MISSOURI PUBLIC SERVICE COMMISSION

STAFF REPORT

PRUDENCE REVIEW OF COSTS
RELATED TO THE FUEL ADJUSTMENT CLAUSE
FOR THE ELECTRIC OPERATIONS
OF
UNION ELECTRIC COMPANY
d/b/a AMEREN MISSOURI

June 1, 2014 through September 30, 2015

FILE NO. EO-2016-0228

Jefferson City, Missouri
August 31, 2016

****Denotes Highly Confidential Information****

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UNION ELECTRIC COMPANY
d/b/a AMEREN MISSOURI

FILE NO. EO-2016-0228

Prudence Review of Costs Report

I. Executive Summary

The Missouri Public Service Commission ("Commission") first authorized a Fuel Adjustment Clause ("FAC") for Union Electric Company d/b/a Ameren Missouri in Case No. ER-2008-0318. Since then, the Commission has approved continuation of Ameren Missouri's FAC with modifications in its orders in Ameren Missouri's subsequent general rate cases, Case Nos. ER-2010-0036, ER-2011-0028, ER-2012-0166, and ER-2014-0258.

Commission Rule 4 CSR 240-20.090(7) and Missouri Revised Statute § 386.266.4 (2015) require that the Commission's Staff (Staff) conduct prudence reviews of an electric utility's FAC no less frequently than every 18 months. In this fifth prudence review of Ameren Missouri's FAC, Staff analyzed items affecting Ameren Missouri's total fuel costs, purchased power costs, net emission costs, transmission costs, off-system sales revenues, and renewable energy credit revenues for the seventeenth, eighteenth, nineteenth, and twentieth, four-month accumulation periods of Ameren Missouri's FAC. Ameren Missouri's seventeenth FAC accumulation period was June 1, 2014, through September 30, 2014. The eighteenth accumulation period was October 1, 2014 through January 31, 2015. The nineteenth accumulation period was February 1, 2015, through May 31, 2015. The twentieth accumulation period was June 1, 2015, through September 30, 2015. Thus, the period of this prudence review covers the sixteen (16) months from June 1, 2014, through September 30, 2015[1]. Staff's previous Ameren Missouri FAC prudence reviews include:

Prudence Review	File Number	Review Period
First	EO-2010-0255	March 1, 2009 through September 30, 2009
Second	EO-2012-0074	October 1, 2009 through May 31, 2011
Third	EO-2013-0407	June 1, 2011 through September 30, 2012
Fourth	EO-2015-0060	October 1, 2012, though May 31, 2014

In evaluating prudence, Staff reviews whether a reasonable person making the same decision would find both the information the decision-maker relied on and the process the decision-maker employed was reasonable based on the circumstances at the time the decision was made, *i.e.*, without the benefit of hindsight. The decision actually made is disregarded

[1] Rate adjustments based on the four (4) four-month accumulation periods during this fifth prudence audit period were the subject of File Nos. ER-2015-0128, ER-2015-0233, ER-2016-0016, and ER-2016-0130.

and the review is instead an evaluation of the reasonableness of the information the decision-maker relied on and the decision-making process the decision-maker employed. If either the information relied upon or the decision-making process employed was imprudent, then Staff examines whether the imprudent decision caused any harm to ratepayers. Only if an imprudent decision resulted in harm to ratepayers, will Staff recommend a disallowance.

Staff analyzed a variety of items in examining whether Ameren Missouri prudently incurred the fuel and purchased power costs associated with its FAC tariff sheets. Based on its review, **Staff identified no evidence of imprudence by Ameren Missouri in the items it examined for the period of June 1, 2014, through September 30, 2015.**

Table 1 identifies Ameren Missouri's Commission-approved FAC tariff sheets which were applicable for service provided by Ameren Missouri to its customers during the period of June 1, 2014, through September 30, 2015:

Table 1	
June 1, 2014, through May 29, 2015	**May 30, 2015, through September 30, 2015**
1st Revised Sheet No. 72	1st Revised Sheet No. 73
1st Revised Sheet No. 72.1	Original Sheet No. 73.1
1st Revised Sheet No. 72.2	Original Sheet No. 73.2
1st Revised Sheet No. 72.3	Original Sheet No. 73.3
1st Revised Sheet No. 72.4	Original Sheet No. 73.4
1st Revised Sheet No. 72.5	Original Sheet No. 73.5
1st Revised Sheet No. 72.6	Original Sheet No. 73.6
1st Revised Sheet No. 72.7	Original Sheet No. 73.7
1st Revised Sheet No. 72.8	Original Sheet No. 73.8
	Original Sheet No. 73.9
	Original Sheet No. 73.10

II. Introduction

A. General Description of Ameren Missouri's FAC

Ameren Missouri's FAC requires that it accumulate its Actual Net Energy Cost[2]; defined generally as variable fuel, purchased power, transmission and net emissions costs less off-system sales revenue during the four-month accumulation periods ("AP").[3] Each four-month accumulation period is followed by an eight month[4] recovery period ("RP")[5] during which ninety-five percent (95%) of the over- or under-recovery of Actual Net Energy Cost during the previous four-month accumulation period relative to the Base Energy Cost amount[6] is returned to or collected from ratepayers as part of a decrease or an increase of the FAC Fuel and Purchased Power Adjustment ("FPA") per kWh rate. Because the total amount charged through the FPA rarely, if ever, will exactly match the required offset, Ameren Missouri's FAC is designed to true-up[7] the difference between the revenues billed and the revenues authorized for collection during recovery periods including interest at the Ameren Missouri's short-term interest rate. Any disallowance the Commission orders as a result of a FAC prudence review shall include interest at Ameren Missouri's short-term interest rate and will be accounted for as an adjustment[8] item when calculating the FPA for a future recovery period.

B. Prudence Standard

In *State ex rel. Associated Natural Gas Co. v. Public Service Com'n of State of Mo.*, the Western District Court of Appeals stated that the Commission defined its prudence standard as follows:

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[2] "Actual Net Energy Cost" (ANEC) are equal to fuel costs (FC) plus costs of purchased power (PP) plus net emissions allowances (E) minus off-system sales revenue (OSSR) as defined on Ameren Missouri's Original Sheet No. 72.1 through Original Sheet No. 72.4.

