

Exhibit No.:
Issue(s): *Renewal Natural Gas Tariff*
Transportation Tariff
School Aggregation
Other Tariff revisions
Witness: *Keenan B. Patterson, PE*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Rebuttal Testimony*
Case No.: *GR-2021-0108*
Date Testimony Prepared: *June 17, 2021*

MISSOURI PUBLIC SERVICE COMMISSION

FINANCIAL AND BUSINESS ANALYSIS DIVISION

PROCUREMENT ANALYSIS

REBUTTAL TESTIMONY

OF

KEENAN B. PATTERSON, PE

**SPIRE MISSOURI INC., d/b/a SPIRE
SPIRE EAST and SPIRE WEST
GENERAL RATE CASE**

CASE NO. GR-2021-0108

**Jefferson City, Missouri
June 2021**

**TABLE OF CONTENTS OF
REBUTTAL TESTIMONY OF
KEENAN B. PATTERSON, PE
SPIRE MISSOURI INC., d/b/a SPIRE
SPIRE EAST and SPIRE WEST
GENERAL RATE CASE
CASE NO. GR-2021-0108**

1	
2	
3	
4	
5	
6	
7	
8	EXECUTIVE SUMMARY1
9	RNG TARIFF3
10	CASH-OUTS AND BALANCING10
11	 TRANSPORTATION CUSTOMER BALANCING AND CASH-OUTS10
12	 BALANCING OF SCHOOL AGGREGATION POOLS14

1 **REBUTTAL TESTIMONY**

2 **OF**

3 **KEENAN B. PATTERSON, PE**

4 **SPIRE MISSOURI INC., d/b/a SPIRE**

5 **SPIRE EAST and SPIRE WEST**
6 **GENERAL RATE CASE**

7 **CASE NO. GR-2021-0108**

8 Q. Please state your name and business address.

9 A. Keenan B. Patterson, 200 Madison Street, P.O. Box 360, Jefferson City, Mo. 65102.

10 Q. By whom are you employed and in what capacity?

11 A. I work for the Missouri Public Service Commission (Commission) as a Senior
12 Professional Engineer.

13 Q. Please describe your background and relevant work experience.

14 A. A summary of my background and education is attached as Schedule KBP-r1.

15 Q. What is the purpose of your testimony in this case?

16 A. My purpose is to address certain new tariff or tariff changes requested by Spire.
17 Specifically, I will discuss the requested new renewable natural gas (RNG) tariff and requested
18 changes to tariff provisions related to cash-outs and balancing of transportation customers and the
19 school aggregation pools.

20 **EXECUTIVE SUMMARY**

21 Q. Please summarize your understanding of Spire's requested RNG tariff.

22 A. Spire proposes to institute a tariff for the sale of RNG to customers that elect to
23 purchase it. Customers would make such elections annually, and Spire would set RNG prices
24 through a process related to the purchased gas adjustment (PGA).

1 Q. Please summarize Staff's recommendation related to the proposed RNG tariff.

2 A. As discussed below, there are unresolved issues in the proposed tariff and in Spire's
3 planning that need to be addressed before implementing an RNG program. Because of these
4 unresolved issues, Staff is unable to support this tariff at this time. This should not prevent Spire
5 from proposing an RNG program in the future after these issues are addressed and resolved.

6 Q. Please summarize your understanding of Spire's requested changes to cash-out and
7 balancing provisions for transportation customers and school aggregation pools.

8 A. Spire proposes to combine tariffs from Spire East and Spire West related to
9 transportation services, including school aggregation programs. This would result in changes to
10 the balancing and cash-out provision for transportation customers and balancing for school
11 aggregation pools.

12 Q. Please summarize Staff's recommendation related to cash-out and balancing
13 provisions.

14 A. Staff recommends that the Commission approve the cash-out balancing provisions
15 for transportation customers in Spire's proposed Transportation Service (TS) tariff. This would
16 continue the use of the current cash-out balancing structure in Spire West. It would implement
17 cash-out balancing in Spire East, replacing the current balancing provisions. Cash-out balancing
18 like those proposed by Spire that used index-based pricing and price multipliers for out of tolerance
19 imbalances as a means to incentivize close balancing are commonly used by Missouri gas
20 corporations and interstate pipelines.

21 Staff recommends that the Commission approve the balancing provisions of Spire's
22 proposed Experimental School Transportation Program (STP) tariff. While the monitoring issues
23 in Spire West discussed below will persist, Spire's proposed STP tariff will allow it to exercise
24 greater oversight of school pools in that division as it now does in Spire East.

