Exhibit No.:
Issue(s): *Revenue - Weather*
Witness: *Seoung Joun Won, PhD*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Surrebuttal Testimony*
Case No.: *GR-2019-0077*
Date Testimony Prepared: *July 10, 2019*

MISSOURI PUBLIC SERVICE COMMISSION

COMMISSION STAFF DIVISION

TARIFF/RATE DESIGN

Staff Exhibit No. 135
Date 8-15-19 Reporter CDS
File No. GR-2019-0077

SURREBUTTAL TESTIMONY

OF

SEOUNG JOUN WON, PhD

UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI

CASE NO. GR-2019-0077

Jefferson City, Missouri
July 2019

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Q. Please state your name and business address.

A. My name is Seoung Joun Won and my business address is Missouri Public Service Commission, P. O. Box 360, Jefferson City, Missouri 65102.

Q. Who is your employer and what is your present position?

A. I am employed by the Missouri Public Service Commission ("Commission") and my title is Regulatory Economist III in the Tariff and Rate Design Department of the Commission Staff Division.

Q. Are you the same Seoung Joun Won who prepared the Weather Variables section of Staff's Cost of Service Report ("Staff Report") and Staff's Rebuttal Testimony?

A. Yes, I am.

EXECUTIVE SUMMARY

Q. What is the purpose of your surrebuttal testimony?

A. The purpose of my surrebuttal testimony is to address issues with the weather variables that Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company") witness Mr. Ryan P. Ryterski addressed in his rebuttal testimony.

Q. Which aspects of the weather variables used by Mr. Ryterski are you going to address?

A. I am addressing two issues: (1) the complexity of the ranked average method for calculating Staff's weather normals, and (2) the volatility of Staff's normal heating degree days ("HDD").[1]

COMPLEXITY

Q. What did Mr. Ryterski address about the complexity of Staff's ranked average method?

A. Mr. Ryterski insists that Staff's method for calculating normal weather is too complex even though both Staff and the Company's methods produce very similar overall results. In lines 14-18 on page 11 of his rebuttal testimony, Mr. Ryterski states,

> Ameren Missouri does employ the rank and average methodology when creating weather adjustments for its electric business because that **complexity** is appropriate due to the more complex modeling of the electric system used to establish net energy costs in the revenue requirement. For revenue normalization purposes only, though, it is **overkill**. [Emphasis added.]

Q. Do you agree with the opinion of Mr. Ryterski?

A. No, I do not agree for two reasons. The first reason is that it is not true that the electric system used a more complex model than the gas system. The second reason is that Staff's ranked average method is not overkill but is necessary and appropriate.

Q. Why is it not true that the electric system used a more complex model?

A. Each electric and gas utility has a unique system used to establish net energy costs in the revenue requirement so that it is not directly comparable. Furthermore, Staff's

[1] Where MDT < 65°F, HDD = 65 – MDT; otherwise, HDD = 0.

model of the weather normalization of gas usage is more complex than that of electric usage because Staff needs to calculate the billing cycle HDD for each billing month.

Q. Why does the billing cycle HDD make a more complex model?

A. In gas rate cases, weather normalization is an adjustment procedure to calculate the normal gas usage that would have occurred if the test year had experienced normal weather. In this procedure, a regression model is used to estimate the relationship between gas usage and weather. For the input data of the regression model, Ameren Missouri only provides the monthly data for 21 billing cycles and not the daily or hourly data because of the gas usage data availability. However, each billing cycle has a distinctive meter reading schedule with billing start date and billing end date for each billing month. Therefore, there is a more complex model to account for billing cycles than the simple model of daily based electricity usage. In addition, if normal HDD is calculated as the Company's dated average method, the relationship between normal HDD and gas usage could be broken.

Q. What was the relationship between gas usage and HDD?

A. The relationship between gas usage and HDD is a positive correlation. In other words, customer gas usage increases when HDD increases because of cold weather. The relationship can be explained using the Company's current rate case data. Figure 1 and Figure 2 present a comparison of actual gas usage, actual HDD, and Staff's normal HDD from the Columbia Regional Airport ("COU") and the Cape Girardeau Municipal Airport ("CGI"), respectively. The associated billing cycle gas usage data for each service region is taken from the residential class in the test year July 2017 through June 2018.

As shown in Figure 1 and Figure 2, residential customer gas usage is strongly correlated to the associated actual HDD. In Figure 1, the gas usage of the February billing month is the

highest during the test year because the February billing cycles of Figure 1, which covers a 31-day period from December 29, 2017 through January 29 2018, had the highest actual HDD in COU.

