Exhibit No.:	
Issue(s):	*Class Cost of Service and Rate Design*
Witness:	*Sarah L.K. Lange*
Sponsoring Party:	*MoPSC Staff*
Type of Exhibit:	*Surrebuttal Testimony*
Case No.:	*ER-2019-0374*
Date Testimony Prepared:	*March 27, 2020*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF/RATE DESIGN DEPARTMENT

SURREBUTTAL TESTIMONY

OF

SARAH L.K. LANGE

THE EMPIRE DISTRICT ELECTRIC COMPANY

CASE NO. ER-2019-0374

Jefferson City, Missouri
March 2020

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THE EMPIRE DISTRICT ELECTRIC COMPANY

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Q. Please state your name and business address.

A. My name is Sarah L.K. Lange and my business address is Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102.

Q. Who is your employer and what is your present position?

A. I am employed by the Missouri Public Service Commission ("Commission") and my title is Regulatory Economist III, Tariff/Rate Design Department of the Industry Analysis Division. A copy of my credentials is attached to the Staff's Class Cost of Service Report ("CCOS Report") filed on January 29, 2020, in this matter, to which I contributed. I also provided Class Cost of Service ("CCOS") Rebuttal testimony filed March 9, 2020.

Q. What is the purpose of your surrebuttal testimony?

A. I will respond to the CCOS Rebuttal testimony of Tim S. Lyons and Kavita Maini concerning CCOS and Rate Design issues, the CCOS Rebuttal testimony of Mr. Lyons and Annika Brink, and the Cost of Service ("COS") Rebuttal testimony of Lena M. Mantle concerning the recommended Sales Reconciliation to Levelized Expectations ("SRLE").

SALES RECONCILIATION TO LEVELIZED EXPECTATIONS

Q. Mr. Lyons indicates that Empire is concerned that additional revenues due to customer growth are limited under the SRLE, and is also concerned because usage may dip below 400kWh due to the impacts of weather or conservation.[1] Are these reasonable concerns?

A. These concerns are not unreasonable, but they are offsetting. Customer growth or customer losses are not eligible for protection under 386.266.3 RSMo, which limits the protection of an RSM to the impact on utility revenues of increases or decreases in residential and commercial customer usage due to variations in either weather, conservation, or both.[2] The selection of the 400kWh level represents balancing the opportunity for additional revenues associated with customer growth (and retaining customer risk associated with customer losses) with covering the changes in gross usage associated with the impacts of weather and conservation pursuant to the statute.

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[1] Lyons CCOS Rebuttal, pages 6-7, and restated at page 11,

> . . . the Company has several concerns regarding the proposed SRLE mechanism, including: (a) its potential impact on Time-of-Use ("TOU") rates as the Company plans to design, propose and implement TOU rates (as well as other alternative rate designs) following implementation of AMI/ smart meters; (b) the loss of new customer and sales revenues that would be credited to customers under the mechanism; and (c) the potential asymmetrical nature of the mechanism; i.e., the potential over time for revenue increases under the SRLE reconciliation process to be less than revenue decreases. Thus, while the Company appreciates Staff's concerns regarding the proposed WNR, the Company continues to believe the WNR is the preferred approach and is willing to address those concerns with the considerations discussed above including implementation as a "Pilot Program".

[2] 386.266.3 states,

> Subject to the requirements of this section, any gas or electrical corporation may make an application to the commission to approve rate schedules authorizing periodic rate adjustments outside of general rate proceedings to adjust rates of customers in eligible customer classes to account for the impact on utility revenues of increases or decreases in residential and commercial customer usage due to variations in either weather, conservation, or both. No electrical corporation shall make an application to the commission under this subsection if such corporation has provided notice to the commission under subsection 5 of section 393.1400. For purposes of this section: for electrical corporations, "eligible customer classes" means the residential class and classes that are not demand metered; and for gas corporations, "eligible customer classes" means the residential class and the smallest general service class. As used in this subsection, "revenues" means the revenues recovered through base rates, and does not include revenues collected through a rate adjustment mechanism authorized by this section or any other provisions of law. This subsection shall apply to electrical corporations beginning January 1, 2019, and shall expire for electrical corporations on January 1, 2029.

