

Exhibit No.:
Issue(s): Expense-School Aggregation
Witness: Keenan B. Patterson, PE
Sponsoring Party: MoPSC Staff
Type of Exhibit: Rebuttal Testimony
Case No.: GR-2019-0077
Date Testimony Prepared: June 7, 2019

MISSOURI PUBLIC SERVICE COMMISSION

COMMISSION STAFF DIVISION

REBUTTAL TESTIMONY

OF

KEENAN B. PATTERSON, PE

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

CASE NO. GR-2019-0077

*Jefferson City, Missouri
June 2019*

**** Denotes Confidential Information ****

**TABLE OF CONTENTS OF
REBUTTAL TESTIMONY OF
KEENAN B. PATTERSON, PE
UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI
CASE NO. GR-2019-0077**

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

Introduction 1

Executive Summary 2

Balancing..... 3

 Definition and Purpose of Balancing 3

 Responsibility for Balancing..... 4

 Current Balancing Requirements are Typical 8

 Costs Associate with Balancing and Basis of Cash Outs..... 18

 Balancing in Relation to the Aggregation and Balancing Fee 25

Separation of School Transportation Program Tariffs 27

Recommendations 28

1 provisions for balancing transportation customers. I will also briefly discuss MSBA's
2 proposal to create a separate tariff section for school transportation customers.

3 **Executive Summary**

4 Q. Please summarize your understanding of MSBA's proposal.

5 A. MSBA has requested two things. First, it desires to change the balancing
6 provisions of Ameren's Natural Gas Transportation Service tariff to remove what it describes
7 as "penalties" on balancing cash outs for school transportation pools. Related to this, MSBA
8 also objects to the use of the Purchased Gas Adjustment (PGA) rate as a basis for pricing cash
9 outs. Second, MSBA recommends the creation of a separate tariff section related to school
10 transportation customers, distinct from the current Natural Gas Transportation Service tariff.

11 Q. Please summarize Staff's recommendations related to MSBA's proposals.

12 A. Staff recommends that the Commission reject both of the MSBA proposals.
13 First, MSBA's suggested tariff language is drawn from the recently approved tariff of
14 Spire Missouri West (Spire West), which was put in place to address the unique
15 circumstances of Spire West and it is not applicable to other utilities.

16 In addition, the MSBA proposal would shift the responsibility for balancing from
17 school pool operators to Ameren. It provides no mechanism for correcting imbalances that
18 may occur. MSBA's proposal practically eliminates balancing requirements for school
19 transportation pools.

20 Second, Ameren's inclusion of requirements related to school transportation pools in a
21 larger section relating to transportation customers is not especially confusing or burdensome.
22 School pools are operated by gas marketing companies that have expertise in supplying gas
23 through various utilities and interstate pipelines, each with their own unique tariffs.

1 **Balancing**

2 **Definition and Purpose of Balancing**

3 Q. What is balancing?

4 A. Balancing is the process by which a transportation service provider (TSP) and
5 a shipper of gas reconcile the difference between the amount of gas the TSP receives and
6 delivers for a shipper. When a gas corporation delivers gas to a transportation customer, the
7 gas corporation acts as a TSP and the transportation customer is a shipper. For all other
8 customer classes, the gas corporation is a shipper and the interstate pipeline acts as a TSP.
9 Transportation customers must arrange for gas to be shipped on the interstate pipeline to the
10 gas corporation's city gate. It is typical for gas corporations to release a portion of their
11 capacity on the interstate pipeline to school pool operators.

12 Q. What is a school pool operator?

13 A. A school pool operator is a gas supplier or gas marketing company that
14 contracts with a not-for-profit school association to aggregate and supply natural gas for a
15 group of schools, or a pool. These companies provide the same kind of services to pools of
16 industrial and commercial customers.

17 The pool operator runs the day-to-day operations of the pool. They estimate how much
18 gas will be needed in aggregate by the schools in the pool. They arrange for gas supply out of
19 their own resources or from gas they purchase. They also arrange for the shipment of gas on
20 interstate pipelines. Utilities typically release some of their capacity on pipelines to the pool
21 operator, though the operator may use capacity it has from other contracts that allow it to ship
22 an appropriate amount of gas to the city gate.

1 Q. What is a city gate?

2 A. A city gate is a location where an interstate pipeline delivers gas to a local
3 distribution company. City gates are equipped with metering and pressure regulating
4 equipment to measure gas flow and adjust the pressure to an appropriate level for the
5 distribution system. City gates are sometimes equipped with devices to measure gas quality.

6 Q. Why is balancing important?

7 A. Natural gas pipelines and local distribution companies must assure that the
8 amount of gas they receive into their transmission or distribution system closely matches the
9 amount of gas they deliver to customers. It must be balanced.

10 Transportation customers' imbalances may impact a gas corporation's management of
11 its gas supply, which can affect the gas costs of its sales customers. Transportation customers'
12 imbalances could cause a gas corporation, such as Ameren, to buy additional, higher-priced
13 gas in the daily gas market for those imbalances, inject or withdraw gas in storage to cover
14 those imbalances, or increase or decrease monthly supply purchases. All of these actions
15 could cause the sales customers' gas costs to be higher than they otherwise would have been.

16 Q. Does balancing serve other purposes?

17 A. Yes. Balancing allows TSPs and shippers to be "made whole" by allowing
18 parties to make up for shortfalls or recover any excesses in the difference between the gas
19 delivered and received either with gas or by cash-outs in lieu of gas.

