MEMORANDUM

TO: Missouri Public Service Commission Official Case File
File No. GR-2014-0238, Union Electric Company d/b/a Ameren Missouri

FROM: David M. Sommerer, Manager – Procurement Analysis
Anne Crowe, Utility Regulatory Auditor IV – Procurement Analysis
Kwang Choe, Ph.D., Regulatory Economist – Procurement Analysis
Kathleen McNelis, Utility Engineering Specialist III – Procurement Analysis

/s/ David M. Sommerer 06/11/15
Project Coordinator / Date

/s/ Kevin A. Thompson 06/11/15
Staff Counsel's Office / Date

/s/ Lesa Jenkins, P.E, 06/11/15
Utility Regulatory Engineer II/ Date

SUBJECT: Staff Recommendation in File No. GR-2014-0238, Union Electric Company d/b/a Ameren Missouri, 2013-2014 Actual Cost Adjustment Filing

DATE: June 11, 2015

EXECUTIVE SUMMARY

On October 16, 2014, Union Electric Company d/b/a Ameren Missouri (Ameren Missouri or Company) filed its Actual Cost Adjustment (ACA) for the 2013-2014 period. This filing revises the ACA rates based upon the Company's calculations of the ACA balances.

The Procurement Analysis Unit (Staff) of the Missouri Public Service Commission has reviewed the Company's ACA filing. A comparison of billed revenue recovery with actual gas costs will yield either an over-recovery or under-recovery of the ACA balance.

Ameren Missouri has three Purchased Gas Adjustment (PGA) rates and three ACA rates (one for firm customers, one for interruptible service customers, and an incremental one for customers in the Rolla service area) for its Missouri service areas. The Rolla area Ameren Missouri customers served from MoGas Pipeline ("MoGas") also continue to pay an additional incremental PGA and ACA charge for MoGas transportation.

Staff conducted the following analyses:

- a review of billed revenue compared with actual gas costs,
- a reliability analysis including a review of estimated peak-day requirements and the capacity levels needed to meet these requirements,

- a review of the Company's natural gas supply plans including a review of the Company's gas purchasing practices to evaluate the prudence of the Company's purchasing decisions for this ACA period; and,
- a hedging review to evaluate the reasonableness of the Company's hedging practices for this ACA period.

Staff has no dollar adjustments related to Reliability Analysis and Gas Supply Planning. However, Staff's comments and recommendations regarding this area are discussed within the Reliability Analysis and Gas Supply Planning section of the memorandum.

Staff has no adjustments related to hedging. However, Staff's comments and recommendations regarding hedging practices are addressed in the Hedging section of the memorandum.

At this time, Staff has determined certain gas cost accounting adjustments as shown in the August 31, 2014 ending ACA balances in the table below. Adjustments recommended in the previous ACA period are shown in the column titled Prior Period Staff Adjustments. Due to the timing of the Staff recommendation and the ACA filing, the Company was unable to include these adjustments in its ACA balances in this case. Staff anticipates these adjustments will be incorporated into the ACA balances of the upcoming ACA filing. Adjustments recommended in column titled Current Period Staff Adjustments are explained in the Gas Cost Errors section of this recommendation.

An over-recovery reflects an amount that is owed to the customer by the Company and is shown as a negative number. An under-recovery is an amount that is owed to the Company by its customers and is shown in the table below as a positive number.

	Balances per Ameren Missouri Filing	**Prior Period Staff Adjustments**	**Current Period Staff Adjustments**	**Ending Balances 8/31/14**
Firm Sales ACA	$ 273,441	$143,556	$ 2,905	$ 419,902
Interruptible Sales ACA	$ 155,746	$ 0	$ 0	$ 155,746
Rolla System	$ (1,443,493)	$ (143,556)	$ (2,905)	$ (1,589,954)

Additionally, Staff recommends the Commission order the Company to respond to the Staff Recommendation Memorandum within 30 days.

STAFF'S TECHNICAL DISCUSSION AND ANALYSIS

Staff's discussion of its findings is organized into the following five sections:

I. Overview

II. Gas Cost Errors

III. Reliability Analysis and Gas Supply Planning

IV. Hedging

V. Recommendations

Each section explains Staff's concerns and recommendations.

