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Witness: Ryan P. Ryterski
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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. GR-2019-0077

SURREBUTTAL TESTIMONY

OF

RYAN P. RYTERSKI

ON

BEHALF OF

UNION ELECTRIC COMPANY

D/B/A AMEREN MISSOURI

St. Louis, Missouri
July, 2019

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SURREBUTTAL TESTIMONY

OF

RYAN P. RYTERSKI

FILE NO. GR-2019-0077

Q. Please state your name and business address.

A. Ryan P. Ryterski, Union Electric Company d/b/a Ameren Missouri ("Ameren Missouri" or "Company"), One Ameren Plaza, 1901 Chouteau Avenue, St. Louis, Missouri 63103.

Q. Are you the same Ryan P. Ryterski that filed direct and rebuttal testimony in this proceeding?

A. Yes, I am.

I. PURPOSE OF TESTIMONY

Q. What is the purpose of your surrebuttal testimony in this proceeding?

A. My surrebuttal testimony responds to the rebuttal testimony of Missouri Public Service Commission Staff ("Staff") witness Robin Kliethermes related to the combining of the weather adjustments from the Cape Girardeau and Columbia weather stations, and also the use of a 200 Heating Degree Day ("HDD") breakpoint in the residential regressions. I also respond to the rebuttal testimony filed by Staff witness Seoung Joun Won, Ph.D. regarding the weather normalization of billing units.

II. AVERAGING OF HDDs AND REGRESSION BREAKPOINTS

Q. Do you agree with Ms. Kliethermes' claim that it was unreasonable to average the HDDs between the Cape Girardeau and Columbia weather stations (Kliethermes Rebuttal, p. 2)?

A. No. The weighted average factors that were applied to the HDDs are statistically relevant because of the high degree of correlation between residential customer usage and the HDDs for any given day. Additionally, because the HDDs were weighted by weather station based on total usage, there should not be a material difference between performing separate regressions, and utilizing the combined method implemented by the Company to determine total revenue. Ms. Kliethermes gives no rationale, based on statistical principles or otherwise, that analyzing the system in total rather than in subdivided components is inappropriate – and for good reason, because there is no basis for one.

Q. Can you explain how the results of the separate regressions would differ from the numbers the Company filed in this case?

A. Yes. When I ran the regressions for each of the weather stations separately using the same methodology that was used to develop the Company's initial weather normalization adjustments to revenue filed in this case, it resulted in a difference of $4,679.05. That dollar amount is equal to a 0.0099% change in the proposed revenue for the Residential class. This difference is obviously immaterial. It should be evident that either method – separate regressions for the two regions, or one regression using weighted average data representing them both – is completely reasonable and appropriate for the purpose of weather normalizing revenues.

Q. Did you also investigate the different breakpoints recommended by Ms. Kliethermes in her rebuttal testimony?

A. Yes. In her rebuttal testimony, Ms. Kliethermes highlighted the R-square and Standard Error statistics as being relevant determining factors when deciding if a regression is an acceptable representation of the relationship between HDDs and customer usage. Kliethermes Rebuttal, p. 10. In Table 1 below, I have provided those statistics for regressions I ran separately for each of the weather stations using the breakpoints recommended by Ms. Kliethermes, and the 200 HDD breakpoint used by the Company. As is demonstrated by the table, the differences are slight.

Table 1

	R-Square	Standard Error	Cold Weather Coefficient	Mild Weather Coefficient
200 HDD Breakpoint RSE	0.99094458	3.875	0.122978610	0.057022699
213 HDD Breakpoint RSE	0.99099899	3.864	0.123474209	0.059955179
200 HDD Breakpoint RPE	0.98802789	4.571	0.108958077	0.070774319
143 HDD Breakpoint RPE	0.98816953	4.543	0.108122413	0.057904920

Q. Do these slight variances warrant separate regressions, and specific breakpoints for each weather station?

A. No. Under any formulation, these regressions have very compelling statistical significance, and once again, the distinction raised by Ms. Kliethermes does not result in any meaningful change to the results. The methodology proposed by the Staff introduces an unnecessary amount of complexity to the calculations without producing significant improvements in the accuracy of the results.

Q. Did you calculate the difference in Residential class revenues when using the combined regression versus the separate regressions with different breakpoints?

A. Yes. The separate regressions with different breakpoints resulted in a 0.14% difference in Residential class revenue when compared to the revenue calculated using the combined regression method.

Q. Do you feel this difference warrants use of the more complicated methodology?

A. No. There is not a sufficient statistical variance between the two methodologies to justify performing the separate regressions with independent breakpoints.

Q. Did you conduct a similar analysis for the General Service class?

A. Yes.

Q. What were the results of your similar analysis for the General Service class?

A. When comparing the revenues between the separate regressions for each pipeline as proposed by Staff and the combined regression approach filed by the Company, there was a difference of 0.09%. I have also included Table 2 below depicting the R-square and standard errors for the different regression approaches that could be taken.

Table 2

	R-Square	Standard Error	Cold Weather Coefficient	Mild Weather Coefficient
Combined Regressions	0.98896234	17.02429798	0.452443315	0.178076149
200 HDD Breakpoint GSSE	0.983447782	18.91541221	0.449558059	0.172708779
259 HDD Breakpoint GSSE	0.983929143	18.63834005	0.459217104	0.219171000
200 HDD Breakpoint GSPE	0.987652175	18.48136608	0.453808816	0.176507687
310 HDD Breakpoint GSPE	0.988252083	18.02682626	0.468763168	0.252997796

Q. Did the separate regressions you performed produce more statistically significant results than the combined regression approach?

