

## MEMORANDUM

TO: Missouri Public Service Commission Official Case File  
File No. GR-2015-0271, Union Electric Company d/b/a Ameren Missouri

FROM: Anne Crowe, Utility Regulatory Auditor IV – Procurement Analysis  
Kwang Choe, Ph.D., Regulatory Economist – Procurement Analysis  
Michael Rush, Utility Engineering Specialist III – Procurement Analysis

/s/ David M. Sommerer 12/12/16                      /s/ Jeffrey A Keevil 12/12/16  
Project Coordinator / Date                                      Staff Counsel’s Office / Date

/s/ Derick Miles, P.E., 12/12/16  
Utility Regulatory Engineer II/ Date

SUBJECT: Staff Recommendation in File No. GR-2015-0271, Union Electric Company  
d/b/a Ameren Missouri, 2014-2015 Actual Cost Adjustment Filing

DATE: December 12, 2016

### EXECUTIVE SUMMARY

On October 15, 2015, Union Electric Company d/b/a Ameren Missouri (Ameren Missouri or the Company) filed its Actual Cost Adjustment (ACA) for the 2014-2015 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.

For gas cost recovery, Ameren Missouri has a single Purchased Gas Adjustment (PGA)/ACA rate division plus an incremental one for customers in the Rolla service area. The Rolla area Ameren Missouri customers served from MoGas Pipeline (“MoGas”) 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,

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

**NP**  
**Appendix A**

- 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.

Staff has proposed no dollar adjustments to the Company's ACA account balances filed October 15, 2015. Staff recommends the Commission issue an order directing the Company to establish the following ACA account balances shown in the table below to reflect the under or (over)-recovery balances as of August 31, 2015.

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.

	<b>Balances per Ameren Missouri Filing</b>	<b>Current Period Staff Adjustments</b>	<b>Staff Recommended Ending Balances 8/31/15</b>
Firm Sales ACA	\$ (4,751,258)	\$ 0	\$ (4,751,258)
Interruptible Sales ACA	\$ 25,737	\$ 0	\$ 25,737
Rolla System	\$ (962,034)	\$ 0	\$ (962,034)

Additionally, Staff recommends the Commission order the Company to respond to the Staff Recommendation Memorandum within 45 days.

### **STAFF'S TECHNICAL DISCUSSION AND ANALYSIS**

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

- I. Overview
- II. Reliability Analysis and Gas Supply Planning
- III. Hedging
- IV. 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 Company, LP (PEPL), Texas Eastern Transmission, LP ("Texas Eastern" or "TETCO"), Natural Gas Pipeline Company of America, LLC ("NGPL"), and MoGas Pipeline ("MoGas"). PEPL serves approximately 103,000 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. 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 2014/2015 ACA period related to Reliability Analysis and Gas Supply Planning. Staff's review of the Company's service areas produced the following comments and concerns:

### **A. Peak Design Day**

#### **1. Peak Day Forecast Demand Compared to Actual Cold Day Demand**

The Company provided demand studies for each of its service areas. The results of these studies contained the information necessary to compare the actual demand on cold days during the ACA period to the forecast output of the models. Each model was developed based on temperature and wind data collected during the study period (April 2011 – March 2014). The models also utilize monthly, seasonal, and weekday/weekend parameters as inputs to the regression model. In essence, the Company has developed one regression model for each weekday/weekend, each month, at each service area.

During the last ACA period, staff expressed concerns the models using the 2013 demand study results were under-predicting actual usage for the coldest days. The new models developed for this ACA period did not under predict demand on average but did have a tendency to under predict demand on some cold 'shoulder months' for the Cape Girardeau and Marble Hill service areas. The table below shows the average under prediction error and number of under predictions for the 15 coldest days<sup>1</sup> during this ACA period as well as the average cold 'shoulder

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<sup>1</sup> Based on the Company definition of EHDD = HDD ( 1 + Wind Speed/100)

month’ under predication error and the number of under predictions in each service area.

