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Sponsoring Party:	Public Counsel
Case No.:	GR-2025-0107

DIRECT TESTIMONY

OF

LENA M. MANTLE

Submitted on Behalf of the Office of the Public Counsel

SPIRE MISSOURI, INC.

FILE NO. GR-2025-0107

April 23, 2025

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DIRECT TESTIMONY

OF

LENA M. MANTLE

SPIRE MISSOURI, INC.

d/b/a SPIRE MISSOURI EAST & SPIRE MISSOURI WEST

CASE NO. GR-2025-0107

Q. Would you state your name and business address?

A. My name is Lena M. Mantle, and my business address is P.O. Box 2230, Jefferson City, Missouri 65102. I am a Senior Analyst for the Office of the Public Counsel (“OPC”).

Q. Would you describe your experience and your qualifications?

A. I started working for the OPC in my current position, as a Senior Analyst in August 2014. In this position, I advise the Public Counsel and provide expert testimony on a variety of topics including natural gas, electric and water utility requests for interim rate mechanisms. Prior to working for the OPC, I worked for the Missouri Public Service Commission Staff (“Staff”) from August 1983 until I retired in December 2012. During my employment on the Commission Staff, I worked as an Economist, Engineer, Engineering Supervisor, and Manager of the Energy Department.

Attached as Schedule LMM-D-1 is a brief summary of my experience with OPC and Staff along with a list of the Commission cases in which I filed testimony, Commission rulemakings in which I participated, and Commission reports to which I contributed. I am a Registered Professional Engineer in the State of Missouri.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to explain the interim rate mechanisms available for Spire, Inc. (“Spire”) in Section 368.266 RSMo. (“Section 386.266”) and explain OPC’s position that

1. The interim rate mechanisms allowed by Section 386.266 are not necessary; and
2. The Commission should order Spire's current Weather Normalization Adjustment Mechanism ("WNAR") be discontinued.

If the Commission allows the current mechanism to be continued, the approval of the mechanism should be accompanied by a reduction in the rate of return to compensate customers for the increased risk that the mechanism places on them and to acknowledge the reduction in risk of revenue recovery to Spire.

My rebuttal testimony will explain why the Commission should reject Spire's request for a different interim rate mechanism it has labeled the "Distribution System Adjustment" or DSA.

Q. What reduction in rate of return is appropriate for the reduction in risk of revenue recovery for Spire's WNAR?

A. OPC witness David Murray discusses the appropriate reduction in his direct testimony.

Overview of Section 386.266 RSMo.

Q. Would you summarize your experience regarding the implementation of the interim rate mechanisms that Section 386.266 allows utilities to request from the Commission?

A. I have been involved with the implementation of Section 386.266 as a non-attorney since Section 386.266 initially became effective in 2005. I was the Staff scribe for the proposed rules implementing Section 386.266.1. and 2. I have filed testimony regarding electric, natural gas, and water utilities requests for all of the rate mechanisms allowed by Section 386.266 RSMo.

1 **Q. What is an interim rate?**

2 A. Generally, an interim rate is a short-term rate that can, and usually does, change
3 between general rate cases in which the Commission sets permanent rates. Interim
4 rates are based on a limited number of actual costs and revenues whereas permanent
5 rates are set in a general rate proceeding after a full review of all costs incurred and
6 revenues collected.

7 **Q. What interim rate mechanisms are allowed for gas utilities in Section 386.266?**

8 A. Section 386.266 allows gas utilities to request two different interim mechanisms:

- 9 1) To reflect increases and decreases in its prudently incurred costs,
10 whether capital or expense, to comply with any federal, state, or
11 local environmental law, regulation, or rule;¹ and
12 2) To account for the impact on utility revenues of increases or
13 decreases in residential and commercial customer usage due to
14 variations in either weather, conservation, or both.²

15 **Q. Does Section 386.266 require the Commission to grant gas utilities requests for**
16 **these two types of interim rate mechanisms?**

17 A. No. Section 386.266.5 states:

18 The commission shall have the power to approve, modify, or reject
19 adjustment mechanisms submitted under subsections 1 to 4 of this
20 section only after providing the opportunity for a full hearing in a
21 general rate proceeding, including a general rate proceeding
22 initiated by complaint. The commission may approve such rate
23 schedules after considering all relevant factors which may affect the
24 costs or overall rates and charges of the corporation, provided that it
25 finds that the adjustment mechanism set forth in the schedules:

26 Emphasis added.

¹ Section 386.266.2.