1 **RNG TARIFF**

2 Q. What is biogas and RNG?

3 A. Biogas is a product of anaerobic decomposition, a process by which bacteria breaks
4 down biological material in the absence of oxygen. It consists of methane, carbon dioxide,
5 hydrogen sulfide, water vapor and other gases. Renewable natural gas (RNG), also called
6 biomethane, is biogas that has been treated to remove most of the non-methane gases. Biogas is
7 typically 40 to 60 percent methane,¹ but treated RNG will be more than 90 percent methane.
8 Like natural gas, RNG is mostly methane, and it is usable for fuel. RNG generally has a lower heat
9 content than natural gas because natural gas contains small amounts of other hydrocarbons that
10 add to its heat content.

11 Q. What is the scope of RNG production in Missouri, and what is its potential?

12 A. RNG is currently produced in Missouri, and RNG production is likely to increase.
13 The U.S. Environmental Protection Agency (EPA) estimates Missouri's potential for biogas
14 production from animal waste at 7 million MMBtu annually.² An American Gas Foundation
15 (AGF) report suggested that Missouri's RNG production from all sources could be 17 Tbtu/year
16 (17 million MMBtu) or more by 2040.³

17 Q. Is RNG currently delivered to natural gas distribution systems in Missouri?

18 A. Currently, there is one producer of RNG in Missouri that is delivering RNG to a
19 municipal gas distribution system and an interstate pipeline. In 2016, Roeslein Alternative Energy
20 Services (RAES) began injecting RNG from biogas produced at Smithfield Hog Production

¹ U.S. Energy Information Agency. (2019 Feb.1) *Biomass Explained: Landfill Gas and Biogas*.
https://www.eia.gov/energyexplained/index.php?page=biomass_biogas.

² EPA. (2018). *Market Opportunities for Biogas Recovery Systems at U.S. Livestock Facilities*. Washington, DC:
EPA. <https://www.epa.gov/sites/production/files/2018-06/documents/epa430r18006agstarmarketreport2018.pdf>.

³ AGF. (2019). *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment*. Washington, DC:
AGF. <https://gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf>.

1 facilities into the ANR pipeline.⁴ RAES entered into an agreement to transport gas on the City of
2 Milan municipal distribution system in 2019.⁵ RAES estimates that it has produced 5,000,000 Ccf
3 of RNG since it began operations in 2016⁶ (approximately 490,000 MMBtu, an average of about
4 160,000 MMBtu/year).

5 Q. How is RNG regulated in Missouri?

6 A. Currently, there is limited regulatory and legal framework that directly addresses
7 RNG in Missouri, though the recent activity in the field has spurred action. In September 2020,
8 Staff petitioned the Commission to open a working case to review and consider amending rules
9 related to gas quality in 20 CSR 4240-10.030. Staff proposed amendments to remove outdated
10 language from the rule and add provisions related to RNG and other alternative gas.⁷
11 The Commission opened Case No. AW-2021-0064 as a repository of stakeholder comments and
12 documents related to a review of the rule.⁸

13 Q. Are there other ongoing activities related to RNG regulation in Missouri?

14 A. In addition to the Commission's working case, there is activity in the Missouri
15 General Assembly related to RNG. House Bill No. 734 (HB 734) was passed by the General
16 Assembly, though as of this writing it has not been signed into law by the governor. HB 734, if it
17 were to become law, would require the Commission to promulgate rules relating to RNG,
18 specifically including:

⁴ RAES. (2016 Sept. 6). Renewable natural gas production begins at large manure-to-energy project.
<http://roesleinalternativeenergy.com/renewable-natural-gas-production-begins-at-large-manure-to-energy-project/>.

⁵ Bryce Gray. (2019 Aug. 6). Northern Missouri 'manure-to-energy' project starts distributing natural gas captured from pig farm. *St. Louis Post Dispatch*. https://www.stltoday.com/business/northern-missouri-manure-to-energy-project-starts-distributing-natural-gas-captured-from-pig-farm/article_c7c718df-c4bf-5070-96d3-a8f13646ce32.html.

⁶ Roeslein Comments, Case No. AW-2021-0064, EFIS Item No. 6.

⁷ Staff Motion to Establish Working Case, Case No. AW-2021-0064, EFIS Item No. 1.

⁸ Order Opening a Working Case to Consider an Amendment of the Commission's Rule on Electric, Gas and Water Utility Standards of Quality, issued September 16, 2021, Case No. AW-2021-0064, EFIS Item No. 2.

- 1 (1) Rules for reporting requirements; and
2 (2) Rules for establishing a process for gas corporations to fully recover
3 incurred costs that are prudent, just, and reasonable associated with a
4 renewable natural gas program. Such recovery shall not be permitted until
5 the project is operational and produced renewable natural gas for customer
6 use.⁹

7 Further, the bill specifies that:

8 A filing by a gas corporation pursuant to the renewable natural gas program...shall
9 include, but is not limited to:

- 10 (1) A proposal to procure a total volume of renewable natural
11 gas over a specific period; and
12 (2) Identification of the qualified investments that the gas
13 corporation may make in renewable natural gas infrastructure.¹⁰

14 While the Spire RNG tariff anticipates purchasing RNG rather than investing in RNG
15 infrastructure, HB 734 still suggests issues of RNG planning and sourcing that are important to
16 consider and document in advance of launching and RNG program.