I. OVERVIEW

Ameren Missouri's natural gas operations are served by the following interstate pipelines: Panhandle Eastern Pipe Line (PEPL), Texas Eastern Transmission Corporation ("TETCO"), Natural Gas Pipeline Company of America ("NGPL"), and MoGas Pipeline ("MoGas"). PEPL serves approximately 104,000 customers in the Jefferson City/Columbia area. TETCO serves approximately 19,000 customers in the Cape Girardeau area. NGPL serves approximately 1,600 customers in the Marble Hill area. PEPL and MoGas serve approximately 3,800 customers in the Rolla, Salem, and Owensville area.

II. GAS COST ERRORS

The ACA rate is calculated by comparing the Company's billed revenues to its actual gas costs for the ACA period. The 2013/2014 ACA filing contained the following errors impacting gas costs.

A. Interstate Pipeline Invoice Credit

The Company's ACA filing incorrectly classified an interstate pipeline bill credit to state-wide firm sales gas costs instead of to the incremental Rolla gas costs. The $2,905 error increased the incremental Rolla gas costs by $2,905 and decreased the firm sales gas costs by an equal amount. To correct this error, Staff proposes an adjustment to increase the Rolla ACA over-recovery balance in the amount of $2,905 with a corresponding adjustment to increase the state-wide ACA under-recovery balance in the amount of $2,905.

B. Storage Costs

Ameren Missouri has five storage agreements with interstate pipelines. Ameren Missouri purchases and injects natural gas into these storage facilities during the summer months where it is held until the winter months when it is withdrawn and delivered to Ameren Missouri's distribution system.

The cost of the natural gas injected into storage is not included as a gas cost in the ACA filing until the gas is withdrawn and delivered to Ameren Missouri's system for customers' use. The Company uses spreadsheets to track the cost of storage injections and withdrawals that impact gas costs in the ACA. Two of the five storage spreadsheets contained formula errors which had an immaterial impact on the gas costs for the current ACA period. Although the errors were immaterial in this ACA period, they could become material if the formulas are not corrected. Staff recommends the Company review the formulas in its storage spreadsheets and evaluate its procedures to ensure the accuracy of its storage gas cost.

III. RELIABILITY ANALYSIS AND GAS SUPPLY PLANNING

As a regulated gas corporation providing natural gas service to Missouri customers, the Local Distribution Company (LDC) is responsible for: 1) conducting reasonable long-range supply planning, and 2) the decisions resulting from that planning. One purpose of the ACA process is to review Ameren Missouri's planning for gas supply, transportation, and storage to meet its customers' needs. For this analysis, Staff reviewed the LDC's plans and decisions regarding estimated peak day requirements and the capacity levels to meet those requirements, peak day reserve margin and the rationale for this reserve margin, and natural gas supply plans for various weather conditions.

Staff has no proposed financial adjustments for the 2013/2014 ACA period related to Reliability Analysis and Gas Supply Planning section.

Staff's review of the Company's service areas produced the following comments and concerns:

A. Peak Design Day

1. 2013 Demand Studies Peak Day Forecast Demand Compared to Actual Cold Days Demand

The Company provided demand studies for each of its service areas (2013 Demand Studies). Each of these demand studies contains a comparison of actual demand on cold days, during the study period (April 2010 – March 2013), with demands predicted by the model the Company developed for each area. Staff is concerned that the forecasts calculated using the 2013 demand study methods are under-predicting actual usage for the coldest days. In the table below, the UPI (Upper Prediction Interval) [1] represents the reserve margin when the variability of the peak day estimate is considered:

[1] The Company determined Prediction Intervals (PI) rather than Confidence Intervals (CI) in its 2013 demand studies. Both PI and CI are expressions of the accuracy or precision of a model, and can be used to make predictions that take into account the uncertainty of the model. The Company explains in GR-2014-0238, Data Request (DR) 59 that it used PIs because the PI takes into account the variability in the point prediction as well as uncertainty of the estimate of the conditional mean.