² Section 386.266.3

1 **Q. To your knowledge, has Spire ever requested a mechanism to reflect changes**
2 **in its incurred costs, whether capital or expense, to comply with any federal,**
3 **state, or local environmental law, regulation, or rule?**

4 A. I am not aware of any such request by Spire in the past and it has not requested such
5 a mechanism in this rate case. For this reason, the rest of this testimony will center
6 on the other interim rate mechanism allowed by Section 386.266 that allows for an
7 interim rate mechanism to account for the impact on utility revenues of increases
8 or decreases in usage due to variations in either weather, conservation, or both.

9 **Spire's Current Section 386.266 Interim Rate Mechanism**

10 **Q. Does Spire currently have a rate mechanism that accounts for the impact on**
11 **its revenues of increases or decreases in usage due to variations in either**
12 **weather, conservation, or both?**

13 A. Yes. The Commission first approved a Weather Normalization Adjustment Rider
14 ("WNAR") for Spire in case nos. GR-2018-0215 and GR-2018-0216 effective
15 April 19, 2018. Its current WNAR is described in Spire's tariff on sheet nos. 13
16 through 13.2 for Spire East and sheet nos. 13.3 through 13.5 for Spire West.

17 **Q. What is your position regarding the continuation of Spire's WNAR?**

18 A. The Commission should not continue Spire's WNAR without a reduction in its rate
19 of return for the reduction in risk of revenue collection resulting from having this
20 mechanism.

21 **Q. Does Section 386.266 allow the Commission to discontinue the WNAR?**

22 A. Yes. Section 386.266.5 give the Commission the power to approve, modify, or
23 *reject* the WNAR in a general rate proceeding such as this case.

1 **Q. What is the revenue risk to Spire without a WNAR?**

2 A. Absent the WNAR, Spire absorbs the risk associated with weather and conservation
3 as it did prior to January 1, 2022 when the current WNAR tariff sheets became
4 effective.

5 In a general rate case, billing determinants (*e.g.* meter counts, usage) and
6 revenue requirement are used to establish non-gas volumetric rates. The usage
7 billing determinants used to calculate these non-gas volumetric rates are normalized
8 for weather in the rate case. Using this weather normalized usage results in rates
9 that will provide the revenues set by the Commission when weather conditions are
10 “normal.”

11 The one thing that is certain is that the weather is never normal. It is warmer
12 than normal and cooler than normal but never normal across an entire year. When
13 the weather is warmer than normal, then natural gas usage is lower meaning that,
14 everything else being constant, Spire will not collect the revenue set by the
15 Commission through the non-gas volumetric rate. If the weather is cooler than
16 normal, everything else being constant, then Spire will collect more revenue than
17 what was used to set the non-gas volumetric rates.

18 Likewise, if customers reduce their natural gas usage either as a result of
19 economic hardship or a desire to conserve energy, Spire does not receive the
20 revenue requirement from its non-gas volumetric rates as set by the Commission.

21 Absent an interim rate mechanism for weather and conservation, Spire
22 absorbs all the risk associated with weather and conservation. If actual usage is
23 below the billing determinants set in the rate case, there is no way for Spire to
24 recover the revenues that it did not receive and the customers’ bills are lower due
25 to reduced usage. Likewise, when actual usage is above the billing determinants,
26 the revenues Spire receives exceed the normalized revenues set in the rate case
27 resulting in increased earnings for Spire. Customers expect to pay more because
28 they made a choice to stay warm.

1 **Q. What is the risk to the customers if Spire does not have a WNAR?**

2 A. If actual usage is below the billing determinants set in the rate case due to warm
3 heating season, the customers' bills are lower due to reduced usage as they expect
4 the bills to be. Likewise, when it the heating season is colder than normal,
5 customers expect to pay more as expected because they made a choice to stay warm.