17 Q. Does Missouri have a formal policy related to RNG development?

18 A. Though RNG has recently drawn attention for Missouri policy makers, there is
19 currently no formal state or federal policy mandating RNG development. Staff enquired of Spire
20 concerning such policies. Spire referred Staff to climate change plans published by the Cities of
21 Kansas City and St. Louis. Staff found that these plans mention RNG only in passing, if at all, and
22 they focused fuel-related carbon emission reduction plans on reducing emissions from electric
23 power generation and promoting use of electric vehicles.¹¹

⁹ CCS SS SCS HCS HB 734, p. 16, l. 27 - p. 17, l. 31.
<https://www.house.mo.gov/billtracking/bills211/hlrbillspdf/1660H.09T.pdf>.

¹⁰ Ibid., p. 17, ll. 34-37.

¹¹ City of Kansas City. (2008). *Climate Protection Plan*. https://drive.google.com/file/d/11P2oG6P-t5Bbjwl_rz5J14jcDN3vKBVX/view.

City of St. Louis. (2017). *Climate Action and Adaptation Plan for the city of St. Louis*. https://www.stlouis-mo.gov/government/departments/planning/sustainability/documents/upload/v1-1-CAP_FINAL.pdf.

1 Q. What are Staff's concerns related to Spire's requested RNG tariff?

2 A. Staff has concerns with Spire's proposed RNG tariff and with the company's
3 readiness to operate and manage a RNG program. Staff's concerns related to the tariff are:

- 4 1. a blended RNG rate that could obscure the cost of RNG to customers;
- 5 2. confusing terminology related to customer election of a level of
- 6 participations; and,
- 7 3. gas quality is not addressed.

8 Staff's concerns related to Spire's readiness to operate and manage an RNG program are:

- 9 1. an unclear scope of the demand for RNG and potential RNG sources; and,
- 10 2. the lack of a plan related to the potential effect of renewable energy incentives
- 11 on the RNG program.

12 Q. What are Staff's concerns related to the proposed blended rate?

13 A. Spire proposes to use a blended rate incorporating the price of both RNG and
14 natural gas (the PGA rate). Spire describes in its proposed tariff saying, "Customer's bills will
15 reflect a single PGA charge that reflects their elected level of RNG program participation."¹²

16 A blended rate such as this obscures the amount paid for RNG and the amount paid for
17 natural gas. In addition, it introduces the complication of updating the blended rate as the PGA
18 rate is updated even though Spire proposes to update the RNG price annually.¹³ Considering that
19 the monthly RNG quantity would be fixed when a customer enrolls in the program,¹⁴ but the total
20 gas use would vary by month, it suggests Spire would need to calculate a blended rate for each
21 customer each month even if the tariff RNG price and PGA rate are otherwise fixed. Vermont Gas
22 proposed a similar blended rate when it initially petitioned the Vermont Public Utility Commission

¹² Replacement Tariff (YG-2021-0133), Case No. GR-2021-0108, EFIS Item No. 4, Sheet No. 13.

¹³ Ibid., Sheet No. 13.1.

¹⁴ Ibid., Sheet No. 13.2. Spire clarified this in its response to Staff Data Request No. 0354 stating, "The proposed program would require customers to purchase a fixed quantity of RNG."

1 to create a RNG program, but it “shifted from a more complicated, blended rate structure” to a
2 “simplified” rate that more clearly distinguished the cost of RNG from the cost of natural gas.¹⁵

3 Q. What are Staff’s concerns related to proposed tariff language describing customer
4 election of level of participation?

5 A. The proposed RNG tariff has the confusing proliferation of terms related to the
6 customer’s election of a level of participation. The proposed tariff defines “RNG Purchase
7 Amount” as “a monthly purchase of RNG, based on average customer usage within each rate class
8 according to the following percentages: 10%, 25%, 50%, or 100%.”¹⁶ Later its states that the
9 “minimum RNG Purchase Amount will be \$1 and the RNG Purchase Amount must be a whole
10 dollar amount.”¹⁷

11 Q. What are Staff’s concerns related to gas quality?

12 A. The Spire RNG proposal does not address gas quality issues, which was a
13 motivation for staff to request the opening of a working case in Case No. AW-2021-0064. Spire
14 recognizes the importance of gas quality in its Spire West tariff for transportation customers by
15 establishing quality and pressure standards for gas transported to those customers.¹⁸ It brought
16 those requirements into its proposed transportation service tariff that would be applicable to both
17 East and West divisions.¹⁹ In conversations with staff of other state utility commissions where
18 RNG projects are in service, it appears common for utilities to place RNG quality standards in

¹⁵ Supplemental Direct Testimony of Thomas Murphy, p. 2, ll. 10-12, Vermont PUC Docket 8667.
<https://epuc.vermont.gov/?q=node/104/16215/FV-Legacy-EXHDOX-PTL>.

