152 |
| SPS | 84 | $ | 76,902 | $ | 1,499 | 1.95% | $ | 0.00140 |
| SPS | 85 | $ | 93,908 | $ | 2,119 | 2.26% | $ | 0.00232 |
| SPS | 86 | $ | 34,957 | $ | 233 | 0.67% | $ | 0.00053 |
| SPS | 87 | $ | 72,035 | $ | 406 | 0.56% | $ | 0.00040 |
| SPS | 88 | $ | 1,198,762 | $ | (3,847) | -0.32% | $ | (0.00021) |
| SPS | 89 | $ | 422,587 | $ | (1,341) | -0.32% | $ | (0.00021) |
| SPS | 90 | $ | 1,360,705 | $ | (2,600) | -0.19% | $ | (0.00012) |
| SPS | 91 | $ | 180,378 | $ | 143 | 0.08% | $ | 0.00007 |
| SPS | 92 | $ | 66,821 | $ | 351 | 0.53% | $ | 0.00039 |
| SPS | 93 | $ | 11,418 | $ | 199 | 1.74% | $ | 0.00237 |
| SPS | 94 | $ | 33,979 | $ | 378 | 1.11% | $ | 0.00107 |
| SPS | 95 | $ | 855,563 | $ | (4,193) | -0.49% | $ | (0.00032) |
| SPS | 96 | $ | 1,164,305 | $ | (573) | -0.05% | $ | (0.00003) |
| SPS | 97 | $ | 925,900 | $ | 777 | 0.08% | $ | 0.00006 |
| SPS | 98 | $ | 1,698,276 | $ | (8,794) | -0.52% | $ | (0.00036) |
| SPS | 99 | $ | 434,294 | $ | 2,577 | 0.59% | $ | 0.00041 |
| SPS | 100 | $ | 47,445 | $ | 833 | 1.75% | $ | 0.00135 |
| LGS | 1 | $ | 17,533 | $ | 52 | 0.30% | $ | 0.00031 |
| LGS | 2 | $ | 112,957 | $ | 95 | 0.08% | $ | 0.00006 |
| LGS | 3 | $ | 382,227 | $ | (3,659) | -0.96% | $ | (0.00063) |
| LGS | 4 | $ | 110,867 | $ | 190 | 0.17% | $ | 0.00013 |
| LGS | 5 | $ | 21,385 | $ | 377 | 1.76% | $ | 0.00488 |
| LGS | 6 | $ | 12,132 | $ | (3) | -0.02% | $ | (0.00003) |
| LGS | 7 | $ | 4,602 | $ | 64 | 1.38% | $ | 0.00191 |
| LGS | 8 | $ | 33,095 | $ | 525 | 1.59% | $ | 0.00129 |
| LGS | 9 | $ | 37,607 | $ | 940 | 2.50% | $ | 0.00189 |
| LGS | 10 | $ | 181,273 | $ | 1,372 | 0.76% | $ | 0.00056 |
| LGS | 11 | $ | 360,881 | $ | (2,760) | -0.76% | $ | (0.00051) |
| LGS | 12 | $ | 83,287 | $ | 656 | 0.79% | $ | 0.00060 |
| LGS | 13 | $ | 2,131 | $ | 23 | 1.07% | $ | 0.00186 |
| LGS | 14 | $ | 209,446 | $ | 642 | 0.31% | $ | 0.00024 |
| LGS | 15 | $ | 218,680 | $ | (2,354) | -1.08% | $ | (0.00074) |
| LGS | 16 | $ | 8,190 | $ | (32) | -0.39% | $ | (0.00037) |
| LGS | 17 | $ | 7,118 | $ | 36 | 0.51% | $ | 0.00044 |
| LGS | 18 | $ | 20,889 | $ | 328 | 1.57% | $ | 0.00122 |
| LGS | 19 | $ | 7,265 | $ | 45 | 0.63% | $ | 0.00064 |