6 **Q. How does Spire's risk change with the WNAR?**

7 A. A WNAR increases Spire's certainty that it will get to collect more revenues if the
8 weather is warmer than normal or customers work to conserve usage. On the flip
9 side, if weather is cooler than normal, Spire does not get to keep the excess revenues
10 because customers will be returned some of what they paid over the next year but
11 only after Spire has already collected the revenue from customers.

12 **Q. How does a WNAR impact the customers?**

13 A. It increases the uncertainty of how a customer's change in consumption impacts
14 their bill. It confuses the customers and distorts price signals. Customers are
15 accustomed to their bills reflecting the weather that they experienced. With a
16 WNAR they could have higher bills due to the recent cold weather with an
17 increment added on because the previous winter was warmer than normal. The
18 relationship between their bills and their usage is no longer direct.

19 **Q. If the Commission approves a reduced rate of return to account for the
20 reduction in risk, should the Commission approve Spire's current WNAR?**

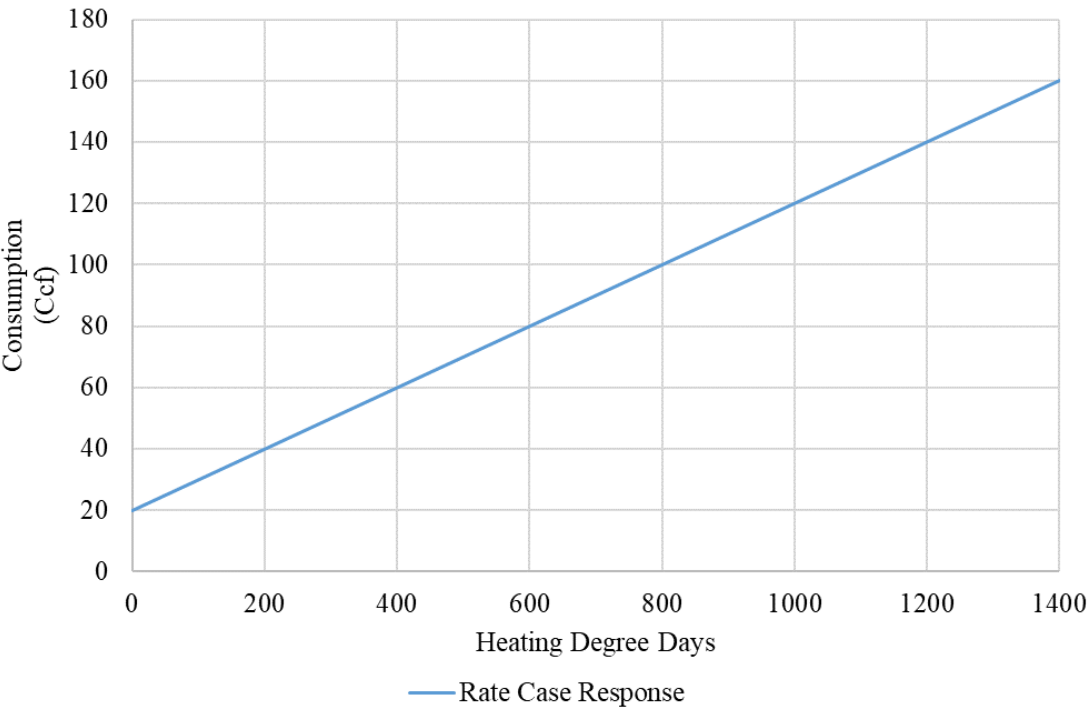
21 A. Yes, but with certain modifications. If the Commission recognizes the reduction in
22 risk to Spire through a reduced rate of return, I recommend the Commission
23 approve the WNAR with the updates and modifications identified in this testimony.

1 **Q. Would you explain how Spire’s WNAR accounts for weather and**
2 **conservation?**

3 A. I will start with how the mechanism accounts for weather. In a rate case, the
4 relationship between weather and usage is measured to determine what the usage,
5 and subsequently revenues, would have been if weather was normal. For gas usage,
6 weather is measured in heating degree days (“HDD”) with HDD being the
7 difference between 65 degrees Fahrenheit (“° F”) and the actual mean daily
8 temperature.³ The colder it is, the greater the HDD.

