Exhibit No.:
Issue(s): *Interconnection Studies*
Witness: *Shawn E. Lange, PE*
Sponsoring Party: *MoPSC Staff*
Type of Exhibit: *Rebuttal Testimony*
Case No.: *EA-2023-0017*
Date Testimony Prepared: *April 19, 2023*

MISSOURI PUBLIC SERVICE COMMISSION

INDUSTRY ANALYSIS DIVISION

ENGINEERING ANALYSIS DEPARTMENT

REBUTTAL TESTIMONY

OF

SHAWN E. LANGE, PE

GRAIN BELT EXPRESS, LLC.

CASE NO. EA-2023-0017

Jefferson City, Missouri
April 2023

**** Denotes Highly Confidential - **Competitive** Information ****
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GRAIN BELT EXPRESS, LLC

CASE NO. EA-2023-0017

Q. Please state your name and business address.

A. My name is Shawn E. Lange, and my business address is Missouri Public Service Commission, P.O. Box 360, Jefferson City, MO 65102.

Q. What is your present position with the Missouri Public Service Commission ("Commission")?

A. I am a Senior Professional Engineer in the Engineering Analysis Department, Industry Analysis Division.

Q. Would you please review your educational background and work experience?

A. A list of the cases in which I have filed testimony and my credentials can be found in Schedule SEL-r1.

EXECUTIVE SUMMARY

Q. Can you please summarize your rebuttal testimony?

A. My rebuttal testimony addresses the Midcontinent Independent System Operator, Inc.'s ("MISO") Long Range Transmission Plan (LRTP) and how it relates to the Grain Belt Express, LLC ("GBX") project, provides an update on the latest Southwest Power Pool (SPP), MISO and PJM study results, and addresses the studies that have not yet been completed. My testimony will also discuss the Tartan Criteria of need and include discussion of the Memorandums of Understanding ("MOUs") and the MJMEUC contract.

REBUTTAL TESTIMONY

Q. What is the MISO LRTP?

A. MISO describes its LRTP as:

> MISO's multi-year Long Range Transmission Planning (LRTP) initiative assesses reliability risks looking 10-20 years into the future to identify the transmission investments needed to enable regional delivery of energy.[1]

Q. Why is Staff discussing the LRTP?

A. The existence of the LRTP and the projects already agreed to in Tranche 1 and the proposed GBX project claim similar to or overlapping benefits of the respective projects. There are also pieces of testimony from MISO that contradicts assumptions that were included in the Guidehouse study that was included as scheduleAP-2 to GBX witness Andrew Petti's direct testimony.[2]

Q. Have additional projects been approved based on the LRTP analysis?

A. Yes.

> In July of 2022, MISO's Board of Directors unanimously approved $10.3 billion in new transmission projects. This LRTP Tranche 1 Portfolio, is the first of four tranches of transmission solutions developed to provide reliable and economic energy delivery to address future reliability needs.[3]

Q. What do the projects associated with Tranche 1 provide?

A. MISO's analysis indicated:

> The transmission enhancements provided by the LRTP Tranche 1 Portfolio increases import capability and enables access to resources

[1] MTEP21 REPORT ADDENDUM: LONG RANGE TRANSMISSION PLANNING TRANCHE 1 EXECUTIVE SUMMARY Pg. 3.
[2] Staff witness Claire M. Eubanks, PE discusses the Guidehouse Study in more detail.
[3] https://www.misoenergy.org/planning/transmission-planning/long-range-transmission-planning/

across the subregion. This decreases the need to procure capacity locally to meet resource adequacy needs.[4]

The development of the LRTP Tranche 1 Portfolio provides a regional solution to addressing the future energy needs rather than an incremental approach to reliability planning. Avoided Transmission Investment captures the benefit provided by LRTP regional projects that address both avoided reliability projects and avoided age and condition replacement projects on right-of way shared by LRTP project.

