

Exhibit No.:
Issue(s): Energy Efficiency
Adjustment, EDI
Witness: Hari K Poudel, PhD
Sponsoring Party: MoPSC Staff
Type of Exhibit: Direct Testimony
Case No.: ER-2024-0319
Date Testimony Prepared: December 03, 2024

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

TARIFF AND RATE DESIGN DEPARTMENT

DIRECT TESTIMONY

OF

HARI K. POUDEL, PhD

**UNION ELECTRIC COMPANY,
d/b/a Ameren Missouri**

CASE NO. ER-2024-0319

*Jefferson City, Missouri
December 2024*

**** Denotes Confidential Information ****

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UNION ELECTRIC COMPANY,
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2 **DIRECT TESTIMONY OF**

3 **HARI K. POUDEL, PhD**

4 **UNION ELECTRIC COMPANY,**
5 **d/b/a Ameren Missouri**

6 **CASE NO. ER-2024-0319**

7 Q. Please state your name and business address.

8 A. My name is Hari K. Poudel, and my business address is P.O. Box 360,
9 Jefferson City, Missouri, 65102.

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

11 A. I am employed by the Missouri Public Service Commission (“Commission”) as
12 an Economist in the Tariff/Rate Design Department in the Industrial Analysis Division.

13 Q. Please describe your educational and work background.

14 A. I received a Ph.D. in Public Policy and a master’s degree in Public Health from
15 the University of Missouri - Columbia and another master’s degree in Agricultural Economics
16 from University of Hohenheim, Germany. In January of 2020, I began working for the Missouri
17 Department of Health and Senior Services as a research and data analyst. I was employed with
18 the Division of Community and Public Health from January 2020 until October 2021. I started
19 my career with the Commission as an economist in October 2021.

20 Q. Have you previously testified in proceedings before the Commission?

21 A. Yes. I have provided written testimony and testified in multiple cases before the
22 Commission. Please see Schedule HKP-d1.

1 **EXECUTIVE SUMMARY**

2 Q. What is the purpose of your direct testimony?

3 A. The purpose of my direct testimony is to:

- 4 1. Perform energy efficiency annualization adjustment calculation;
- 5 2. Discuss the Net Marginal Rate; and,
- 6 3. Perform economic development incentive annualization calculation.

7 **ENERGY EFFICIENCY ANNUALIZATION ADJUSTMENT**

8 Q. What is the energy efficiency adjustment and why is it used?

9 A. The goal of the energy efficiency adjustment is to account for the annualized
10 impact of energy efficiency measures installed during the test year. This modification adjusts
11 for the decrease in billing units and related revenue that Ameren Missouri encountered due to
12 its implementation of energy efficiency measures approved by the Commission pursuant to the
13 Missouri Energy Efficiency Act (“MEEIA”). The energy efficiency adjustment normalizes the
14 billing units used to calculate the revenue requirement for Ameren Missouri.

15 Q. How was the energy efficiency adjustment made?

16 A. Staff calculated the energy efficiency adjustment based on the number of
17 end-use measures installed during the test year. The first input required for the analysis is the
18 deemed saving value. Deemed savings are pre-specified values in Ameren Missouri’s
19 Technical Resource Manual (“TRM”) for each of the energy efficiency measures. Deemed
20 savings represent the average energy savings (kWh) that could be expected from the average of
21 a specific energy efficiency measure in the program year.¹ These savings are applied to

¹ Ameren Missouri’s Technical Resource Manual, Appendix G- TRM – Vol. 1: Overview and user Guide, Page 9 (<https://efis.psc.mo.gov/Document/Display/22595>).

1 quantify savings in the update period that are attributed to each of the end-use measure and rate
2 class. The total deemed energy savings are calculated from these end-use measures installed in
3 each category of saving and the low-income energy savings of the update period.

4 The second input data is the installed savings for each calendar month. Installed savings
5 represent the kWh billing units that Ameren Missouri will no longer meter or bill due to the
6 energy efficiency measures installed during the test year.

7 For the energy efficiency adjustment, a half-month convention is used to estimate the
8 energy savings in each month of the installation. A half-month convention assumes that all
9 energy-efficient capacity was installed halfway between the beginning and end of the month,
10 which is mathematically similar to assuming that investments were distributed uniformly
11 throughout the month. Ameren Missouri estimated savings using the same half-month
12 convention methodology.