9 The Figure 1 below shows a hypothetical relationship between usage and
10 HDD.

11 Figure 1



12 This graph shows that as HDD increase, the amount of gas used also increases. The
13 equation for this example is:
14

³ Mean daily temperature is the sum of the daily high and the daily low divided by two.

$$\text{Ccf} = \alpha + (\beta \times \text{HDD}) + \varepsilon$$

In words, the usage in Ccf equals the base usage (“ α ”) plus the change in usage per HDD (“ β ”) multiplied by HDD plus everything else (“ ε ”)

The graph shows that, for this customer class at this point in time,⁴ an increase of 200 HDD results in consumption increasing by 20 Ccf or for a change of one HDD, usage changes by 0.10 Ccf. Using this line, the usage for any HDD point can be predicted with the equation of:

$$\text{Ccf} = 20 \text{ Ccf} + (0.10 \text{ Ccf per HDD} \times \text{HDD}).$$

Q. How is the relationship of usage to weather estimated?

A. While the relationship in Figure 1 was created for simplicity, for a utility the relationship is estimated by developing a regression model using the most recent usage data for a customer class and the actual HDD associated with each usage data point. Other variables can be included for growth (positive or negative) or the impacts of other circumstances such as the pandemic or economic downturns.

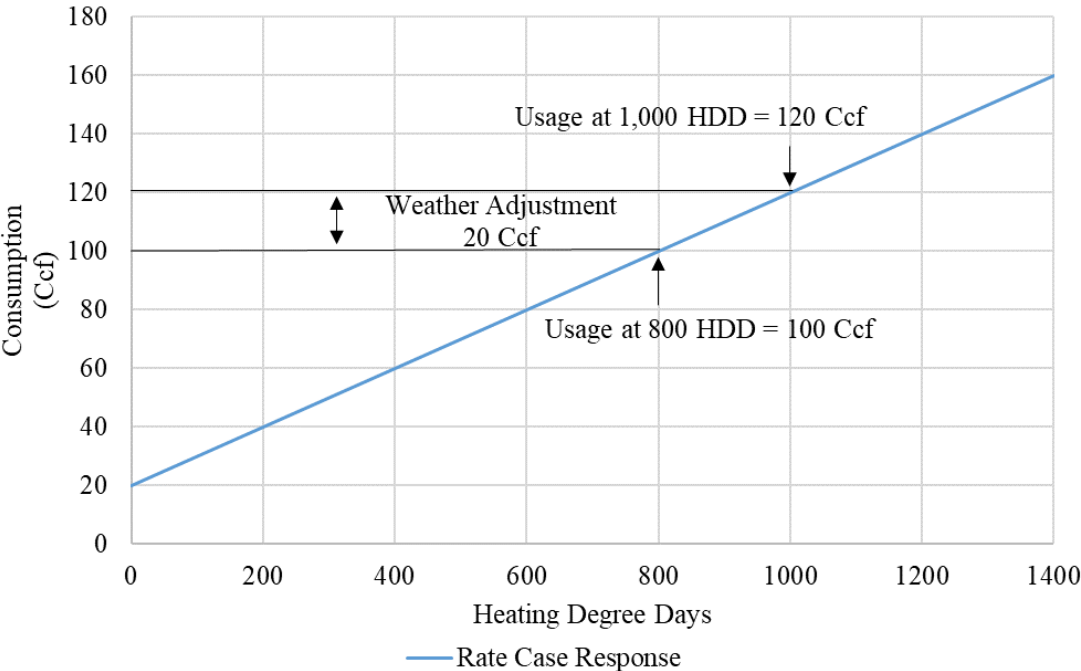
Q. How is the relationship between HDD and usage used to calculate a weather normalization adjustment?

A. To answer this question, I will go back to the hypothetical relationship shown in Figure 1. Assume normal weather was 1,000 HDD and the actual weather was warmer than normal with HDD of 800. Figure 2 below shows the usage at 800 HDD is 100 Ccf and at 1,000 HDD is 120 Ccf. Therefore, the adjustment for weather is a positive increase of 20 Ccf.⁵

⁴ The β coefficient changes over time as the response to weather of the class changes.

⁵ 120 Ccf – 100 Ccf = 20 Ccf.