LRTP projects deliver benefits by addressing future reliability issues and avoiding the costs of future upgrades that would have been required absent the LRTP Tranche 1 Portfolio.[5]

Q. What projects are included in Tranche 1?

A. Below is a graphic illustrating the Tranche 1 projects:

[4] MTEP21 REPORT ADDENDUM: LONG RANGE TRANSMISSION PLANNING TRANCHE 1 EXECUTIVE SUMMARY Pg. 56.
[5] MTEP21 REPORT ADDENDUM: LONG RANGE TRANSMISSION PLANNING TRANCHE 1 EXECUTIVE SUMMARY Pg. 54.

Q. How does the LRTP and the projects included in Tranche 1 relate to the proposed GBX Project?

A. Invenergy Transmission LLC filed a complaint at FERC alleging discrimination on the part of MISO for not including the GBX project in the modeling and evaluation of the MISO LRTP tranche 1 series of projects.[6]

Q. What is MISO's response?

A. MISO argued in its response to the Invenergy Transmission LLC complaint at FERC that under the MISO tariff, to be included in the long term planning models, the project needs to either have an interconnection agreement or be a part of a load serving entity's long term plan and it did not meet either requirement.[7] MISO further argued that under the MISO tariff, the GBX project is being evaluated as an external facility which, as such it is not intended to resolve any transmission issues on the MISO system.[8]

Q. Has FERC ruled on that Complaint?

A. No, as of the date of this filing.

Q. Is Staff aware of allegations Invenergy Transmission, on behalf of GBX, has made in other forums concerning the interaction of GBX and the LRTP Tranche 1?

A. Yes. In EL22-88-000, Invenergy Transmission filed testimony from an ICF consultant. That consultant performed an analysis of the GBX proposed project to mimic how MISO calculated the production cost benefits of the LRTP Tranche 1. Finally, the

[6] EL22-83-000 COMPLAINT REQUESTING FAST TRACK PROCESSING TO FIX MISO'S TRANSMISSION EXPANSION PLANNING PROCESSES Attachment A PG. 1.
[7] EL22-83-000 Answer of the Midcontinent System Operator INC. Pg. 5.
[8] Tariff, Attachment GGG § 1 ("Merchant HVDC Transmission Line (MHVDC Transmission Line) shall mean the merchant high-voltage direct current (HVDC) transmission line external to the Transmission System that is proposed for connection to the Transmission System.); see also id. § 2.1. (Emphasis added.). Under the Tariff, MISO identifies a Transmission Issue and then proceeds through the stakeholder process to identify the preferred solution for inclusion in MTEP. See Tariff, Attachment FF § I.C.

consultant also looked at benefits of both the LRTP Tranche 1 and the GBX proposed project together.

Q. Could you summarize your understanding of these allegations?

A. GBX's expert alleges that including GBX in the MISO study would cause the calculation of resulting benefits for zones 1, 3, and 5 to be negatively affected by the inclusion of both the LRTP Tranche 1 and the proposed GBX project.

While Staff cannot perform the same level of modeling because of data and software limitations, the allegation that the inclusion of both the LRTP Tranche 1 and the GBX project could cause ratepayers in Missouri to receive less benefits from Tranche 1 if both Tranche 1 and the proposed GBX project are constructed, is concerning and warrants further consideration.

Q. Is the ICF modeling included in GBX's Direct Testimony in this case?

A. No. Invenergy filed the information with FERC on April 3, 2023 and much of the underlying data is not public. Staff has requested the non-public version of the FERC filing in Staff Data Request ("DR") No. 0060.

Q. Are there other FERC cases that Invenergy on behalf of GBX has requested?

A. Yes. Invenergy has requested that FERC hold a technical conference to explore ways to "make available and compensate certain grid reliability and resilience benefits associated with interregional high voltage direct current transmission provided on a merchant basis."[9]

[9] AD22-17-000 REQUEST FOR TECHNICAL CONFERENCE OF INVENERGY TRANSMISSION LLC.

Q. Why is Staff bringing this up?

A. In EA-2016-0358, the Report and Order on Remand states:

> The Project is a participant-funded, "shipper pays" transmission line. Grain Belt would recover its capital costs by entering into voluntary, market-driven contracts with entities that want to become transmission customers of the Project.[10]

It appears that Invenergy is attempting to cause new payment methods to be discussed and perhaps if implemented would impact whether this project will be a participant-funded project.