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|---|---|---|---|---|---|---|---|---|
| LGS | 20 | $ | 23,355 | $ | 120 | 0.52% | $ | 0.00038 |
| LGS | 21 | $ | 26,004 | $ | (259) | -1.00% | $ | (0.00074) |
| LGS | 22 | $ | 15,973 | $ | 12 | 0.07% | $ | 0.00006 |
| LGS | 23 | $ | 13,220 | $ | 110 | 0.83% | $ | 0.00072 |
| LGS | 24 | $ | 32,518 | $ | 212 | 0.65% | $ | 0.00055 |
| LGS | 25 | $ | 26,041 | $ | 77 | 0.30% | $ | 0.00022 |
| LGS | 26 | $ | 77,574 | $ | 93 | 0.12% | $ | 0.00009 |
| LGS | 27 | $ | 9,277 | $ | 108 | 1.16% | $ | 0.00101 |
| LGS | 28 | $ | 212,955 | $ | (2,226) | -1.05% | $ | (0.00073) |
| LGS | 29 | $ | 99,434 | $ | (609) | -0.61% | $ | (0.00042) |
| LGS | 30 | $ | 313,598 | $ | (1,844) | -0.59% | $ | (0.00043) |
| LGS | 31 | $ | 93,343 | $ | 399 | 0.43% | $ | 0.00031 |
| LGS | 32 | $ | 39,480 | $ | 185 | 0.47% | $ | 0.00039 |
| LGS | 33 | $ | 4,962 | $ | 27 | 0.53% | $ | 0.00055 |
| LGS | 34 | $ | 83,753 | $ | (72) | -0.09% | $ | (0.00007) |
| LGS | 35 | $ | 22,113 | $ | 257 | 1.16% | $ | 0.00088 |
| LGS | 36 | $ | 2,732 | $ | 5 | 0.20% | $ | 0.00030 |
| LGS | 37 | $ | 122,867 | $ | (707) | -0.58% | $ | (0.00040) |
| LGS | 38 | $ | 217,216 | $ | 2,930 | 1.35% | $ | 0.00098 |
| LGS | 39 | $ | 282,658 | $ | (3,282) | -1.16% | $ | (0.00080) |
| LGS | 40 | $ | 600,142 | $ | (6,791) | -1.13% | $ | (0.00080) |
| LGS | 41 | $ | 79,951 | $ | 522 | 0.65% | $ | 0.00049 |
| LGS | 42 | $ | 38,887 | $ | (446) | -1.15% | $ | (0.00088) |
| LGS | 43 | $ | 102,074 | $ | (447) | -0.44% | $ | (0.00032) |
| LGS | 44 | $ | 190,592 | $ | (1,479) | -0.78% | $ | (0.00055) |
| LGS | 45 | $ | 182,923 | $ | (1,880) | -1.03% | $ | (0.00074) |
| LGS | 46 | $ | 36,909 | $ | 106 | 0.29% | $ | 0.00026 |
| LGS | 47 | $ | 239,620 | $ | (2,248) | -0.94% | $ | (0.00066) |
| LGS | 48 | $ | 116,071 | $ | (944) | -0.81% | $ | (0.00059) |
| LGS | 49 | $ | 24,002 | $ | 212 | 0.88% | $ | 0.00076 |
| LGS | 50 | $ | 52,166 | $ | 59 | 0.11% | $ | 0.00009 |
| LGS | 51 | $ | 26,358 | $ | 189 | 0.72% | $ | 0.00067 |
| LGS | 52 | $ | 40,707 | $ | 824 | 2.02% | $ | 0.00154 |
| LGS | 53 | $ | 80,486 | $ | (220) | -0.27% | $ | (0.00025) |
| LGS | 54 | $ | 95,400 | $ | (203) | -0.21% | $ | (0.00022) |
| LGS | 55 | $ | 14,230 | $ | (18) | -0.13% | $ | (0.00010) |
| LGS | 56 | $ | 32,392 | $ | 52 | 0.16% | $ | 0.00012 |
| LGS | 57 | $ | 31,152 | $ | 345 | 1.11% | $ | 0.00103 |
| LGS | 58 | $ | 366,502 | $ | (1,588) | -0.43% | $ | (0.00030) |
| LGS | 59 | $ | 123,619 | $ | 387 | 0.31% | $ | 0.00022 |
| LGS | 60 | $ | 55,868 | $ | (7) | -0.01% | $ | (0.00001) |
| LGS | 61 | $ | 33,763 | $ | (124) | -0.37% | $ | (0.00028) |
| LGS | 62 | $ | 68,873 | $ | (359) | -0.52% | $ | (0.00038) |
| LGS | 63 | $ | 57,541 | $ | (16) | -0.03% | $ | (0.00002) |
| LGS | 64 | $ | 50,691 | $ | (304) | -0.60% | $ | (0.00044) |
| LGS | 65 | $ | 50,742 | $ | 351 | 0.69% | $ | 0.00050 |
| LGS | 66 | $ | 548,622 | $ | (5,636) | -1.03% | $ | (0.00072) |