Q. Would Staff oppose a reasonable modification to the Empire "Electric Distribution Policy" tariff provisions to reduce (1) the 1,000' of overhead electric service provided at no cost to residential customers not in a subdivision pursuant to Sheet 17a, (2) the Construction Allowance made available to refund to the developers of Residential Subdivisions pursuant to Sheet 17b, and (3) the estimated revenues considered for SH & CB customers pursuant to Sheet 17c, to exclude an approximation of the assumed revenue contribution of new residential customers in excess of 400 kWh per month, and 700 kWh per month for new commercial customers?

A. No. Staff would not oppose a reasonable adjustment of these amounts to reduce the company's exposure to incremental costs caused by addition of distribution facilities when new customers connect to the system.[3]

Q. Based on the company's cumulative frequency data and Staff's direct-recommended rates and SRLE treatment, what new revenue would be produced by comparing changes in customer numbers over a 12 month period?

A. As indicated below, depending on the 12 month period selected for which data is available, the changes in customer numbers not protected by the SRLE would have accounted for increased revenues of between $95,000 and $178,000. This analysis does not attempt to adjust out disconnections or reconnections that may have skewed the number of bills with usage below 400 kWh high in months such as April and May of 2019.

[3] Mr. Lyons' example provided in Figure 1 at page 12 of his CCOS Rebuttal testimony appears to fail to consider the Fuel Adjustment Clause ("FAC") in establishing percentages. Using Staff's direct-filed rates and FAC base factor, Mr. Lyons' new customer would generate approximately $1,661 in new revenue, $300 of which would be associated with the FAC base factor. $718.19 would be subject to effective refund pursuant to the SRLE, which is 43% of the total new revenue from base rates, as opposed to the $947 and 54.8% stated by Mr. Lyons.

	April - April	Sept. - Sept.
New Customer Charges #:	3,557	1,889
New kWh Sales below 400, monthly average #:	1,309,326	696,530
New Customer Charges $:	$ 46,241	$ 24,557
New kWh Sales $ (not excluding FAC base):	*$ 163,535*	*$ 86,997*
New kWh Sales $ (excluding FAC base):	$ 132,707	$ 70,597
New Customer Charge & Net kWh > 400 Revenues:	$ 178,948	$ 95,154

Q. Would you expect customers who do not exceed 400 kWh per month to show a greater or lesser gross kWh response to weather or conservation than a more typically-sized customer?

A. If the relationship of normal to actual heating and cooling degree days is expected to have a new uniform impact on a customer's consumption per month above a base level, then a customer using 400 or less kWh per month would be expected to have a much lower gross change in kWh consumption in response to weather than a customer using more kWh per month. Put more simply, if customers' usage is 10% higher in a month due to weather, 10% of 400 or less is a smaller number than 10% of 1,000 or more.

Similarly, customers with larger overall kWh consumption would tend to be seen as an easier and higher yielding target for utility-sponsored conservation programs. In other words, absent full decoupling, the perfect should not get in the way of the good for developing a mechanism that addresses most of the deviation in revenue associated with weather and conservation, while retaining company risk and opportunity for elements like customer growth.

Q. Ms. Brink raises concerns that Empire's requested weather normalization rider ("WNR") WNR fails to address conservation, and recommends that the impact of conservation and energy efficiency be adjusted for across the customer base.[4] Do you agree with these concerns?

A. Yes. Not only does the WNR not attempt to explicitly adjust for conservation, its design would actually result in a customer who engaged in conservation efforts to repay the company for that customer's reductions in usage from year to year, as adjusted for the number of heating and cooling degree days. This concern is also raised by Ms. Mantle in her COS Rebuttal testimony at page 5.

Q. Ms. Brink did not address the SRLE. Does the SRLE adjust for conservation and energy efficiency across the customer base?

A. Yes. This attribute makes the SRLE an excellent option for protecting Empire's revenues from the impact of energy efficiency programs whether offered under a MEEIA or through some other utility or non-utility sponsored program. With the SRLE the revenue impact of conservation is spread to all customers within the indicated classes. Under the WNR, a customer who reduces consumption would be rebilled for that reduction in consumption, for at least the first 12 months after the reduction occurs.

Q. At page 11 of his CCOS Rebuttal testimony, Mr. Lyons states that "implementation of the TOU rate structure may require a substantial redesign of the proposed SRLE mechanism." Is this an accurate characterization?