Interconnection Studies

Q. What is the purpose of interconnection studies?

A. The purpose of the interconnection studies is to identify the impacts of interconnecting a new generator to the transmission system and the impacts of using the transmission system to deliver power from a new generator. These studies also identify and estimate the cost of upgrading transmission facilities due to the project and the project's characteristics. If these studies are incomplete, any potentially necessary upgrades and the associated costs are unknown.

Q. The GBX project has had different iterations, is Staff going to go through all studies that GBX has caused to be performed?

A. No, in this testimony Staff discusses the current project and the studies that correspond to that project.

Q. Are there interconnection studies that have not been completed or have been completed since the Commission's Report and Order on Remand?

[10] EA-2016-0358 Report and Order Pg. 11, Paragraph 12.

A. Yes. There are studies that have not been completed and studies that have only recently been completed in order to reflect changes to the proposed project. The sections below discuss the studies by RTO.

SPP

Q. Are there any studies that have not been completed with regard to the Southwest Power Pool?

A. Yes. The change of the converter station technology triggered the SPP planning criteria 5.5. SPP planning criteria 5.5 states:

> Southwest Power Pool Planning Criteria 5.3.1 and the SPP Open Access Transmission Tariff both require members to contact SPP and the Transmission Working Group whenever new transmission facilities that impact the interconnected operation are in the conceptual planning stage so that the optimal integration of any new facilities can be identified. Under this criterion an interconnection involves two or more SPP members or an SPP member and a non-member. A project that creates a non-radial, non-generation interconnection at 69 kV or above or that removes an interconnection at 230 kV or above shall be reviewed for impacts in accordance with section 14 of this Criteria.[11]

The expectation is to have the studies related to the change of converter station completed and approved for 4,000 MW capacity by the end of 2022 or early 2023.[12] The change in capacity from 4,000 MW to 5,000 MW will also result in additional analysis. The expectation is that study is to be completed mid to late 2023.[13] With the study not expected to be completed until mid to late 2023, it is unclear what, if any, additional upgrades may be necessary.

[11] https://spp.org/documents/68856/spp%20planning%20criteria%20v4.0.pdf Pg. 17.
[12] Carlos Rodriguez Direct Pg. 19, lines 11-13.
[13] Carlos Rodriguez Direct Pg. 19, lines 13-16.

Q. Will the project have all necessary requirements and physical capability of taking power in PJM or MISO and transmitting that to SPP?

A. No. As GBX stated in response to Staff DR No. 0054:

> Although system capacity from eastern points to western points on the Grain Belt assets has not yet been requested, Grain Belt is planning to undertake the incremental investment to allow for bi-directional operation when the demand exists.

Q. What is the scope of the SPP studies?

A. The studies that SPP is requiring be performed are looking at an outage of the proposed project. In the event that the project has a failure, some of the power being transmitted may be temporarily transmitted into SPP. The project is designed to have minimal impact on the SPP Grid while not in an outage event.[14]

MISO

Q Has a request for interconnection for the project been submitted to MISO?

A. Yes, a total of four (4) interconnection requests have been submitted to MISO for the changes to the project associated with change in the point of interconnection. Two (2) interconnection requests have been submitted under MISO's Merchant HVDC Transmission Connection Procedures ("MHCP"). The MHCP requests have been given a queue position of H104 (injection of 1000 MW) and H105 (injection of 500 MW). There are also two (2) interconnection requests that have been submitted under MISO's Generator Interconnection Procedures (GIP). The GIP requests have been given a queue position of J1488 (500 MW) and J1490 (1000 MW).

Q. What is the MHCP?

[14] Carlos Rodriguez Direct Pg. 19, ll. 19-21.