Ameren Missouri Comparison of 10 Peak Load Days (Actual vs Forecast) and Ameren Missouri Net Reserve Margins				
Demand Study Area	Number of Days Under predicted out of 10	Average Error (+ over predicted, - under predicted)	Net Reserve Margin (2013/2014)	
			Expected	UPI
Marble Hill	** _ **	** ____ **	** ____ **	** ____ **
Cape Girardeau	** _ **	** ____ **	** ____ **	** ____ **
Columbia	** _ **	** ____ **	** ____ **	** ____ **
Rolla	** _ **	** ____ **	** ____ **	** ____ **

Staff considered the average error in conjunction with the Company's net reserve margins. The possible tendency of Ameren Missouri's Cape Girardeau area 2013 Demand Study model to under predict actual demand on cold days by an average error of about five percent is of immediate concern to Staff since the reserve margins are relatively low.[2] The possible under-prediction of demand is also of general concern to Staff for all service areas because the Company uses these estimates to evaluate and plan for future capacity required in each area.

The Company stated[3] that it was currently working on 2014 demand studies for each service area, primarily to determine the impact on Peak Design Day from the cold weather experienced during the 2013-2014 winter. Staff recommends that Ameren Missouri continue to refine its peak day demand estimates for its evaluation of: (a) whether the demands predicted by its demand studies are representative of actual demands on cold days, and (b) the capacity required for peak day planning.

2. Specific Concerns for Rolla Area Peak Day Demand Estimates

The Company made a number of changes in its peak day forecasts between the previous ACA period and the current ACA period, including but not limited to consideration of wind speed, changing from Columbia to Rolla weather data, changing the software used to model demand and changing how transportation customer loads are modeled for peak day. Ameren Missouri's peak day demand estimate for the Rolla area direct sales customers has declined from ** ____ ** in Ameren Missouri's 2012 Demand Study to ** ____ ** in Ameren Missouri's 2013 Demand Study (a decrease of about nine percent in one year). As noted above, the 2013 Demand Study appears to be under-predicting Rolla actual demand on cold days.

[2] See additional concern regarding reserve margin for Cape Girardeau service area below.
[3] Response to GR-2014-0238, DR 60.

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The Company regressed actual total load (including end user activity) and actual transporter load (end user activity), against actual HDD to estimate peak day loads for both total load and transportation load. Ameren Missouri then subtracted the transportation customer peak day load from total peak day load to predict direct sales customers peak day loads. While Staff appreciates the challenges involved in modeling the transportation customer loads, Ameren Missouri's regression results for the transportation customer load had an R-squared[4] value of 0.659 (adjusted R-squared[5] of 0.656), whereas the total system load regression had an R-squared value of 0.957 (adjusted R-squared of 0.956). The difference in R-squared values indicates Ameren Missouri's model for the total system load is a better fit to the actual data than Ameren Missouri's model for transportation customers. Since the transportation customer load is subtracted from total load to estimate net sales load, over-prediction of transportation peak day load will result in under-prediction of direct sales peak day load, and vice versa. Staff suggests Ameren Missouri review options for modeling its direct sales load data that are less dependent upon the estimated peak transportation load volume. This would address Staff's concerns regarding introducing the uncertainty associated with the transportation peak day estimate into the peak day estimate for direct sales customers.

The Company stated that one of the reasons it used this approach as opposed to modeling the net daily sales load demand directly is that the transportation customer imbalances can distort the actual gas demand, and during periods of low system flow (e.g., summer) the imbalances can cause the net system demand to appear negative.[6] Staff noted that the monthly average transportation customer load as a percent of total Rolla system load ranged from about 75 percent in the summer months to about 30 percent in the winter months.[7] In the past, the Company used only data with HDD greater than 10 in its regressions, which would have minimized if not eliminated the occurrences of low demand days. Staff suggests that the Company review a plot of the demand data and consider modeling only demand data for days above a selected HDD value (or a minimum load value) for the Rolla system. This would also be more representative of the type of load (i.e., direct sales customers represent a higher percentage of total load than transportation customers) that would be encountered on an actual peak day.[8]

The Company should continue to look at R-squared results as an indicator of goodness of fit; however, obtaining a good R-squared will not guarantee model accuracy for predicting demand required on cold days. Staff suggests that the Company review the assumptions it has made in its model for the Rolla system, with respect to how each assumption affects the error of the model.

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[4] R-squared is a statistical measure of how close the data are to the fitted regression line. It is also known as the coefficient of determination. R-squared varies between 0 and 1. In general, the higher the R-squared value, the better the model (regression results) explain the data set. Ameren Missouri states in its 2013 Demand Studies that generally speaking the higher the R-squared (or adjusted R-squared) value, the better goodness of fit is achieved.