20 **Responsibility for Balancing**

21 Q. Who is responsible for balancing?

22 A. Transportation customers and their pool operators are responsible for
23 balancing. School transportation pools are transportation customers that have this

1 responsibility. Mr. Ervin acknowledged that school pool operators should match the gas they
2 deliver to the city gate to the usage of their customers when he stated, “MSBA agrees that [it]
3 is the School’s Pool Operator’s responsibility to make intra-month winter nominations
4 in accordance with forecasted temperatures and other available information,”¹ and
5 “[t]he schools’ Pool Operator is responsible to make weekly adjustments to its schedule
6 winter deliveries to reflect weather forecasts.”²

7 Q. Does the MSBA proposal hold school pool operators responsible for balancing
8 on a daily, weekly or monthly basis?

9 A. No. Though Mr. Ervin acknowledged the balancing responsibility of school
10 pool operators, the tariff language proposed by MSBA tends to shift responsibility for
11 balancing from the pool operators to the utility.

12 As a practical matter, MSBA’s proposal would make Ameren responsible for
13 preventing school pool imbalances. In order to exercise any other mechanism of
14 accountability open to it in the MSBA proposal, Ameren must first recommend that the school
15 pool operator adjust its nominations. To accomplish this, Ameren would need to
16 independently evaluate the anticipated daily needs of the school pools, compare this to the
17 pool operator’s nominations, and contact the pool operator in the event that it believed the
18 operator’s nomination was not appropriate.

19 In addition, MSBA’s proposal has no provision for correcting imbalances that may
20 occur. The proposal has no requirement for the calculation or tracking of imbalances or for

¹ Direct Testimony of Louis R. Ervin, Sr., p. 7, ll. 1-3.

² Ibid., p. 8, ll. 7-8.

1 the correction of imbalances by adjusting nominations, supplying or returning gas, cash-out³
2 or any other means. It is unclear that imbalances would ever be corrected.

3 Q. Does the MSBA proposal provide timely and proportionate accountability for
4 school pool imbalances?

5 A. No. First, the MSBA proposal does not correct imbalances. Under the tariff
6 language recommended by MSBA in the testimony of Mr. Ervin (p. 8, l. 16 - p. 9, l. 11) there
7 is no calculation of imbalances and no provision to correct imbalances that occur, either by
8 cash-out⁴, adjustment of nominations in subsequent months or any other method. If the pool
9 operator delivers too little gas, MSBA's proposal would not require the operator to deliver
10 additional gas to make up the shortfall or pay the utility for gas to make up the difference.
11 If the pool operator delivers too much gas, the MSBA proposal would not require the utility to
12 return any gas or make payments for the gas to the pool operator.

13 Second, the MSBA proposal does not provide for a timely response or correction to
14 imbalances that may occur. MBSA's proposal would require the utility to proactively
15 recommend that the pool operator change nominations to avoid an imbalance before the utility
16 could take any other corrective actions. Before the utility could take corrective action, the
17 pool operator would need to fail to make an adjustment based on the utility's recommendation
18 three times in a 12-month period. Potentially, corrective action may not be available to the
19 utility for almost a year after the first incident, and it may never be available if enough time
20 elapses between incidents. To exercise this option, the utility must closely watch the daily
21 activity of the pool operator and intervene with recommendations.

³ In a cash-out, the utility bills or pays the transportation customer for gas shortages or overages rather than requiring the customer to make up or take back the gas physically.

⁴ In a cash-out, the utility bills or pays the transportation customer for gas shortages or overages rather than requiring the customer to make up or take back the gas physically.

1 Finally, the MSBA proposal does not provide for responses to imbalances that are
2 proportional to the magnitude or severity of the imbalance. If the pool operator fails to
3 comply with recommendations three times in 12 months, the only action available to the
4 utility is the termination of the transportation program for that pool, returning them to sales
5 customers. Termination is the result whether the magnitude of the imbalances is large or
6 small. Termination is the result whether there are severe imbalances three months in a row or
7 spread out over twelve months. It does not scale with the number, frequency or magnitude of
8 imbalances, it does not correct outstanding imbalances at the termination of the program for a
9 pool and it does not require the correction of prior imbalances before the reinstatement of the
10 program for a previously terminated pool.

11 Q. Could Ameren override a pool operator's nomination if the operator failed to
12 change its nomination based on the company's recommendation, as Mr. Ervin suggests in his
13 direct testimony?

14 A. No. Ameren stated in response to Staff Data Request (DR) No. 0288, "Only a
15 Shipper, who has an executed Service Agreement from the pipeline for capacity release or
16 transportation contract, can make a nomination change for that respective contract. Therefore,
17 Ameren Missouri cannot adjust another counterparty's pipeline nominations." Ameren further
18 stated in its response to Staff DR No. 0297, "Ameren Missouri would need to contact the
19 Pool Group Operator to adjust any transporting interstate pipeline nomination. Only the
20 Shipper of the respective interstate pipeline contract can make nominations on their respective
21 pipeline contract."

1 Ameren may not recall capacity releases to school pools for the purpose of overriding
2 a pool operator's interstate pipeline nominations. As noted in Ameren's tariff, "Company will
3 not recall such capacity unless requested by the school or the school's agent."⁵

4 **Current Balancing Requirements are Typical**

5 Q. Are balancing provisions common in interstate pipeline and gas corporation
6 tariffs?

7 A. Yes. All of the interstate pipelines that transport gas to Ameren have balancing
8 provisions in their tariffs. The major provisions for balancing in the tariffs of MoGas Pipeline
9 (MoGas, Section 7.14.1), Natural Gas Pipeline of America (NGPL, Part 6.13), Panhandle
10 Eastern Pipe Line (PEPL, Part VI, Section 12), Southern Star Central Gas Pipeline
11 (SSC, General Terms and Conditions, Sections 9.7 - 9.9) and Texas Eastern Pipeline
12 (TETCO, Part 6, Section 8) are attached as Schedule KBP-r2.