Figure 1. Actual and Normal HDD and Residential Gas Usage of COU

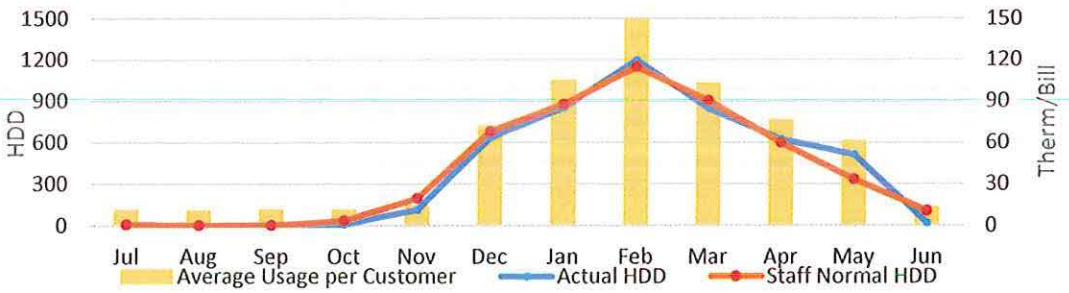
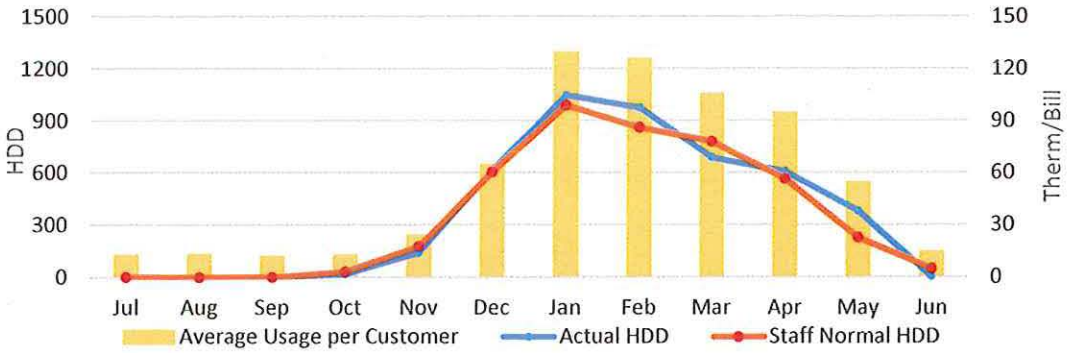


Figure 2. Actual and Normal HDD and Residential Gas Usage of CGI



In contrast, Figure 2 shows the highest gas usage happened in the January billing month because the January billing cycles of Figure 2, a 31-day period from November 30, 2017 through January 2, 2018, had the highest actual HDD in CGI. Therefore, in accordance with the weather normalization procedure, the gas usage adjustment should be calculated based on proper relationship between usage and weather. A more detailed explanation about Staff's regression model of weather normalization is explained in Staff witness Robin Kliethermes' rebuttal testimony.

Q. Why do you think that Staff's ranked average method is not overkill?

A. Not only is Staff's ranked average method not excessive, it is necessary and appropriate. As explained above, Staff's method properly preserves the relationship between gas usage and weather. Moreover, the procedure of calculating Staff's normal demands no additional effort beyond any other method because the only requirement of Staff's procedure is to update actual weather data in Staff's weather data file. Staff's weather data file is an excel file, provided to Ameren Missouri as workpapers in this case, that automatically calculates Staff's ranked average normal HDD.[2]

Q. Had the automated excel file actually been used for any gas cases?

A. Yes. Staff has used the automated excel file for previous gas cases including rate cases GR-2017-0215 for Spire East, GR-2017-0216 for Spire West, and GR-2018-0013 for Liberty. Specifically, these 3 gas utilities used the automated excel file for calculating weather normalization adjustment rider ("WNAR") adjustments.

Q. Were there any gas cases where the Commission ordered the utility to use Staff's ranked average method for calculating normal HDD?

A. Yes. In Page 13, Report and Order of gas cases GO-2019-0058 of Spire East, Spire Missouri, Inc., and GO-2019-0059 of Spire West, Spire Missouri, Inc., the Commission stated:

> The Commission finds that the tariff sheets to adjust Spire's WNAR rate should be rejected and that Spire should file tariff sheets based on **Staff's ranked method** for determining daily normal weather. [Emphasis added.]