Figure 2



The weather adjustment to usage is the predicted normal Ccf minus the predicted actual Ccf. Therefore, the weather adjustment to usage in this example is 20 Ccf (120 Ccf minus 100 Ccf). The equation for this calculation is:

$$\begin{aligned} \text{WA}_{\text{usage}} &= \beta \times (\text{HDD}_{\text{Normal}} - \text{HDD}_{\text{Actual}}) \\ 20 \text{ Ccf} &= 0.10 \text{ Ccf/HDD} \times (1,000 \text{ HDD} - 800 \text{ HDD}) \end{aligned}$$

Q. What would the adjustment be if it was colder than normal?

A. If normal HDD was 800 and the actual was 1,000 HDD, the weather adjustment would be -20 Ccf (100 Ccf minus 120 Ccf).

$$\begin{aligned} \text{WA}_{\text{usage}} &= \beta \times (\text{HDD}_{\text{Normal}} - \text{HDD}_{\text{Actual}}) \\ -20 \text{ Ccf} &= 0.10 \text{ Ccf/HDD} \times (800 \text{ HDD} - 1,000 \text{ HDD}) \end{aligned}$$

1 **Q. How is this related to the WNAR?**

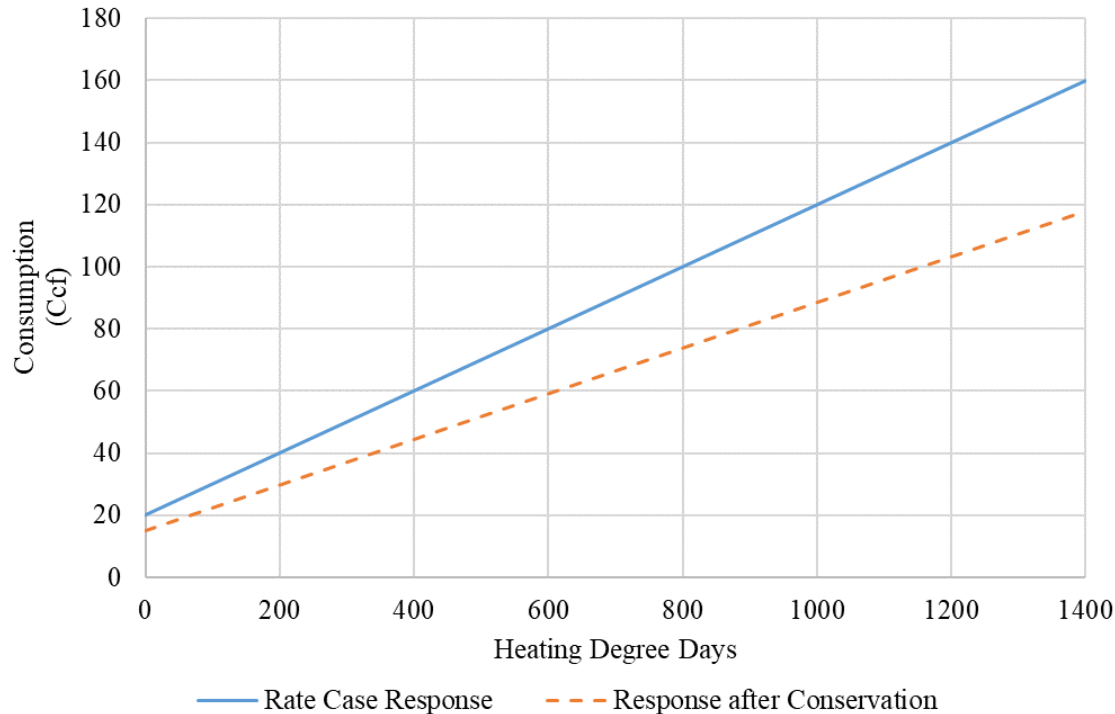
2 A. The WNAR uses the coefficient β to determine the adjustment to usage. Weather
3 normalization adjustments in Ccfs are calculated for each billing cycle and each
4 month based on this coefficient and the actual and normal weather measured for
5 each billing cycle. The sum of these weather normalization adjustments is then
6 multiplied by a rate to calculate how much revenue was not collected or was over-
7 collected. These revenue adjustments are summed across billing months and then
8 divided by the billing determinants in the last rate case resulting in a WNAR rate
9 that is applied for the next 12 months.