13 All of Missouri's gas corporations also have balancing provisions in their tariffs
14 for transportation customers. In the Ameren tariff, balance provisions appear in the
15 Natural Gas Transportation Service (Sheet Nos. 10 - 16.3), a copy of which is attached as
16 Schedule KBP-r3. Spire Missouri West (Spire West), to which Mr. Ervin makes frequent
17 reference, has unique provisions related to balancing for school pools, though it has more
18 typical balancing for other transportation customers. I will discuss these unusual provisions
19 elsewhere in this testimony, and I have attached a copy of the Spire West's Experimental
20 School Transportation Program (Sheet Nos. 15 - 15.4) and Transportation Provisions (Sheet
21 Nos. 16-16.14) tariffs as Schedule KBP-r4.

⁵ Ameren's Natural Gas Transportation Service tariff (Schedule KBP-r3), Sheet No. 13.

1 Q. How is balancing accomplished under the various tariffs?

2 A. TSPs have balancing provisions that fit the needs of their systems. Cash-out
3 balancing is a method used by all Missouri gas corporations and by four of the five pipelines
4 that serve Ameren: NGPL, PEPL, SSC and TETCO. The remaining pipeline, MoGas Pipeline,
5 imposes ongoing penalties for uncorrected imbalances.

6 Because pipelines have resources that utilities typically do not have, they employ
7 other methods of balancing in addition to cash-out. Some pipelines provide for imbalance
8 trading. The large capacity of pipelines also allows them to permit shippers to nominate gas to
9 make up imbalances, subject to the availability of capacity on the pipeline. For NGPL, PEPL,
10 SSC and TETCO, imbalances that are not resolved by other means in a timely fashion are
11 cashed out.

12 Q. What balancing methods are used by gas corporations for their transportation
13 customers?

14 A. All of Missouri's gas companies balance their transportation customers using
15 cash-out, with the exception that Spire does not cash-out the school transportation pools,
16 though Spire East requires school pools to balance by adjusting nominations in the month
17 following the month in which an imbalance occurs. Examples can be found in the attached
18 schedules. Ameren's cash-out balancing provisions are in Section I (Sheet Nos. 13.2 - 16) of
19 its Natural Gas Transportation Service tariff (Schedule KBP-r3). The cash-out balancing
20 provision for Spire West's non-school transportation customers are in Section A, Paragraph 9
21 (Sheet Nos. 16.5 - 16.6) of its Transportation Provisions tariff (Schedule KBP-r4).

1 Q. What is the advantage of cash-out balancing?

2 A. Cash-out balancing is administratively simple to implement in comparison to
3 other methods of balancing. Pipelines have pipeline capacity and storage resources that allow
4 them to more easily accommodate imbalance correction through additional receipts or
5 deliveries in a period following the imbalance. However, resources of this scale are not
6 typically available within a utility distribution system. Similarly, pipelines operate systems
7 from capacity release or the exchange of similar resources that accommodates similar systems
8 for imbalance trading, which are not normally part of utility operations.

9 In addition, cash-outs provide an economic incentive to balance. Pool operators pay or
10 receive a price tied to the amount of the imbalances that recognizes that utility resources are
11 used to deal with imbalances as they happen.

12 Another advantage of cash-out balancing is that it is a timely economic signal to pool
13 operators about the occurrence and degree of imbalances. Each month the pool operator
14 receives a bill or payment indicating its balancing performance along with the utility's
15 calculation of the imbalance.

16 Q. You have compared the balance provision in tariffs of interstate pipelines and
17 gas corporations. Is the relationship between a gas corporation and its transportation pool
18 operators similar to the relationship between an interstate pipeline and shippers?

19 A. Yes. The relationship between a transportation customer and a gas corporation
20 is very similar to the relationship between a shipper and a pipeline. Mr. Ervin acknowledged
21 this in his direct testimony when he states, "The [MSBA Natural Gas] Consortium purchases
22 natural gas on the open market and arranges for gas supply, pipeline delivery, and local utility

1 transportation.”⁶ The consortium he refers to is in the role of the not-for-profit
2 school association; it contracts with a pool operator that supplies and ships the gas. He also
3 compared school transportation pools to other transportation customers when he stated,
4 “STP [School Transportation Program] allows schools to transport on the utility delivery
5 system in a similar manner to large commercial and industrial transportation providers.”⁷

6 Q. Who controls capacity released to a pool operator?

7 A. Pool operators control capacity released to them subject to rules and tariffs
8 applicable to the pipeline. While a pool operator is obligated to deliver gas to the city gate to
9 supply its customers, it may use the capacity released to it as it pleases. A pool operator may
10 use any pipeline capacity, in any combination, in its portfolio to ship gas to customers so long
11 as it has the capacity to reach the needed receipt and delivery locations.

12 When a pool operator does not need capacity released to it by a utility to serve a
13 school pool, it may use that capacity to serve other customers or support other deals.
14 Similarly, if that capacity is committed, the pool operator may meet its obligation to deliver
15 gas to the city gate by using other contracts or capacity releases on the same pipeline.

16 Q. You mentioned Spire West’s balancing provisions for school pools are unique,
17 differing from its provision for other transportation customers and from the balancing
18 provisions of other Missouri gas corporations. Please explain.