[5] Adjusted R-squared is a modified version of R-squared that has been adjusted for the number of predictors in the model.

[6] Ameren Missouri response to GR-2014-0238, DR 59.2.

[7] Based on data provided in GR-2014-0238, DR 75.

[8] Based on data in GR-2014-0238, DR 75, on January 6, 2014, the transportation customer load was about 20% of the total system load.

3. Method for Consideration of Wind Speed

The Company has modified its method of forecasting peak day to include consideration of wind speed in the 2013 Demand Studies. Ameren Missouri explained that the equation it used to calculate Effective Gas Day HDD from Gas Day HDD and wind speed data was originally introduced by a consultant some time ago; however, the original source document is not available.[9]

Including consideration of wind speed is not unreasonable. However, Staff is concerned that Ameren Missouri is unable to document the source of the equation it used. There may be inherent assumptions and limitations involved in the use of this particular equation that are unknown without review of the source document. Additionally, there may be new methods for considering wind speed that are more representative of actual demands. Staff recommends that Ameren Missouri routinely review its methods for consideration of wind speed in predicting peak demands and evaluate if there are other methods that may provide more accurate demand estimates.

B. Reserve Margin on TETCO for Cape Girardeau Service Area

Staff expressed concerns in its 2012/2013 ACA recommendations regarding the capacity available to meet peak day demand in the Cape Girardeau service area when viewed in conjunction with delivered storage contracts which have reduced delivered capacity as storage inventory is depleted.[10] The Company's response to Staff's recommendation stated that Ameren Missouri actively manages capacity on its system to meet peak requirements and is cognizant of the applicability of storage ratchets for contractual storage resources. Ameren Missouri further stated that it plans its storage withdrawals to preserve maximum storage deliverability through approximately the second week of February.[11]

Staff continues to have concerns regarding the capacity available to meet peak day demand in the Cape Girardeau service area. Storage deliverability is considered for this service area because Ameren Missouri capacity for peak day planning includes both pipeline transportation capacity and delivered storage. Ameren Missouri's plans support that its reserve margins for ***planned storage inventories*** are to be positive through the first two weeks of February. However, based on Ameren Missouri's ***actual storage inventories*** during February 2014, Staff estimates that the reserve margins were negative when considering Ameren Missouri's ***net UPI peak day*** and that the reserve margin decreased step-wise from ** _____

_____ ** A summary of the data and Staff's calculated results for key dates is included in the table below.

[9] See the Company response to GR-2014-0238, DR 60.1.
[10] GR-2014-0061, file date 12/18/2014.
[11] GR-2014-0061, file date 2/2/2015.

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Total Delivered Storage Capacity (MMBtu) [12] Calculated From Actual Storage Ending Inventories Compared With Ameren Missouri Upper Prediction Interval Peak Day From 2013 Demand Study					
Date in February 2014		2/1/2014	2/4/2014	2/11/2014	2/12/2014
Staff Calculated Maximum Daily Withdrawal Quantity (MDWQ) Based on Actual Day End Inventory and Ratchets[13]	TETCO SS-1 400211	** **	** **	** **	** **
	TETCO SS-1 400237	** **	** **	** **	** **
	DOM GSS 600034	** **	** **	** **	** **
Subtotal firm capacity on FT-1 800242 and 991029 and CDS 800241 contracts		** **	** **	** **	** **
Staff calculated total daily capacity using storage ratchets		** **	** **	** **	** **
Capacity release to schools (DRs 78, 84 and 30)		** **	** **	** **	** **
Staff, Net Capacity Available less school capacity releases		** **	** **	** **	** **
Company UPI Peak Day less interruptible sales (DR 59)		** **	** **	** **	** **
Staff, Reserve from Company UPI Peak Day less interruptible sales		** **	** **	** **	** **
Staff, Reserve Margin from Company UPI Peak Day (less interruptible sales)		** **	** **	** **	** **

Staff recommends that Ameren Missouri more closely monitor its actual storage withdrawals and storage inventory for its Cape Girardeau system through the second week of February to assure it maintains its planned peak day capacity.

