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Issue(s): Weather Normalization
Witness: Michael L. Stahlman
Sponsoring Party: MoPSC Staff
Type of Exhibit: Rebuttal Testimony
Case No.: ER-2019-0335
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MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF/RATE DESIGN DEPARTMENT

REBUTTAL TESTIMONY

OF

MICHAEL L. STAHLMAN

**UNION ELECTRIC COMPANY,
D/B/A AMEREN MISSOURI**

CASE NO. ER-2019-0335

*Jefferson City, Missouri
January, 2020*

Staff Exhibit No. 122
Date 3/4/20 Reporter JMB
File No. ER-2019-0335

REBUTTAL TESTIMONY

OF

MICHAEL L. STAHLMAN

AMEREN MISSOURI

CASE NOS. ER-2019-0335

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6 Q. Please state your name and business address.

7 A. My name is Michael L. Stahlman, and my business address is Missouri Public
8 Service Commission, P.O. Box 360, Jefferson City, Missouri, 65102.

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

10 A. I am employed by the Missouri Public Service Commission ("Commission") as a
11 Regulatory Economist III in the Tariff and Rate Design Department, of the Industry Analysis
12 Division.

13 Q. Are you the same Michael L. Stahlman that supported sections in Staff's Cost of
14 Service ("COS Report")?

15 A. Yes.

16 Q. What is the purpose of your testimony?

17 A. The purpose of my rebuttal testimony is to respond to Ameren Missouri's witness
18 Michael W. Harding concerning the weather normalization, 365-day, and MEEIA adjustments.

19 Q. Please summarize your testimony.

20 A. Since the filing of Staff's COS Report, Staff has worked with Ameren Missouri
21 and identified several issues that would impact Staff's direct filed positions for the weather
22 normalization adjustment, the 365-day adjustment, and the MEEIA Rebasing Adjustment.

1 **Weather Normalization**

2 Q. What issues has Staff identified with the Weather Normalization adjustment?

3 A. Staff has identified two data issues and two technical issues with the regression
4 analysis.

5 Q. What is the first data issue?

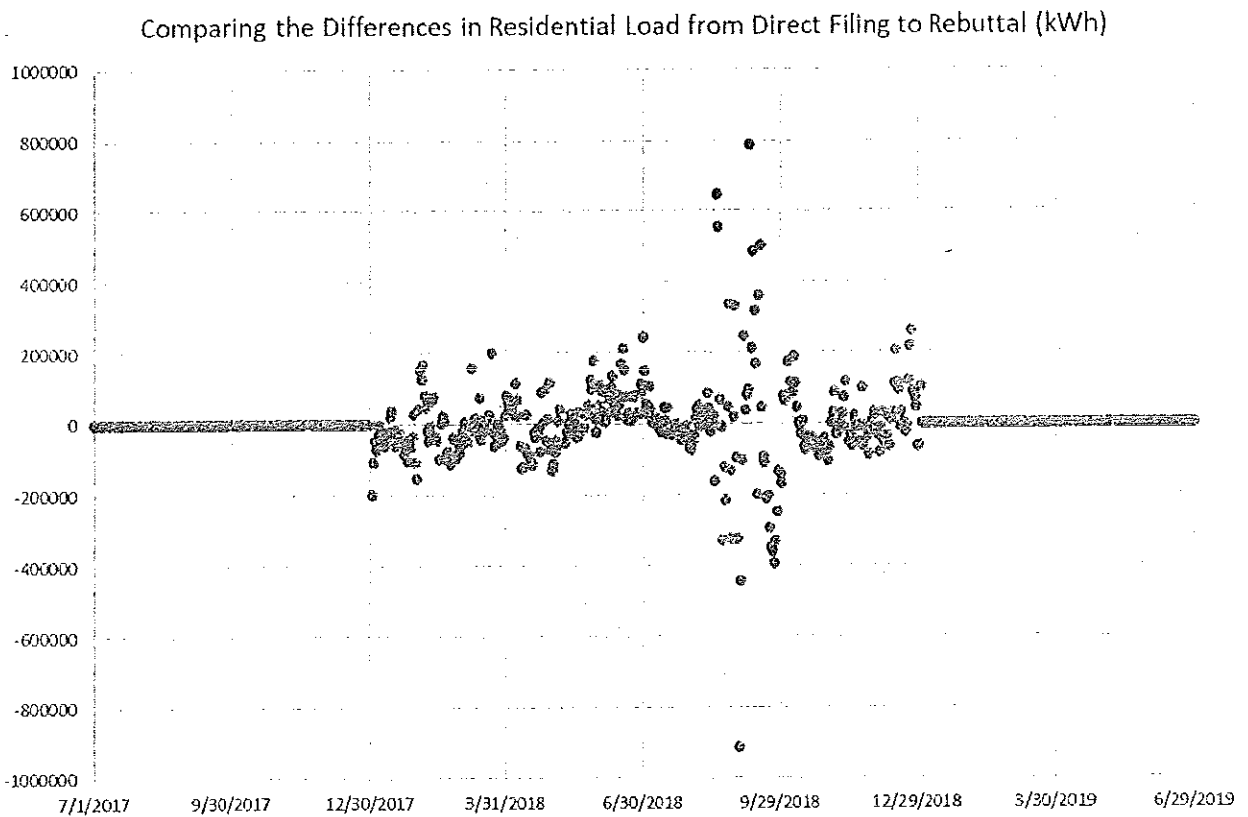
6 A. In preparing Staff's weather normalization adjustment, Staff became aware that
7 there were differences between Ameren Missouri's and Staff's weather data. This data should
8 be identical since both Staff and Ameren Missouri use the same weather station. In response
9 to Staff Data Request 0281, Ameren Missouri identified the source of the issue and stated that
10 it will make corrections to its data. However, at this time Ameren Missouri has not updated its
11 weather normalization results to account for the correction.