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|---|---|---|---|---|---|---|---|---|
| LGS | 67 | $ | 89,095 | $ | 1,172 | 1.31% | $ | 0.00096 |
| LGS | 68 | $ | 118,598 | $ | 904 | 0.76% | $ | 0.00058 |
| LGS | 69 | $ | 180,380 | $ | (1,034) | -0.57% | $ | (0.00042) |
| LGS | 70 | $ | 219,656 | $ | (2,577) | -1.17% | $ | (0.00079) |
| LGS | 71 | $ | 464,526 | $ | (1,081) | -0.23% | $ | (0.00016) |
| LGS | 72 | $ | 12,260 | $ | 108 | 0.88% | $ | 0.00074 |
| LGS | 73 | $ | 76,494 | $ | 169 | 0.22% | $ | 0.00016 |
| LGS | 74 | $ | 19,586 | $ | 47 | 0.24% | $ | 0.00020 |
| LGS | 75 | $ | 19,398 | $ | 5 | 0.03% | $ | 0.00002 |
| LGS | 76 | $ | 106,619 | $ | (737) | -0.69% | $ | (0.00050) |
| LGS | 77 | $ | 7,466 | $ | (37) | -0.49% | $ | (0.00041) |
| LGS | 78 | $ | 129,388 | $ | (319) | -0.25% | $ | (0.00020) |
| LGS | 79 | $ | 104,894 | $ | 36 | 0.03% | $ | 0.00002 |
| LGS | 80 | $ | 195,181 | $ | (2,142) | -1.10% | $ | (0.00077) |
| LGS | 81 | $ | 113,081 | $ | (16) | -0.01% | $ | (0.00001) |
| LGS | 82 | $ | 46,633 | $ | 405 | 0.87% | $ | 0.00062 |
| LGS | 83 | $ | 143,592 | $ | (539) | -0.38% | $ | (0.00026) |
| LGS | 84 | $ | 150,592 | $ | (631) | -0.42% | $ | (0.00030) |
| LGS | 85 | $ | 121,159 | $ | 131 | 0.11% | $ | 0.00008 |
| LGS | 86 | $ | 109,224 | $ | 817 | 0.75% | $ | 0.00056 |
| LGS | 87 | $ | 385,893 | $ | 363 | 0.09% | $ | 0.00007 |
| LGS | 88 | $ | 30,681 | $ | 631 | 2.06% | $ | 0.00179 |
| LGS | 89 | $ | 138,237 | $ | (1,236) | -0.89% | $ | (0.00062) |
| LGS | 90 | $ | 146,945 | $ | (615) | -0.42% | $ | (0.00030) |
| LGS | 91 | $ | 143,942 | $ | (640) | -0.44% | $ | (0.00032) |
| LGS | 92 | $ | 94,840 | $ | (10) | -0.01% | $ | (0.00001) |
| LGS | 93 | $ | 63,415 | $ | (316) | -0.50% | $ | (0.00035) |
| LGS | 94 | $ | 131,890 | $ | (1,255) | -0.95% | $ | (0.00067) |
| LGS | 95 | $ | 74,684 | $ | 238 | 0.32% | $ | 0.00024 |
| LGS | 96 | $ | 49,770 | $ | (475) | -0.95% | $ | (0.00071) |
| LGS | 97 | $ | 492,200 | $ | (167) | -0.03% | $ | (0.00002) |
| LGS | 98 | $ | 73,760 | $ | 82 | 0.11% | $ | 0.00009 |
| LGS | 99 | $ | 43,704 | $ | 803 | 1.84% | $ | 0.00145 |
| LGS | 100 | $ | 54,955 | $ | (496) | -0.90% | $ | (0.00069) |
| SGS | 1 | $ | 838 | $ | 5 | 0.64% | $ | 0.00056 |
| SGS | 2 | $ | 930 | $ | 19 | 2.06% | $ | 0.00185 |
| SGS | 3 | $ | 1,333 | $ | 21 | 1.56% | $ | 0.00157 |
| SGS | 6 | $ | 144 | $ | (0) | -0.03% | $ | (0.00003) |
| SGS | 7 | $ | 423 | $ | (7) | -1.73% | $ | (0.00146) |
| SGS | 8 | $ | 2,375 | $ | 6 | 0.26% | $ | 0.00022 |
| SGS | 9 | $ | 451 | $ | 3 | 0.72% | $ | 0.00063 |
| SGS | 10 | $ | 6,077 | $ | 53 | 0.87% | $ | 0.00074 |
| SGS | 11 | $ | 443 | $ | (1) | -0.28% | $ | (0.00022) |
| SGS | 12 | $ | 7,281 | $ | 38 | 0.52% | $ | 0.00045 |
| SGS | 13 | $ | 5,609 | $ | 155 | 2.76% | $ | 0.00236 |
| SGS | 14 | $ | 2,381 | $ | 36 | 1.53% | $ | 0.00131 |
| SGS | 15 | $ | 5,393 | $ | 14 | 0.26% | $ | 0.00026 |

