FILED June 24, 2024 Data Center Missouri Public Service Commission

## Exhibit No. 109

Staff – Exhibit 109 Shawn Lange Surrebuttal File No. EF-2024-0021

Exhibit No.: Issues: Carbon Pricing Witness: Shawn E. Lange, PE Sponsoring Party: MoPSC Staff Type of Exhibit: Surrebuttal Testimony Case No.: EF-2024-0021 Date Testimony Prepared: March 22, 2024

### **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 5		UNION ELECTRIC COMPANY, 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	А.	Yes.		
10	Q.	What is the purpose of your testimony?		
11	А.	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	А.	Yes, in part. Mr. Michels' assumptions underlying his analysis were developed		
18	in the 2020 I	RP. In the recent solar CCN case, Staff criticized Ameren Missouri's modeling of		
19	emissions lin	mitations through a Carbon dioxide price. Staff witness Claire Eubanks outlines		
20	other concer	ns Staff presented in the solar CCN case.		
21	Q.	What is a Carbon Dioxide Price?		

# Surrebuttal Testimony of Shawn E. Lange, PE

A.

Q.

Q.

A. A Carbon Dioxide Price, in this context, is an additional price leveed upon
 carbon dioxide emission to incentivize the transition away from combustion processes<sup>1</sup> to
 generate electricity.

- 4 Q. Did Ameren Missouri use a carbon price in their 2020 Integrated Resource Plan
  5 ("IRP")?
- 6

Yes. Ameren Missouri used a carbon price for the last three IRPs<sup>2</sup>.

7

Does Staff have concerns about using a Carbon Dioxide price?

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

12

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

<sup>&</sup>lt;sup>1</sup> Combustion processes are typically used in traditional, fossil fuel utilizing generation resources.

<sup>&</sup>lt;sup>2</sup> EA-2023-0286 Michels Surrebutal Pg. 29 lines 16-19.

Surrebuttal Testimony of Shawn E. Lange, PE

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

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

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

Q. What is the expectation for Carbon Dioxide prices in theAmeren Missouri 2023 IRP?

A. Mr. Michels states:

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

22

16

17

18

19

20

21

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

<sup>&</sup>lt;sup>3</sup>https://www.epa.gov/system/files/documents/2023-05/FS-OVERVIEW-GHGfor%20Power%20Plants%20FINAL%20CLEAN.pdf Pg. 3.

<sup>&</sup>lt;sup>4</sup> EA-2023-0286 Michels Direct .Pg. 64. ll. 3-6.

Surrebuttal Testimony of Shawn E. Lange, PE

1	А.	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 7 8 9		The higher the CO2 price, the higher the power price. Wind and solar generation, along with other non-carbon-emitting generating sources like hydro and nuclear, therefore see a benefit from CO2 prices through the revenue they receive in the market. <sup>5</sup>			
10	Q.	Has Ameren Missouri performed IRP scenario analysis that includes an imposed			
11	emission lim	it on fossil generation carbon emissions but no carbon tax or carbon price or any			
12	other mechanism to price out carbon emissions?				
13	А.	No. <sup>6</sup>			
14	Q.	Have other Missouri utilities switched from using a carbon price or carbon tax			
15	to an emission limitation?				
16	А.	Yes. Evergy in its IRP annual update in EO-2023-0212 stated:			
17 18 19		Evergy currently expects future carbon policies to be in the form of incentives (such as those in the IRA), or requirements for physical emissions reductions, rather than carbon taxes. <sup>7</sup>			
20	Q.	Does this conclude your surrebuttal testimony?			
21	А.	Yes, it does.			

 <sup>&</sup>lt;sup>5</sup> EO-2024-0020 Chapter 10, Pg. 13.
 <sup>6</sup> EA-2023-0286 Ameren Missouri Response to Staff DR No. 0108.
 <sup>7</sup> 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  $18 \frac{18}{10}$ day of March 2024.

Sus Mankin Netary Public