A. The MHCP is located in attachment GGG to MISO's Open Access Transmission Tariff. In attachment GGG to MISO's Open Access Transmission Tariff (OATT), MISO spells out what is necessary for a merchant HVDC line to interconnect into MISO. Section 3.2.1 of attachment GGG to MISO's OATT states:

> MHVDC Transmission Connection Service is provided to physically interconnect an MHVDC Transmission Line to the Transmission System with or without Injection Rights. MHVDC Transmission Connection Service does not confer on any entity any transmission service rights or generator interconnection rights with respect to the Transmission System.

Therefore, the two GIP requests are to determine the cost of upgrades to the transmission system of the actual injection of power.

Q. What analysis has been performed regarding the four interconnection requests?

A. The network upgrades facilities study, dated October 20, 2022, was performed for the MHCP requests. *** [redacted][15]***

The MISO Definitive Planning Phase 2019 Central Area Study Phase III Final Report Revision 1, dated February 1, 2023, was performed for the GIP requests. This study resulted in network upgrade costs of $32,646,521 for J1488 and $ 64,293,986 for J1490[16].

Q. Are there any current cases before the Commission that may be impacted that are related to this case?

A. Yes, Ameren Missouri's EA-2023-0226 case requests authority to construct, own operate and maintain the burns substation. The GBX project will use the

[15] Response to Staff DR No. 0002 staff dr 00002_att. 15_confidential.pdf Exhibit A4.
[16] MISO DPP 2019 Central Area Study Phase III Final Report Revision 2 Dated 3/30/2023.

Burns substation for interconnection in the MISO system. The Interconnection Facilities Report revised as of August 17, 2022 show upgrades necessary to physically interconnect the J1488 and J1490, which includes network upgrades to the Burns substation, is estimated to be $3,310,000.

AECI

Q Has a request for interconnection for the project been submitted to Associated Electric Cooperative Incorporated (AECI)?

A. Yes. Interconnection request, GI-083, (1,018 MW)[17] was submitted to AECI in June of 2019.

Q. What analysis has been performed regarding the interconnection request?

A. Since the execution of the interconnection agreement in 2021, there have been changes to the interconnection costs and an update to the agreement. The resulting changes have increased the interconnection costs from $98,618,000 to *** [redacted] ***[18].

PJM

Q. Has PJM made changes that may affect the proposed GBX project?

A. Yes. FERC has accepted PJM's methodological change to its interconnection process to go from a "first come, first served" queue approach to a "first ready, first served" cycle approach. This process change and the according tariff

[17] In early conceptual designs of the new configuration for the Project, the flow to the AECI POI was 1018 MW so that was what GBX requested. Since then, the AECI POI has been approximated to 1000 MW.

[18] *** [redacted] *** Response to Staff DR No. 0002 *staff dr 00002_att. 13_confidential.pdf* Pg. 1; see also Response to Staff DR No. 0002 *staff dr 00002_att. 13_confidential.pdf* Pg. 9.

changes had an effective date of January 3, 2023. Under these changes, the GBX project interconnection will be retooled and restudied to determine whether they share cost responsibility for one or more Network Upgrades.

Q. Has a request for interconnection for the project been submitted to PJM?

A. As purported by GBX, four (4) interconnection requests have been submitted to PJM:

- AF1-088 (1,000 MW Energy; 1,000 MW Capacity; Injection/Withdrawal rights) expected to be completed in 2025.
- AF2-008 (1,000 MW Energy; 500 MW Capacity; Injection rights) expected to be completed in 2025.
- AH1-084 (500 MW Energy; 500 MW Capacity; Injection rights) expected to be completed in 2026.
- AH1-085 (500 MW Energy; 500 MW Capacity; Withdrawal rights) expected to be completed in 2026.

Q. Does Staff have concerns with regard to the status of the interconnection studies?

A. Yes. The purpose of the interconnection studies is to identify the impacts of interconnecting a new generator to the transmission system and the impacts of using the transmission system to deliver power from a new generator. These studies also identify and estimate the cost of upgrading transmission facilities due to the project and the project's characteristics. If these studies are incomplete, any potentially necessary upgrades are unknown. Currently the SPP study outlining any cost impacts of increasing the overall

size of the project from 4,000 MW to 5,000 MW won't be known until mid to late 2023. All four (4) PJM studies are currently expected to be completed in 2025 or 2026.