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|---|---|---|---|---|---|---|---|---|
| SGS | 16 | $ | 1,315 | $ | (5) | -0.40% | $ | (0.00031) |
| SGS | 17 | $ | 780 | $ | (0) | -0.04% | $ | (0.00003) |
| SGS | 18 | $ | 1,857 | $ | 10 | 0.56% | $ | 0.00049 |
| SGS | 19 | $ | 1,695 | $ | 26 | 1.53% | $ | 0.00140 |
| SGS | 20 | $ | 7,506 | $ | 17 | 0.23% | $ | 0.00021 |
| SGS | 21 | $ | 17,001 | $ | 180 | 1.06% | $ | 0.00098 |
| SGS | 22 | $ | 5,860 | $ | 10 | 0.17% | $ | 0.00018 |
| SGS | 23 | $ | 15,829 | $ | 68 | 0.43% | $ | 0.00037 |
| SGS | 24 | $ | 3,634 | $ | 97 | 2.66% | $ | 0.00257 |
| SGS | 25 | $ | 11,910 | $ | 141 | 1.18% | $ | 0.00105 |
| SGS | 26 | $ | 1,128 | $ | 12 | 1.08% | $ | 0.00093 |
| SGS | 27 | $ | 653 | $ | 7 | 1.14% | $ | 0.00105 |
| SGS | 28 | $ | 1,686 | $ | 41 | 2.45% | $ | 0.00213 |
| SGS | 29 | $ | 3,610 | $ | 70 | 1.93% | $ | 0.00181 |
| SGS | 30 | $ | 2,123 | $ | 44 | 2.06% | $ | 0.00195 |
| SGS | 31 | $ | 309 | $ | (2) | -0.61% | $ | (0.00055) |
| SGS | 32 | $ | 2,373 | $ | 44 | 1.84% | $ | 0.00160 |
| SGS | 33 | $ | 1,881 | $ | 2 | 0.09% | $ | 0.00008 |
| SGS | 34 | $ | 5,968 | $ | 20 | 0.34% | $ | 0.00027 |
| SGS | 35 | $ | 972 | $ | 7 | 0.69% | $ | 0.00061 |
| SGS | 36 | $ | 759 | $ | 12 | 1.61% | $ | 0.00149 |
| SGS | 37 | $ | 6,451 | $ | 5 | 0.08% | $ | 0.00006 |
| SGS | 38 | $ | 1,970 | $ | 31 | 1.57% | $ | 0.00153 |
| SGS | 39 | $ | 2,964 | $ | 9 | 0.30% | $ | 0.00025 |
| SGS | 40 | $ | 793 | $ | 11 | 1.35% | $ | 0.00126 |
| SGS | 41 | $ | 3,029 | $ | 72 | 2.38% | $ | 0.00225 |
| SGS | 42 | $ | 6,126 | $ | 33 | 0.55% | $ | 0.00050 |
| SGS | 43 | $ | 1,175 | $ | 41 | 3.48% | $ | 0.00351 |
| SGS | 44 | $ | 3,614 | $ | 60 | 1.65% | $ | 0.00154 |
| SGS | 45 | $ | 6,649 | $ | 155 | 2.33% | $ | 0.00210 |
| SGS | 46 | $ | 2,098 | $ | 42 | 2.02% | $ | 0.00185 |
| SGS | 47 | $ | 132 | $ | (0) | -0.15% | $ | (0.00013) |
| SGS | 48 | $ | 5,488 | $ | 17 | 0.31% | $ | 0.00027 |
| SGS | 49 | $ | 678 | $ | 12 | 1.77% | $ | 0.00173 |
| SGS | 50 | $ | 543 | $ | (2) | -0.46% | $ | (0.00041) |
| SGS | 51 | $ | 1,831 | $ | 15 | 0.81% | $ | 0.00065 |
| SGS | 52 | $ | 1,551 | $ | 7 | 0.43% | $ | 0.00037 |
| SGS | 53 | $ | 7,513 | $ | (22) | -0.29% | $ | (0.00024) |
| SGS | 54 | $ | 1,506 | $ | 13 | 0.84% | $ | 0.00069 |
| SGS | 55 | $ | 4,026 | $ | 32 | 0.79% | $ | 0.00075 |
| SGS | 56 | $ | 2,223 | $ | 18 | 0.82% | $ | 0.00073 |
| SGS | 57 | $ | 1,921 | $ | 2 | 0.11% | $ | 0.00011 |