A. No. In fact, the combined regression for the General Service class produced a higher R-Square, and also a lower Standard Error than any of the approaches that split the analysis up by weather station whether the 200 HDD breakpoint, or the independently optimized breakpoint for each weather station was used.

Q. Given the results outlined for both classes above, do you recommend splitting the analysis back out by weather station and optimizing the breakpoint for each of them?

A. No. In order to make the weather normalization process streamlined and repeatable without impacting the statistical significance of the results, it is more logical to perform a single regression for each of the classes with a standard breakpoint of 200 HDDs.

III. WEATHER NORMALIZATION

Q. Do you agree with the issues Dr. Won addressed regarding the weather data used by the Company in normalizing the Company's billing units?

A. I do not agree with some details of Dr. Won's weather normalization process; however, because the Company does not disagree with the unblocked billing units filed by the Staff in this case, I will not address all of the points presented individually.

Q. Is there any portion of Dr. Won's rebuttal testimony that you would like to respond to?

A. Yes. Dr. Won recommends that the Company use the ranked average methodology for calculating the normal HDDs as the Staff did in direct testimony. As I

outlined on pages 11 and 12 of my rebuttal testimony, this methodology is overly complex, unduly burdensome, and creates additional volatility in monthly results.

Q. Do you agree with Figures 3 and 4 Dr. Won presented in his testimony that he claims represent biased gas usage as a result of not using the ranked average methodology?

A. No. The graphs that Dr. Won created compare daily and ranked average temperatures. There are two reasons that the "Dated Average" line on the graph is not an accurate representation of the monthly average HDDs used in the Company's analysis. First, the daily variability that is causing some of the disconnect between the two lines on the graph is not applicable because the weather normalization regression uses aggregate HDDs across the month as an input, not daily temperatures, which makes the day to day variability irrelevant. All of the HDDs are reflected in the analysis in the appropriate month without the necessity of the Ranked Average approach. Second, averaging the HDDs of the month instead of the daily average temperatures ensures that the Company will not understate any HDDs. If the Company were to use the daily average temperatures from the previous years to determine normal, any day with an average temperature greater than 65°F (which is the reference point used by the Company for calculating HDDs) would raise that day's average temperature by an amount proportionate to the order of magnitude that temperature was over 65°F and cause an under-representation of heating degree days for that month. Table 3 shows a hypothetical example of the impact a day with higher than 65°F temperature could have on the calculation of daily average temperature HDDs compared to the calculation of average HDDs.

Table 3

Methodology	Date and Temperature			Average Temp. / Total HDDs	Normal HDDs
	5/1/2020 75°F	5/1/2021 58°F	5/1/2022 55°F		
Dated Average Temperature	75°F	58°F	55°F	62.67°F	2.33
Average HDDs	0	7	10	17	5.67

Q. How were the Dated Average method Normal HDDs in the table calculated?

A. This number was calculated by averaging that day's temperature from the prior three years to get an average daily temperature of 62.67°F. This number was then subtracted from 65 to get a number of 2.33 HDDs for that day using the dated average method.

Q. How were the Normal HDDs calculated in the table for the Average HDDs methodology?

A. Using the average HDD methodology requires averaging the day's HDDs from each year of 0, 7, and 10, to get the result of 5.67 Normal HDDs.

Q. Would it be reasonable to require the Company to adopt the ranked average method when administering the Weather and Conservation Adjustment Rider tariff given that the method of averaging HDDs will produce similar results?

A. No. As I stated in my rebuttal testimony, adoption of the ranked average method would create highly complex calculations that would have to be embedded in monthly accounting procedures without any commensurate benefit.

Q. Do you agree with Dr. Won's recommendation to only weather normalize the customers that he has classified as weather sensitive in the Large Volume Transportation ("LVT") class?

A. No. The "Non-Weather Sensitive" customers being included in the class weather normalization reduces the adjustment the class receives on a percentage basis (i.e, only the Ccf of the weather sensitive customers are reflected in the absolute Ccf adjustment to the class, but when expressed as a percent of total class usage, the adjustment is a smaller percentage due to the inclusion of the non-weather sensitive load in the denominator), and allows the weather normalized class sales to accurately reflect the makeup of the entire class. Including the non-weather sensitive customers will have an impact on the y-intercept of the regression line; however, if they are in fact truly non-weather sensitive, then they will not impact the slope of the line in a statistically significant manner which will result in only the weather sensitive customers being adjusted.

Q. How did the weather adjustment applied to the LVT class compare to the total revenue adjustment including the other classes?

A. The LVT class weather normalization adjustment of 0.87% is less than the system total adjustment percentage of 1.29% because some of the customers in the class are less responsive to variations in weather.

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.	)))	File No. GR-2019-0077

AFFIDAVIT OF RYAN P. RYTERSKI

STATE OF MISSOURI)
) **ss**
CITY OF ST. LOUIS)

Ryan P. Ryterski, being first duly sworn on his oath, states:

1. My name is Ryan P. Ryterski. I work in the City of St. Louis, Missouri, and I am employed by Union Electric Company d/b/a Ameren Missouri as a Regulatory Rate Specialist.

2. Attached hereto and made a part hereof for all purposes is my Surrebuttal Testimony on behalf of Union Electric Company d/b/a Ameren Missouri consisting of 8 pages and no Schedule(s), all of which have been prepared in written form for introduction into evidence in the above-referenced docket.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct.

Ryan P. Ryterski

Subscribed and sworn to before me this 3 day of July, 2019.

Notary Public

My commission expires:

GERI A. BEST
Notary Public - Notary Seal
State of Missouri
Commissioned for St. Louis County
My Commission Expires: February 15, 2022
Commission Number: 14839811