Need

Q. What is the Tartan Criteria?

A. When making a determination of whether an applicant or project is convenient or necessary, the Commission has traditionally applied five criteria, commonly known as the Tartan Criteria, which are as follows:

a) There must be a need for the service;

b) The applicant must be qualified to provide the proposed service;

c) The applicant must have the financial ability to provide the service;

d) The applicant's proposal must be economically feasible; and

e) The service must promote the public interest.[19]

Q. What are you responding to with regard to need?

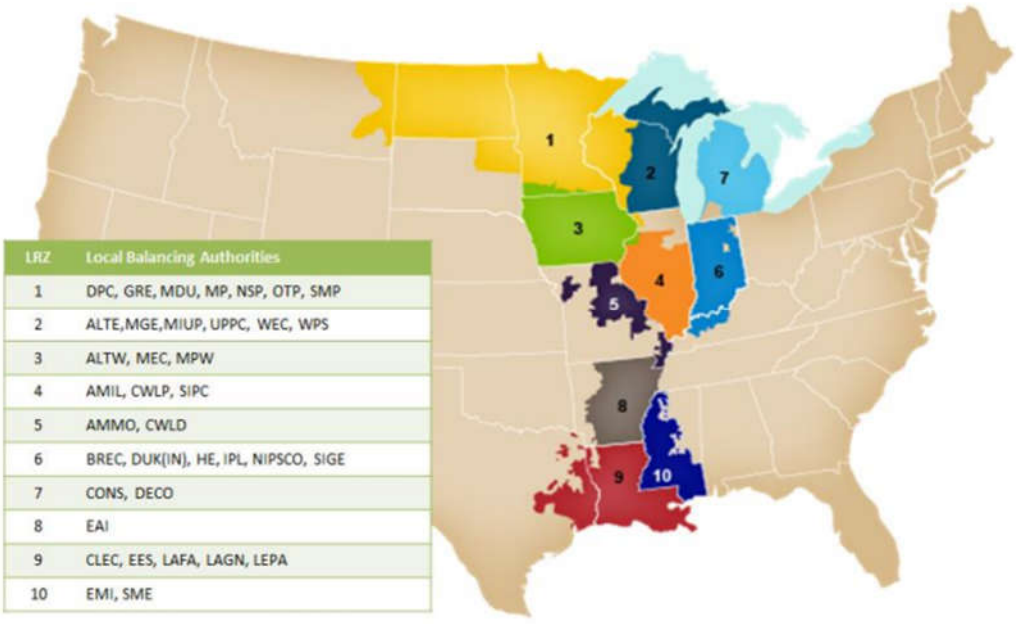
A. I would first discuss resource adequacy in MISO.

Resource Adequacy

Q. How does MISO look at resource adequacy?

A. MISO requires load serving entities within each zone to have sufficient resources to meet load and required reserves. A map[20] showing the different zones is shown below:

[19] In re Tartan Energy, Report and Order, 3 Mo.P.S.C. 3d 173, Case No. GA-94-127, 1994 WL 762882 (September 16, 1994).
[20] https://cdn.misoenergy.org/20220610%20OMS-MISO%20Survey%20Results%20Workshop%20Presentation625148.pdf