Ameren Missouri Comparison of 15 Coldest Days (Actual vs Forecast) and Cold ‘Shoulder Month’ Under Prediction				
Demand Area	Number of Under Predicted Days out of 15	Average Error (+ / - ) (over / under)	Number of ‘Cold Shoulder’ Days Under Predicted	Average Under Predicted Error (+ / - ) (over / under)
Marble Hill	** _ **	** ____ **	** _ **	** ____ **
Cape Girardeau	** _ **	** ____ **	** _ **	** ____ **
Columbia	** _ **	** ____ **	** _ **	** ____ **
Rolla	** _ **	** ____ **	** _ **	** ____ **

The possibility of under-prediction of demand is of general concern to Staff for all service areas as the Company uses these estimates to evaluate and plan for future capacity required in each area. The Company has previously stated<sup>2</sup> that it was working on new 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. The new models which the Company has developed have eliminated the under prediction on average but some cold days and cold ‘shoulder months’ are still under predicted.

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, (b) look at the effect of the ‘shoulder month’ parameter on peak loads, and (c) the capacity issues related to 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 including but not limited to consideration of wind speed and changing from Columbia to Rolla weather data in the 2013/2014 ACA period. Staff has concerns with the use of the Rolla weather data as a basis for any 30 year average weather calculations. The Rolla station has significant time frames in which data is not available. However, utilization of the Rolla station for 3 year regression analysis for peak day estimates is reasonable as the station is currently an Automated Surface Observing System (ASOS) station utilized by NOAA.

<sup>2</sup> See company response to GR-2014-0238, DR 0060

Ameren Missouri's peak day demand estimate for the Rolla area firm sales customers has increased from \*\* \_\_\_\_ \*\* in Ameren Missouri's 2013 Demand Study to \*\* \_\_\_\_ \*\* in Ameren Missouri's 2014 Demand Study, an increase of \*\* \_\_\_\_ \*\* as opposed to the over \*\* \_\_\_\_ \*\* decrease last ACA review. As noted in the 2013/2014 ACA review, the 2013 demand models appeared to be under predicting actual demand. The updated 2014 Company demand models seem to be more predictive of actual loads during this ACA review<sup>3</sup>.

### **3. Method for Consideration of Wind Speed**

The Company has considered wind speed in the 2014 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 previously introduced by a consultant; however, the original source document is not available.<sup>4</sup>

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 Texas Eastern Transmission for Cape Girardeau Service Area**

Staff expressed concerns in the 2013/2014 ACA review 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.<sup>5</sup> 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.<sup>6</sup> Storage deliverability is considered for this service area because capacity for peak day planning includes both pipeline transportation capacity and delivered storage.

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<sup>3</sup> See "Peak Day Forecast Demand Compared to Actual Cold Day Demand"

<sup>4</sup> See company response to GR-2014-0238, DR 0060.1

<sup>5</sup> See company response to GR-0215-0271, DR 0075, DR 0059

<sup>6</sup> GR-2014-0061, file date 2/2/2015

Based on Ameren Missouri’s *actual storage inventories*, Staff estimated that reserve margins during the 2013/2014 review could be as low as **\*\* \_\_\_\_\_ \*\*** when considering Ameren Missouri’s *net peak day*. For the three peak use days during the 2014/2015 ACA period, Staff calculated reserve margin was **\*\* \_\_\_\_\_ \*\*** **\*\* A summary of the data and Staff’s calculated results for the three peak use days in the 2014/2015 ACA period is included in the table below.**

Total Delivered Storage Capacity (MMBtu) <sup>7</sup> Calculated From Actual Storage Ending Inventories Compared With Ameren Missouri Upper Prediction Interval Peak Day From 2013 Demand Study				
Date		1/7/2015	2/23/2015	1/8/2015
Staff Calculated Maximum Daily Withdrawal Quantity (MDWQ) Based on Actual Day End Inventory and Ratchets <sup>13</sup>	TETCO SS-1 400211	<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
	TETCO SS-1 400237	<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
	DOM GSS 600034	<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Subtotal firm capacity on FT-1 800242 and 991029 and CDS 800241 contracts		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Staff calculated total daily capacity using storage ratchets		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Capacity release to schools (DRs 78, 84 and 30)		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Staff, Net Capacity Available less school capacity releases		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Company UPI Peak Day less interruptible sales (DR 59)		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Staff, Reserve from Company UPI Peak Day less interruptible sales		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>
Staff, Reserve Margin from Company UPI Peak Day (less interruptible sales)		<b>** _____ **</b>	<b>** _____ **</b>	<b>** _____ **</b>

While the reserve margins for the 2014/2015 ACA review were mostly positive, Staff recommends that Ameren Missouri continue to monitor its actual storage withdrawals and storage inventory for its Cape Girardeau system to assure it maintains its planned peak day capacity.