¹⁶ Replacement Tariff (YG-2021-0133), Sheet No. 13.

¹⁷ Ibid., Sheet No. 13.2.

¹⁸ Schedule of Rates and Charges Applying to Spire Missouri West Service Areas, Tracking No. YG-2018-0118,
Sheet Nos. 16.2-16.4.

¹⁹ Replacement Tariff (YG-2021-0013), Sheet Nos. 5.8-5.10.

1 tariffs. Because the Commission’s authority to regulate gas quality extends to all gas utilities in
2 the state, Staff recommended a rule change to address RNG quality in Case No. AW-2021-0064.²⁰

3 Q. What are Staff’s concerns related to RNG demand and sources?

4 A. Staff also has concerns with Spire’s current readiness to operate and manage the
5 proposed RNG program. Spire does not appear to have a clear estimate of the potential demand
6 for RNG, nor has it identified potential sources or their capacity to produce RNG. Though Spire
7 has commissioned public surveys to gauge customer support for RNG and carbon reduction
8 programs, “Spire has not made any projections of the amount of RNG it might purchase to supply
9 participating customers under the RNG tariff.”²¹ Responding to Staff inquiry, Spire stated that its
10 “engineering and development groups have begun researching available databases for potential
11 RNG feedstocks,”²² it provided no specific estimates of potential RNG supply. It is important to
12 have an understanding of the potential demand and supply for RNG before launching an RNG
13 program. Concerns about supply issues have been raised in relation to other RNG program
14 proposals. For instance, The Minnesota PUC rejected a similar pilot program without prejudice.
15 The reason cited by the Minnesota PUC for this decision was that it was unclear how the RNG
16 would be sourced, whether local sources were available, and if RNG was available on a scale to
17 expand the program beyond a pilot.²³

18 Q. What are Staff’s concerns related to the potential effects of renewable energy
19 incentives?

²⁰ Staff Motion to Establish Working Case, Case No. AW-2021-0064.

²¹ Spire response to Staff Data Request No. 0267.1.

²² Spire response to Staff Data Request No. 0269.

²³ Order Denying Petition Without Prejudice, issued August 29, 2019, Minnesota Public Utilities Commission, Docket No. G-008/M-18-547.

1 A. Spire has not specifically addressed how renewable energy incentives may affect
2 its RNG program. The company recognized that it will “be in competition with RNG being priced
3 in the California markets” where state incentives allow and pay a premium over the cost of natural
4 gas to encourage RNG development.²⁴ It is conceivable that Spire might benefit from such
5 incentive and have reductions in the cost of RNG to pass on to customers. As of yet, Spire has not
6 indicated to staff that it has studied the potential effects of renewable energy incentive on its
7 proposed RNG program or how they might be a component of the RNG price charged to
8 customers.

9 Q. What action does Staff recommend in relation to the proposed RNG tariff?

10 A. Staff recommends that the Commission deny Spire’s request to implement an RNG
11 tariff in this case. However, if the Commission were to approve an RNG tariff for Spire in this
12 case, Staff recommends that the Commission require Spire to:

- 13 1. Establish a specific rate for RNG instead of the blended rate currently proposed
14 by Spire;
- 15 2. Clarify the levels of participation customers may select and the terms used to
16 describe those levels;
- 17 3. Establish a quality standard for RNG;
- 18 4. Submit a RNG program plan that would include
 - 19 a. Estimates of potential RNG demand and supply with supporting
20 documentation and specific information on prospective sources,
 - 21 b. A description of renewable energy incentives that may affect the proposed
22 RNG program along with how they may interact with it and whether Spire
23 might directly participate in such incentives,
 - 24 c. Identify any capital investments Spire might make in RNG infrastructure; and,

²⁴ Spire response to Staff Data Request No. 0272.

- 1 5. Clarify that the procurement aspects of the RNG program are subject to prudence
2 and compliance reviews in the applicable Actual Cost Adjustment period.

3 **CASH-OUTS AND BALANCING**

4 Q. What is balancing?

5 A. Balancing is a process by which local distribution companies such as Spire
6 reconcile the difference between the amount of gas delivered and the amount used by their
7 transportation customers. Transportation customers purchase gas on their own or through an agent
8 rather than purchasing gas from Spire, and has the gas delivered to one of Spire’s city gates.
9 Spire transports the gas from its city gates to the transportation customers.