19 A. Prior to the tariff that became effective April 19, 2018, the Spire West
20 Experimental School Transportation Program had typical cash-out balancing requirements for
21 school pools. However, it was not implementing its tariff related to balancing school

⁶ Direct Testimony of Louie R. Ervin, Sr., p. 4, ll. 3-4. The MSBA Natural Gas Consortium is sometimes referred to as the Missouri Purchasing Resource Center (MOPURC).

⁷ Ibid. p. 4, ll. 14-16.

1 transportation pools. Staff brought up this issue in prior Actual Cost Adjustment (ACA) Case
2 Nos. GR-2013-0042, GR-2014-0324 and GR-2015-0203. Staff noted:

3 According to MGE’s tariff Sheet No. 58, the STP customers are subject
4 to Cash Out of their monthly balances. Staff found in this ACA period,
5 as in the prior ACA period, MGE’s practice with regard to imbalances
6 of STP customers is not consistent with its tariff. MGE was carrying
7 over STP customers’ imbalances from month-to-month rather than
8 Cashing Out the imbalances for these customers on a monthly basis.⁸

9 Tariff language to correct this oversight in light of the unique situation at Spire West, was
10 arrived at *by a stipulation* that was approved by the Commission in Case No. GR-2017-0216.⁹

11 The reason Spire West, then MGE, was not balancing in accordance with the tariff at
12 the time was that “[s]chools in the MGE STP were on numerous billing cycles.”¹⁰ Schools in
13 the school aggregation programs of other Missouri gas utilities are on the same billing cycle,
14 which allows them to calculate imbalances monthly, but this was not the case for Spire West.
15 Spire West was unable to determine the monthly imbalance for school pools because the
16 meter reading for schools within the pools were taken on different days. This lack of
17 time-coordinated metering data also makes it more challenging for pool operators to match
18 nominations to usage and adjust nominations based on forecasted weather.

19 Q. Is this unique problem of the timing of school meter reading in Spire West
20 likely to persist?

⁸ *Memorandum: Staff’s Recommendation in Missouri Gas Energy’s 2014-2015 Actual Cost Adjustment Filing*, filed December 12, 2016, Case No. GR-2015-0203, p. 14. Note that Sheet No. 58 does not appear in the current tariff, and Staff in this instance was referring to the tariff at the time, which had an effective date February 28, 2010. The Experimental School Transportation Program appears on Sheet Nos. 15-15.4 in the current tariff (Schedule KBP-r4).

⁹ *Order Approving Joint Stipulation and Agreement Regarding Spire West’s (Formerly Known as Missouri Gas Energy) STP Tariff*, issued October 25, 2017, and *Joint Stipulation and Agreement*, Case No. GR-2017-0216.

¹⁰ *Memorandum* filed December 12, 2016, Case No. GR-2015-0203, p. 14.

1 A. No. Staff anticipates that as a new generation of metering is implemented that
2 incorporates modern communication technology, Spire West will be able to read meters with
3 greater flexibility and frequency. Staff addressed this issue in the Spire West rate case. Staff
4 stated its Class Cost of Service report:

5 ** _____
6 _____
7 _____
8 _____ ** it appears MGE may have the
9 ability to match monthly pipeline nominations with STP customers'
10 actual monthly usage and therefore have the ability to cash out its STP
11 customers in accordance with its tariff provisions.¹¹

12 Q. Is it Staff's view that the Spire West balancing provision for school
13 transportation customers that was reached through a stipulation and approved by the
14 Commission is a temporary measure to address Spire West's metering limitations at the time?

15 A. Yes. When Spire West has the means to balance school transportation
16 customers, Staff anticipates Spire West will balance school pools as it does with other
17 transportation customers.

18 Q. Are the balancing requirements of Spire East the same at those of Spire West?

19 A. No. A major difference is that Spire East requires monthly balancing for school
20 pools. Spire East calculates imbalances each month and requires school pool operators to
21 adjust nominations each month to correct imbalances from the previous month. This
22 requirement can be found in Section D (Sheet 15.1) of Spire East's Experimental School
23 Transportation Program tariff, which I have attached as Schedule KBP-r7.

24 Q. Is the problem of varied meter reading cycles an issue for Ameren?

¹¹ Staff Report: Class Cost of Service, Exhibit No. 208, Case No. GR-2017-0216, p. 39.

1 A. No. Ameren has metering technology in place that allows it to remotely read
2 daily usage by schools. It uses this data to balance school pool operators each month as
3 described in its tariff, though it is feasible for it to balance school pool operators on a daily
4 basis, as it does with other transportation customers, using the technology it has in place.

5 Meter data is updated and available to school pool operators daily, which means that
6 pool operators are able to model pool demand based on actual daily usage and weather data.
7 Mr. Ervin acknowledges the availability of this usage data when he refers to “Company’s
8 portal metered school data.”¹² He also claims that “the school’s Pool Operator similarly
9 utilizes a linear regression model starting with historical monthly usage and historic heating
10 degree days then makes intra-month nomination adjustment based on forecasted temperature.”

11 Q. Do school pool operators use the use the type of models suggested by
12 Mr. Ervin?

13 A. Staff is not aware of all the factors the pool operators use to nominate gas for
14 schools or other customers, though weather is likely one of them. Staff has observed that the
15 nominations of school pool operators may be driven by other factors, especially when they are
16 free of daily balancing requirements.