13 The difference between the actual monthly energy efficiency savings realized and the
14 annualized energy efficiency savings for each end-use measure category and rate class is the
15 calendar month energy efficiency annualization adjustment. Each end-use measure is then
16 multiplied by the applicable monthly load shape. The load pattern reflects the seasonality of
17 the savings.

18 Q. What is Staff's recommended energy efficiency adjustment to be applied to the
19 level of current revenues and billing determinants?

20 A. Staff's total energy efficiency adjustment is ** [REDACTED] ** for the
21 update period ending June 30, 2024.

22 Q. Through this testimony, do you describe the development of a work product
23 that you provided to another Staff witnesses for the development of an issue?

1 A. Yes. Development of the energy efficiency adjustment is the result of the
2 process described in this testimony, which Staff witnesses Kim Cox and Marina Stever use to
3 determine total revenue billing determinants. To represent the effect of the energy efficiency
4 adjustment on the company’s revenue, the energy efficiency adjustment is applied to revenue
5 billing determinants.

6 **NET MARGINAL RATE**

7 Q. What is the net marginal rate (“NMR”)?

8 A. The NMR is the difference between the wholesale cost of the energy for a given
9 kWh sold at retail and the marginal retail rate for that kWh of energy. The marginal rate is the
10 retail price of a unit of energy not sold due to Ameren Missouri’s facilitation of
11 customer-funded demand-side programs.

12 Q. Why are you addressing NMR in this general rate case?

13 A. Prior to the widespread use of time-based rates, total usage by class and by
14 month were the key drivers of marginal rate calculations. With wide-spread time-based rate
15 structures, it will be more important to calculate marginal rates by time-based rates. With a
16 Time-Of-Use (“TOU”) rate structure, the rate differential no longer occurs based primarily
17 upon the total usage in a given month, but rather the time of day that an individual customer
18 uses energy. As customer adoption of higher differential rates increases, the need for NMR by
19 rate code also increases.

20 Q. Does Ameren Missouri provide net margin rate analysis as stated in the
21 Commission’s Report and Order in Case No. ER-2022-0337?

22 A. Yes. The Commission’s Report and Order in that case states that “The
23 Company’s Rider EEIC margin rate table will be updated consistent with the method in the

1 direct testimony of Company witness Dr. Nicholas Bowden adjusted to exclude MEEIA opt-out
2 customers, as applied to the retail tariff rates established by this Stipulation.”² Considering the
3 increasing adoption of TOU rate structures in Ameren Missouri’s territory, customers pay
4 different prices at different times of the day. On-peak prices are higher and off-peak prices are
5 lower than they would be for a flat rate, based on season, day of week, and time of day.

6 Q. Do net marginal rates vary based on the various rate codes?

7 A. Yes. Ameren Missouri’s customers are grouped into several classes, with each
8 class receiving service under a different rate schedule. Ameren Missouri has multiple active
9 rate schedules with different energy charges per kWh within each rate class. Generally
10 speaking, blocked rate structures include distinct rates for energy based upon the level of billed
11 energy usage; i.e., one rate for all usage up to 750 kWh and a second rate for usage exceeding
12 750 kWh. Ameren Missouri’s current tariff includes several residential time-based rate
13 schedules. TOU rates are rate structures in which customers pay different prices at different
14 times of the day. On-peak prices are higher and off-peak prices are lower than they would be
15 for a flat rate, based on season, day of week, and time of day.

16 Q. Do the high-differential TOU rates make the calculation of the net marginal rate
17 more important?

18 A. Yes. High differential TOU adoption undoubtedly poses challenges in the net
19 marginal rate calculation. The current rate structure is complex in nature. The complexity may
20 require separate net marginal rates by rate code by time period, with the ability to account for
21 measurement installation type differences. Differences between the prices for energy usage on
22 one rate schedule can vary in a single day depending on the hour of usage.³ The current tariff

² Case No. ER-2022-0337 Report and Order, Page 10 #23.

³ Lines 16-17, Page 7 of the rebuttal testimony of J Luebbert, EO-2024-0002.