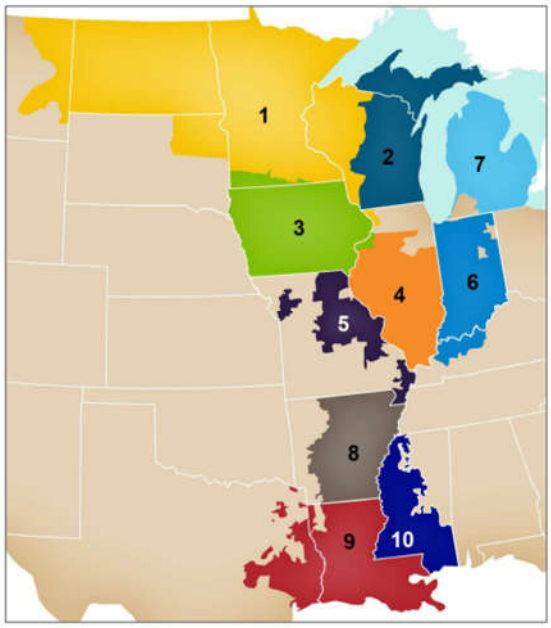


LRZ	Local Balancing Authorities
1	DPC, GRE, MDU, MP, NSP, OTP, SMP
2	ALTE,MGE,MIUP, UPPC, WEC, WPS
3	ALTW, MEC, MPW
4	AMIL, CWLP, SIPC
5	AMMO, CWLD
6	BREC, DUK(IN), HE, IPL, NIPSCO, SIGE
7	CONS, DECO
8	EAI
9	CLEC, EES, LAFA, LAGN, LEPA
10	EMI, SME

Q. What are the MISO Capacity Auction results?

A. The MISO capacity auction for 2022-2023 resulted in a capacity auction price of $236.66 MW-Day in certain zones, as shown below:[21]

Zone	Local Balancing Authorities	Price $/MW-Day
1	DPC, GRE, MDU, MP, NSP, OTP, SMP	$236.66
2	ALTE, MGE, UPPC, WEC, WPS, MIUP	$236.66
3	ALTW, MEC, MPW	$236.66
4	AMIL, CWLP, SIPC, GLH	$236.66
5	AMMO, CWLD	$236.66
6	BREC, CIN, HE, IPL, NIPS, SIGE	$236.66
7	CONS, DECO	$236.66
8	EAI	$2.88
9	CLEC, EES, LAFA, LAGN, LEPA	$2.88
10	EMBA, SME	$2.88
ERZ	KCPL, OPPD, WAUE (SPP), PJM, OVEC, LGEE, AECI, SPA, TVA	$133.70-236.66



[21] https://cdn.misoenergy.org/2022%20PRA%20Results624053.pdf Pg. 4.

Q. What does a capacity auction price of $236.66 indicate?

A. If the auction does not have enough installed capacity, the auction uses a price for the Cost of New Entry (CONE).[22] The CONE for 2022-2023 Capacity auction was priced at $236.66. The local resource zones for MISO north priced at $236.66 shows that as a whole, MISO north is short on capacity.

Q. How would this project impact the Capacity auction prices?

A. According to the Guidehouse study, GBX is assuming the proposed project will cause the capacity auction price to lower from the 2022-2023 auction price. At this time, the only executed contract does not interconnect into MISO, therefore their assumptions are overstating the known impacts.

MOUs

Q. Mr. Shashank has stated in is direct on page 31, lines 5 through line 8:

> Yes, as discussed above Grain Belt Express has entered into several MOUs with various parties and the discussions around the MOUs included pricing that incorporates the current projected cost of the Project. These MOUs are a clear demonstration both of the interest in and need for the Project.
>
> Do you agree?

A. I agree the MOUs demonstrate interest in the project.

**** [redacted]

[redacted]

[redacted]

[redacted]

[22] Cost of New Entry is an industry-wide term, used to indicate the current, annualized, capital cost of constructing a power plant. https://cdn.misoenergy.org/20221012%20RASC%20Item%2004c%20CONE%20Update626542.pdf slide 4.

[redacted] ****

Q. **** [redacted] **** A. **** [redacted] **** Q. Has GBX demonstrated a need for this project based on the MOUs in the project?

A. No.

Q. On what basis does Staff make that statement?

A. Staff's basis for this statement is that **** [redacted] ****.

MJMEUC Contract

Q. What did the Commission find in EA-2016-0358 with regard to the need component of the tartan criteria?

A. The Report and Order on Remand states:

> The Project is needed primarily because of the benefits to MJMEUC and its customers, who have committed to purchase 136 MW of wind power utilizing transmission service purchased from Grain Belt. The transmission service agreement between Grain Belt and MJMEUC allows MJMEUC to purchase up to 200 MW of transmission capacity from the Grain Belt project.[23]

Q. Is the Contract with MJMEUC still in effect?

A. The Company purports that the contract is still in effect.[24] Staff witness Michael L. Stahlman's direct testimony includes the issues Staff has with that contract.

