MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF/RATE DESIGN DEPARTMENT

REBUTTAL TESTIMONY

OF

KIM COX

UNION ELECTRIC COMPANY
d/b/a Ameren Missouri

CASE NO. ER-2021-0240

Jefferson City, Missouri
October 2021

TABLE OF CONTENTS OF

REBUTTAL TESTIMONY

OF

KIM COX

UNION ELECTRIC COMPANY
d/b/a Ameren Missouri

CASE NO. ER-2021-0240

REBUTTAL TESTIMONY

OF

KIM COX

UNION ELECTRIC COMPANY
d/b/a Ameren Missouri

CASE NO. ER-2021-0240

1   Q.   Please state your name and business address.

2   A.   Kim Cox, 200 Madison Street, Jefferson City, Missouri 65101.

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

4   A.   I am employed by the Missouri Public Service Commission ("Commission") as a Policy Analyst in the Tariff and Rate Design Department of the Industry Analysis Division of the Commission Staff.

5   Q.   Have you previously filed testimony in this case?

6   A.   Yes. I provided testimony in the Cost of Service direct filing.

7   Q.   What is the purpose of your rebuttal testimony?

8   A.   The purpose of my rebuttal testimony is to respond to Union Electric Company d/b/a Ameren Missouri's ("Ameren Missouri") witness Nicholas Bowden regarding Ameren Missouri's method of normalizing the percentage of kilowatt-hours ("kWh") billed in the first rate block for residential and small general service ("SGS") customers; the growth adjustment for the residential ("Res"), SGS, large general service ("LGS"), and small primary service ("SPS") rate classes; and to address an update to the weather and days adjustment for the SPS rate class.

1 **RESPONSE TO AMEREN MISSOURI REGARDING NORMALIZED FIRST**
2 **BLOCK USAGE**

3   Q.   What is the current rate design on Ameren Missouri's basic residential tariff?

4   A.   The Residential customer class' rate design is divided into two parts. The first

5 part is a fixed monthly customer charge. The second part is a usage charge. The usage charge

6 is a flat per kWh rate for usage during the months of June, July, August, and September

7 (generally considered the summer months), and a declining block rate for usage over 750 kWh

8 for all other months of the year (generally considered the winter months).

9   Q.   What is a declining block rate?

10   A.   A declining block rate is a rate that becomes cheaper as the customer uses more

11 electricity. In Ameren Missouri's tariff, the initial block is on all usage up to 750 kWh and the

12 second block is for all usage over 750 kWh. The rate in the second block is lower than the rate

13 in the first block.

14   Q.   What is the current rate design on Ameren Missouri's SGS tariff?

15   A.   The SGS rate class consists of a fixed customer charge[1] and an energy charge.

16 For the summer months, the energy charge is a flat rate for all kWh. For the winter months, the

17 customer's usage is divided between Base and Seasonal usage. The Base use charge applies to

18 the first 1,000 kWh and the Seasonal use charge applies to all kWh greater than 1,000 kWh.

19   Q.   Does Staff agree with Ameren Missouri's first block percent as filed in its

20 direct case?

21   A.   No. Ameren Missouri used historical weather and usage data[2] to determine the

22 percent of usage that should be in the first rate block, whereas Staff used the twelve months

---

[1] The customer charge is billed at a single phase, three phase or a limited unmetered service.
[2] Bowden, billing unit workpaper. Historical data 2007-2020

1   ending April 2021 actual billing data. The table below displays the first block percent used by

2   Ameren Missouri and Staff for the Res and SGS rate classes[3].

SGS Rate Class first block percent		Ameren
	Staff	Missouri
October	78.73%	78.56%
November	80.95%	80.27%
December	69.40%	69.82%
January	57.99%	66.14%
February	63.53%	69.45%
March	69.89%	73.85%
April	78.71%	86.87%
May	88.96%	91.55%

Res Rate Class first block percent		Ameren
	Staff	Missouri
October	73.22%	71.72%
November	71.08%	69.68%
December	55.57%	54.01%
January	43.24%	44.29%
February	44.79%	47.34%
March	51.50%	51.59%
April	67.36%	65.08%
May	74.74%	73.95%

4   Q.   How did Ameren Missouri determine the amount of normalized kWh that should

5   be billed in the first rate block during the winter months for the Res and SGS rate classes?

6   A.   Ameren Missouri used a regression analysis that studied the relationship

7   between the actual billing month heating degree days ("HDD") and the percent of actual kWh

8   billed in the first block for each winter month from 2007 to 2020. Then Ameren Missouri

9   applied the outcome of the regression to the normal HDD of the applicable winter month of

10   the test year to find the percent of normalized kWh that should be billed in the first block for

11   the month[4].

12   Q.   Did Ameren Missouri apply the normalized first block percent calculated in its

13   regression to all eight winter months of the test year for the Res rate class?