17 Q. Do you have an example?

18 A. Yes. Staff observed that a school pool operated in the Ameren system by
19 ** _____ ** did not appear to deliver gas based on
20 weather in ** _____ . ** The background data for this example comes from Ameren’s
21 response to MSBA DR 11, and is attached as part of Confidential Schedule KBP-r5.

¹² Direct Testimony of Louie R. Ervin, Sr., p. 7, l. 10.

1 This is illustrated by figures I have attached as Confidential Schedule KBP-r6.
2 Figure 1 shows the metered daily usage for the pool for ** _____
3 _____. ** It also shows the gas delivered for the pool by ** _____
4 _____. ** The gas used varies day to day from approximately ** _____
5 _____ ** deliveries of gas were either
6 approximately ** _____
7 _____ . **

8 Figure 2 show this in a slightly different way. It plots both gas usage (the square
9 points) and delivered gas (the circular points) against the heating degree days (HDD).
10 The usage tends to increase or decrease with HDD, which is typical. The delivered gas does
11 not appear to follow a pattern related to HDD.

12 The day ** _____ ** was
13 the ** _____. ** It was the third highest day of the month
14 for gas usage ** _____ . **

15 In this example the correlation coefficient between gas usage and HDD was 0.83,
16 indicating that they tend to move together, which is typical. The correlation coefficient
17 between gas delivered and HDD is 0.13, indicating that there is very little correlation between
18 them. Because gas delivered is poorly coordinated with HDD, its correlation coefficient with
19 usage is also low, 0.08.

20 Q. What is the correlation coefficient, and how may it be interpreted?

21 A. The correlation coefficient is a measure of linear dependence. If you think
22 of comparing two things by plotting one against the other, the correlation coefficient

1 would indicate if the resulting points come close to forming a straight line or if they are
2 more scattered.

3 The correlation coefficient is a number that can range from -1 through 1. If the
4 coefficient is positive, it indicates that the factors increase and decrease together. If it is
5 negative, it indicates that one factor increases as the other decreases and vice-versa. As the
6 magnitude of the correlation coefficient decreases, when it gets closer to zero, it indicates the
7 points are more scattered and less correlated. As its magnitude increases, when it gets closer
8 to -1 or 1, it indicates the points are closer to a straight line and more correlated.

9 Q. How do your observations related to this school pool contrast with a
10 non-school pool?

11 A. Staff compared the same school pool to a non-school pool with daily balancing
12 for the same period. The background data comes from Ameren's response to DR No. 0038 in
13 Case No. GR-2018-0346, and it is attached as part of Confidential Schedule KBP-r5.

14 Figure 3 in Confidential Schedule KBP-r6 shows the metered daily usage for the pool
15 for ** _____ ** and the gas delivered for the non-school
16 pool by ** _____
17 _____
18 _____ . **

19 Figure 4 plots both gas usage (the square points) and delivered gas (the circular points)
20 against HDD. Both gas usage and delivered gas tend to increase and decrease with HDD,
21 which is typical. Contrast this with the delivered gas for the schools shown in Figure 2, which
22 has no apparent relationship with HDD.

1 In this example the correlation coefficient between gas usage and HDD was 0.91,
2 indicating they move together, which is typical. The correlation coefficient between delivered
3 gas and HDD was 0.79, which is also reasonably well correlated. This is in contrast to the
4 school pool, for which the correlation coefficient was 0.13. The comparison of gas usage and
5 delivered gas resulted in correlation coefficient of 0.78. One might expect this type of
6 correlation of usage strongly correlates to HDD and nominations for gas delivery are based on
7 reasonably good forecasts of HDD.

8 Q. Was the pool operator's gas deliveries to the school pool responsive to factors
9 other than gas?

10 A. There are some indications that the pool operator's nominations for the school
11 pool in my first example was responsive to price. ** _____

12 _____
13 _____
14 _____
15 _____
16 _____
17 _____
18 _____
19 _____
20 _____
21 _____
22 _____

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

___ ** is shown on Figure 5 in Confidential Schedule KBP-r6.

Q. Does the monthly balancing of school pools open the opportunity for arbitrage to pool operators?

A. Yes. Arbitrage is the buying and selling of assets in different markets to take advantage of price differences. School pool operators have two markets in which to operate: the open market for gas and the utility. If the daily market price is higher than the pool operator would expect to pay the utility, the operator can deliver less than usage, essentially buying gas from the utility at a lower than market rate. Similarly, when gas prices are lower than they would expect to pay the utility, the operator can deliver more gas than usage, essentially selling gas to the utility at greater than market rates.

Because school pools are balanced on a monthly basis, rather than on the daily basis that applies to other transportation customers, the pool operator can adjust nominations over the course of a month to avoid or reduce costs related to imbalances.

Costs Associate with Balancing and Basis of Cash Outs

Q. Do market prices reflect the incremental cost to the utility of managing the imbalances of transportation customers?

A. The market price does not always reflect the costs to a utility to manage transportation customer imbalances. When a transportation customer, such as a school pool, has an imbalance, whether it delivers more or less gas than it uses, it makes use of the gas, storage, transportation and distribution resources of the utility. To manage imbalances, a utility must either buy gas on the market at the daily price to make up for shortfalls or make unplanned injections or withdrawals from storage.

1 When a pool operator does not match deliveries and usage, it does not make up for the
2 imbalance by buying or selling gas on the market that day. Instead, the utility manages the
3 imbalance with its resources. It is appropriate for the utility to recover all of the associated
4 costs from the pool operator, including gas, transportation and distribution costs, as outlined
5 in Section 393.310.4.(2) RSMo.