Q. How does the proposed Tiger Connector and converter station changes relate to the MJMEUC contract?

A. GBX is proposing that the power associated with the MJMEUC contract travel the Tiger Connector and be injected in the interconnection at or near McCredie. The MJMEUC contract is currently 200 MW out of the proposed 5000 MW total project.

Summary

Q. What are your conclusions?

A. This project fulfills the need requirement of the tartan criteria.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

[23] EA-2016-0358 Report and Order on Remand Pg. 41.
[24] EA-2023-0017 Shashank Sane Direct Pg. 13, ll. 3-4.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of the Application of Grain Belt Express LLC for an Amendment to its Certificate of Convenience and Necessity Authorizing it to Construct, Own, Operate, Control, Manage, and Maintain a High Voltage, Direct Current Transmission Line and Associated Converter Station	)))))))	Case No. EA-2023-0017

AFFIDAVIT OF SHAWN E. LANGE, PE

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW SHAWN E. LANGE, PE and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal 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
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 17th day of April 2023.

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

D Suzie Mankin
Notary Public

CREDENTIALS AND CASE PARTICIPATION OF SHAWN E. LANGE, PE

PRESENT POSITION:

I am a Professional Engineer in the Engineering Analysis Department, Industry Analysis Division, of the Missouri Public Service Commission.

EDUCATIONAL BACKGROUND AND WORK EXPERIENCE:

In December 2002, I received a Bachelor of Science Degree in Mechanical Engineering from the University of Missouri, at Rolla now known as the Missouri University of Science and Technology. I joined the Commission Staff in January 2005. I am a registered Professional Engineer in the State of Missouri and my license number is 2018000230.

TESTIMONY FILED:

Case Number	Utility	Testimony	Issue
ER-2005-0436	Aquila Inc.	Direct	Weather Normalization
		Rebuttal	Weather Normalization
		Surrebuttal	Weather Normalization
ER-2006-0314	Kansas City Power & Light Company	Direct	Weather Normalization
		Rebuttal	Weather Normalization
ER-2006-0315	Empire District Electric Company	Direct	Weather Normalization
		Surrebuttal	Weather Normalization
ER-2007-0002	Union Electric Company d/b/a AmerenUE	Direct	Weather Normalization
ER-2007-0004	Aquila Inc.	Direct	Weather Normalization
ER-2007-0291	Kansas City Power & Light Company	Staff Report	Weather Normalization
		Rebuttal	Weather Normalization
ER-2008-0093	Empire District Electric Company	Staff Report	Weather Normalization
ER-2008-0318	Union Electric Company d/b/a AmerenUE	Staff Report	Weather Normalization

Case Number	Utility	Testimony	Issue
ER-2009-0089	Kansas City Power & Light Company	Staff Report	Net System Input
ER-2009-0090	KCP&L Greater Missouri Operations Company	Staff Report	Net System Input
ER-2010-0036	Union Electric Company d/b/a AmerenUE	Staff Report	Net System Input
ER-2010-0130	Empire District Electric Company	Staff Report	Variable Fuel Costs
		Surrebuttal	Variable Fuel Costs
ER-2010-0355	Kansas City Power & Light Company	Staff Report	Variable Fuel Costs
ER-2010-0356	KCP&L Greater Missouri Operations Company	Staff Report	Engineering Review-Sibley 3 SCR
ER-2011-0004	Empire District Electric Company	Staff Report	Variable Fuel Costs
ER-2011-0028	Union Electric Company d/b/a Ameren Missouri	Staff Report	Net System Input
ER-2012-0166	Union Electric Company d/b/a Ameren Missouri	Staff Report	Weather Normalization
		Surrebuttal	Weather Normalization Maryland Heights In-Service
ER-2012-0174	Kansas City Power & Light Company	Staff Report	Weather Normalization Net System Input Variable Fuel Costs
		Surrebuttal	Weather Normalization
ER-2012-0175	KCP&L Greater Missouri Operations Company	Staff Report	Weather Normalization Net System Input
		Surrebuttal	Weather Normalization
ER-2012-0345	Empire District Electric Company	Rebuttal	Interim Rates
		Staff Report	Weather Normalization
EC-2014-0223	Noranda Aluminum v. Ameren Missouri	Rebuttal	Weather Normalization
EA-2014-0207	Grain Belt Express CCN	Rebuttal	Certificates of Convenience/Feasibility Analysis
		Surrebuttal	