| SGS | 58 | $ | 865 | $ | 14 | 1.63% | $ | 0.00143 |
| SGS | 59 | $ | 1,278 | $ | 19 | 1.47% | $ | 0.00144 |
| SGS | 60 | $ | 3,573 | $ | 23 | 0.63% | $ | 0.00058 |
| SGS | 61 | $ | 3,633 | $ | 23 | 0.63% | $ | 0.00056 |
| SGS | 62 | $ | 1,555 | $ | 17 | 1.07% | $ | 0.00095 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| SGS | 63 | $ | 2,385 | $ | 68 | 2.86% | $ | 0.00280 |
| SGS | 64 | $ | 2,465 | $ | 41 | 1.65% | $ | 0.00153 |
| SGS | 65 | $ | 2,788 | $ | 25 | 0.90% | $ | 0.00079 |
| SGS | 66 | $ | 2,093 | $ | 38 | 1.83% | $ | 0.00186 |
| SGS | 67 | $ | 6,823 | $ | 11 | 0.17% | $ | 0.00015 |
| SGS | 68 | $ | 83 | $ | (0) | -0.02% | $ | (0.00002) |
| SGS | 69 | $ | 2,434 | $ | 28 | 1.17% | $ | 0.00106 |
| SGS | 70 | $ | 238 | $ | (5) | -2.17% | $ | (0.00191) |
| SGS | 71 | $ | 2,675 | $ | (18) | -0.68% | $ | (0.00060) |
| SGS | 72 | $ | 4,687 | $ | 25 | 0.53% | $ | 0.00055 |
| SGS | 73 | $ | 1,066 | $ | 9 | 0.89% | $ | 0.00084 |
| SGS | 74 | $ | 1,539 | $ | 6 | 0.39% | $ | 0.00038 |
| SGS | 75 | $ | 5,456 | $ | 23 | 0.42% | $ | 0.00035 |
| SGS | 76 | $ | 467 | $ | 3 | 0.55% | $ | 0.00043 |
| SGS | 77 | $ | 3,216 | $ | 47 | 1.46% | $ | 0.00132 |
| SGS | 78 | $ | 4,717 | $ | 40 | 0.85% | $ | 0.00079 |
| SGS | 79 | $ | 451 | $ | 1 | 0.33% | $ | 0.00028 |
| SGS | 80 | $ | 94 | $ | 2 | 2.18% | $ | 0.00196 |
| SGS | 81 | $ | 2,850 | $ | 31 | 1.08% | $ | 0.00106 |
| SGS | 82 | $ | 6,290 | $ | (24) | -0.38% | $ | (0.00035) |
| SGS | 83 | $ | 1,147 | $ | 11 | 0.97% | $ | 0.00080 |
| SGS | 84 | $ | 7,147 | $ | 170 | 2.37% | $ | 0.00219 |
| SGS | 85 | $ | 5,372 | $ | 33 | 0.61% | $ | 0.00057 |
| SGS | 86 | $ | 147 | $ | (1) | -0.40% | $ | (0.00034) |
| SGS | 87 | $ | 113 | $ | (0) | -0.30% | $ | (0.00026) |
| SGS | 88 | $ | 5,383 | $ | 28 | 0.51% | $ | 0.00047 |
| SGS | 89 | $ | 4,463 | $ | 21 | 0.47% | $ | 0.00044 |
| SGS | 90 | $ | 4,448 | $ | 66 | 1.48% | $ | 0.00138 |
| SGS | 91 | $ | 222 | $ | (1) | -0.38% | $ | (0.00034) |
| SGS | 92 | $ | 671 | $ | 18 | 2.71% | $ | 0.00240 |
| SGS | 93 | $ | 3,591 | $ | 81 | 2.25% | $ | 0.00191 |
| SGS | 94 | $ | 3,440 | $ | 31 | 0.89% | $ | 0.00077 |
| SGS | 95 | $ | 811 | $ | 16 | 1.94% | $ | 0.00185 |
| SGS | 96 | $ | 1,157 | $ | 14 | 1.18% | $ | 0.00103 |
| SGS | 97 | $ | 4,303 | $ | 80 | 1.87% | $ | 0.00170 |
| SGS | 98 | $ | 1,018 | $ | 9 | 0.91% | $ | 0.00079 |
| SGS | 99 | $ | 1,038 | $ | 16 | 1.54% | $ | 0.00139 |
| SGS | 100 | $ | 2,003 | $ | 62 | 3.07% | $ | 0.00326 |