10 In the event that a transportation customer does not deliver as much gas as it uses,
11 Spire must make up for the shortage, incurring gas costs that are normally passed on to sales
12 customers through the Purchased Gas Adjustment (PGA). If the transportation customer delivers
13 more gas than it uses, Spire must apply its resources to manage the situation. Balancing provisions
14 keep Spire and its transportation customers “whole” by reconciling these differences, offsetting
15 gas costs incurred to serve transportation customers back to sales customer through the PGA, and
16 providing incentives for transportation customers to match delivered gas to their usage as closely
17 as possible.

18 This testimony separately addresses balancing provisions related to transportation
19 customers generally and special tariff provisions related to school aggregation pools. The tariffs
20 related to general transportation services will be addressed first, followed by the tariffs related to
21 school aggregation.

22 **TRANSPORTATION CUSTOMER BALANCING AND CASH-OUTS**

23 Q. What type of balancing does Spire use for transportation customers?

1 A. Spire West uses a cash-out balancing system. Spire East uses a somewhat different
2 system, though it has similarities to cash-out balancing.

3 Q. Briefly describe the cash-out balancing provisions specified in the Spire West tariff.

4 A. Spire West balances transportation customers using cash-outs. Each month, it
5 determines the amount of the imbalance for each transportation customer or pool. It then cashes
6 out by billing or crediting the transportation customer an amount of money based on the quantity
7 of the under- or over-delivery of gas, adjusted for retainage. In the case in which Spire makes up
8 for a transportation customer's under-deliveries, Spire also charges transportation costs as part of
9 the cash-out. (Generally, Spire West bills or credits the marketing companies that serve as agents
10 for transportation customer or operators of pools of such customers.) Spire is essentially selling
11 gas to the customer to make up for its shortages and buying the customer's overages of gas
12 over-delivered. The rate is based on a published index. If the imbalance is greater than 5 percent
13 of the amount of gas delivered to the city gate, multipliers are applied to the index price to increase
14 the amount billed or decrease the amount paid. This multiplier provides an incentive for
15 transportation customers to minimize imbalances.²⁵

16 Q. Briefly describe the balancing provisions in the Spire East tariff.

17 A. The Spire East tariff specifies a somewhat different means of addressing
18 transportation customer imbalances. Imbalances within 5 percent of the gas delivered to the city
19 gate are carried forward and applied to quantities in the next month. If a transportation customer's
20 delivered gas falls short of usage by more than 5 percent, Spire sells it the difference at the current
21 PGA (CPGA) rate. (Though similar to the PGA, the applicable PGA rate is updated monthly
22 pursuant to a separate provision in the PGA tariff, and Spire informs transportation customers of

²⁵ Schedule of Rates and Charges Applying to Spire Missouri West Service Areas, Tariff No. YG-2018-0118, Sheet Nos. 16.5-16.6.

1 the new CPGA by e-mail.) If the customer's delivered amount exceeds the usage by five percent,
2 the extra amount is treated as if it were stored by Spire, and Spire charges the customer based on
3 the amount of the "stored" gas. In the subsequent month, transportation customer's delivered and
4 "stored" gas is used to correct any imbalances from the prior month before the customers delivered
5 gas is attributed to its use; sales to transportation customers is the last resort to make up shortages.²⁶

6 Q. What balancing provisions does Spire request in its proposed tariff?

7 A. In its proposed transportation tariff that would be applicable to both Spire East and
8 Spire West if approved by the Commission, Spire proposes to use cash-out balancing. The new
9 tariff closely follows the current Spire West tariff, but it adds gas price indices and pipeline
10 transportation rates applicable to Spire East.²⁷

11 Q. Is cash-out balancing a common practice?

12 A. Yes. Index-based cash-outs such as those used by Spire West are used for balancing
13 by the other Missouri gas corporations: Ameren Missouri,²⁸ Empire District Gas Company,²⁹
14 Liberty Utilities (Midstates Natural Gas) Corp.,³⁰ and Summit Natural Gas of Missouri.³¹ Cash-out
15 balancing is also common on the interstate pipelines that provide transportation services to Spire.
16 Enable Gas Transmission,³² Enable Mississippi River Transmission,³³ Natural Gas Pipeline

²⁶ Schedule of Rates and Charging Applying to Spire East Service Areas, Tracking No. YG-2018-0017, Sheet Nos. 10.8-10.9.

²⁷ Replacement Tariff, Tracking No. YG-2021-0133.

²⁸ Union Electric Company Gas Service Applying to Missouri Service Area, Tracking No. JG-2003-0027, Sheet Nos. 13.1-14.

²⁹ Missouri Public Service Commission Gas Tariff of the Empire District Gas Company (EDG) D/B/A Liberty Utilities or Liberty, Tracking No. YG-2021-0026, Sheet Nos. 41-42.