6 Q. What gas price reflects the utility’s cost to supply gas to manage daily
7 imbalances of school pools and other transportation customers?

8 A. The Purchase Gas Adjustment (PGA) reflects the average cost of gas for the
9 utility. Commission regulations define the PGA clause as “the adjustment procedure approved
10 by the commission to recognize variations in the cost of purchased gas.”¹³

11 If the daily gas price is greater than the PGA, it would reflect the price the utility may
12 have purchased on that day. In addition to allowing the utility to recover its costs, using the
13 daily gas price when it is higher than PGA informs the pool operator of the full cost it would
14 have paid if it had fully supplied usage from the market.

15 Q. Is it appropriate for the utility to charge a rate the greater of the PGA or daily
16 market price when it makes up for shortfalls in the deliveries of school pool operators and
17 other transportation customers?

18 A. Yes. When a pool operator delivers too little gas to meet usage, it makes use of
19 the gas supply, transportation and distribution resources of the utility, for which it does not
20 normally pay. It is appropriate for the utility to recover the costs from those customers as
21 allowed by Section 393.310.4.(2) RSMo.

¹³ 4 CSR 240-13.015(1)(Y).

1 Q. Is it appropriate for a utility to pay cash-outs to transportation customers at a
2 rate less than the market price when such customers deliver more gas than they use?

3 A. Yes. Even when a pool operator over-supplies gas, the utility must apply its
4 resources to addressing the imbalances, such as by making additional or unplanned injections
5 to storage. School pools and other transportation customers do not normally pay for these
6 resources. It is appropriate for the utility to adjust cash-outs to transportation customers to
7 recognize these costs, which the utility is allowed to recover in Section 393.310.4.(2) RSMo.

8 Q. Is this difference in cash-out pricing common?

9 A. Yes. In addition to Ameren, The Empire District Gas Company applies similar
10 cash-out provisions that are adjusted based on the direction and severity of the imbalance.
11 Utilities that do not have such graduated adjustments to the cash-outs typically have other fees
12 related to the imbalances to recover costs, such as the overrun charge in the tariff of Liberty
13 Utilities (MNG) and the Unauthorized Use Charges in the tariffs of Spire East.¹⁴

14 Q. If a utility does not recover imbalance costs from school pools and
15 transportation customers, who pays for it?

16 A. The utility passes its gas costs to sales customers through the PGA. If the utility
17 does not fully recover gas costs associated with transportation customers from those
18 customers, the remaining cost would flow through the PGA to sales customers.

19 Q. Is it appropriate for sales customers to pay for any of the costs a utility incurs
20 to manage the imbalances of school transportation customers?

21 A. No. Though I am not an attorney, my understanding of the law that authorized
22 school transportation programs states the Commission “shall approve such tariffs upon

¹⁴ Spire East’s Experimental School Transportation Program (Schedule KBP-r7), paragraph G, Sheet No. 15.3.

1 finding that the implementation of the aggregation program set for in such tariffs will not have
2 any negative financial impact on the gas corporation, its other customers or local taxing
3 authorities.”¹⁵ This principle is acknowledged in the Spire West Experimental School
4 Transportation Program tariff because the balancing fee “shall be credited to the Purchase Gas
5 Adjustment Clause.”¹⁶

6 Q. Does the Illinois Commerce Commission (ICC) case cited by Mr. Ervin
7 address the appropriateness of the PGA as a basis for imbalance cash-outs?

8 A. No. In his direct testimony, Mr. Ervin discussed an Ameren Illinois (AIC)
9 case before the ICC. He suggested that the ICC rejected the use of the PGA as a basis for
10 billing imbalance cash outs to transportation customers because a market price is the only
11 appropriate price.

12 In the case in question, AIC had requested to change its tariff so that transportation
13 customers “would receive the lower of the PGA cost or the market price when they
14 over-deliver and [pay] the higher of the PGA cost or the market price when they under
15 deliver.”¹⁷ AIC was concerned that its “current gas balancing cashout provisions are flawed;
16 they do not create enough incentive to deter some Transportation Customers from arbitrage;
17 creating system imbalances.”¹⁸

18 The ICC acknowledged the concerns of parties in this case, but these issues
19 were related to arbitrage and the potential subsidization of one class of customers by another.
20 When the ICC concluded that it would reject the AIC proposal, its stated reason was that

¹⁵ Section 393.310.5 RSMo. A copy of Section 393.310 RSMo. appears as Appendix 1 in the Direct Testimony of Louie R. Ervin, Sr.

¹⁶ Spire West tariff (Schedule KBP-r4), Sheet No. 15.1.

¹⁷ Illinois Commerce Commission, *Order*, issued April 12, 2016, Docket No. 15-0439, p. 21. A copy of this page appears as Appendix 5 in the Direct Testimony of Louie R. Ervin, Sr.

¹⁸ *Ibid.*

1 “[t]he Commission finds that this record does not contain an extensive analysis to support a
2 change in the imbalance cashout provisions for Transportation Customers.”¹⁹

3 Q. Does the ICC order acknowledge AIC’s concerns about the opportunities for
4 arbitrage open to its transportation customers?

5 A. Yes. The ICC noted that an uncontested change to the AIC tariff would
6 “help reduce the opportunity for arbitrage.”²⁰

7 Q. Has the ICC permitted the use of the PGA as a basis for cash-outs of
8 transportation customer imbalances?

9 A. Yes. Northern Illinois Gas Company (Nicor) has balancing provisions similar
10 to those proposed by AIC in ICC Docket No. 15-0439.