VOLATILITY

Q. What did Mr. Ryterski address about the volatility of Staff's normal?

[2] Staff Engineer Shawn E. Lange formulated the excel file.

A Mr. Ryterski insists that Staff's method introduces unnecessarily additional volatility for calculating normal weather. In lines 3-5 on page 12 of his rebuttal testimony, Mr. Ryterski states,

> An additional issue with the rank and average methodology is that, when applied to data associated with usage as billed by utilities across multiple billing cycles in a month, it tends to produce **additional volatility** in monthly results. Across the course of a whole year, results associated with both methodologies will be similar, but there is no need to introduce **additional volatility** to the calculation that will make period to period comparisons more difficult, as would be the case using the rank and average approach in the WCAR. [Emphasis added.]

Q. Do you agree with the opinion of Mr. Ryterski?

A. No. Staff's ranked average normal HDD properly preserves the variation of actual HDD so that it minimizes unnecessary adjustments of gas usage. Ameren Missouri's normal HDD produces additional volatility in weather normalization adjustments of gas usage because it smooths away the natural variation in actual HDD.

Q. How does Staff's ranked average normal preserve the variation of actual HDD?

A. As a result of the ranking process, the highest normal HDD in the month is assigned to the date with the highest actual HDD in the month of the test year. The second highest normal HDD is assigned to the date with the second highest actual HDD in the month of the test year, and so forth. Therefore, the rank of Staff's normal HDD is the same as the rank of actual HDD for any given date in the month.

Figure 3 and Figure 4 show that there is a positive correlation between Staff's daily normal HDD and daily actual HDD of the test year, but no discernable relationship between increases and decreases in the Company's daily normal HDD and the value of the daily actual HDD. The lines created by the different sets of data are not close to having the same shape in

the figure. In summary, the variations of actual HDD and Staff's normal HDD is synchronized but the Company's normal HDD shows variations that are not relevant to the test year weather. In other words, the statistical relationship between usage and HDD is broken if Ameren Missouri's method is used.

Figure 3 Daily HDD Comparison in COU

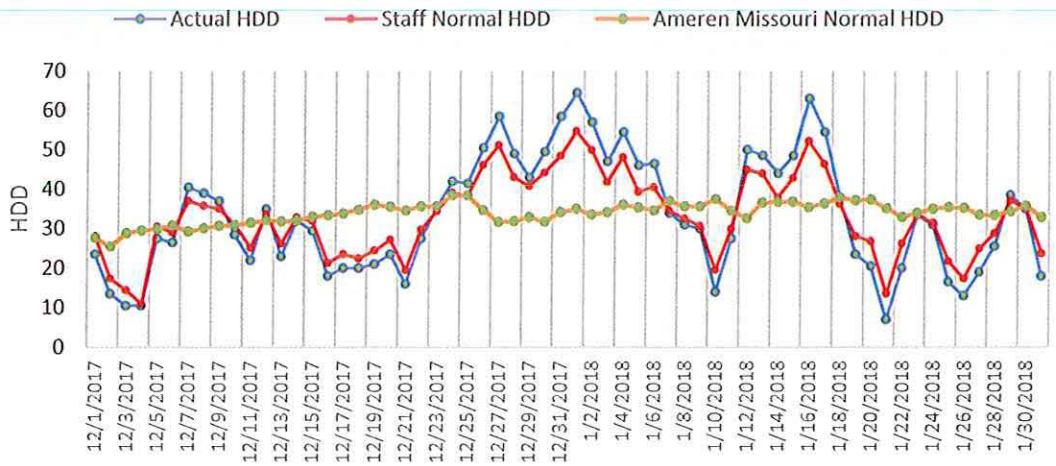
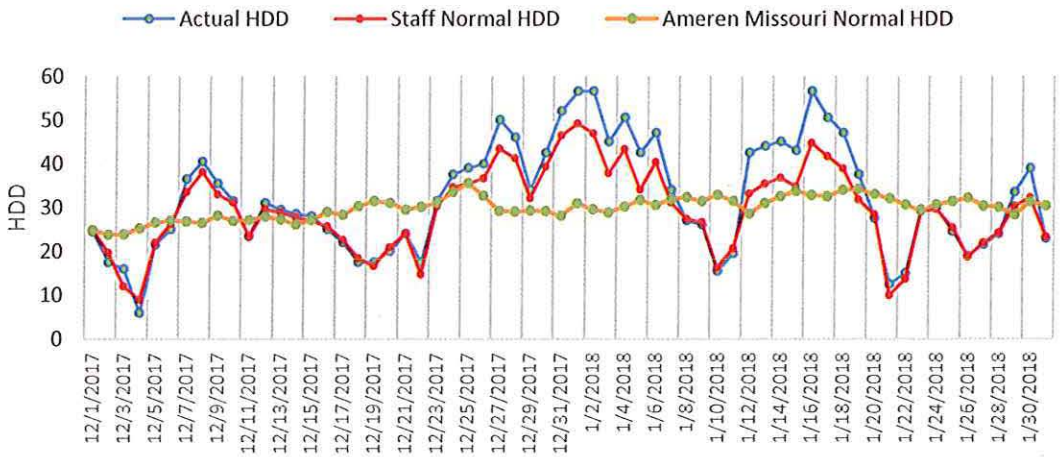