12 Q. What is the second data issue?

13 A. As noted in the Cost of Service Report, Staff found some irregularities with the
14 load research data. Since then, Staff has worked with Ameren Missouri and received new load
15 research data with Staff Data Request 0517. The differences between the load research data
16 used in the Cost of Service Report and in this testimony for the residential class is provided
17 graphically in Figure 1.

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1 Figure 1:



3 This issue affects both Ameren Missouri's and Staff's weather normalization calculations
4 provided in the respective direct filings. Based on the Company's response to Staff Data
5 Request 517, Ameren Missouri did not identify what caused the load discrepancies just that
6 Ameren Missouri reran the full 2018 load research process from the beginning in an effort to
7 resolve the load discrepancy issues. Although, the load discrepancies that Staff identified seem
8 to be resolved with new data provided by Ameren Missouri, Staff is concerned that since a
9 specific issue for the cause of the load discrepancies could not be identified Ameren Missouri's
10 load research process may have a flaw.

11 Q. Did Ameren Missouri update its weather normalization results for the load
12 discrepancies in its load research data?

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1 A. Not that Staff is aware of.

2 Q. What is load research data?

3 A. Load research data is a sample of a rate class's energy consumption provided on
4 an hourly basis and is used to develop the general load shape of the rate class.¹ The Company
5 and Staff use load research data to develop a customer's response to weather, to build the hourly
6 load shape of the Company's total system load requirement used to determine the cost to
7 purchase customers load and revenue from generation sales and to develop the class coincident
8 and non-coincident peaks used in a Class Cost of Service Study (CCoS). Since the Company
9 has not incorporated the corrected load research data, all of the Company's direct filed system
10 load shapes and class coincident and non-coincident peaks are not accurate and should not be
11 relied upon.

12 Q. How is load research data different from billing cycle data?

13 A. Billing cycle data currently only provides the kWh consumed between two meter
14 read dates; it does not provide any information on when the energy was consumed and may not
15 include information about peak demand. The bill cycle data on its own is not sufficient to
16 develop the statistical relationship between weather and energy consumption or how weather
17 would change peak energy consumption. However, with AMI meter deployment, Staff should
18 be able to receive actual hourly loads for each customer, which would make load research
19 data redundant.