10 **Q. Does the WNAR account for conservation?**

11 A. Yes, but how is not intuitive. To help explain how the WNAR accounts for
12 conservation I have created additional graphs. In Figure 3 below, the solid line
13 represents the response of a customer class to weather as determined in the rate
14 case. This is the same line that is shown in Figures 1 and 2. I have added the
15 dashed line in Figure 3 as the response to weather of the same customer class after
16 time passes and customers have taken steps to reduce their usage.⁶

⁶ Not all reduction in usage is due to a deliberate act to conserve energy.

Figure 3



The response to weather as set in the rate case is the solid line showing an increase of 200 HDD results in consumption increasing by 20 Ccf. The β is 0.10 Ccf per HDD as previously explained.

After time passes and conservation occurs, there is less response to weather by this class as shown by the dashed line in this graph. The response is 15 Ccf for a change in HDD of 200 resulting in a β is 0.075 Ccf per HDD.

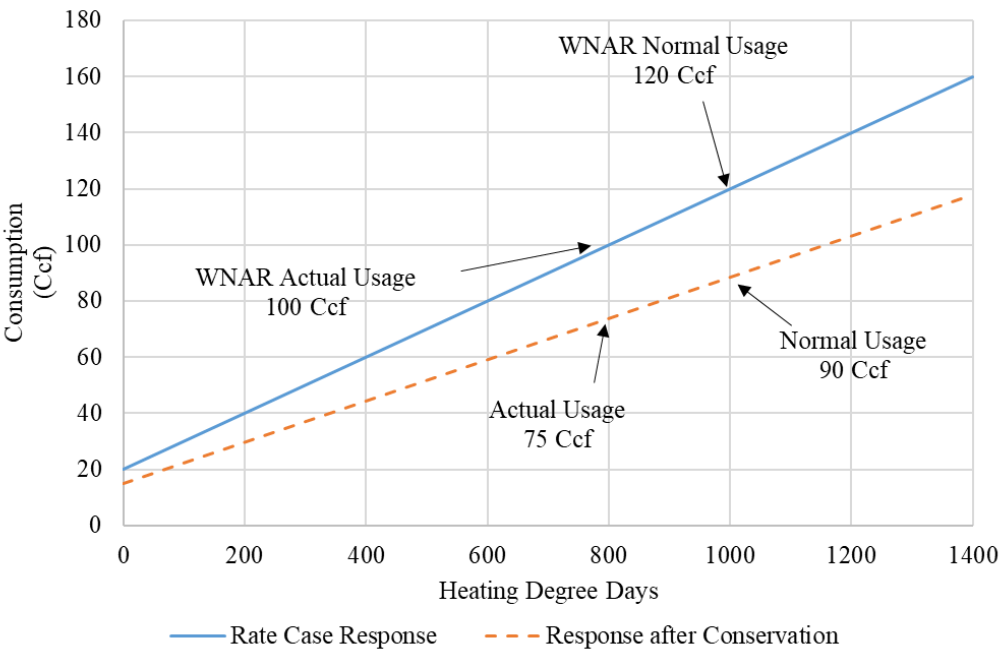
Q. In this example, what happens when the actual weather is warmer than normal?

A. To get an understanding of what would occur I have taken the example one-step further as shown in Figure 4 below. Warmer than normal means that the actual HDD is lower than the normal HDD. In this example, actual HDD is 800 and normal is 1,000. Because the β in the WNAR is based on the weather

responsiveness at the time rates were set, the weather adjustment to usage would be 20 Ccf or $0.10 \text{ Ccf/HDD} \times (1,000 \text{ HDD} - 800 \text{ HDD})$.

However, using the updated relationship between usage and weather, the weather adjustment for normal weather after conservation, would be 15 Ccf; the difference between 90 Ccf and 75 Ccf as shown in Figure 4 below.

Figure 4



The WNAR adjustment of 20 Ccf calculated using the relationship at the time rates were set, is greater than the after-conservation weather adjustment of 15 Ccf. Because the WNAR line is used to determine the WNAR rate, not the after-conservation line, in this example, the weather normalization adjustment is 33% higher⁷ than it would have been had the relationship after conservation line that is representative of the true weather responsiveness at that time, been used.