### III. 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 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

<sup>7</sup> See company response to DR0075, “mspc 0075 tetco ops hc.xlsx”

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 2014 through March 2015. 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 costless collars 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-October 2014 for the winter heating season of November 2014 through March 2015. 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.<sup>8</sup>

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. Additionally, the Company should carefully plan for the price protected volumes based on the reasonably forecasted normal requirements consistent with its hedging goal.<sup>9</sup>

Finally, Staff recommends the Company continue to assess and document the effectiveness of its hedges for the 2015-2016 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

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<sup>8</sup> 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 2014 through March 2015 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.

<sup>9</sup> The Company indicated in its response to data request (DR 0091.1) that the price-hedged % was forecasted to be \*\* \_\_\_\_ \*\*.

seeing the long term financial impact of the hedge program. Staff recommends that Ameren Missouri continue to develop this summary in future ACA periods.

#### IV. RECOMMENDATIONS

Staff recommends the Commission issue an order directing the Company to establish the following ACA account balances shown in the table below to reflect the under or (over)-recovery balances as of August 31, 2015.

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.

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Rolla System	\$ (962,034)	\$ 0	\$ (962,034)

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 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 concerns, comments, and the recommendations contained herein within 45 days.



**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of Union Electric Company        )  
d/b/a Ameren Missouri Changes to Company's    )  
Purchased Gas Adjustment (PGA) Clause        )


**Case No. GR-2015-0271**

**AFFIDAVIT**

State of Missouri        )  
                                  ) ss.  
County of Cole         )

**COMES NOW** Kwang Y. Choe and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Staff Memorandum; and that the same is true and correct according to his best knowledge and belief.


Further the Affiant sayeth not.

  
\_\_\_\_\_  
Kwang Y. Choe, Ph.D.

**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 8<sup>th</sup> day of December, 2016.

JESSICA LUEBBERT Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: February 19, 2019 Commission Number: 15633434
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\_\_\_\_\_  
NOTARY PUBLIC

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

In the Matter of Union Electric Company        )  
d/b/a Ameren Missouri Changes to Company's    )  
Purchased Gas Adjustment (PGA) Clause        )

**Case No. GR-2015-0271**

**AFFIDAVIT**

State of Missouri        )  
                                  ) ss.  
County of Cole         )

**COMES NOW** Anne M. Crowe and on her oath declares that she is of sound mind and lawful age; that she contributed to the attached Staff Memorandum; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.

  
\_\_\_\_\_  
**Anne M. 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 8<sup>th</sup> day of December, 2016.

JESSICA LUEBBERT Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: February 19, 2019 Commission Number: 15633434
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**NOTARY PUBLIC**

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OF THE STATE OF MISSOURI**

In the Matter of Union Electric Company            )  
d/b/a Ameren Missouri Changes to Company's    )  
Purchased Gas Adjustment (PGA) Clause         )

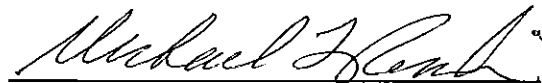
**Case No. GR-2015-0271**

**AFFIDAVIT**

State of Missouri    )  
                                  ) ss.  
County of Cole        )

**COMES NOW** Michael Rush and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Staff Memorandum; and that the same is true and correct according to his best knowledge and belief.


Further the Affiant sayeth not.

  
\_\_\_\_\_  
Michael Rush

**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 12<sup>th</sup> day of December, 2016.

JESSICA LUEBBERT Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: February 19, 2019 Commission Number: 15633434
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\_\_\_\_\_  
NOTARY PUBLIC