[3] Accumulation periods are: February through May, June through September and October through January.

[4] In Ameren Missouri's initial FAC, recovery periods lasted twelve (12) months. In Case No. ER-2011-0028, recovery periods were changed from a twelve (12) month duration to an eight (8) month duration. Recovery Period 7, which began on October 1, 2011, was the first recovery period with an eight (8) month duration.

[5] Recovery periods are: October through May for each immediately preceding February through May accumulation period; February through September for each immediately preceding June through September accumulation period; and June through January for each immediately preceding October through January accumulation period.

[6] "Base Energy Cost" (B) as defined on Ameren Missouri's Original Sheet No.72.6.

[7] True-up of FAC is defined on Ameren Missouri's Original Sheet No. 72.8.

[8] See line item 6 on Ameren Missouri's Original Sheet No. 72.7.

> [A] utility's costs are presumed to be prudently incurred.... However, the presumption does not survive “a showing of inefficiency or improvidence... [W]here some other participant in the proceeding creates a serious doubt as to the prudence of expenditure, then the applicant has the burden of dispelling these doubts and proving the questioned expenditure to have been prudent.
>
> In the same case, the PSC noted that this test of prudence should not be based upon hindsight, but upon a reasonableness standard: [T]he company's conduct should be judged by asking whether the conduct was reasonable at the time, under all the circumstances, considering that the company had to solve its problem prospectively rather than in reliance on hindsight. In effect, our responsibility is to determine how reasonable people would have performed the tasks that confronted the company.
>
> 954 S.W.2d 520, 528-29 (Mo. App. W.D., 1997) (citations omitted).

In reversing the Commission in that case, the Court did not criticize the Commission’s definition of prudence, but held, in part, that to disallow a utility's recovery of costs from its ratepayers based on imprudence; the Commission must determine the detrimental impact of that imprudence on the utility’s ratepayers. *Id.* at 529-30. This is the prudence standard Staff has followed in this review. Staff reviewed for prudence the areas identified and discussed below for Ameren Missouri’s seventeenth, eighteenth, nineteenth, and twentieth, four-month accumulation periods.

Staff Expert Witness: David Roos

III. Actual Net Energy Costs

The Ameren Missouri FAC definition of Actual Net Energy Costs includes three components of costs – fuel costs (“FC”), costs of purchased power (“PP”) and net emissions allowance costs (“E”), and one component of revenue – off-system sales revenues. Table 2 is a breakdown of Ameren Missouri’s fuel costs, costs of purchased power, net emissions allowance costs and off-system sales revenues for the period of June 1, 2014, through September 30, 2015:

continued on next page

Table 2

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Component	Costs or Revenues	Percentage of Component	Percentage of FC + PP + E
Fuel Costs (FC)			
Coal	$ ** __________ **	** _____ **	** _____ **
Oil	$ ** _____ **	** ____ **	** ____ **
Nuclear	$ ** __________ **	** _____ **	** ____ **
Natural Gas	$ ** __________ **	** ____ **	** ____ **
Total FC	$ ** __________ **	** _____ **	** _____ **
	-		-
Costs of Purchased Power (PP)	-		-
Long Term Contracts	$ -	** ____ **	** ____ **
Short Term Contracts	$ ** __________ **	** _____ **	** ____ **
Replacement Power Insurance	$ -	** ____ **	** ____ **
Transmissions Costs	$ ** __________ **	** _____ **	** ____ **
plus Transmission Revenues	$ ** __________ **	** _____ **	** _____ **
Total PP	$ ** __________ **	** _____ **	** ____ **
	-		-
Net Emissions Allowance Costs (E)	$ ** _____ **	** _____ **	** ____ **
	-		-
Total FC + PP + E	$ ** __________ **		** _____ **
	-		-
***less* Off-System Sales Revenues**	$ ** __________ **		-
	-		-
Actual Net Energy Cost	$ ** __________ **		-

A. Utilization of Generation Capacity

1. Description

Ameren Missouri's Generation consists of a mixture of Nuclear, Coal, Natural Gas, Solar, Methane Gas, #2 Fuel Oil and Hydro generating stations as indicated in the table below.

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2. Summary of Cost Implications

"Ameren Missouri offers all of its generation into the MISO day-ahead market and bids its forecasted load into the MISO day-ahead market. When Ameren Missouri's cleared generation MWh in a given hour exceeds its cleared load MWh in that hour, Ameren Missouri has a net off-system energy sale equal to the difference between the cleared generation MWh and load MWh."[9]

[9] Direct Testimony of James R. Dauphinais, Case No. ER-2012-0166, page 11, lines 16-20.

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Ameren Missouri's electricity generating units are dispatched in the MISO day-ahead market as a function of each generating unit's offered cost per kWh relative to the MISO Locational Marginal Price ("LMP") at the unit node and subject to the unit's operating characteristics and commitment status as provided by Ameren Missouri. Units which are committed as "must run" will be dispatched at the unit's offered unit minimum cost per kWh when LMP is below the respective cost.[10] This method of dispatching the generating units assures that only the most cost effective supply-side resources are used to service Ameren Missouri's load requirements.

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3. Conclusion

Staff did not observe any evidence of imprudent utilization of generation resources during the time period examined in this prudence review.

4. Documents Reviewed

a. Ameren Missouri's responses to Staff Data Requests Nos. 0004, 0011, 0022, 0028, 0029, 0040 and 0041;

b. Ameren Missouri Response to Staff Data Request 0336 for Case No. ER-2014-0258; and

[10] Ameren Missouri Response to Staff Data Request 0336 for Case No. ER-2014-0258.
[11] Ameren Missouri Response to Staff Data Request 0029.
[12] Ibid.

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c. Direct testimony of James R. Dauphinais, Case No. ER-2012-0166, page 11, lines 16-20.