³⁰ Missouri Public Service Commission Gas Tariff of the Liberty Utilities (Midstates Natural Gas) Corp. D/B/A Liberty Utilities or Liberty, Tracking No. YG-2021-0025, Sheet No. 52.

³¹ Summit Natural Gas of Missouri, Inc. Schedule of Rates, Rules and Regulations and Conditions of Service Governing the Provision and Taking of Natural Gas Service, Tracking No. YG-2015-0207, Sheet Nos. 34-37.

³² FERC Gas Tariff Ninth Revised Volume No. 1 Superseding Eight Revised Volume No. 1 of Enable Gas Transmission LLC, Sheet Nos. 625-641.

³³ FERC Gas Tariff Sixth Revised Volume No. 1 of Enable Mississippi River Transmission, LLC, Sheet Nos. 204-206.

1 Company,³⁴ Panhandle Eastern Pipe Line Company,³⁵ Rockies Express Pipeline,³⁶ Spire STL
2 Pipeline,³⁷ Southern Star Central Gas Pipeline,³⁸ Tallgrass Interstate Gas Transmission,³⁹ and
3 Trunkline Gas Company⁴⁰ use cash-out balancing. MoGas Pipeline is the exception among
4 pipelines that serve Spire in that it resolves imbalances by other means, though it charges penalties
5 for imbalances that are not resolved in a timely manner as defined in the tariff.⁴¹ Transportation
6 customers, or marketing companies acting as their agents, are also shippers on interstate pipelines,
7 so they are subject to and must be familiar with the cash-out balancing tariffs of the pipelines they
8 use. Even shippers on MoGas would likely be subject to the cash-out provisions of other interstate
9 pipelines because MoGas does not directly connect to gas producing regions or major gas hubs.

10 Bringing the cash-out provisions to Spire East would bring it in line with common
11 balancing practices. In addition, index-based cash-outs with multipliers for out of tolerance
12 imbalances like those proposed by Spire provide an incentive for close balancing.

13 Q. What action does staff recommend in relation to cash-outs and balancing for
14 transportation customers?

15 A. Staff recommends that the Commission approve the cash-out balancing provisions
16 for transportation customers in Spire's proposed Transportation Service (TS) tariff.

³⁴ Natural Gas Pipeline Company of America LLC Eighth Revised Volume No. 1 Tariff, General Terms and Conditions, Section 13.3.

³⁵ FERC NGA Gas Tariff Fourth Revised Volume No. 1 (Supersedes Third Revised Volume No. 1) of Panhandle Eastern Pipe Line Company, LP, Part IV General Terms and Conditions, Section 12.11.

³⁶ Rockies Express Pipeline LLC Third Revised Volume No. 1 Tariff, General Terms and Conditions, Section 13.1.

³⁷ FERC NGA Gas Tariff Original Volume No. 1 of Spire STL Pipeline LLC, Section 11.3.

³⁸ FERC Gas Tariff First Revised Volume No. 1 (Superseding Original Volume No. 1) of Southern Start Central Gas Pipeline, Inc., Sheet Nos. 243-246.

³⁹ Tallgrass Interstate Gas Transmission LLC Third Revised Volume No. 1 Tariff, General Terms and Conditions, Section 12.1.

⁴⁰ FERC NGA Gas Tariff Fourth Revised Volume No. 1 (Supersedes Third Revised Volume No. 1) of Trunkline Gas Company, LLC, Part IV General Terms and Conditions, Section 5.2.

⁴¹ FERC Gas Tariff Second Revised Volume No. 1 of MoGas Pipeline LLC, Section 7.14.1.

1 **BALANCING OF SCHOOL AGGREGATION POOLS**

2 Q. Does Spire have balancing provisions for school aggregation pools that differ from
3 those applicable to other transportation customers?

4 A. Yes. Spire takes a different approach to transportation customers participating in
5 the Experimental School Transportation Program (STP). It does not use cash-out balancing for
6 school aggregation pools. The balancing provisions for school aggregation pools are very different
7 in the current tariffs of Spire East and Spire West.

8 Q. Briefly describe the school aggregation pool balancing provision in the Spire East
9 tariff.

10 A. Spire East addresses imbalances of school aggregation pools by increasing or
11 decreasing gas delivered by the pool operator (a marketing company) in the subsequent month.
12 Spire East is unusual in that it is involved in the supply planning of school aggregation pools. Each
13 year, Spire East provides to its school aggregation pool operators a delivery schedule, which is a
14 temperature-based equation for determining the daily amount of gas that needs to be delivered in
15 order to meet the demand of the schools in the pool. The company or pool operator may make
16 adjustments to the demand schedule throughout the year to reflect consumption patterns or reduce
17 the accumulation of imbalances. During the period of October 15 through April 30, Spire East
18 sends the pool operators weekly temperature forecasts that the operators must use to determine the
19 amount of gas to deliver.⁴²

20 Q. Briefly describe the school aggregation pool balancing provision in the Spire West
21 tariff.

⁴² Schedule of Rates and Charging Applying to Spire East Service Areas, Tracking No. YG-2018-0017, Sheet Nos.15-15.1.