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0198

**:** Please fully describe all information retained by the Company as of July 1, 2022, that was not retained by the Company as of July 1, 2021, to facilitate allocation or assignment of labor and non-labor distribution expenses in general rate cases. Data requested by Sarah Lange (sarah.lange@psc.mo.gov <mailto:sarah.lange@psc.mo.gov>)

**RESPONSE**

**Prepared By: Tom Hickman**
**Title: Regulatory Rate Consultant**
**Date: 9/28/22**

The steps the Company has taken to facilitate the allocation or assignment of labor and non-labor distribution expenses in general rate cases are as follows:

1. Based on good faith collaboration between Staff and the Company, we identified that the areas of concern were SEP projects that would reduce O&M (as being counter to historic cost allocation processes) and the deployment of Smart Meters (also having this counter effect).
2. We had internal discussions with our SEP team that became further conversations within the SEP team to identify groups of investments that specifically drove reductions in recorded O&M.
3. For the identified groups, we further identified the underlying assets comprising those projects and performed analysis to identify which customers (by number and class) were served by those assets.
4. We compiled the information we were able to identify and provided summary information to Staff. We also highlighted the availability of metering information that could be used to more discretely allocate meter reading costs to classes on the basis of which customers are utilizing the related infrastructure.

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 198s1

Please fully describe all information retained by the Company as of July 1, 2022, that was not retained by the Company as of July 1, 2021, to facilitate allocation or assignment of labor and non-labor distribution expenses in general rate cases. Data requested by Sarah Lange (sarah.lange@psc.mo.gov <mailto:sarah.lange@psc.mo.gov>)

**RESPONSE**

**Prepared By: Tom Hickman**
**Title: Regulatory Rate Consultant**
**Date: 10/11/2022**

As of July 1, 2021, the Company had not specifically identified groups of investments that specifically drove reductions in recorded O & M, for the purposes of facilitating allocation or assignment of labor and non-labor distribution expenses in general rate cases. As of July 1, 2022, the Company made that identification. As of July 1, 2021, the Company had not identified the underlying assets comprising projects that specifically drove reductions in recorded O & M and had not performed analysis to identify which customers (by number and class) were served by those assets. As of July 1, 2022, the Company has made those identifications by performing such analysis.

The results of the foregoing identifications/analysis have been provided to Staff.

The Company has not "retained" other information as of July 1, 2022, that it did not possess as of July 1, 2021, because it is unaware of what information it could retain to "facilitate the allocation or assignment of labor and non-labor distribution expenses in general rate cases" short of abandoning the use of mass property accounting, as prescribed by the USoA, or otherwise completely changing the Company's accounting system. A key reason the Company is unaware of what information it could retain for such purposes is that despite twice requesting Staff to identify what data Staff desires the Company to collect or retain, Staff has indicated that it does not know what data it would like the Company to collect or retain.

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0198.1

(a) Please identify all "groups of investments that specifically drove reductions in recorded O & M" as referenced in response 198s1. (b) Please identify the reduction in O&M by month projected and experienced for each group identified in Part A. (c) Please identify by asset number each item included in each group identified in part A. (d) Please clarify whether any other SEP project has resulted or was projected to result in reduced distribution O&M that was not identified in part A. Data requested by Sarah Lange (sarah.lange@psc.mo.gov <mailto:sarah.lange@psc.mo.gov>)

**RESPONSE**

**Prepared By: Tom Hickman**
**Title: Regulatory Rate Consultant**
**Date: 11/02/2022**

Subject to the Company's objection,

a. Cutout Fuses replaced with Tripsavers (detail provided in Excel file "Tripsaver OM Analysis" provided in response to DR MPSC 0198.4), and Substation Oil Circuit Breakers replaced with Vacuum Circuit Breakers (detail provided in Excel file "OCB OM Analysis" provided in response to DR MPSC 0198.4).

d. The Substation Transformer Load Tap Changer Replacements, Substation Electromechanical Relay replacements, and Air Circuit Breaker Replacement projects have resulted or were projected to result in reduced distribution O&M.