Staff Expert Witness: J Luebbert

B. Risk Management

1. Description

Ameren Missouri's risk management strategies encompass a wide range of activities. The *Ameren Missouri Commodity Risk Management Policy* ("CRMP")[13] identifies the following strategies it will pursue to manage commodities' risks:

Energy and Transmission Hedging
Asset Optimization
Capacity Transactions
Congestion Hedging
Energy Arbitrage
Natural Gas LDC Supply and & Transportation Hedging
Natural Gas Generation Supply & Transportation Strategies
Coal Buy for Burn Procurement
Rail Fuel Surcharge Hedging
Fuel Oil Purchases
Nuclear Fuel Cycle Hedging
Renewable Energy Credits
Emissions Hedging
Carbon Compliance Hedging

Ameren Missouri's risk management strategies are directly controlled by the guidelines contained in its CRMP. A policy overview is given in the CRMP as follows:

> **1.1 Background, Purpose, and Scope of Policy**
>
> Ameren Corporation ("Ameren") has charged three functional units within Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri") with the responsibility of managing all of Ameren's generation, load, and other obligations in a manner consistent with the policy set forth herein. The three functional units are Asset Management & Trading ("AM&T"), Fuel Commodities & Operations ("FC&O"), and Nuclear Fuel Cycle Management ("NFCM"). AM&T manages generation assets, load and other obligations, and natural gas supply by engaging in wholesale energy, capacity, electricity, FTR/ARR, transmission, and natural gas transactions. FC&O manages select power plant fuel supplies (e.g. coal, fuel oil) and emissions requirements. NFCM manages nuclear fuel requirements through the purchase and sale of uranium, conversion services, enrichment services, and fabrication services.

[13] Ameren Missouri Commodity Risk Management Policy, Version -2016.2, 01/01/2016.

> It is the intent of management that this Risk Management Policy ("this Policy") governs all financial risk taking and risk management/mitigation activities associated with the above activities. In order to fulfill the responsibilities described above in a financially disciplined manner, AM&T, FC&O, and NFCM may enter into transactions that are defined in this Policy as approved by the Risk Management Steering Committee ("RMSC")…

2. Summary of Cost Implications

Ameren Missouri employs risk management strategies in an attempt to mediate the market volatility risk of fuel, energy, capacity, emissions, and transmission congestion prices. A discussion related to hedging strategy employed for various components is contained in the report under the Natural Gas Costs, Coal and Rail Transportation Costs, Fuel Oil Costs, Nuclear Fuel Costs and Transmission Costs sections of this report. If Ameren Missouri did not manage its risk management strategies prudently it could result in an increase in fuel costs that are collected from customers through the Ameren Missouri FAC charge.

3. Conclusion

Staff did not observe Ameren Missouri to have acted imprudently in the administration of its risk management strategies during the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's responses to Staff Data Request 0020.

Staff Expert Witness: Matthew J. Barnes

C. Purchased Power Contracts

1. Description

During the period June 1, 2014, through September 30, 2015, Ameren Missouri did not issue any request for proposals, nor did it execute any contracts for energy delivery.[14] However, Ameren Missouri's response to Data Request 0011 in this case referenced a purchased power agreement ("PPA") supplied to Staff in Data Request 0017 in File No. EO-2012,-0074. Staff reviewed the Renewable Resource Power Purchase Agreement by and between Pioneer Prairie Wind Farm I, LLC, and Ameren Missouri ("Pioneer Prairie PPA"). The Pioneer Prairie PPA is a ** ____________ ** that expires ** ____________ **

[14] Staff's Data Request 0011 in File No. EO-2016-0228.

and provides a capacity of ** ____ ** MW and estimated annual energy purchases of ** ____ ** MWhs at a price of ** ____ ** per MWh of which ** ____ ** per MWh is for the purchase of energy which flows through the FAC and ** ____ ** per MWh is for the purchase of renewable energy attributes which may be used for compliance with 4 CSR 240-20.100 Electric Utility Renewable Energy Standard Requirements and do not flow through the FAC. When Ameren Missouri was asked[15] to provide a copy of all purchased power contracts that were in effect during the period June 1, 2014, through September 30, 2015, Mark J. Peters, Ameren Missouri's Manager, Asset and Trade Optimization, responded as follows:

> Ameren Missouri is a party to large number of master enabling agreements, including various interconnection agreements and EEI Master Power Purchase and Sale Agreements. These agreements provide for the general terms and conditions under which Ameren Missouri and the counterparty may transact at points in the future. These agreements do not, in and of themselves, obligate the counterparty to sell power and energy to Ameren Missouri, nor do they specify the pricing, term and any special conditions of specific transactions. Transactions other than hourly transactions are normally confirmed with either a written confirmation or electronically. These confirmations contain the specifics regarding volume, price, delivery location and any special conditions. Ameren Missouri has contracts in conjunction with the operation of its Commission approved tariff providing for Electric Power Purchases from Qualifying Facilities.

2. Summary of Cost Implications

If Ameren Missouri was imprudent by purchasing additional power or capacity to meet its demand, ratepayer harm could result from that imprudence through an increase in Ameren Missouri's FAC charges.

3. Conclusion

Staff identified no evidence of imprudence related to Ameren Missouri's long-term purchased power agreements during the prudence review period.

4. Documents Reviewed

Ameren Missouri's Responses to Staff Data Request 0011.

[15] Ibid..

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Staff Expert Witness: Matthew J. Barnes

D. Purchased Power Costs

1. Description

For the period June 1, 2014, through September 30, 2015, ** ________ ** was attributed to purchased power costs. In addition to the long-term purchased-power contract discussed above, Ameren Missouri also purchases short-term energy in the MISO and PJM day-ahead markets (hourly) and through bilateral agreements. Typically, Ameren Missouri relies on these short-term energy sources to help it meet its load during forced, planned or derating[16] generation plant outages and when the market price for that short-term energy is both below the marginal cost of providing that energy from Ameren Missouri's generating units and below the cost of longer-term capacity purchases.

2. Summary of Cost Implication

If Ameren Missouri was imprudent by purchasing energy to meet its demand at a cost that exceeded Ameren Missouri's cost to generate that energy itself, ratepayer harm could result from that imprudence through an increase in FAC charges.

3. Conclusion

Staff identified no evidence Ameren Missouri acted imprudently with regard to purchases of short-term energy in the MISO and PJM day-ahead markets or by bilateral agreements during the prudence review period.