⁷ 20 Ccf vs. 15 Ccf.

1 **Q. Does this difference account for all the change in usage due to conservation**
2 **effects?**

3 A. No, it does not.

4 **Q. Can the WNAR be modified to capture more conservation effects?**

5 A. It could but to do so would require an estimate of future conservation that may or
6 may not actually occur.

7 **Q. You have discussed the β coefficient in the weather normalization equation.**
8 **Would you explain the last term in the equation – ϵ ?**

9 A. The term ϵ is “everything else.” While weather influences natural gas usage, it does
10 not explain all the variances in natural gas usage across time. The number of people
11 in a household can change the usage. For example, a new baby may result in the
12 thermostat being set higher resulting in more usage. A child leaving for college is
13 likely to reduce the customer’s usage. In addition, general economic conditions
14 may deteriorate for the customer and the decision is made to lower their thermostat
15 so that they can afford to pay their bills. The ϵ term is all the impacts that was not
16 explained through the independent variables in the regression model.

17 In mathematical terms, ϵ is the difference between predicted and actual and
18 is often referred to as the error term. However, it is not an error. ϵ normally occurs
19 and should not be removed from the normalized usage of customers. The ϵ term of
20 a good regression model will be randomly positive and negative.

21 **Q. Why is this important in the discussion of the WNAR?**

22 A. Section 386.266 allows a mechanism that accounts for impacts on revenues due to
23 changes in customer usage due to weather, conservation, or both. It does not allow
24 for recovery of revenue for everything else that impacts usage.

1 **Q. Does Section 386.266 allow gas utilities ask the Commission for a mechanism**
2 **that recovers revenue changes due to all changes in usage?**

3 A. No. Section 386.266.4 allows such a mechanism for water utilities but not natural
4 gas utilities.

5 **Modifications of Current WNAR**

6 **Q. If the Commission reduces the rate of return to reflect the reduction of risk to**
7 **Spire, how should the current WNAR be modified?**

8 A. There are two components of the current WNAR that should be updated: (1) the β
9 coefficients; and (2) the Weighted Residential Volumetric Rates (“WRVR”).

10 **Q. Why do the β coefficients need to be updated?**

11 A. The β s that are in the current tariff sheets reflects the relationship between weather
12 and usage as measured in the last rate case. The response to weather changes over
13 time and is re-estimated in every rate case when normalizing billing determinants
14 used in revenue normalization and rate design.

15 **Q. Is there more than one β in Spire’s WNAR?**

16 A. Yes. There are two β s in Spire’s WNAR – one for Spire East and one for Spire
17 West – because Spire East residential customers respond differently to weather than
18 Spire West customers. The β in the current WNAR is 0.1493772 for Spire East and
19 0.1291586 for Spire West. This reflects the weather responsiveness of the average
20 residential customer of Spire East, as measured in the last general rate case, for 10
21 HDD was 1.49 Ccf. The response of the average residential customer of Spire West
22 to 10 HDD was 1.29 Ccf.

23 Not only are these coefficients different between Spire East and Spire West,
24 but they also change between rate cases. How customers use natural gas in the test
25 year in this case is different than it was in the test year of the last rate case for a
26 variety of reasons including increases and decreases in customers and conservation

1 efforts of the customers.⁸ That is why usage is normalized for a variety of factors
2 in each rate case. As a part of this normalization of usage used to calculate normal
3 revenue, the relationship between weather and usage is measured. The β coefficient
4 is used to determine the portion of the normalization that is attributed to weather.

5 **Q. Can you recommend to the Commission the correct β s to use in WNAR rates?**

6 A. Not at this time. These should be consistent with the weather normalization process
7 used in determining the final normal revenues and billing determinants in this case.

8 **Q. The other change to the current WNAR that is necessary is an update to the**
9 **weighted residential volumetric rate (“WRVR”). What is the WRVR and why**
10 **does it need to be updated?**

11 A. The WRVR is the rate used to calculate the weather normalization adjustment
12 amount in dollars for each billing month. This rate (\$/Ccf) multiplied by the
13 weather normalization adjustment in usage (Ccf) determines the weather
14 normalization amount in dollars (\$) that is to be collected from or returned to
15 customers.