1 sheet No. 91.7 has net marginal rates by service class and by month. However, the current tariff
2 sheet may require separate net marginal rates by rate code by month since a majority of Ameren
3 Missouri residential customers are now served on time-based rate structures. Most Ameren
4 Missouri residential customers are on a rate plan where total monthly usage defines most of the
5 energy charge, but a time-based overlay is also included on a customer's bill. Therefore, both
6 total usage and time of energy consumption must be considered going forward.

7 Q. Did Ameren Missouri provide an NMR analysis to support the proposed rates in
8 direct testimony in this case?

9 A. Yes. Ameren Missouri provided NMR analysis in the direct filing. Commission
10 approved a Non-Unanimous Stipulation and Agreement on November 14, 2024, in Case No.
11 EO-2023-0136, permitting the Company to recover the Throughout Disincentive for MEEIA 4
12 through Rider EEIC.”⁴

13 Q. What is your recommendation concerning Ameren Missouri's NMR analysis?

14 A. The NMR analysis is very complex in nature. As Ameren Missouri has been
15 transitioned to the TOU rate plan, the extent of its complexity could possibly increase.
16 The spreadsheets of the raw data are voluminous. Despite such fact, Staff reviewed NMR
17 analysis workpapers and found that Ameren Missouri provided NMR by rate code and by
18 rate class.

19 **ECONOMIC DEVELOPMENT INCENTIVE (“EDI”)**

20 Q. What is EDI?

⁴ EO-2023-0136 Non-Unanimous Stipulation and Agreement, Page 8

1 A. The EDI is available under the EDI Rider tariff⁵ to new non-residential
2 customers or customers expanding their load. Customers qualifying for this incentive receive
3 a billing credit for a set period. The Rider aims to entice new and expanding business
4 to Missouri.

5 Q. Please explain Ameren Missouri's EDI Rider discount program.

6 A. Ameren Missouri's EDI offers electric bill discounts to new or expanding
7 industrial customers that satisfy specific rider requirements. Eligible customers receive a
8 discount applied to base rates over a five-year term. All discounts are directed by tariff
9 guidelines and agreed upon by the customer and Ameren Missouri in a written agreement.
10 Discounts are applied as a direct credit or reduction to the customer's utility bill.

11 Q. How many EDI contracts has the Ameren Missouri signed with large customers?

12 A. As of the end of the update period, the Company had made a total of 37 EDI
13 agreements⁶ that have realized discounts during the update year.

14 Q. How does Staff review EDI Rider discounts?

15 A. Staff reviewed 37 active EDI agreements and EDI calculations. Staff
16 annualized the EDI discount for these customers for the 12 months ending June 30, 2024. Staff
17 did not see any changes in rates during the update period. As a result, pricing adjustments are
18 not required to reflect the EDI Rider discount annualization. Rate modifications occurred prior
19 to June 9, 2023.⁷ The rate classes for participating EDI tariff customers were Small Primary
20 Service ("SPS"), Large General Service ("LGS"), and Large Primary Service ("LPS")
21 rate classes.

⁵ JE-2013-0582 Tariff Sheet No. 86 through Tariff Sheet No. 86.7

⁶ MPSC 0266 Rider EDI Realized Rate Work Paper CONF

⁷ Ameren Missouri's response to Staff Data Request 266 states that the increased charge applies to usage prior to June 9, 2023.

1 Q. How is the cost of the discounts recovered by Ameren Missouri?

2 A. With each rate case, Ameren Missouri submits an Economic Development
3 Reduction (“EDR”) credit for discounts provided to customers utilizing this incentive. This is
4 the cost of the discount which is allocated among all customer classes through rates as an
5 adjustment to revenue requirement per 393.1640, RSMo.⁸ Staff’s EDI Rider annualized
6 discounts is ** [REDACTED] ** for the update period. Ameren Missouri’s EDI Rider discount
7 is ** [REDACTED] **⁹ for the test year. Ameren Missouri allocates the reduced level of revenues
8 to each of the customer classes through the application of a uniform percentage adjustment to
9 the revenue requirement responsibility of each customer class.¹⁰

10 **CONCLUSION AND RECOMMENDATION**

11 Q. Does this conclude your direct testimony?

12 A. Yes. It does.

⁸ Section 393.1640 RSMo, states that “the impact of the discounts provided for by this section shall be allocated to all the electrical corporation's customer classes, including the classes with customers that qualify for discounts under this section through the application of a uniform percentage adjustment to the revenue requirement responsibility of all customer classes.”