4. Documents Reviewed

Ameren Missouri's response to Staff Data Request 0001 and work papers in File Nos. ER-2015-0128, ER-2015-0233, ER-2016-0016, and ER-2016-0130.

Staff Expert Witness: Matthew J. Barnes

E. Plant Outages

1. Description

Ameren Missouri generates most of the energy for its retail customers with its own

[16] See. E. Plant Outages section of the Prudency Review Report for definitions of forced, planned and derating outages.

generating units. Outages occurring at any of the generating units can have an impact on how much Ameren Missouri pays for fuel and purchased power and could result in Ameren Missouri paying more for fuel and purchased power cost than is necessary. Ameren Missouri is required by the North American Electric Reliability Corporation ("NERC") to submit data for every outage in accordance with Generating Availability Data System ("GADS") data reporting instructions effective January, 2012.

Generating unit outages generally can be classified as scheduled outages, forced outages or partial outages (derating). ** ____________________ **

Staff examined the planned outages and the timing of these outages to determine if the planned outages were prudently taken. An example of an imprudent planned outage would be planning an outage of a large coal unit during peak demand times or not performing recommended or required maintenance that results in equipment failure that directly increases the forced outage rate.

The major generating unit planned outages that occurred between June 1, 2014, through September 30, 2015 were as follows[18]:

[17] Ameren Missouri Response to Staff Data Request 0032
[18] Ibid.

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2. Summary of Cost Complications

An imprudent outage could result in Ameren Missouri purchasing expensive spot market energy or running its more expensive units to meet demand and could result in ratepayer harm through an increase in customer FAC charges.

3. Conclusion

Staff did not observe any evidence of imprudent outages during the time period examined in this prudence review.

4. Documents Reviewed

a. Ameren Missouri's responses to Staff Data Requests Nos. 0002, 0032, 0033, 0055 and 0059.

Staff Expert Witness: J Luebbert

F. Natural Gas Costs

1. Description

For the review period, ** ________ ** or **____** of Ameren Missouri's total fuel costs, cost of purchased power, transmission costs, and net emission costs is associated with the natural gas used in generating electricity. The cost of natural gas includes various miscellaneous charges such as firm transportation service charges and other fuel handling expenses. Ameren maintained natural gas contracts to meet its requirements during the review period.

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The following list identifies Ameren Missouri's peaking generating units that burn natural gas:

Pinckneyville 1, 2, 3, 4, 5, 6, 7, and 8;
Peno Creek 1, 2, 3, and 4;
Meramec CTG 1, 2;
Venice CTG 2, 3, 4, and 5;
Raccoon Creek 1, 2, 3, and 4;
Goose Creek 1, 2, 3, 4, 5, and 6;
Audrain 1, 2, 3, 4, 5, 6, 7, and 8;
Kinmundy 1 and 2
Kirksville CT

During the prudence review period, Ameren Missouri's natural gas price averaged ** _____ _** MMBtu. Natural gas prices have remained at low levels due to advancements in technologies used to explore for and produce natural gas.

Staff reviewed the Ameren Missouri 2016 Commodity Risk Management Policy that was in effect during the review period. Ameren Missouri's natural gas procurement strategy is summarized in the March 1, 2016 Commodity Risk Management Policy, page 13, as part of Data Request 0020:

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Ameren Missouri employs hedging activities in an attempt to mitigate the impacts of market volatility in natural gas prices and aid in providing a reliable fuel commodity.

Financial hedges can be described as:

> Making an investment to reduce the risk of adverse price movements in an asset. Normally, a hedge consists of taking an offsetting position in a related security, such as a futures contract. An example of a hedge would be if you owned a stock, then sold a futures contract stating that you will sell your stock at a set price, therefore avoiding market fluctuations. Investors use this strategy when they are unsure of what the market will do. A perfect hedge reduces your risk to nothing (except for the cost of the hedge).[19]

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[19] www.investopedia.com

2. Summary of Cost Implications

If Staff determined that Ameren Missouri was imprudent in its purchasing decisions relating to natural gas, ratepayer harm could result from that imprudence by an increase in FAC charges.

3. Conclusion

Staff observed no indication of imprudence associated with Ameren Missouri's natural gas purchases for the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's response to Data Request 0020.

Staff Expert Witness: Matthew J. Barnes

G. Coal and Rail Transportation Costs

1. Description

For the review period, ** ________ ** or ** ____ ** of Ameren Missouri's total fuel cost of purchased power, transmission costs, and net emission costs is associated with the coal used in generating electricity. The cost of coal includes various miscellaneous charges such as rail and other ground transportation-service charges, and other fuel handling expenses.

Ameren maintains 7 short and long-term coal purchase contracts, 2 rail transportation contracts, 2 rail lease contracts, and 2 rail storage contracts. The counterparties for the contracts were:

<u>Coal Purchase Contracts</u>

** ________ **

** __________________ **

** ________ **

** _____________ **

Refined Coal Purchase Contracts** _____________ **

** ______________________ **

** _____________ **

Rail Transportation Contracts

** ____ **

** ____ **

Rail Lease Contracts

** ____ **

** ____ **

Railcar Storage Contracts

** ____ **

** ____ **

Staff reviewed the Ameren Missouri 2016 Commodity Risk Management Policy. Ameren Missouri's coal procurement strategy is summarized in the March 1, 2016 Commodity Risk Management Policy, page 13 and 14, as part of Data Request 0020;

** ____

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Staff has reviewed the various components of Ameren Missouri's coal supply strategy, and Ameren Missouri has complied with its stated parameters.

Ameren Missouri also utilizes a rail fuel surcharge hedge program in an effort to minimize price volatility associated with rail transportation of coal. Ameren Missouri's rail fuel surcharge hedge program is summarized in the Ameren Missouri Commodity Risk Management Policy, page 14;

** ____
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___ **

Staff has reviewed the various components of Ameren Missouri's rail fuel surcharge strategy, and determined that Ameren Missouri has complied with these stated parameters.