No.: MPSC 0198.2

The response 198s1, includes the statement “short of abandoning the use of mass property accounting, as prescribed by the USoA.” Is it Ameren Missouri’s position or belief that retaining or developing data in addition to that contained in the CPR or creating CPR sub accounts is contrary to the prescriptions of the USoA? Data requested by Sarah Lange (sarah.lange@psc.mo.gov <mailto:sarah.lange@psc.mo.gov>)

**RESPONSE**

**Prepared By: Mitch Lansford**
**Title: Director Regulatory Accounting**
**Date: October 17, 2022**

The Company could retain additional data, beyond what is required to be retained for categories of mass property, without failing to comply with the requirements of the USoA.

To further clarify this portion of the Company's prior response, the USoA details the data required to be retained for categories of mass property and for retirement units (also commonly referred to as location property). One difference in the requirements is that location is not required to be retained for categories of mass property, whereas it is required to be retained for a retirement unit. If the Company were to retain all data elements required for retirement units, the benefits associated with accounting for an asset as a category of mass property would no longer exist and doing so would represent effectively abandoning the use of mass property accounting. Further, retaining additional data for the Company's categories of mass property in its accounting system may require completely changing the Company's accounting system.

To the extent Staff has requested accounting information by voltage, voltage is a category of information not required by the USoA. Voltage information as a category related to accounting data would be even more burdensome to maintain than location data. Voltage data can change multiple times and can change agnostic to the location of the property. For example, if a pole was installed with only Primary voltage equipment later has some Secondary voltage equipment added to it, the recorded voltage would need to change from Primary only to Primary and Secondary (or to include more detail if precise voltages were to be used). In this way, retaining additional information could cause an amount of work beyond the scope of just abandoning the use of mass property accounting.

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0198.3

Reference the 10/3/2022 EFIS submitted response to DR 198 stating "We compiled the information we were able to identify and provided summary information to Staff." Please provide the compiled information and all analysis supporting the summary of that information.
Data requested by Sarah Lange (sarah.lange@psc.mo.gov <mailto:sarah.lange@psc.mo.gov>)

**RESPONSE**

**Prepared By: Tom Hickman**
**Title: Regulatory Rate Consultant**
**Date: 11/01/2022**

Please see Excel files "OCB OM Analysis" and "Tripsaver OM Analysis" included in response to DR MPSC 0198.4.

Ameren Missouri's
Response to MPSC Data Request - MPSC
ER-2022-0337
In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Adjust Its Revenues for Electric Service

No.: MPSC 0198.4

The response 198s1, includes the statement “A key reason the Company is unaware of what information it could retain for such purposes is that despite twice requesting Staff to identify what data Staff desires the Company to collect or retain, Staff has indicated that it does not know what data it would like the Company to collect or retain.” (a) Please provide any emails, notes, transcripts, or other documents supporting this statement. (b) Please confirm that on occasions when the matter was discussed, Staff has indicated that it does not want to create unduly burdensome work for Ameren in developing new processes, but that it is unaware of the existing processes in place to make specific suggestions, but that possible areas to explore include but are not limited to Work tickets and the internal documentation relied upon to develop and process SEP projects. (c) Please list each and every existing channel of record keeping or information sharing which could potentially be suggested by Staff. (d) Please provide a copy of all materials presented or discussed on the 7/19/2022 Microsoft Teams meeting. Data requested by Sarah Lange sarah.lange@psc.mo.gov <mailto:sarah.lange@psc.mo.gov>

**RESPONSE**

**Prepared By: Tom Hickman**
**Title: Regulatory Rate Consultant**
**Date: 11/01/2022**

Subject to the Company's objection,

a. The only documents reflecting support for the statement are two communications with Company counsel. A privilege log will be provided by counsel.

b. It is true that that Staff indicated that it did not want to create unduly burdensome work and Staff indicated it was unaware of existing processes to make specific suggestions, but the Company does not specifically recall discussion of "Work tickets" or "internal documentation relied upon to develop and process SEP projects." It is also true that Staff indicated it did not know what data it would like the Company to collect or retain.

d. Please see the attached PowerPoint file "Data Stipulation Meeting Powerpoint" and the two attached Excel files "OCB OM Analysis" and "Tripsaver OM Analysis". Additionally, the

Company discussed and presented information contained in the file named "2022 Meter Allocators Final" which was included with the workpapers of Mr. Hickman's direct testimony. The ~~c~~Company also presented and discussed information that was provided in response to DR MPSC 0183.


# Ameren Missouri ER 2021-0240 Data Stipulation Meeting 07/19/2022

# Data Collection

## Stipulation Overview

30. Data Collection

A. For each voltage at which service is provided to large primary service (Rate Schedule 11M) customers, or at which three or more customers which are not large primary service customers are served, the Company shall identify (1) the retirement units and quantities associated with providing one span of overhead (and the equivalent distance of underground) infrastructure including devices, and (2) the typical meter(s) and related installations. If these items vary with usage characteristics of customers, Company shall provide items (1) and (2) for a minimum of high, medium, and low infrastructure customers.