---

[3] Staff updated its case through April 2021 and Ameren Missouri used twelve months ending December 2020.
[4] Bowden, Billing Unit Workpaper and direct testimony of Nicholas Bowden, page 12,line 6-13 states: Historic data on the proportion of kWh consumed in block 1 to kWh consumed in block 2 are regressed on historic temperature variables by month to develop a month specific relationship between the proportion of kWh consumed in each block and temperature. The month specific relationship between the proportion of kWh consumed within each block and the difference between proposed test year and normal monthly temperature are then used to normalize the proportion observed in each winter month of the test year. The month specific normalized proportion is then used to normalize the actual kWh within in each block.

1   A.   No. Ameren Missouri only applied the normalized first block percent to the

2 months of February, March, April, November and December. Ameren Missouri did not use its

3 regression results for the months of January and May and instead used the actual kWh billed in

4 the first rate block. However, for October, Ameren Missouri again did not use its regression

5 results and instead applied the entire weather adjustment for the month to only the first

6 rate block.

7   Q.   What was the result by Ameren Missouri using the actual first block kWh instead

8 of applying the percent?

9   A.   For the month of January, the overall kWh increased due to weather and the total

10 increase was applied to the second block only. For the month of May the total kWh decreased,

11 all of which was applied to the second block. For the month of October, the total kWh decreased

12 but the second rate block did not receive any of the decrease.

13   Q.   Why did Ameren Missouri not apply its regression results consistently to all

14 winter months?

15   A.   I don't know. I can only assume that the regression results resulted in

16 unreasonable outcomes, so the Company chose not to use the regression for the months of

17 January, May and October.

18   Q.   Did Staff review Ameren Missouri's data for the winter months for the years

19 2007 through 2020?

20   A.   Yes. The table below from Ameren Missouri's work paper[5] displays that

21 January 2018 had the highest HDDs out of all of the years presented.

---

[5] Bowden, Billing Unit Workpaper

1

	January	
	% Block 1	Actual HDD
2007	49.41%	790.4
2008	43.64%	994.2
2009	41.16%	1084.2
2010	38.88%	1196.0
2011	40.35%	1166.5
2012	47.38%	826.6
2013	44.69%	936.1
2014	40.76%	1156.2
2015	44.61%	995.2
2016	48.29%	846.2
2017	44.58%	974.3
2018	41.26%	1209.9
2019	47.28%	911.2
2020	48.68%	843.5

2

3   Q.   Does the Company's regression appropriately capture the relationship between

4 weather and usage for current customers?

5   A.   No. For example, January 2018 had a higher percentage of usage billed in the

6 first rate block compared to January 2009, 2010, 2011 and 2014, when the percent of usage

7 billed in the first block was lower than January 2018 even though there were fewer HDDs on

8 average.[6] Given the relationship between HDDs and customer usage, the Company's regression

9 fails to capture that variables other than weather may have impacted a customer's overall

10 response to weather. Further, the Company's individual monthly regressions for the months of

---

[6] Generally, the more HDDs in a winter month results in more overall kWh which produces an overall lower
percentage billed in the first rate block since it is capped at 750 kWh per customer. Ameren Missouri's regression
is dependent upon this relationship being true, so when one month with greater HDDs has less usage than a month
with more HDDs, the regression may not be able to fully quantify the relationship.

1   May, October, November and December result in questionably low R^2 values. The closer the

2   R^2 value is to 1.0 the more reasonable it is to assume that the variance of weather explains the

3   variance of usage.

Month	Company Calculated % for Block 1	Adjusted R Square
January	44.29%	0.93117
February	47.34%	0.96291
March	51.59%	0.96690
April	65.08%	0.94762
May	73.95%	0.57838
October	71.72%	0.86502
November	69.68%	0.66049
December	54.01%	0.80516

4

5   Q.   How did Staff determine the amount of normalized kWh for the residential class

6   that should be billed in the first rate block during the winter months for the residential class?

7   A.   Staff reviewed actual monthly cumulative frequency distribution data[7] for the

8   residential class and performed an analysis using the change in average usage per customer

9   when kWh is normalized to develop a normalized percentage of usage for the first rate block.

10   Q.   What is the difference between the actual monthly usage Ameren Missouri

11   provided and the cumulative frequency distribution data?

12   A.   The cumulative frequency data only includes usage from customers who

13   received a full bill in the month, so any customer who received a partial bill was excluded.

14   Therefore, the total number of customers and kWh in the cumulative frequency data does not

15   exactly match the test year billing determinants that are being normalized; however,

---

[7] Cumulative frequency distribution data is the distribution of customer bills and kWh over various block sizes. This data shows how many customers and how much kWh exceed or do not exceed certain rate blocks.

1   the cumulative frequency is still reasonable to use because it reflects the blocking for a full

2   month customer.

3   Q.   Why did Staff use this method over a regression that provides the relationship

4   between average usage per customer and the percent of kWh billed in the first block?