2. Summary of Cost Implications

If Ameren Missouri was imprudent in its purchasing decisions relating to the purchase of coal and the handling of the rail fuel surcharge hedging policy, ratepayer harm could result from such imprudence through an increase in Ameren Missouri customer FAC charges.

3. Conclusion

Staff identified no imprudence by Ameren Missouri in its purchase of coal and its rail fuel surcharge hedging practices for the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's response to Staff Data Request 0020; and

b. Email containing fossil fuel contract counterparties from Ameren to Staff.

Staff Expert Witness: Matthew J. Barnes

H. Fuel Oil Costs

1. Description

For the prudency review period, ** ________ ** or ** ____ ** of Ameren Missouri's total fuel costs, cost of purchased power, transmission costs, and net emission

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costs is associated with the fuel oil used in generating electricity. The cost of fuel oil includes various other miscellaneous charges such as rail and/or ground transportation service charges and other various fuel handling expenses.

Ameren Missouri maintained 5 oil contracts that were in place during the review period. The contracts provide a primary delivery location and agreement on the price. The price is based on the market price at the time Ameren purchases the fuel oil. The counterparties are:

** ______________ **

** ______________ **

** _____ **

** ______________ **

** ______________ **

Ameren Missouri's response to Staff Data Request 0020 describes in detail Ameren Missouri's policies for the procurement of fuel oil. Staff reviewed the March 1, 2016 Commodity Risk Management Policy, which states on page 14:

** ____
_________________________________ **

Staff has reviewed the various components of Ameren Missouri's fuel oil procurement strategy, and determined that Ameren Missouri has complied with these stated parameters.

2. Summary of Cost Implications

If Ameren Missouri was imprudent in its purchasing decisions relating to fuel oil, ratepayer harm could result from the imprudence by an increase in FAC charges.

3. Conclusion

Staff observed no indication of imprudence by Ameren Missouri related to the purchase of fuel oil for the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's response to Staff Date Request 0020; and

b. Email containing fossil fuel contract counterparties from Ameren to Staff.

Staff Expert Witness: Matthew J. Barnes

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E. Nuclear Fuel

1. Description

For the prudency review period ** ________ ** or ** ____ ** of Ameren Missouri's cost of fuel, cost of purchased power, transmission costs, and net emission costs is associated with nuclear fuel used in the generation of electricity at Ameren Missouri's Callaway facility. The cost of nuclear fuel includes various miscellaneous costs, such as Westinghouse credits, ground transportation service charges and other miscellaneous nuclear fuel handling expenses.

Ameren Missouri had 5 nuclear fuel contracts, 3 conversion contracts, 4 enrichment contracts, and 1 fabrication contract that were in place during the review period. Each contract provides a primary delivery location and agreement on a price. Each contract price is based on the market price at the time Ameren purchased the nuclear fuel. The counterparties are:

<u>Nuclear Fuel Contracts</u>

** ________ **

** ______________ **

** ________ **

** ________ **

** ________ **

<u>Conversion Contracts</u>

** ________ **

** ____ **

** ____ **

<u>Enrichment Contracts</u>

** ____________________________ **

** ______________ **

** ____________________________ **

** ________________________________ **

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Fabrication Contracts

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Ameren Missouri's response to Staff Data Request 0020 describes in detail Ameren Missouri's policies for the procurement of nuclear fuel. Staff reviewed the March 1, 2016 Commodity Risk Management Policy, which states on page 14 and 15:

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[redacted] **

Ameren Missouri's Commodity Risk Management Policy is the controlling document for the acquisition and control of nuclear fuel for the Callaway facility. Staff has reviewed the various components of Ameren Missouri's nuclear fuel purchasing practices, and determined that Ameren Missouri has complied with these stated parameters.

2. Summary of Cost Implications

If Ameren Missouri was imprudent in purchasing nuclear fuel, ratepayer harm could result from that imprudence by an increase in customer FAC charges.

3. Conclusion

Staff observed no indication of imprudence related to the purchase of nuclear fuel for the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's response to Staff Date Request 0020.

Staff Expert Witness: Matthew J. Barnes

J. Emission Allowances

1. Description

The EPA's Clean Air Interstate Rule (CAIR), issued in 2005, and was developed to address the transport of pollutants from upwind to downwind states. States in the eastern half of the country were required, over a six-year compliance period (2009-2015), to participate in a federal program intended to reduce emissions of sulfur dioxide (SO_2) by 57 percent (57%) from 2003 levels and Nitrogen Oxides (NOx) by 61 percent (61%) from 2003 levels.

The primary mechanism of the rule is a cap-and-trade program that allows major sources of NOx and/or SO_2 to trade excess allowances when its emissions of a specific pollutant fall below its cap for that pollutant. Ameren Missouri receives its NOx and SO_2 allowances from the EPA on a yearly basis. The EPA issued a model cap-and-trade program for power plants, which could have been used by states as the primary control mechanism under the CAIR.

The Cross State Air Pollution Rule (CSAPR) was finalized on July 6, 2011, replacing CAIR. CSAPR established new allowances for the annual NOx and SO2 programs and the seasonal NOx program. CSAPR uses newly created allowances and thus there is no bank to rely on for any potential shortfall. CSAPR was slated to become effective January 1, 2012, but the rule was stayed by a federal court decision on December 30, 2011, in response to several legal challenges. On June 26, 2014, the EPA filed a motion with the U.S. Court of Appeals for the D.C. Circuit to (1) remove the stay of CSPAR and (2) delay for three years all of the compliance deadlines that had not already passed when the stay was enacted. On October 23, 2014, the D.C. Circuit court lifted the stay. On December 3, 2014, the EPA implemented a 3 year delay that moved the starting date for Phase 1 of CSAPR to January 1, 2015 and January 1, 2017, for Phase 2. Ameren Missouri units are in compliance with the CSAPR limits for both SO2 and NOx.

Ameren Missouri received permission to manage and trade all CAIR SO2 allowances on December 15, 1998, under case EO-98-401, and, under the same case number, on October 28, 2011, the MO PSC Commission granted authority for Ameren Missouri to sell excess vintage 2011 and earlier CAIR NOx allowances, with proceeds from the sale of NOx emissions allowances to flow through Ameren Missouri's FAC. On January 4, 2012, the MO PSC Commission conditionally granted a one-time exchange of 1,050 surplus sulfur dioxide ("SO_2") emission allowances for 500 annual nitrogen oxide ("NOx") emission allowances.

