

Exhibit No.:
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Witness: Shawn E. Lange, PE
Sponsoring Party: MoPSC Staff
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MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

ENERGY RESOURCES DEPARTMENT

SURREBUTTAL TESTIMONY

OF

SHAWN E. LANGE, PE

**UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI**

CASE NO. EF-2024-0021

*Jefferson City, Missouri
March, 2024*

1 **SURREBUTTAL TESTIMONY**

2 **OF**

3 **SHAWN E. LANGE, PE**

4 **UNION ELECTRIC COMPANY,**
5 **d/b/a AMEREN MISSOURI**

6 **CASE NO. EF-2024-0021**

7 Q. Are you the same Shawn E. Lange, PE that provided rebuttal testimony in
8 this case?

9 A. Yes.

10 Q. What is the purpose of your testimony?

11 A. The purpose of my surrebuttal testimony is to respond to OPC witness
12 Jordan Seaver regarding his criticism of the Company's early retirement plan and recent solar
13 CCN filing in EA-2023-0286.

14 Q. On page 9, lines 23-26, Mr. Seaver discusses Ameren Missouri's analysis
15 presented by Mr. Michels as being wholly insufficient to support the Company's decision to
16 close Rush Island rather than install FGD equipment. Does Staff agree?

17 A. Yes, in part. Mr. Michels' assumptions underlying his analysis were developed
18 in the 2020 IRP. In the recent solar CCN case, Staff criticized Ameren Missouri's modeling of
19 emissions limitations through a Carbon dioxide price. Staff witness Claire Eubanks outlines
20 other concerns Staff presented in the solar CCN case.

21 Q. What is a Carbon Dioxide Price?

1 A. A Carbon Dioxide Price, in this context, is an additional price leveed upon
2 carbon dioxide emission to incentivize the transition away from combustion processes¹ to
3 generate electricity.

4 Q. Did Ameren Missouri use a carbon price in their 2020 Integrated Resource Plan
5 (“IRP”)?

6 A. Yes. Ameren Missouri used a carbon price for the last three IRPs².

7 Q. Does Staff have concerns about using a Carbon Dioxide price?

8 A. Yes. While it is unclear if a future emission guideline or rule from the
9 Environmental Protection Agency (“EPA”) will come with a cap and trade type system a carbon
10 dioxide price system or a cap in emissions, Ameren Missouri has only modeled one type of
11 emission limitation attainment method.

12 Q. Why is that concerning?

13 A. The most recent Good Neighbor Rule for nitrogen emissions has a cap and trade
14 type set up. The Climate and Equitable Jobs Act (“CEJA”) legislation in Illinois has a limit on
15 the emissions with no carbon pricing. Finally, the Acid Rain Program of the EPA used a cap
16 and trade system for emission limitation attainment. The current proposed rule language on
17 carbon emissions, starting in 2030, would generally require more CO2 emissions control at
18 fossil fuel-fired power plants that operate more frequently and for more years and would phase
19 in increasingly stringent CO2 requirements over time. The proposed requirements vary by the
20 type of unit (new or existing, combustion turbine or utility boiler, coal-fired or natural
21 gas-fired), how frequently it operates (base load, intermediate load, or low load (peaking) and

¹ Combustion processes are typically used in traditional, fossil fuel utilizing generation resources.

² EA-2023-0286 Michels Surrebutal Pg. 29 lines 16-19.

1 its operating horizon (i.e., planned operation after certain future dates).³ Pair the proposed rule
2 language on carbon emission and the tax incentives provided for in the Inflation Reduction Act,
3 and it appears that at least currently; there is a push to incentivize renewables and place caps
4 on emissions.

5 Q. How does using a carbon dioxide price influence the market prices generated in
6 a modeling scenario?

7 A. A carbon dioxide price not only impacts the cost profile for the fossil generation
8 units, it also, by default, impacts the energy market prices. These impacts tend to create
9 generally higher energy market prices in more hours than would be the case if alternative
10 environmental measures were modeled instead. In the case that there are emission limits, there
11 is a build out of renewables to fulfil the load requirements with renewable generation but this
12 generation is either zero or negative cost with the tax incentives. The additional zero or negative
13 cost renewable generation would lower the market prices as time goes on.

14 Q. What is the expectation for Carbon Dioxide prices in the
15 Ameren Missouri 2023 IRP?

16 A. Mr. Michels states:

17 I would expect the economics of renewable energy resources to
18 improve using the 2023 IRP assumptions for CO2 prices because the
19 probability weighted average CO2 price for the 2023 IRP will be higher
20 than that used in the analysis that supported the Company's 2022
21 change in PRP.⁴

22 Q. Does this seem to be consistent with Staff's concern?

³<https://www.epa.gov/system/files/documents/2023-05/FS-OVERVIEW-GHG-for%20Power%20Plants%20FINAL%20CLEAN.pdf> Pg. 3.

⁴ EA-2023-0286 Michels Direct .Pg. 64. ll. 3-6.

1 A. Yes. Generally speaking, if a scenario has a higher Carbon Dioxide Price that
2 scenario will also have higher market prices. Those higher market prices are an incentive to
3 increase the amount of renewable generation, and will result in models showing that renewable
4 generation is more economical than in models with lower market prices. Ameren Missouri
5 stated in EO-2024-0020:

6 The higher the CO2 price, the higher the power price. Wind and solar
7 generation, along with other non-carbon-emitting generating sources like
8 hydro and nuclear, therefore see a benefit from CO2 prices through the
9 revenue they receive in the market.⁵

10 Q. Has Ameren Missouri performed IRP scenario analysis that includes an imposed
11 emission limit on fossil generation carbon emissions but no carbon tax or carbon price or any
12 other mechanism to price out carbon emissions?

13 A. No.⁶

14 Q. Have other Missouri utilities switched from using a carbon price or carbon tax
15 to an emission limitation?

16 A. Yes. Evergy in its IRP annual update in EO-2023-0212 stated:

17 Evergy currently expects future carbon policies to be in the form of
18 incentives (such as those in the IRA), or requirements for physical
19 emissions reductions, rather than carbon taxes.⁷

20 Q. Does this conclude your surrebuttal testimony?

21 A. Yes, it does.

⁵ EO-2024-0020 Chapter 10, Pg. 13.

⁶ EA-2023-0286 Ameren Missouri Response to Staff DR No. 0108.

⁷ EO-2023-0212 Annual Update, Pg. 19.

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of the Petition of Union Electric)
Company d/b/a Ameren Missouri for a)
Financing Order Authorizing the Issue of)
Securitized Utility Tariff Bonds for Energy)
Transition Costs related to Rush Island)
Energy Center)


Case No. EF-2024-0021

AFFIDAVIT OF SHAWN E. LANGE, PE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)


COMES NOW SHAWN E. LANGE, PE, and on his oath states that he is of sound mind and lawful age; that he contributed to the foregoing *Surrebuttal Testimony of Shawn E. Lange, PE*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.


SHAWN E. LANGE, PE

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 18th day of March 2024.


Notary Public

<p style="text-align: center;">D. SUZIE MANKIN Notary Public - Notary Seal State of Missouri Commissioned for Cole County My Commission Expires: April 04, 2025 Commission Number: 12412070</p>