5   A.   Staff did attempt to use a regression for the Residential class; however,

6   the results during the winter months did not produce a reasonable outcome.

7   Cumulative frequency distribution analysis is generally preferred, because it uses the actual

8   distribution of customer bills within a billing month to determine that if that billing month was

9   less than or greater than normal how would the adjusted level of kWh be distributed across

10   customer bills.

11   Q.   Did Staff use cumulative frequency distribution data for the SGS class?

12   A.   No, the seasonal nature of the rate blocks for SGS do not provide the best-fit

13   using cumulative frequency distribution data. Instead, Staff used a regression and tested its

14   reasonableness against the cumulative frequency distribution and kWh billed sales for

15   the month.

16   **RESPONSE TO AMEREN MISSIOURI REGARDING THE CUSTOMER GROWTH**
17   **ADJUSTMENT**

18   Q.   Did Ameren Missouri adjust billing units for customer growth?

19   A.   Yes. Ameren Missouri forecasted customer growth by using monthly customer

20   counts and total kWh usage from January 2017 through the test year, December 2020.

21   Ameren Missouri chose a linear method for the residential and SGS rate classes and used a

22   2020 average for the LGS and SPS rate classes.

23   Q.   Does Staff recommend using Ameren Missouri's growth adjustment?

1   A.   No. Ameren Missouri direct testimony[8] which was filed on March 31, 2021 did

2 not include the updated customer counts through April 2021. Staff notes that the DR 494

3 response provided updated test year customer counts which also were not included in Ameren

4 Missouri's analysis. Table A below shows that the test year[9] Res customer count is less than

5 the test year Res customer count that Ameren provided in DR 494. Table B. shows the DR 494

6 update Res customer counts and Ameren Missouri forecasted Res customer counts.

7   A.   B.

Month/yr	Test year	DR 494 update response	Delta
Jan-20	1068945		
Feb-20	1069321		
Mar-20	1069625		
Apr-20	1069911		
May-20	1070806	1070894	(88)
Jun-20	1072025	1072142	(117)
Jul-20	1072888	1073053	(165)
Aug-20	1073690	1073927	(237)
Sep-20	1073657	1074014	(357)
Oct-20	1073088	1073638	(550)
Nov-20	1072980	1073862	(882)
Dec-20	1073307	1075309	(2,002)

Month/yr	DR 494 update through April 2021	Ameren Missouri Forecast	Delta
May-20	1,070,894	1,070,806	(88)
Jun-20	1,072,142	1,072,025	(117)
Jul-20	1,073,053	1,072,888	(165)
Aug-20	1,073,927	1,073,690	(237)
Sep-20	1,074,014	1,073,657	(357)
Oct-20	1,073,638	1,073,088	(550)
Nov-20	1,073,862	1,072,980	(882)
Dec-20	1,075,309	1,073,307	(2,002)
Jan-21	1,076,662	1,074,458	(2,204)
Feb-21	1,077,338	1,074,942	(2,396)
Mar-21	1,077,525	1,075,427	(2,098)
Apr-21	1,076,861	1,075,911	(950)
May-21		1,076,396	
Jun-21		1,076,880	
Jul-21		1,077,365	
Aug-21		1,077,849	
Sep-21		1,078,334	

8

9   By not being able to include these customer counts in the forecast, Ameren Missouri's

10 analysis resulted in an inaccurate customer count that was applied to billing units.

11 Ameren Missouri applied a monthly residential customer count of 1,078,334 to determine the

12 customer growth rate. If Ameren Missouri was able to incorporate the updated counts

[8] Direct testimony of Nicholas Bowden, page 19-21.
[9] Bowden, billing units workpaper

1 in DR 494, the customer count would have been 1,078,761 which would have resulted in a

2 higher growth rate.

3   Q.   What is Staff's recommended customer growth adjustment?

4   A.   Staff updated the monthly customer count by tariff rate class through April 2021.

5 Staff's analysis captures the actual monthly customer counts as provided by Ameren Missouri

6 in DR 494. Staff generally does not recommend using forecasted values for purposes of

7 determining retail rate revenues and subsequent retail rates.   As stated in Staff's direct report

8 cost of service; Staff will review customer growth through September 30, 2021, true-up cut off

9 and make adjustments as necessary to reflect the change in customer levels.

10 **UPDATED WEATHER AND DAYS ADJUSTMENT**

12   Q.   What update did Staff make to the weather and days adjustment?

13   A.   Staff updated the SPS rate class weather and days adjustment to correct an error

14 in its direct filing. The error resulted in the weather and days adjustment for the SPS rate class

15 to go from a ($1,415,972) to a $1,622,422.

16   Q.   Did Staff provide this update to Ameren Missouri?

17   A.   Yes. Staff provided updated workpapers to Ameren Missouri.

18   Q.   Does this conclude your rebuttal testimony?

19   A.   Yes.