Beginning on January 1, 2007, Ameren Missouri has been required to account for all SO_2 premiums, net of any SO_2 discounts, in a regulatory liability account. The Commission also ordered that all gains from SO_2 allowance sales, in excess of $5,000,000, be recorded in this same regulatory liability account. This regulatory liability account, referred to as the SO_2 Tracker, also accumulates interest at Ameren Missouri's short-term borrowing rate. This SO_2 tracker was continued as a result of Case No. ER-2008-0318; however, as a result of the rate proceeding in File No. ER-2010-0036, the SO_2 tracker was discontinued. The cost associated with the SO_2 premiums, net of discounts, and the revenues from gains on the sale of SO_2 emission allowances have been included in Ameren Missouri's Fuel Adjustment Clause since July 8, 2010, as a result of Case No. ER-2010-0036.

Ameren Missouri did not purchase the inventory of emission allowances consumed during the review period of June 1, 2014, through September 30, 2015. Approximately ** ____ ** of net emission allowance costs were generated from the sale of allowances during the review period.

The management of emission allowances is described in Ameren Missouri's response to Staff's Data Request No. 0015, 0038, 0039, 0040 and 0041. Staff reviewed the document titled *Ameren Missouri Hedge plan* and an Ameren Missouri Risk Management Steering Committee Report concerning emission allowances.

2. Summary of Cost Implications

If Ameren Missouri imprudently used, purchased, sold or banked its SO_2 and NO_x allowances, ratepayer harm could result from an increase in Ameren Missouri's FAC charges.

3. Conclusion

Staff observed no indication of imprudence associated with Ameren Missouri's management of its emission allowances during the prudence review period.

4. Documents Reviewed

a. Ameren Missouri response to Staff Data Request Nos. 0015, 0038, 0039, 0040 and 0041; and

b. Ameren Missouri FAR filings in File Nos. ER-2015-0128, ER-2015-0233, ER-2016-00163, and ER-2016-0130.

Staff Expert Witness: David Roos

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M. Off-System Sales Revenue

1. Description

Staff reviewed the off-system sales quantities and OSSR revenues and costs in FERC Account 447 for the prudence review period. Ameren Missouri's MO P.S.C Schedule No 6 Original Sheet No. 73.4 describes off-system sales revenues or "OSSR" as:

OSSR = Costs and revenues in FERC Account 447 for:

1. Capacity;
2. Energy;
3. Ancillary services, including:
   A. Regulating reserve service (MISO Schedule 3, or its successor);
   B. Energy Imbalance Service (MISO Schedule 4, or its successor);
   C. Spinning reserve service (MISO Schedule 5, or its successor); and
   D. Supplemental reserve service (MISO Schedule 6, or its successor);
4. Make-whole payments, including;
   A. Price volatility; and
   B. Revenue sufficiency guarantee; and
5. Hedging.

For the review period Ameren Missouri's OSSR amount is ** ________ **.

2. Summary of Cost Implications

Ameren Missouri's revenues from off-system sales are offset against total fuel, purchased power and net emissions allowance costs. If Ameren Missouri was imprudent either because it made or did not make off-system sales, ratepayers could be harmed by that imprudence through an increase in FAC charges.

3. Conclusion

Staff identified no imprudence related to off-system sales for the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's response to Staff Data Request 0001 and Ameren's Fuel Adjustment Rate (FAR) filings during the review period.

Staff Expert Witness: Matthew J. Barnes

O. Transmission Costs and Revenues

1. Description

For the period June 1, 2014 through September 30, 2015, ** ________ ** of Ameren Missouri's FAC costs were for MISO transmission costs associated with purchased power costs. As a result of Ameren Missouri's general rate case, Case No. ER-2012,-0166, Ameren Missouri began flowing MISO transmission revenues through the FAC. For the review period, ** ________ ** is for transmission revenues that off-set transmission costs. As a result of Ameren's last general rate case, Case No. ER-2014-0258, Ameren Missouri was ordered by the Commission to include 3.5 percent of MISO transmission costs[20] through the FAC and exclude all transmission revenues.[21] The effective date of this modification to the FAC is May 30, 2015, which is approximately four (4) months prior to the end of this sixteen (16) month review period in this matter.

Ameren Missouri's response to Staff Data Request 0020 describes in detail Ameren Missouri's policies for hedging transmission costs. Staff reviewed the document titled; *Ameren Missouri Commodity Risk Management Policy*, page 12 and 13; this document describes Ameren Missouri's hedging strategy to mitigate transmission costs:

** ____

____ **

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[20] *In the Matter of Union Electric Company, d/b/a/ Ameren Missouri's Tariff to Increase Its Revenues for Electric Service, Report and Order*, Effective Date: May 12, 2015, page 114.

[21] *In the Matter of Union Electric Company, d/b/a/ Ameren Missouri's Tariff to Increase Its Revenues for Electric Service, Report and Order*, Effective Date: May 12, 2015, page 117.

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2. Summary of Cost Implications

If Ameren Missouri was imprudent in hedging transmission expense or in accounting for its transmission costs, ratepayer harm could result from that imprudence through an increase in customer FAC charges.

3. Conclusion

Staff identified no indication of imprudence related to transmission costs and hedging transmission costs for the prudence review period.

4. Documents Reviewed

a. Ameren Missouri's response to Staff Data Request 0020.

Staff Expert Witness: Matthew J. Barnes

N. Demand Response Program

1. Description

The only current Ameren Missouri electric tariff sheet which contains any "interruptible" provision is Rider M-Option Based Curtailment Rider; however, no customers are currently under contract for this program. During the prudence review period, there were no curtailments called, load interrupted, or payments made under the provisions of Rider M.[22]

2. Summary of Cost Implications

Although Staff understands the current economic conditions, excess capacity and reduced load have generally depressed capacity prices and utilizing demand response may not be the least cost option for every peak load situation, these conditions can change.