⁹ ER-2024-0319 Dr. Nicholas Bowden Direct Testimony, p 23, line 13.

¹⁰ ER-2024-0319 Dr. Nicholas Bowden Direct Testimony, p 23, lines 13-16.

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 Adjust)
Its Revenues for Electric Service) Case No. ER-2024-0319

AFFIDAVIT OF HARI K. POUDEL, PhD

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW HARI K. POUDEL, PhD and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Direct Testimony of Hari K. Poudel, PhD*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.



HARI K. POUDEL, 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 26th day of November 2024.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070



Notary Public

Hari K. Poudel

Present Position

Currently, I work for the Missouri Public Service Commission (“Commission”) as a Regulatory Economist in the Tariff/Rate Department of the Industry Analysis Division. The Department of Tariff and Rate Design takes part in and offers advice on matters filed with the Commission, such as rate, complaint, application, territorial agreements, sale, and merger. The department also handles rate design, weather variables, and weather normalization tasks and offers technical assistance. I am responsible for using quantitative economic techniques and statistical analysis to address energy-related challenges that have an effect on utility ratemaking. I am also responsible of recommendations for the Commission based on a various economic analysis of the problems relating to energy and energy efficiency.

Educational Credentials and Work Experience

I received a Doctor of Philosophy in Public Policy from the University of Missouri, Columbia, Missouri in May 2020. I graduated with a Master’s in Public Health from the University of Missouri, Columbia in May 2019. In 2008, I received a Master’s in Agricultural Economics degree from Hohenheim University in Germany.

I’ve been employed with the Missouri Public Service Commission since October 25, 2021, in the Tariff/Rate Department of the Industry Analysis Division as a Regulatory Economist. Prior to joining the Commission, I was a Research/Data Analyst for the Missouri Department of Health and Senior Services. I analyzed public health data that directly affects Missourians in my capacity as an analyst.

Testimonies/Memorandum

SN	Case Number	Company Name	Issue
1.	GR-2021-0320	Liberty Utilities	Tariff Compliance
2.	GR-2022-0235	Spire Missouri, Inc.	Weather Normalization Adjustment Rider (WNAR)
3.	ER-2022-0146	Ameren Missouri	Rider Energy Efficient Investment Charge (EEIC)
4.	GT-2022-0233	Liberty Utilities	Weather Normalization Adjustment Rider (WNAR)
5.	ER-2022-0129 & ER-2022-0130	Evergy Metro, Inc. & Evergy Missouri West, Inc.	General Rate Case
6.	ER-2022-0337	Ameren Missouri	365-Day Adjustment, Weather Variables, Weather Normalization, Hourly Load Requirement Energy Efficiency Adjustment
7.	GO-2023-0002	Spire	Weather Normalization Adjustment Rider (WNAR)
8.	GT-2023-0088	Liberty Utilities	Weather Normalization Adjustment Rider (WNAR)
9.	GT-2023-0274	Liberty Utilities	Weather Normalization Adjustment Rider (WNAR)
10.	EA-2023-0286	Ameren Missouri	Economic Feasibility
11.	GT-2024-0054	Liberty Utilities (Midstates Natural Gas)	Weather Normalization Adjustment Rider (WNAR)
12.	GT-2024-0055	The Empire District Gas Company	Weather Normalization Adjustment Rider (WNAR)
13.	GR-2024-0107	Ameren Missouri	Weather Normalization Adjustment Rider (WNAR)
14.	EO-2023-0136	Ameren Missouri	Throughput Disincentive, Marginal Rate Analysis, Rebound Effect, Rate Case Annualization
15.	EO-2023-0369 & EO-2023-0370	Evergy Metro, Inc. & Evergy Missouri West, Inc.	MEEIA (Throughput Disincentive, Rebound Effect, Rate Case Annualization)
16.	ER-2024-0189	Evergy Missouri West, Inc.	MEEIA, Net Margin Rate, Economic Development Riders, PISA Compliance
17.	GR-2024-0106	Liberty Utilities	Weather Normalization, 365 Days-Adjustment