A. While certainly any change in rate structure would necessitate revisiting any rider designed to function ancillary to that rate structure, adapting the SRLE for a time variant rate structure is significantly more straightforward than adapting the WNR. Staff is unaware

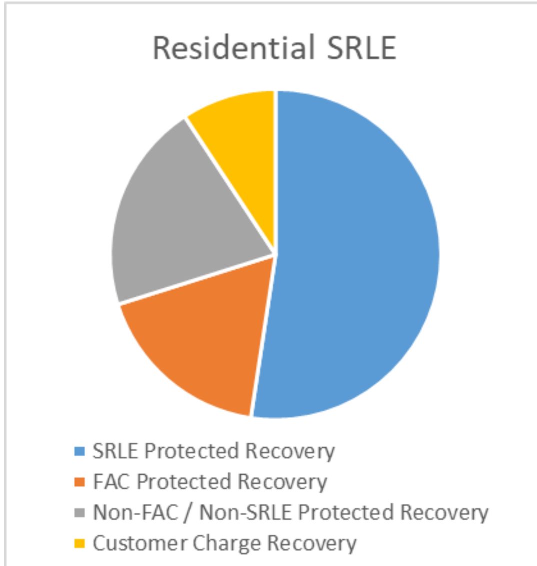
[4] Brink CCOS Rebuttal at page 5, "the proposed mechanism does not include revenue normalization for the effects of conservation or energy efficiency. If the Company proceeds with such a mechanism, it is NHT's position that the mechanism adjust for conservation and energy efficiency across its customer base."

of a reasonable adaptation of the WNR to a time variant rate structure. An example of a possible adaptation of the SRLE to a time-variant rate structure consistent with an estimation of the phased-in rate structure laid out by Staff in the Staff Report on Distributed Energy Resources, filed April 5, 2018, in File No. EW-2017-0245, at pages 50-53, is provided below:

Sales Reconciliation to Levelized Expectations **Residential Potential ToU Design**	Example Residential Rates	Rates Net of FAC Base Factor	Revenues per Block Net of FAC Base Factor
Summer Daytime first 300	$ 0.13000	$ 0.10646	$ 15,157,557
Summer Overnight first 100	$ 0.12000	$ 0.09646	$ 4,744,373
Summer Daytime Additional Sales	$ 0.13000	$ 0.10646	$ 30,297,913
Summer Overnight Additional Sales	$ 0.12000	$ 0.09646	$ 5,552,014
Shoulder Daytime first 100	$ 0.12000	$ 0.09646	$ 4,494,669
Shoulder Overnight first 75	$ 0.09000	$ 0.06646	$ 2,408,553
Shouler Daytime Additional Sales	$ 0.12000	$ 0.09646	$ 18,346,453
Shoulder Overnight Additional Sales	$ 0.09000	$ 0.06646	$ 8,082,742
Winter Morning/Evening first 200	$ 0.13000	$ 0.10646	$ 10,472,494
Winter Nighttime/Midday first 200	$ 0.10800	$ 0.08446	$ 8,308,247
Winter Morning/Evening Additional Sales	$ 0.13000	$ 0.10646	$ 44,147,399
Winter Nighttime/Midday Additional Sales	$ 0.10058	$ 0.07704	$ 9,361,018