IV. HEDGING

The Staff reviewed Ameren Missouri's hedging program. The Company's goal is to hedge prices to reduce market price volatility. In particular, Ameren Missouri's stated objective is to

[12] 1 MMBtu (Million British Thermal Units) = 1 Dth (dekatherm) = 10 therms = approximately 1 thousand cubic feet (Mcf) of natural gas. Note: the exact conversion of units which represent the heating value of a fuel (e.g., Dth, therms, MMBtu) to units representing volumetric quantities (e.g., cubic feet) depends on the heating (caloric) content of the natural gas. The heating value can vary depending on the gas source. Energy Information Administration (EIA) reports that the average heat content in 2014 for residential, commercial and industrial sectors was approximately 1,028 Btu/Cubic Foot, which would correspond to 1 Dth = 0.973 Mcf.

[13] Ratchets means the injection and/or withdrawal rates are reduced as a function of inventory level. An example of withdrawal ratchets would be: for storage inventory >75% and ≤100% full, MDWQ = 1,000 MMBtu/day. For storage inventory > 50% and ≤ 75% full, MDWQ = 800 MMBtu/day. For storage inventory ≤ 50% full, MDWQ = 500 MMBtu/day.

create a forward gas supply portfolio and to dollar-cost-average gas supply prices to mitigate price volatility for the PGA sales customers, among other objectives. The current planning horizon for gas supply purchases and price hedging is thirteen seasons or six and one-half years. Gas supply transactions and price hedges for this period are phased in, based on factors including current futures prices, availability of gas supply, as well as general market conditions.

Ameren Missouri receives regular natural gas market reports from energy and financial firms and regular market reports and assessments. The Staff reviewed Ameren Missouri's hedging practices for the winter months, November 2013 through March 2014. Ameren Missouri's hedging implementation plan is to protect approximately ** ___ ** percent of normal winter demand requirements against market price volatility for the three Ameren Missouri systems, PEPL-UE, TETCO-UE and NGPL-UE. The price protection, including storage, comes from financial natural gas swaps and call options for PEPL-UE, though only storage was utilized for TETCO-UE and NGPL-UE. The financial hedges were placed between late-July 2009 and late-September 2013 for the winter heating season of November 2013 through March 2014. These resulted in ** __ ** percent hedged overall for Ameren Missouri, based on actual delivered volumes for the winter months, and ** __ ** percent based on normal volumes for the winter months.[14]

Staff reviews the prudence of a Company's decisions based on what the Company knew, or should have reasonably known, at the time it made its hedging decisions. The Company's hedging planning should be flexible enough to incorporate changing market circumstances. The Company should evaluate its hedging strategy in response to changing market dynamics as to how much the existing hedging strategy actually benefits its customers while balancing market price risk. For example, the Company should continue to evaluate its current strategy of financially hedging summer storage injections regarding potentially less percentage coverage and using more cost-effective financial instruments under the current market where the market prices have become relatively less volatile.

In its evaluation of the volumes hedged using options, Ameren Missouri "delta" adjusts the volumes of its option positions. Delta adjustment is one way of assessing how closely a hedge is tracking or following the commodity being hedged. However, it tends to give little weight to call options that might effectively cap prices but at a somewhat higher level than current market prices (e.g., out-of-the-money call options). Therefore, the process of the delta hedging may limit consideration of out-of-the-money call options. Certain out-of-the-money call options may have a strike price that still affords significant protection near current market prices but at a reduced premium cost. Staff was concerned that the Company's delta hedging approach would greatly limit out-of-the-money call options as a possible hedge tool. However, Staff notes that

[14] Although the costs of hedging are spread across the three systems, operational impacts of the hedging may affect each system differently. PEPL-UE and TETCO-UE were ** ___ ** and ** ___ ** hedged, respectively, while NGPL-UE was ** ___ ** hedged for November 2013 through March 2014 based on actual delivered gas. PEPL-UE and TETCO-UE were ** ___ . ** and ** ___ . ** hedged based on normal volumes. For NGPL-UE, it was ** ___ ** hedged based on normal volumes. Since there is one system-wide PGA rate, the specific regional differences are averaged to all systems.

the Company indicated, during a recent update, that it would re-evaluate the delta hedging approach in response to Staff's concern, and it is Staff's understanding that this change is being implemented.