1 A. Spire West has an unusual tariff relating to balancing of school pools that reflects
2 a unique situation relate to its school transportation program. Pool operators in Spire west “make
3 reasonable good faith efforts to avoid imbalances.”⁴³ The tariff further provides for information
4 sharing between the company and pool operators to mitigate imbalances.

5 Q. Why does the Spire West tariff differ so much from the Spire East tariff on
6 this subject?

7 A. The unique Spire West STP provisions came to be over the course of several cases.
8 Prior to the tariff that became effective April 19, 2018, the Spire West STP tariff had typical
9 cash-out balancing requirements for school pools, similar to those I previously describe in relation
10 to transportation customers. However, it was not implementing its tariff related to balancing school
11 transportation pools. Staff brought up this issue in prior Actual Cost Adjustment (ACA) Case Nos.
12 GR-2013-0042, GR-2014-0324 and GR-2015-0203. Staff noted:

13 According to MGE’s tariff Sheet No. 58, the STP customers are subject to
14 Cash Out of their monthly balances. Staff found in this ACA period, as in
15 the prior ACA period, MGE’s practice with regard to imbalances of STP
16 customers is not consistent with its tariff. MGE was carrying over STP
17 customers’ imbalances from month-to-month rather than Cashing Out the
18 imbalances for these customers on a monthly basis.⁴⁴

19 Tariff language to correct this oversight in light of the unique situation at Spire West, was
20 arrived at *by a stipulation* that was approved by the Commission in Case No. GR-2017-0216.⁴⁵

⁴³ Schedule of Rates and Charges Applying to Spire Missouri West Service Areas, Tariff No. YG-2018-0118, Sheet No. 15.3.

⁴⁴ *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.

⁴⁵ *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.

1 The reason Spire West, then MGE, was not balancing in accordance with the tariff at the
2 time was that “[s]chools in the MGE STP were on numerous billing cycles.”⁴⁶ Schools in the
3 school aggregation programs of other Missouri gas utilities are on the same billing cycle, which
4 allows them to calculate imbalances monthly, but this was not the case for Spire West.
5 Spire West was unable to determine the monthly imbalance for school pools because the meter
6 reading for schools within the pools were taken on different days. This lack of time-coordinated
7 metering data also makes it more challenging for pool operators to match nominations to usage
8 and adjust nominations based on forecasted weather.

9 Q. What balancing method does Spire request in its proposed STP tariff?

10 A. Spire’s proposed STP tariff for both divisions would bring make the balancing and
11 supply planning provision of the Spire East tariff applicable to Spire West as well. Staff recognizes
12 that this will not change the current situation in Spire West, meaning that the parties will still be
13 acting on “good faith,” but it Spire’s more active involvement in supply planning for school pools
14 in Spire West may help mitigate imbalances there, and it will give the company more oversight
15 over pool operators that might find opportunities to take advantage of the current lax tariff in
16 Spire West.

17 Q. What is staff’s analysis of Spire’s proposed balancing provisions for school
18 aggregation pools?

19 A. In the long term, cash-out balancing of school aggregation pools such as were
20 previously part of the Spire West tariff are desirable. The current Spire East tariff and proposed
21 tariff place significant responsibility for supply planning on the company, which properly belongs
22 to the pool operators. In addition, the incentives for balancing in the proposal are weak.

⁴⁶ *Memorandum* filed December 12, 2016, Case No. GR-2015-0203, p. 14.

1 Schools and their pool operators have an incentive to look out for their own interests by shifting
2 gas purchases from days when price are high to those when prices are low, regardless of projected
3 demand for current day, and they are only restrained by Spire's involvement in supply planning
4 for school aggregation pools. Spire is able to recover its gas costs through the PGA, and can
5 therefore cover its gas costs related to balancing school aggregation pools even if it does not fully
6 recover them from the schools and pool operators. Under a cash-out system, pool operators would
7 be responsible for supply planning for their schools and they would have financial incentives to
8 closely balance delivered gas and use. However, such a system cannot be implemented in
9 Spire West currently.

10 The proposal will not change the situation in Spire West, but it will allow Spire to exercise
11 more oversight of school aggregation pool operators. In the absence of the ability to implement
12 other balancing method for school aggregation pools in Spire West, such oversight may mitigate
13 the lack of financial incentives for balancing.