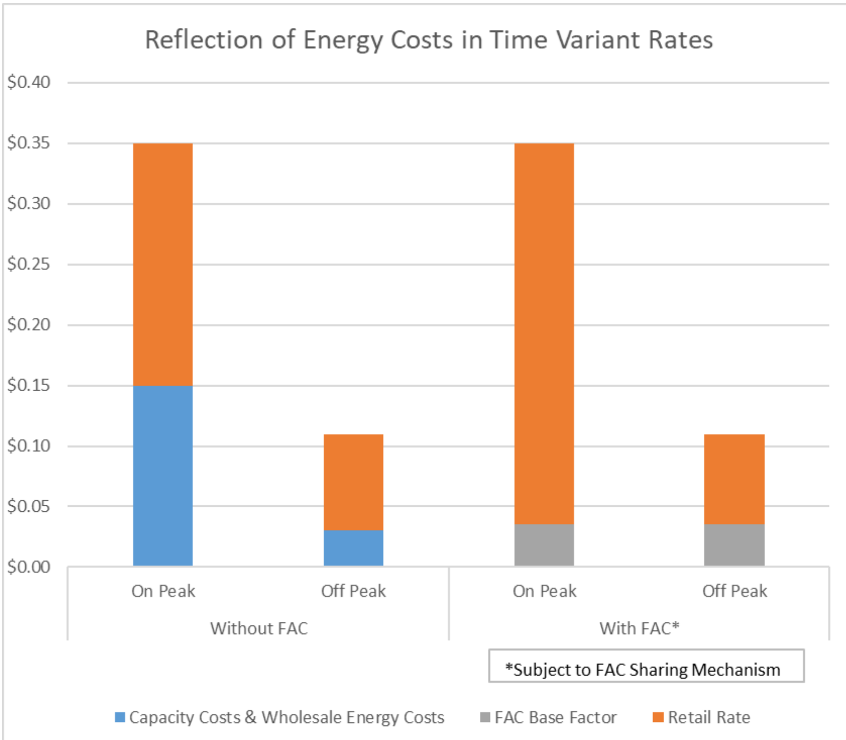
The revenue treatment under such a structure and SRLE is summarized below:

Residential SRLE	
SRLE Protected Recovery	$ 115,787,539
FAC Protected Recovery	$ 39,117,380
Non-FAC / Non-SRLE Protected Recovery	$ 45,585,893
Customer Charge Recovery	$ 20,467,668



Q. Would a SRLE mechanism address, at least in part, Staff's concerns related to the flatness of the FAC base factor with imposing a higher differential ToU?

A. Yes. The base factor for Empire's FAC is not time differentiated. The concept of a high-differential ToU rate is primarily supported by the energy costs and capacity costs that are avoidable during those intervals. Empire is nearly fully insulated from those costs, but customers are assessed the variation in those costs through the FAC based on gross energy usage – not time-differentiated energy usage. So when certain customers pay more due to high usage during on-peak hours, all customer will pay again – later – to compensate Empire for the additional energy costs associated with that increased usage. The additional revenue acquired by Empire due to those additional on-peak sales will not reduce the net energy costs borne by customers through the FAC. Similarly, if weather is milder than expected, Empire will recoup less revenue through on-peak charges, but will still be required to refund the reduced energy costs through the FAC. A similar concern is related to the relatively lower average energy prices typically experienced in the shoulder months that are currently part of the winter billing season. An example is provided below:



Q. Beyond expressing a willingness to designate the WNR as a "pilot program," several times in his testimony, does Mr. Lyons describe how a WNR could be properly considered a pilot program?

A. Staff is unaware of a pilot program design that would encompass more than 95% of a utility's customer base, or almost 150,000 customers at a utility the size of Empire. Empire has not suggested any learning objectives, evaluation criteria, or a limitation on the duration of the requested WNR.

RATE DESIGN

Q. At page 15-16 of his CCOS Rebuttal Mr. Lyons provides Empire's objection to Staff's recommendation to merge Schedule PFM into the consolidated Schedules GP and TEB in a future rate proceeding,

> based on three considerations: (1) Schedule PFM's rate structure is different than the consolidated Schedules GP and TEB's rate structure; (2) Schedule PFM's cost of service is different than the consolidated Schedules GP and TEB's cost of service, and (3) since the Company has concerns with Schedules GP and TEB consolidation, it cannot support a further consolidation. Specifically, Schedule PFM's rate structure consists of a head block for the first 700 kWh and a tail block for the remainder. This rate structure is not consistent with Schedules GP and TEB's rate structure, which consists of two demand charges and a three tiered energy rates. As an alternative, the Company would consider, subject to customer bill impact considerations, merging Schedule PFM into Schedule CB because the rate structures and cost of service are more comparable to than Schedules GP and TEB, as shown in Figure 2 (below).

At page 9 Mr. Lyons states "There are concerns with Staff's recommendation to maintain Schedule PFM rates at its pre-tax reduction level. Instead, the Company proposes to adjust Schedule PFM revenue levels consistent with the approach taken for Schedules GP and TEB." What is your response to these statements?