Finally, Staff recommends the Company continue to assess and document the effectiveness of its hedges for the 2014-2015 ACA period and beyond. The analysis should include identifying the benefits/costs based on the outcomes from the hedging strategy, and evaluating any potential improvements on the future hedging plan and its implementation. During various proceedings in the past, at Staff's request, Ameren Missouri has provided a useful summary of how the Company's hedges (swaps) have performed against market pricing, (i.e., the impact of purchases without the hedges). The Company has provided that analysis which looks back over an extensive historical period. This hedge performance or mark-to-market summary is helpful in seeing the long term financial impact of the hedge program. Staff recommends that Ameren Missouri continue to develop this summary in future ACA periods.

V. RECOMMENDATIONS

Staff recommends the following accounting adjustments as reflected in the August 31, 2014 ending ACA balances shown in the table below. Adjustments recommended in the previous ACA period are shown in the column titled Prior Period Staff Adjustments. Due to the timing of the Staff recommendation and the ACA filing, the Company was unable to include these adjustments in its ACA balances in this case. Staff anticipates these adjustments will be incorporated into the ACA balances of the upcoming ACA filing. Adjustments recommended in column titled Current Period Staff Adjustments are explained in the Gas Cost Errors section of this recommendation.

An over-recovery reflects an amount that is owed to the customer by the Company and is shown as a negative number. An under-recovery is an amount that is owed to the Company by its customers and is shown in the table below as a positive number.

	Balance per Ameren Missouri Filing	**Prior Period Staff Adjustments**	**Current Period Staff Adjustments**	**Staff Recommended Ending Balances 8/31/14**
Firm Sales ACA	$ 273,441	$143,556	$ 2,905	$ 419,902
Interruptible Sales ACA	$ 155,746	$ 0	$ 0	$ 155,746
Rolla System	$ (1,443,493)	$ (143,556)	$ (2,905)	$ (1,589,954)

1. Staff has no dollar adjustments related to Reliability Analysis and Gas Supply Planning. However, Staff also asks the Commission to order Ameren Missouri to respond to Staff's comments and recommendation in the Reliability Analysis and Gas Supply Planning section.

2. Staff also asks the Commission to order Ameren Missouri to respond to the concerns / comments / recommendations expressed by Staff in the Hedging Section. Staff has no dollar adjustments related to Hedging.

3. Staff also asks the Commission to order Ameren Missouri to respond to the accounting adjustments reflected in the above table and to the concerns, comments, and the recommendations contained herein within 30 days.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company D/B/A Ameren Missouri's Purchased Gas Adjustment Tariff Filing	)))	File No. GR-2014-0238

State of Missouri)
) ss.
County of Cole)

AFFIDAVIT

COMES NOW DAVID SOMMERER and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Staff Recommendation in Memorandum form; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

DAVID SOMMERER

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 11th day of June, 2015.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2016
Commission Number: 12412070

NOTARY PUBLIC

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company D/B/A Ameren Missouri's Purchased Gas Adjustment Tariff Filing	)))	File No. GR-2014-0238

State of Missouri)
) ss.
County of Cole)

AFFIDAVIT

COMES NOW ANNE CROWE and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Staff Recommendation in Memorandum form; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

Anne Crowe
ANNE CROWE

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 11th day of June, 2015.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2016
Commission Number: 12412070

D Suzie Mankin
NOTARY PUBLIC

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company D/B/A Ameren Missouri's Purchased Gas Adjustment Tariff Filing	)))	File No. GR-2014-0238

State of Missouri)
) ss.
County of Cole)

AFFIDAVIT

COMES NOW KWANG CHOE and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing Staff Recommendation in Memorandum form; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

KWANG CHOE

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 11th day of June, 2015.

NOTARY PUBLIC

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2016
Commission Number: 12412070

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company D/B/A Ameren Missouri's Purchased Gas Adjustment Tariff Filing	)))	File No. GR-2014-0238

State of Missouri)
) ss.
County of Cole)

AFFIDAVIT

COMES NOW KATHLEEN McNELIS and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing Staff Recommendation in Memorandum form; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

KATHLEEN McNELIS

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 11th day of June, 2015.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2016
Commission Number: 12412070

NOTARY PUBLIC