In its 2014 Integrated Resource Plan, Ameren Missouri states that MISO capacity markets indicate that demand response opportunities have little market capacity value for the immediate future. Since Ameren Missouri is not projecting a need for demand response for reliability purposes, the business case for demand response for Ameren Missouri customers is dependent on the MISO capacity market.[23] Ameren Missouri will include $1.5 million in the $158.18 million MEEIA Cycle 2 budget (March 2016 through February 2019) to fund additional research and development on energy efficiency and demand response. These

[22] Company response to Staff Data Request MPSC 0039
[23] Ameren Missouri, 2014 Integrated Resource Plan, Chapter 8, page 7

additional costs will be recovered through Ameren Missouri's Rider EEIC for Cycle 2 as part of the budget for the Research & Development program.[24]

3. Conclusion

Staff did not identify any evidence of imprudence concerning demand response programs during the time period of this prudence review.

4. Documents Reviewed

a. Company response to Staff Data Request 0039.

Staff Expert Witness: J Luebbert

P. Renewable Energy

1. Description

The Missouri Renewable Energy Standard ("RES")[25] was adopted through a voters' ballot initiative (Proposition C) on November 4, 2008,[26] and requires all investor-owned electric utilities in Missouri to provide at least two percent (2%) of their retail electricity sales using renewable energy resources annually in each calendar year 2011 through 2013, and to increase that percentage over time to at least fifteen percent (15%) by 2021.[27] The Commission's administrative rule that sets the definitions, structure, operations and procedures for RES compliance is contained in Rule 4 CSR 240-20.100, which first became effective September 30, 2010.

In May 2009, Ameren Missouri entered into an agreement with Fred Weber, Inc., to install three (3) combustion turbines capable of generating electricity by burning methane gas captured from Fred Weber, Inc.'s solid waste landfill at Maryland Heights, Missouri. The generation facility is known as the Maryland Heights Energy Center ("Maryland Heights"). In December 2010, IESI MO Champ Landfill, LLC., acquired the Fred Weber Sanitary

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[24] Non-unanimous Stipulation and Agreement, Case No. EO-2015-0055, page 5, lines 6 through 9
[25] 111 Mo. Rev. Stat. § 393.1020 (2010) and116 Mo. Rev. Stat. § 393.1030 .1(1) (2010)
[26] Section 393.1030, RSMo.
[27] However, the annual level of required renewable energy resources may be constrained due to 4 CSR 240-20.100(5) Retail Rate Impact. (A) The retail rate impact, as calculated in subsection (5)(B), may not exceed one percent (1%) for prudent costs of renewable energy resources directly attributable to RES compliance. The retail rate impact shall be calculated on an incremental basis for each planning year that includes the addition of renewable generation directly attributable to RES compliance through procurement or development of renewable energy resources, averaged over the succeeding ten (10)-year period, and shall exclude renewable energy resources owned or under contract prior to the effective date of this rule.

Landfill. According to Ameren Missouri, this project is intended to boost its renewable energy capabilities as well as meet state and federal regulatory requirements to generate or procure a specified percentage of retail electric sales through renewable sources.[28] Based on Staff's on-site observation of the facility supplemented by review of test records, operating logs, computer data, and other documentation, the Maryland Heights generating units successfully met all of the in-service criteria and were fully operational and used for service on June 16, 2012.

On December 12, 2012, the Commission issued its *Report and Order* in Case No. ER-2012-0166. Beginning on page 118 of its *Report and Order* the Commission's discussion and approval of Ameren Missouri's request for a variance from Commission Rule 4 CSR 240-20.100(6)(A)16, which provides that "RES compliance costs" are not to be considered for cost recovery through a fuel adjustment clause (FAC) or interim energy charge. "RES compliance costs" are "prudently incurred costs, both capital and expense, directly related to compliance with the Renewable Energy Standard." 4 CSR 240-20.100(1)(N). In its variance request, Ameren Missouri has committed:

> "… to working with the Staff and other interested parties to resolve the issue of whether and to what extent some or all of the fuel costs for Maryland Heights and other potential renewable generation energy costs[4] are RES compliance costs, and committing to have that work completed before another Company general electric rate case would be filed. The Company hereby makes that commitment. In that way, the parties can ensure that a similar issue does not come up in a future rate case. If it is determined that any of the cost of Maryland Heights fuel is a cost directly related to RES compliance, then it (or the appropriate portion of it) would not be included in net base fuel costs in a future rate proceeding. On the other hand, if it is determined that the fuel cost, or some portion of it, is not directly related to RES compliance, it could be considered for inclusion.
>
> [4] This may be another renewable energy generating unit or the energy charges for renewable energy through purchased power agreements."
>
> 6. The Company also commits to keep track of the RES compliance cost of the Maryland Heights landfill gas facility so that it can and will properly be taken into account for purposes of applying the one percent rate cap provided for in the RES statute and the Commission's RES rules. Consequently, granting the requested waiver or variance will have no impact on the application of that rate cap.

[28] Staff COS ER-2012-0166

The *Non-Unanimous Stipulation and Agreement Regarding Some Fuel Adjustment Clause Issues*, filed March 6, 2015, in the Ameren Rate Case, ER-2014-0258, settled this issue and, effective May 30, 2015, Maryland Heights fuel costs are no longer included in the FAC. Based on Ameren Missouri response to Staff Data Request 0050, potential renewable energy costs are included in FAC calculations for June 1, 2014 through May 29, 2015 of this review period. For the review period of June 1, 2014 through September 30, 2015, the total cost for this component is ** ________ ** and is included in the natural gas cost component in Table 2.

2. Summary of Cost Implications

If Ameren Missouri imprudently included RES compliance costs through its FAC resulting in increases to Ameren Missouri's FPA per kWh rates, ratepayer harm could result from an increase in FAC charges.

3. Conclusion

This issue was resolved in general rate case, Case No. ER-2014-0258. Effective May 30, 2015 RES compliance costs no longer flow through Ameren Missouri's FAC. Staff identified no imprudence related Maryland Heights fuel costs for the prudence review period.