A. Mr. Lyons response to portions of Staff's recommendation at page 17 of the CCOS Report ignores Staff's reference to recommended future changes in the GP/TEB consolidated class, reproduced in full below, with emphasis added, "Staff recommends the currently tariffed Feed & Grain rates be retained, and that the Feed Mill rate schedule be consolidated into the GP/TEB schedule in a future rate proceeding. Given the relatively small number of customers taking service on this schedule, Staff encourages Empire to work one-on-one with customers to understand the impacts of this transition. **If a well-designed time-variant rate is in place for the consolidated GP/TEB class at the time of transition,** customer impacts should be minimal and may result in overall bill reductions for customers that utilize energy primarily in times of low capacity and energy costs."

This statement at page 17 of the CCOS Report is followed at page 19 by the recommendation that

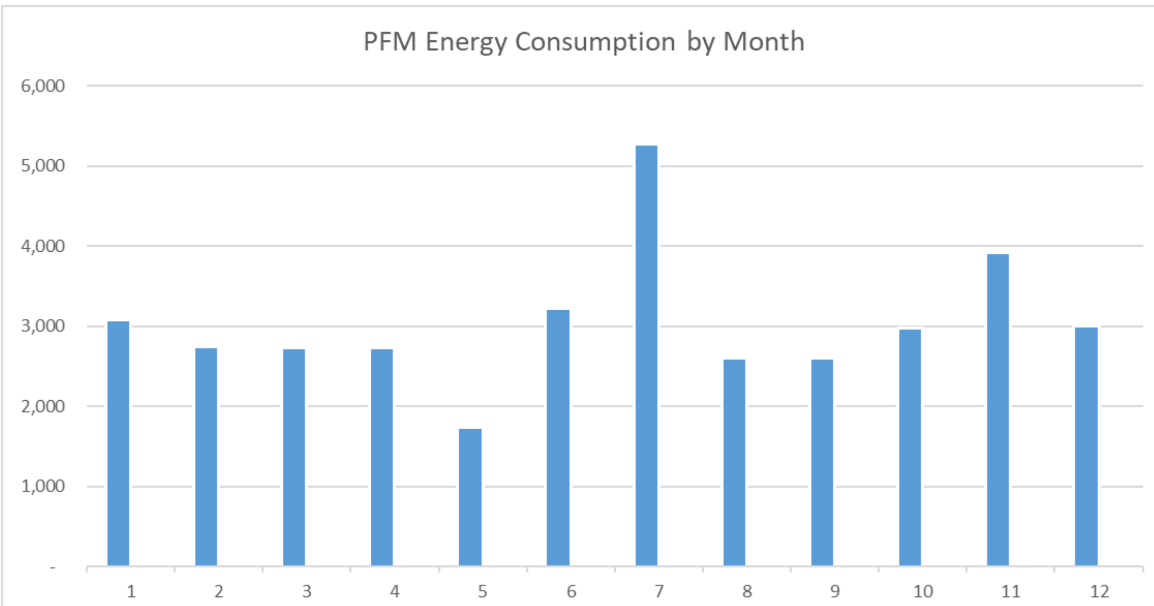
> When sufficient metering and billing technology has been deployed, Staff recommends that Empire adopt time-variant rate structures as discussed in the Staff Report on Distributed Energy Resources, filed April 5, 2018, in File No. EW 2017-0245, concerning residential and utility-wide rate design. In the more immediate future, pending Empire's deployment of AMI and broad-scale billing technology which are necessary for more broadly-deployed ToU, Staff recommends Empire work towards a more seasonally appropriate incorporation of a "shoulder" season. Empire has consistently high demands and usage in the months of December, January, and February. It is most appropriate to charge out the usage in these months at a higher rate than is charged for usage in October, April or similar months. Empire should also begin retaining determinants associated with creation of a coincident peak demand charge to facilitate study of this charge type as a potential element of a more modern rate structure in the future.

In other words, Staff recommends Empire revise all rate schedules to a suitable time-variant rate structure. Thus, while Staff is not opposed to assigning current customers to a future CB/SH rate schedule instead of a future GP/TEB rate schedule, Staff is optimistic that neither of those rate schedules would reflect a simplistic non-time-variant design as currently employed by the CB and SH rate schedules.