11 When transportation customers deliver too little gas to meet usage, it is classified in
12 the Nicor tariff as “authorized use” or “unauthorized use”.²¹ I have attached selected pages of
13 the Nicor tariff as Schedule KBP-r8.

14 Nicor charges transportation customers for these imbalances on the basis of the higher
15 of the PGA rate, which it refers to as “Rider 6 Gas Cost (GC)”, or the market rate. This is
16 described in the tariff for General Transportation Service in these terms:

17 (h) Requested Authorized Use Charge

18 For each term of Requested Authorized Use, the charge shall be the
19 higher of: (a) the Rider 6 Gas Cost (GC); or (b) the Market Price as
20 defined in the Terms and Conditions of this rate.

21 (i) Authorized Use Charge

22 For each term of Authorized Use, the charge shall be the higher of:
23 (a) the Rider 6 Gas Cost (GC); or (b) the Market Price as defined in the
24 Terms and Conditions of this rate.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Nicor, *Schedule of Rates for Gas Service (Ill. C. C. No. 16)* (Schedule KBP-r7), Sheet No. 51.

1 (j) Unauthorized Use Charge

2 For each therm of Unauthorized Use, the charge shall be the sum of
3 \$6.00 plus the higher of: (a) the Rider 6 Gas Cost (GC); or (b) the
4 Market Price as defined in the Terms and Conditions of this rate.

5 Revenues arising from the application of the \$6.00 per therm charge
6 hereunder shall be credited to Rider 6, Gas Supply Cost.²²

7 The same language is used in Nicor's tariffs for other classes of transportation customers.²³

8 Nicor also charges transportation customers for storage services provided to manage
9 imbalances that occur when a transportation customer delivers more gas than it uses. These
10 charges are described in the General Transportation tariff as:

11 (c) Storage Banking Service Charge

12 0.52¢ per therm per month for all therms of Storage Banking Service
13 capacity.

14 Customers may annually select Storage Banking Service capacity with
15 a minimum selection of 1 times their Maximum Daily Contract
16 Quantity (MDCQ) subject to provisions included in the Terms and
17 Conditions.

18 For each therm of Company-supplied Gas delivered und this service,
19 the charges shall be considered Authorized Use....

20 (g) Excess Storage Charge

21 10¢ per therm of the maximum amount in storage in excess of
22 Customer's Storage Banking Service capacity on any day during the
23 billing period. If such maximum excess amount is less than five percent
24 of the Customer's Storage Banking Service capacity, the Excess
25 Storage Charge shall not apply. Revenues arising through the
26 application of the Excess Storage Charge will be credited to Rider 6,
27 Gas Supply Cost.²⁴

28 The same language is used in Nicor's tariffs for other classes of transportation customers.²⁵

²² Ibid., Sheet No. 20.

²³ Ibid., Sheet Nos. 21.5, 23 and 26.

²⁴ Ibid., Sheet No. 19.

²⁵ Ibid., Sheet Nos. 21.4, 21.5, 22, 23 and 26.

1 The Nicor tariff has no special provisions for schools or school pools. However,
2 it does provide a pooling service that allows sales customers to transport customer-supplied
3 gas in Rider 25 Firm Transportation Service and Rider 34 Supplier Firm Transportation
4 Service. These customers are subject to the same excess storage charge as transportation
5 customers. For imbalances classified as Authorized Use, they pay the Commodity Gas Cost
6 for stored or delivered customer-supplied gas and they pay the rate they would pay in their
7 normal classification as a sales customer for gas supplied by the utility, which includes the
8 Gas Cost rider (PGA). Large General Service and Large Volume Service customers are
9 subject to the same Unauthorized Use Charge as transportation customers.²⁶

10 Q. Are there differences between gas corporations that could account for their
11 different approaches to balancing?

12 A. Yes. For instance, Spire East has on-system storage and high-pressure pipes
13 that allow it to store gas in its system. This gives it flexibility in addressing imbalances
14 without necessarily resorting to using storage on the interstate pipeline or purchasing
15 additional gas. It also allocates a portion of its costs for these facilities to transportation
16 customers.

17 In contrast, Ameren does not have on-system storage or high-pressure pipes. If it
18 experiences a significant imbalance, it must make unplanned injections or withdrawals from
19 storage on the interstate pipeline or purchase additional gas to deal with the situation, and
20 incur associate costs.

²⁶ Ibid., Sheet Nos. 77 and 87.

Balancing in Relation to the Aggregation and Balancing Fee

Q. An aggregation and balancing fee is authorized by Section 393.310.4(2) RSMo. What is the purpose of the aggregation and balancing fee?

A. The fee is authorized in Section 393.310.4.(2) RSMo., which states:
4. The tariffs required pursuant to section 3 of this section shall...
Provide for the resale of natural gas supplies, including related transportation service costs, to the eligible school entities at the gas corporation's cost of purchasing of such gas supplies and transportation, plus all applicable distribution costs, plus and aggregation and balancing fee to be determined by the commission.²⁷

The aggregation and balancing fee is mentioned in the context of permitting the gas corporation to charge the school pool the costs of resources it provides to support transportation services. The aggregation and balancing fee allows the utility to recover the costs of providing aggregation and balancing services.

Q. Does the aggregation and balancing fee accomplish balancing?

A. It is unclear to Staff how balancing is accomplished through the aggregation and balancing fee. This fee is applied at a unit rate to all gas delivered for a school pool. It does not account for the magnitude of the imbalance or whether the imbalance is negative or positive. It does not return gas, credits or cash-out payments to pool operators when they deliver more gas than is used.