B. For each voltage and phase at which the distribution system operates Company shall provide (1) an example typical retirement unit and quantity list for one span or underground equivalent, and (2) an estimate of the number of miles operating at that voltage and phase.

C. Company agrees to undertake reasonable data collection to facilitate allocation or assignment of labor and non-labor distribution expenses in future cases on a more detailed basis than application of the plant allocators, in good faith collaboration with Staff.

# Data Collection

## Assignment of Expense

*C. Company agrees to undertake reasonable data collection to facilitate allocation or assignment of labor and non-labor distribution expenses in future cases on a more detailed basis than application of the plant allocators, in good faith collaboration with Staff.*

Based on our previous discussion, our understanding of this centers around the fact that some of the Smart Energy Plan projects may be reducing O&M but accomplish so by deploying additional capital.  This is counter to the historic view in that expense follows plant, because additional capital could be reducing expense.  Smart Energy Plan projects and AMI metering were cited as two specific areas of concern.

We engaged the SEP team to perform a review of projects to identify specific projects that had O&M savings so that we could further analyze the impacts.  Two specific projects were identified in this process, Oil Circuit Breakers and Tripsavers.

Oil Circuit Breakers are self contained circuit breakers that will not require oil replacement and Tripsavers are reclosers that wait a few moments when faulted, and close to identify if the fault has cleared itself.  This can prevent sending employees out to replace a blown fuse that was caused by something like temporary contact with a tree.

# Data Collection

## Assignment of Expense

For OCB, we obtained a breakdown of the Capital for the associated Major and O&M savings for that associated Major. We determined a breakdown of customers served on the circuits impacted. Customer breakdowns were not available for every circuit, but breakdowns were available for over half of the circuits, and we extrapolated the results to cover the impacts on all circuits.

We performed an analysis using class cost of service allocators and determined that the $24,000,000 worth of capital which was expected to save $211,000 of O&M, if allocated using the breakdown of specific customers served on those circuits, would have resulted in the following shifts in O&M allocation:

| | Residential | SGS | LGS | SPS | LPS |
|---|---|---|---|---|---|
| Shift in O&M Dollars | 851 | 2,603 | 3,763 | 4,765 | (11,982) |

Ameren does not believe this analysis indicates these types of projects would be expected to have a material impact on O&M allocations. The Tripsavers projected O&M savings are $145,500, expected to be fully realized in 2026. Due to the size of the total O&M savings that will begin occurring over the next handful of years, we opted not to do a more detailed analysis at this time.

# Data Collection

## Assignment of Expense

One additional concern raised at our previous meeting was AMR meter reading costs in relationship to AMI metering capital being deployed.  Our meter allocations are broken down between customers served by AMR meters (and the associated costs) and customer served by AMI meters (and the associated cost).  See excel example.

Meter reading costs are being allocated only on the percentage of costs for customers being served by AMR meters.  To this extent, incremental investment in AMI is not driving how meter reading expense is being allocated.

# Data Collection

## Voltage Data

*A. For each voltage at which service is provided to large primary service (Rate Schedule 11M) customers, or at which three or more customers which are not large primary service customers are served, the Company shall identify (1) the retirement units and quantities associated with providing one span of overhead (and the equivalent distance of underground) infrastructure including devices, and (2) the typical meter(s) and related installations. If these items vary with usage characteristics of customers, Company shall provide items (1) and (2) for a minimum of high, medium, and low infrastructure customers.*

*B. For each voltage and phase at which the distribution system operates Company shall provide (1) an example typical retirement unit and quantity list for one span or underground equivalent, and (2) an estimate of the number of miles operating at that voltage and phase.*

Our understanding based on our previous meeting is that A is referring to more of the last span used to connect a customer to the distribution system, and B is referring to more of a span as it broadly exists on the distribution system at that voltage. Our engineers have a clearer understanding of A and have provided a list of stock units (which I will work with Plant Accounting to into Retirement Units), but had questions or are seeking clarification and further conversation on B.

# Data Collection

## Voltage Data

We believe the typical meter installation question can be answered by the previously referenced meter allocators, as this is a direct breakdown of the meter installations serving each customer, by customer class.

We can provide estimated number of miles consistent with the previous case.  Secondary miles will need to be heavily estimated as the secondary system is not currently included in our mapping.

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