16 Currently for the billing months of November through April for both Spire
17 East and Spire West, the residential gas service rate (RS) non-gas volumetric rate⁹
18 is the same for all Ccfs used. Therefore, for the billing months of November
19 through April, the WRVR is the same as the non-gas volumetric rate. For the billing
20 months of May through October, the non-gas volumetric rates are a two-block rate
21 with the second block rate being higher than the first. The WRVR for these billing
22 months is an average of the rates of these two blocks weighted by the number of
23 customers whose usage ended in each block as determined in the most recent rate
24 case.

⁸ Spire’s estimate of the β s for this rate case is 0.1409 per HDD for Spire East and 0.121 per HDD for Spire West.

⁹ Shown as “Charge for Gas Used – per Ccf” on tariff sheet no. 2 for residential customers.

1 In this case, the rates and billing determinants will change from the current
2 rates. Therefore, the WRVR will need to be updated with the new rates and billing
3 determinants from this rate case. For example, Spire is proposing in this rate case,
4 a single residential volumetric charge for the May through October billing months.
5 If this rate design is adopted, then there is no need to weight the volumetric rates.
6 If this rate design is adopted, the tariff sheets will need to be modified to reflect that
7 the relevant charge is the Residential Volumetric Rate (“RVR”) and no description
8 of a weighted rate will be necessary.

9 **Conclusion**

10 **Q. Would you summarize your testimony?**

11 A. A mechanism that allows for interim rates that account for changes in weather and
12 conservation is a privilege and not a right for investor-owned gas utilities in
13 Missouri. Such a mechanism shifts risk in revenue recovery away from Spire to
14 the customer thus increasing the volatility of bills for customers while decreasing
15 revenue recovery risk for Spire. This moving of the risk should be reflected in a
16 lower rate of return for Spire.

17 If the Commission agrees the authorization of a mechanism is reasonable
18 and orders a lower rate of return, then the Commission should continue Spire’s
19 weather normalization adjustment rider with modifications as set out in this
20 testimony. The β and weighted residential volumetric rates should be updated for
21 the weather normalization and used in this case to determine normalized revenues
22 and the rate design approved by the Commission.

23 **Q. Finally, what is your experience with weather normalization?**

24 A. I was a part of the team on the Commission Staff that developed a cutting-edge
25 weather normalization process for electric utilities in the late 1980’s and 1990s.
26 This methodology is still the basis for the weather normalization methodologies
27 used today by utilities across the nation. As shown in Schedule LMM-D-1, I was

1 the Staff weather normalization expert witness in many cases while at the
2 Commission. While much of my work was weather normalizing electric usage, the
3 same principles apply to weather normalization of gas usage.

4 **Q. Does this conclude your direct testimony?**

5 A. Yes, it does.

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

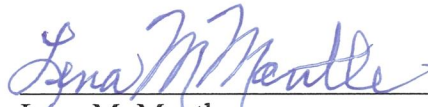
In the Matter of Spire Missouri Inc. d/b/a Spire's)	
Request for Authority to Implement a General)	<u>Case No. GR-2025-0107</u>
Rate Increase for Natural Gas Service Provided in)	
the Company's Missouri Service Areas)	

AFFIDAVIT OF LENA M. MANTLE

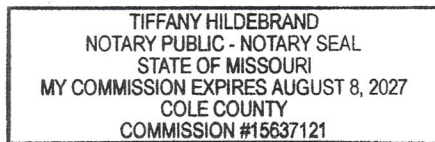
STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Lena M. Mantle, of lawful age and being first duly sworn, deposes and states:

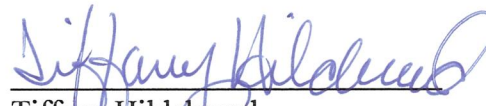
1. My name is Lena M Mantle. I am a Senior Analyst for the Office of the Public Counsel.
2. Attached hereto and made a part hereof for all purposes is my direct testimony.
3. I hereby swear and affirm that my statements contained in the attached testimony are true and correct to the best of my knowledge and belief.


Lena M. Mantle
Senior Analyst

Subscribed and sworn to me this 17th day of April 2025.



My Commission expires August 8, 2027.


Tiffany Hildebrand
Notary Public