4. Documents Reviewed

a. Staff COS Report, Rate Case File ER-2013-0166;

b. Staff COS Report, Rate Case File ER-2014-0258 and

c. Staff Data Request 0054.

Staff Expert Witness: David Roos

Q. N Factor

On January 12, 2016, a Non-Unanimous Stipulation and Agreement (the "First Stipulation") was filed in Case No. ER-2016-0130, under which the Signatories agreed that an amount in dispute arising from the calculation of an adjustment triggered by Noranda Aluminum, Inc.'s ("Noranda") load changes (an adjustment commonly referred to as the "N Factor") would not be included in the Fuel Adjustment Rate ("FAR") called for by the

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Company's Fuel Adjustment Clause ("FAC"). The FAR to be made arose from changes in net energy costs for the FAC accumulation period of June 1, 2015 through September 30, 2015 ("Accumulation Period 20"), which is the last four (4) months of this sixteen (16) month prudence review. The Signatories all agreed that an N Factor adjustment in some amount should be made arising from Accumulation Period 20, but they were not in agreement on the methodology to calculate the adjustment.

Consequently, the First Stipulation reflected the Signatories' agreement to exclude an N Factor adjustment from the new FARs that were to take effect starting with Ameren Missouri's February 2016 billing cycle (which began January 27, 2016), pending a later determination on the calculation of the N Factor adjustment. The First Stipulation provided that the Signatories would either agree on a methodology for calculating the adjustment or, if an agreement could not be reached, would file a Joint Proposed Procedural Schedule designed to bring the issue before the Commission for decision. Moreover, the Signatories agreed that the methodology determined by them by agreement (or the Commission ordered methodology, if necessary) would be implemented for Accumulation Period 20 by including the agreed upon or ordered N Factor adjustment for Accumulation Period 20 in the first FAR adjustment to occur after the agreement (or Commission order) becomes effective, and that the agreed upon (or ordered) methodology for the N Factor adjustment would also be used for calculating future FAR adjustments post-Accumulation Period 20.

By order dated January 26, 2016, the Commission approved a tariff sheet implementing new FARs arising from Accumulation Period 20, but excluding any N Factor adjustment for Accumulation Period 20, as was agreed upon in the First Stipulation.

On March 7, 2016, Ameren Missouri, Commission Staff, the Office of the Public Counsel, and Missouri Industrial Energy Consumers filed a *Second Non-Unanimous Stipulation and Agreement* ("Second Agreement") that provided a methodology to calculate the N factor adjustment and requested a variance to Commission rule 4 CSR 240.20-090(4) to effectuate the Second Agreement.[29]

The methodology used to calculate the N Factor is provided in Exhibit A of the Second Agreement filed in Case No. ER-2016-0130. The signatories to the Second Agreement have agreed that, using the methodology in Exhibit A, an N Factor adjustment in the amount of $437,526 (after sharing is applied), plus interest will be applied to Accumulation Period 20 and included in the FAR filing for Accumulation Period 21.

1. Summary of Cost Implications

If Ameren Missouri was imprudent in its calculation of the N factor ratepayers could be harmed through increased FAC charges.

2. Conclusion

Staff observed no evidence Ameren Missouri acted imprudently with regard to Ameren Missouri's application of the N Factor during the review period.

3. Documents Reviewed

a. Ameren Missouri's work papers in support of the calculation of the N factor for AP 20; and

b. Ameren Missouri Far Filing Case No. ER-2016-0130.

Staff Expert Witness: David Roos

IV. Interest

1. Description

For each month of the FAC accumulation and recovery periods Ameren Missouri is required to calculate the interest associated with the over- or under-recovered balance of fuel

[29] Case ER-2016-0130

and purchased power costs less off-system sales revenues. Ameren Missouri applies its short-term interest rate to the over- or under-recovered balance and the interest is compounded on a monthly basis. This interest amount is component "I" of the FPA calculation described on Original Sheet No. 72.7.

For the review period, Ameren Missouri applied an interest amount of ** ____ ** to the over- or under recovered balance of fuel and purchased power costs less off-system sales revenues.

2. Summary of Cost Implications

If Ameren Missouri was imprudent in its identification of monthly short-term interest rates and/or in its calculation of monthly interest amounts ratepayers could be harmed through increased FAC charges.

3. Conclusion

Staff observed no imprudence with regard to the Ameren Missouri's monthly short-term interest rates and the calculation of monthly interest amounts applied to the over- or under-recovered balances.

4. Documents Reviewed

a. Ameren Missouri's interest calculation work papers in support of the calculation of interest amounts on the over- under-recovered balance.

Staff Expert Witness: Matthew J. Barnes

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BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Fifth Prudence Review of Costs Subject to Commission-Approved Fuel Adjustment Clause of Union Electric Company d/b/a Ameren Missouri	)))	**File No. ER-2016-0228**

AFFIDAVIT OF MATTHEW J. BARNES

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW, Matthew J. Barnes and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Staff Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Matthew J. Barnes
Matthew J. Barnes

Subscribed and sworn to be this 31st day of August, 2016.

DIANNA L. VAUGHT
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: June 28, 2019
Commission Number: 15207377

Dianna L. Vaught
Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Fifth Prudence Review of Costs Subject to Commission-Approved Fuel Adjustment Clause of Union Electric Company d/b/a Ameren Missouri	)))	**File No. ER-2016-0228**

AFFIDAVIT OF J LUEBBERT

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW, J Luebbert and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Staff Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

J Luebbert
J Luebbert

Subscribed and sworn to be this 31st day of August, 2016.

DIANNA L. VAUGHT
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: June 28, 2019
Commission Number: 15207377

Dianna L. Vaught
Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Fifth Prudence Review of Costs Subject to Commission-Approved Fuel Adjustment Clause of Union Electric Company d/b/a Ameren Missouri	)))	**File No. ER-2016-0228**

AFFIDAVIT OF DAVID C ROOS

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

COMES NOW, David C. Roos and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Staff Report; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

David C. Roos

David C. Roos

Subscribed and sworn to be this 31st day of August, 2016.

DIANNA L. VAUGHT
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: June 28, 2019
Commission Number: 15207377

Dianna L. Vaught

Notary Public