20 Q. What is the first technical issue?

21 A. While updating the regression model with the new load research data, Staff
22 became aware that both Ameren Missouri's and Staff's direct filed regression models contained

¹ The Large Power rate class is usually 100% sampled.

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1 an issue with the functional form; all the temperature regressors were based on a cooling degree
2 day model rather than both a heating and cooling degree day. A heating degree day is often
3 defined as the maximum of sixty five (65) degrees Fahrenheit minus the average daily
4 temperature or zero. In both Ameren Missouri's and Staff's direct filed models, all the
5 temperatures were written as the average daily temperature minus the selected breakpoint
6 temperature. However, this is more of a technical issue because another variable, the average
7 daily temperature, minimized the impact of this issue on the overall model results.

8 Q. What is the second technical issue?

9 A. The Durbin-Watson statistic in Ameren Missouri's model indicates that the
10 regression has an autocorrelation problem. Autocorrelation is when errors follow a pattern and
11 is common in time-series regressions. This violates one of the "classical assumptions" for an
12 ordinary least squares linear regression model. While autocorrelation does not bias the
13 coefficient estimates, it can result in inflated t-statistics which can make some independent
14 variables seem significant when they are not. Ideally it is corrected by including additional
15 independent variables, but Staff was unable to identify independent variables that resolved the
16 problem and therefore utilized an AR(1) method² to correct the issue.

17 **365-Days Adjustment**

18 Q. Were there any issues with Mr. Harding's 365-day adjustment?

19 A. Yes. The method Mr. Harding used to calculate this adjustment requires
20 additional billing cycle information beyond the test year because a revenue month includes
21 usage from the prior calendar month. While this has been limited to only one extra revenue

² The AR(1) method uses a complex nonlinear technique to estimate the pattern in the error terms. The regression package Staff utilized in this case, MetrixND, included this method as one option to resolve an autocorrelation issue.

1 month in prior rate cases, this case would require two extra revenue months because some of
2 Ameren Missouri's billing cycles have meter read dates that end before the first day of the
3 corresponding calendar month. As an example, Ameren Missouri's meter read dates for the
4 first bill cycle in January 2019 is November 28th through December 28th. This means that to
5 have sufficient information for the 365-day adjustment through the end of the test year,
6 December 31, 2018, information for the February 2019 revenue month would need to be
7 included since that month has the information for December 29th through 31st. The lack of this
8 information inflated the 365-days adjustment in Mr. Harding's direct testimony. Because of
9 this issue, Staff employed the method, described in Staff's direct filed Cost of Service Report
10 ("COS"), which uses the daily average usage to adjust for days over/under 365 days for each
11 of the bill cycles and does not require information beyond the test year.

12 **MEEIA Rebasing Adjustment**

13 Q. Were there any issues with Mr. Harding's MEEIA annualization?

14 A. As discussed in Staff's COS Report, some of Staff's issues with the MEEIA
15 annualization will be addressed when this adjustment is recalculated through the true-up period.
16 However, an additional item not mentioned in the COS Report is that Mr. Harding's calculation
17 assumed that all the measures were installed on the first day of a month rather than midway
18 through the month, as the Stipulation and Agreement in File No. EO-2018-0211 contemplates.
19 This causes Ameren Missouri's MEEIA annualization adjustment to be inflated.

20 Q. Did Staff account for the mid-month adjustment in its direct-filed MEEIA
21 annualization?

22 A. Yes.

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1 Q. Does this conclude your rebuttal testimony?

2 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 Decrease)
Its Revenues for Electric Service) Case No. ER-2019-0335

AFFIDAVIT OF MICHAEL L. STAHLMAN

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW MICHAEL L. STAHLMAN and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony of Michael L. Stahlman*; and that the same is true and correct according to his best knowledge and belief.

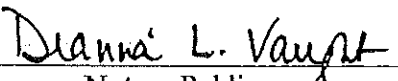
Further the Affiant sayeth not.



MICHAEL L. STAHLMAN

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 January, 2020.



Notary Public