14 Q. What action does staff recommend in relation to balancing of school
15 aggregation pools?

16 A. Staff recommends that the Commission approve the balancing provisions of Spire's
17 proposed STP tariff.

18 Q. Does this conclude your rebuttal testimony?

19 A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Spire Missouri Inc.'s d/b/a)
Spire Request for Authority to Implement a)
General Rate Increase for Natural Gas)
Service Provided in the Company's)
Missouri Service Areas)

Case No. GR-2021-0108

**AFFIDAVIT OF
KEENAN B. PATTERSON, PE**

STATE OF MISSOURI)
)
COUNTY OF COLE) ss.

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 of Keenan B. Patterson, PE*; 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 16th day of June 2021.

D. SUZIE MANKIN Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: April 04, 2025 Commission Number: 12412070


Notary Public

KEENAN B. PATTERSON, PE

Education and Employment Background and Credentials

I am currently employed as a Senior Professional Engineer for the Missouri Public Service Commission (Commission) in the Procurement Analysis Department. I have been employed by the Commission in this position since February 2018. From August 2015 through January 2018, I was employed by the Commission as a Utility Engineering Specialist/Utility Regulatory Engineer in the Engineering Analysis Department.

I am a graduate of the University of Missouri where I earned the degrees of Bachelor of Science in Agricultural Engineering and Master of Public Administration. In addition, I am licensed as a Professional Engineer in Missouri.

Prior to working for the Commission, I was employed as an Environmental, Health and Safety Coordinator by Pittsburgh Corning Corporation from 2013 to 2015. I have also been employed as an Associate at The Cadmus Group from 2010 to 2013, an Environmental Engineer at GREDELL Engineering Resources in 2009, the owner of Infra Consulting LC from 2006 to 2013, and various environmental engineering positions at the Missouri Department of Natural Resources from 1994 to 2006. In addition, I am a member of the National Association of Regulatory Utility Commissioner's Staff Subcommittee on Gas.

Other cases I have been assigned to or that I have participated in are listed below.

Case Number	Company
GR-2021-0128	Spire Missouri (Spire West)
GR-2021-0127	Spire Missouri (Spire East)
GR-2021-0121	Liberty Utilities (Midstates Natural Gas)
GA-2020-0251	Summit Natural Gas of Missouri
GR-2020-0126	Liberty Utilities (Midstates Natural Gas)
GR-2020-0122	Spire Missouri (Spire West)
GR-2020-0121	Spire Missouri (Spire East)
GR-2019-0123	Liberty Utilities (Midstates Natural Gas)
GR-2019-0120	Spire Missouri (Spire West)
GR-2019-0119	Spire Missouri (Spire East)
GR-2019-0077	Ameren Missouri
WR-2018-0170 SR-2018-0171	Liberty Utilities (Missouri Water)
GR-2018-0122	Empire District Gas Company

cont'd Keenan B. Patterson, PE

Case Number	Company
GR-2018-0106	Summit Natural Gas Company of Missouri
GR-2018-0077	Liberty Utilities (Midstates Natural Gas)
WM-2018-0023	Liberty Utilities
WM-2018-0018 SM-2018-0017	Seges Partners Mobile Home Park
WR-2018-0001	Environmental Utilities
GR-2017-0341	Ameren Missouri
GR-2017-0300	Spire Missouri (Spire West)
GR-2017-0299	Spire Missouri (Spire East)
WR-2017-0285	Missouri-American Water Company
WR-2017-0259	Indian Hills Utility Operating Company
GR-2017-0216	Missouri Gas Energy
GR-2017-0215	Laclede Gas Company
SM-2017-0187 WM-2017-0186	Lake Region Water & Sewer Company
WA-2017-0181	Missouri-American Water Company
SM-2017-0150	Elm Hills Utility Operating Company, Inc.
WF-2017-0143 WR-2017-0110	Terre Du Lac Utilities Corporation
WR-2017-0139	Stockton Hills Water Company
SR-2017-0130	Gladlo Water and Sewer Company, Inc.
SR-2017-0099	Seges Partners Mobile Home Park, L.L.C.
WO-2017-0236 WC-2017-0200 WR-2017-0042	Ridge Creek Water Company LLC
ER-2016-0285	Kansas City Power & Light Company
SR-2016-0202	Raccoon Creek Utility Operating Company, Inc.
EM-2016-0213	Empire District Electric Company
ER-2016-0179	Ameren Missouri
WM-2016-0169	Woodland Manor Water Company, LLC
SR-2016-0110 WR-2016-0109	Roy-L Utilities, Inc.
WM-2016-0094	Foxfire Utilities Company
WA-2016-0054	Missouri-American Water Company
WA-2016-0031 SA-2016-0030	Peaceful Valley Service Company
WR-2015-0301	Missouri-American Water Company