Figure 4 Daily HDD Comparison in CGI



Q. How does Ameren Missouri's normal HDD introduce unnecessary volatility in weather normalization adjustments?

A. The weather normalization adjustment is proportional to the weather deviation ratio ("WDR"); that is the ratio of the difference between normal HDD and actual HDD to normal HDD.[3] In other words, if other conditions are the same, a bigger deviation of actual HDD from normal HDD will produce a greater weather normalization adjustment. In Figure 5 and Figure 6, Staff's WDR and Ameren Missouri's WDR of 21 billing cycles during the January billing month are compared:

Figure 5. The WDR Comparison of COU

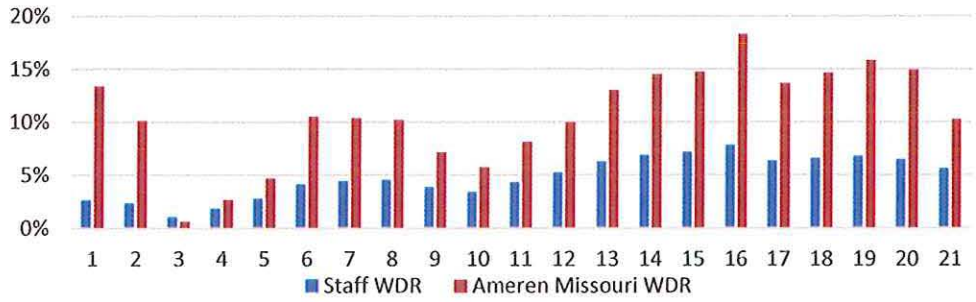
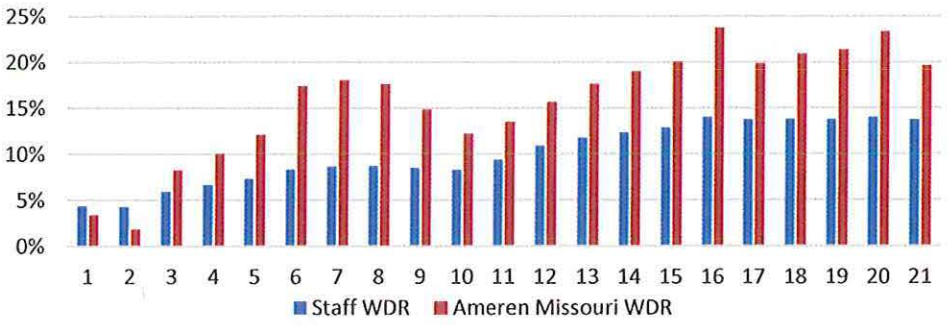


Figure 6. The WDR Comparison of CGI



As seen in Figure 5 and Figure 6, weather data in both COU and CGI shows that Ameren Missouri's WDR is greater than Staff's WDR for most of the billing cycles. This means that Ameren Missouri's normal HDD for weather normalization adjustments will tend to produce additional volatility.

[3] WDR = (Normal HDD – Actual HDD) / Normal HDD.

CONCLUSION

Q. What is the conclusion of your rebuttal testimony?

A. Staff's normal HDD is not complex or difficult because of Staff's automatic formula driven excel file. In addition, Staff's normal HDD produces less volatility for a weather normalization mechanism than Ameren Missouri's normal HDD. For normal HDD calculations, Staff recommends the Commission order Ameren Missouri to utilize Staff's ranked average method.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

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 SEOUNG JOUN WON, PhD

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW SEOUNG JOUN WON, PhD and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Surrebuttal Testimony*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

SEOUNG JOUN WON, PhD

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 8th day of July 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