Case Number	Utility	Testimony	Issue
ER-2014-0258	Union Electric Company d/b/a Ameren Missouri	Staff Report	Net System Input Variable Fuel Costs
ER-2014-0351	Empire District Electric Company	Staff Report	Net System Input Variable Fuel Costs
ER-2014-0370	Kansas City Power & Light Company	Staff Report	Net System Input Variable Fuel Costs
		True-up Direct	Variable Fuel Costs La Cygne In-service
EA-2015-0146	ATXI CCN	Rebuttal	Certificates of Convenience/Feasibility Analysis
		Surrebuttal	
ER-2016-0023	Empire District Electric Company	Staff Report	Net System Input Variable Fuel Costs
		Surrebuttal	Variable Fuel Costs
ER-2016-0179	Union Electric Company d/b/a Ameren Missouri	Staff Report	Variable Fuel Costs
EA-2016-0385	Grain Belt Express CCN	Rebuttal	Certificates of Convenience/Feasibility Analysis
		Surrebuttal	
ER-2018-0145	Kansas City Power & Light Company	Staff Report	Variable Fuel Costs Market Prices
		Rebuttal	Variable Fuel Costs Market Prices
		True-up Direct	Variable Fuel Costs Market Prices
EA-2018-0327	ATXI CCN	Rebuttal	Certificates of Convenience/Feasibility Analysis
EA-2019-0021	Ameren CCN	Staff Report	Certificates of Convenience/Feasibility Analysis
EA-2019-0010	Empire District Electric Company CCN	Staff Report	Certificates of Convenience/Feasibility Analysis
EC-2020-0408	MLA v. Grain Belt Complaint	Staff Recommendation	Formal Complaint
EA-2021-0167	ATXI CCN	Staff Recommendation	Certificates of Convenience/Feasibility Analysis

Case Number	Utility	Testimony	Issue
EA-2021-0087	ATXI CCN	Staff Report	Certificates of Convenience/Feasibility Analysis
ER-2021-0240	Union Electric Company d/b/a Ameren Missouri	Staff Report	Variable Fuel Costs Atchison wind farm Construction Audit and in-service review
		Rebuttal	Atchison in-service and Variable Fuel Costs
		True-up Direct	Variable Fuel Costs
ER-2021-0312	Empire District Electric Company	Staff Report	Transmission and Distribution Investment
EA-2022-0043	Evergy Metro and Evergy West Hawthorn Solar CCN	Staff Report	Certificates of Convenience/Feasibility Analysis
EA-2022-0099	ATXI CCN	Staff Direct Testimony	Certificates of Convenience/Feasibility Analysis
EA-2022-0244	Union Electric Company d/b/a Ameren Missouri	Staff Report	Certificates of Convenience/Feasibility Analysis
EA-2022-0245	Union Electric Company d/b/a Ameren Missouri	Staff Rebuttal Testimony	Certificates of Convenience/Feasibility Analysis
ER-2022-0337	Union Electric Company d/b/a Ameren Missouri	Direct Testimony	Variable fuel Costs
		Rebuttal Testimony	Variable fuel Costs
		Surrebuttal/True-up Direct	Variable fuel Costs
		True-up Rebuttal	Variable fuel Costs
EA-2022-0328	Evergy West	Staff Rebuttal Testimony	Certificates of Convenience/Feasibility Analysis