Further, Mr. Lyons' graphic that is intended to convey the average $/MWh associated with service to each of the indicated rate schedules fails to account for the differences in experienced billed $/MWh among customers on a rate schedule. Customers served on the PFM rate schedule do not appear to use energy consistently throughout the year, and if served on the GP/TEB rate schedule would expect to experience a higher than average $/kWh bill. The average $/kWh experienced by class is provided below:

Average $/kWh Staff Recommended Outcome		
Residential	$	0.128
CB/SH	$	0.120
GP/TEB	$	0.093
LP	$	0.072
Feed & Grain	$	0.179

The monthly energy consumption of the PFM customers is provided below:



Thus, a PFM customer would not experience a uniform rate per kWh on the GP/TEB existing rate structure, but would experience a more uniform bill month-to-month. Staff estimates that the “average” experienced rate for a PFM customer billed on the GP/TEB rate schedule would be approximately $0.135/kWh, as an optimistic case. The actual experienced rate for a PFM customer would likely be slightly higher, but would produce a much more uniform month-to-month bill than the current PFM structure. Following Mr. Lyons’ suggestion to move the revenue recovered by PFM rates commensurate with the revenue recovered by GP/TEB rates in this case, but moving the PFM customers to the CB/SH rate schedule in a future rate case, while maintaining the structure of that rate schedule, is not a reasonable approach.

Q. At page 14 Mr. Lyons raises a concern with Staff's recommendation to realign the customer and non-summer non-tailblock charges of the CB and SH rate schedules, due to "customer bill impacts and whether some customers may experience significant bill increases as a result of the change." Would any customers experience bill increases under Staff's recommended revenue requirement allocation and rate design?

A. No customers would experience bill increases under Staff's recommendation, given Staff's recommended revenue requirements and class revenue responsibilities.

Q. Mr. Lyons states that Staff misapplied the 100 highest hours approach and implicitly characterized all production capacity as demand-related, is this accurate?

A. Yes. However, due to the overall unreliability of the loads in this case, primarily related to the estimated bill issue, it is not necessary to correct this error.[5] I agree with Mr. Lyons' assessment that this error creates a shift in revenue responsibility to lower load factor classes.

Q. Ms. Maini says future wind will increase "fixed" costs and decrease "variable" costs, is this a reasonable approach to modern cost of service studies?

A. No. While the expected return on capital and depreciation expense associated with wind generation facilities does not vary with energy production, essentially a wind generator substitutes capital cost for fuel expenses. This concept is discussed extensively throughout the RAP manual[6], and specifically at page 48.

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[5] See Lyons CCOS Rebuttal at page 22.
[6] "Electric Cost Allocation for a New Era," by Jim Lazar, Paul Chernick and William Marcus, edited by Mark LeBel.

Q. Given the reliability concerns with the underlying data, including the role that estimated bills play in introducing greater than normal uncertainty into the weather normalization process and the estimation of billing determinants, what is a reasonable approach to class revenue allocations in this case?

A. Typically Staff assumes a CCOS study is accurate to around 5% plus or minus of each studied class's revenue requirement. In this case, that is not a reasonable assumption. However, given (1) the magnitude of overall revenue requirement decrease contemplated in this case, (2) the results of Staff's CCOS study in File No. ER-2016-0023, (3) likely future investment in metering systems, (4) the intent to phase out the overly simplistic PFM rate schedule and transition all customers to modern time-variant rate designs, and (5) an overall goal of minimizing customer impacts associated with unnecessary bill swings from case-to-case, Staff maintains its class revenue responsibility and rate design variations as a reasonable outcome in this case, regardless of the unavailability of a typically-reliable CCOS from any party.

Q. Does this conclude your surrebuttal testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of The Empire District Electric	)	
Company's Request for Authority to File	)	Case No. ER-2019-0374
Tariffs Increasing Rates for Electric Service	)	
Provided to Customers in its Missouri	)	
Service Area	)	

AFFIDAVIT OF SARAH L.K. LANGE

STATE OF MISSOURI	)	
	)	ss.
COUNTY OF COLE	)	

COMES NOW SARAH L.K. LANGE and on their oath declares that they are of sound mind and lawful age; that they contributed to the foregoing Surrebuttal Testimony; and that the same is true and correct according to their best knowledge and belief, under penalty of perjury.

Further the Affiant sayeth not.

/s/ *Sarah L. K. Lange*
SARAH L.K. LANGE