Q. Do all utilities require balancing and charge an aggregation and balancing fee?

A. It is typical for utilities to both require balancing and charge the aggregation and balancing fee. For instance Spire East's Experimental School Transportation Program (Schedule KBP-r7) charges an aggregation and balancing fee of \$0.004 per therm (Section F, Sheet 15.2) and requires pool operators to adjust nominations to correct imbalances that

²⁷ A copy of Section 393.310 RSMo. is included in Appendix 1 of the Direct Testimony of Louie R. Ervin, Sr.

1 occurred in the previous month (Section 3, Sheet 15.1). Ameren’s Natural Gas Transportation
2 Service Tariff (Schedule KBP-r3) charges an aggregation and balancing fee of \$0.44 per CCF
3 (Section 2, Sheet No. 10) and requires monthly cash-out balancing for monthly imbalances
4 (Sheet No. 5). In these cases, the aggregation and balancing fees appear to be for services and
5 resources provided by the utility, and balancing is accomplished by other means.

6 Q. Why are aggregation and balancing fees for Spire West different from those of
7 other utilities?

8 A. As I previously discussed, Spire West cannot presently balance school pools
9 because schools that are not required to have telemetry are on different billing cycles, and
10 their meters are read on different dates. As part of a settlement to address this issue,²⁸
11 the Spire West tariff has a separate balancing fee as described on Sheet 15.1 of its tariff
12 (Schedule KBP-r4):

13 An ESE [eligible school entity] enrolled in the STP [Experimental
14 School Transportation Program] shall be assessed a Balancing Fee of
15 \$0.002 per CCF for all gas delivered through the meter of which EGM
16 [electronic gas measurement] equipment is not installed. The fee is
17 intended to recover costs of such customers associated with any
18 difference between actual daily deliveries and actual daily
19 consumption. The fee shall be credited to the Purchased Gas
20 Adjustment Clause and is subject to adjustment on an annual basis.

21 This balancing fee is a payment made in lieu of balancing schools in a pool that do not have
22 EGM equipment. Schools that have EGM equipment that would support balancing are pooled
23 separately from the schools that do not, as specified in Section 6 of Spire West’s STP tariff
24 (Schedule KBP-r4, Sheet No. 15), which states “ESEs enrolled in the STP with EGM shall
25 not be pooled with ESEs enrolled in the STP without EGM.” Schools that have EGM
26 equipment are pooled separately because it is possible to calculate an imbalance; a pool

²⁸ *Joint Stipulation and Agreement*, Case No. GR-2017-0216.

1 operator could balance EGM-equipped schools by adjusting nominations in the subsequent
2 month as they are allowed to do in the Spire East tariff.

3 As previously mentioned, Staff anticipates that new metering technology will
4 eventually permit Spire West to calculate imbalances for all customers in a school pool on the
5 same schedule. In that case, Spire West should be able to return to having more typical
6 balancing provisions in its tariff instead of applying a special fee in lieu of balancing.

7 **Separation of School Transportation Program Tariffs**

8 Q. Should the Commission order Ameren to create a stand-alone tariff for school
9 transportation customers?

10 A. No. While Staff does not object to the idea of organizing the tariff in this
11 fashion, it is not necessary. The elements that are unique to school transportation customer are
12 distinguished in the Ameren tariff.

13 In addition, the pool operator is a gas marketing company with expertise in gas
14 trading. It provides services in commercial, industrial and utility customers in multiple
15 utilities and states. In light of the many tariffs such a company must understand, including
16 interstate pipeline tariffs, it should not be a hardship for a pool operator to gain an
17 understanding of the Ameren tariff as it is.

18 Q. Are there other tariffs in which the school transportation provisions are
19 incorporated into a more general section related to transportation customers?

20 A. Yes. The tariffs of The Empire District Gas Company incorporate school
21 transportation tariff into a larger section related to transportation services.

1 **Recommendations**

2 Q. What action does staff recommend in relation to MSBA's proposals?

3 A. Staff has two recommendations related to the MSBA proposals.

4 1. Staff recommends that the Commission deny MSBA's proposal to
5 change the balancing provisions in Ameren's tariff. It is typical for utilities to balance
6 transportation customers by cash-out or other means. Gas corporations are permitted to
7 recover gas supply, transmission, distribution and other costs associated with providing
8 transportation services to school pools as provide in Section 393.310.4.(2) RSMo. These
9 tariffs must also protect the gas corporation and other customers from financial harm as
10 specified in Section 393.310.5 RSMo.

11 2. Staff recommends that the Commission deny MSBA's proposal to
12 create a separate tariff section for school transportation customers. Special provisions related
13 to school pools are identified in the tariff, and the pool operators are gas marketing companies
14 that have sufficient expertise to understand these and other transportation tariffs.

15 Q. Does this conclude your rebuttal testimony?

16 A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company)
d/b/a Ameren Missouri's Tariffs to Increase)
its Revenues for Natural Gas Service) Case No. GR-2019-0077

AFFIDAVIT OF KEENAN B. PATTERSON, PE

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW KEENAN B. PATTERSON, PE and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony*; and that the same is true and correct according to his best knowledge and belief.

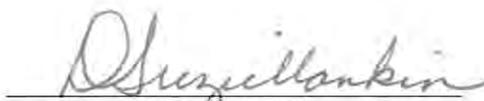
Further the Affiant sayeth not.


KEENAN B. PATTERSON, PE

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 5th day of June 2019.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: December 12, 2020
Commission Number: 12412070


Notary Public