

Exhibit No.:
Issues: Tartan Criteria Need
Witness: Shawn E. Lange
Sponsoring Party: MO PSC Staff
Type of Exhibit: Rebuttal Testimony
Case No.: EA-2015-0146
Date Testimony Prepared: October 21, 2015

MISSOURI PUBLIC SERVICE COMMISSION

COMMISSION STAFF DIVISION

REBUTTAL TESTIMONY

OF

SHAWN E. LANGE

AMEREN TRANSMISSION COMPANY OF ILLINOIS

CASE NO. EA-2015-0146

*Jefferson City, Missouri
October 2015*

Staff Exhibit No. 29
Date 11/25/16 Reporter JK
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CASE NO. EA-2015-0146

*Jefferson City, Missouri
October 2015*

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

In the Matter of the Application of Ameren)
Transmission Company of Illinois for Other)
Relief or, in the Alternative, a Certificate of)
Public Convenience and Necessity)
Authorizing it to Construct, Install, Own,)
Operate, Maintain and Otherwise Control)
and Manage a 345,000-volt Electric)
Transmission Line from Palmyra, Missouri)
to the Iowa Border and an Associated)
Substation Near Kirksville, Missouri)

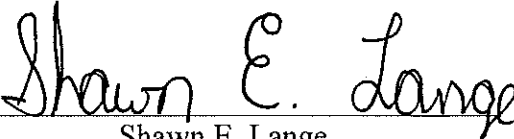
Case No. EA-2015-0146

AFFIDAVIT OF SHAWN E. LANGE

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

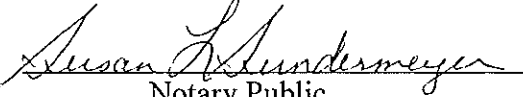
COMES NOW Shawn E. Lange and on his oath declares that he is of sound mind and lawful age; that he contributed to the attached Rebuttal Testimony; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.


Shawn E. Lange

Subscribed and sworn to before me this 20th day of October, 2015.

SUSAN L. SUNDERMEYER Notary Public - Notary Seal State of Missouri Commissioned for Callaway County My Commission Expires: October 28, 2018 Commission Number: 14942086
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Notary Public

REBUTTAL TESTIMONY

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CASE NO. EA-2015-0146

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REBUTTAL TESTIMONY

OF

SHAWN E. LANGE

AMEREN TRANSMISSION COMPANY OF ILLINOIS

CASE NO. EA-2015-0146

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 Utility Engineering Specialist III in the Engineering Analysis Unit, Operational Analysis Department, Commission Staff Division.

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

A. In December of 2002, I received a Bachelor of Science Degree in Mechanical Engineering from the University of Missouri, at Rolla. I joined the Commission Staff (“Staff”) in January 2005. I am a registered Engineer-in-Training in the State of Missouri. A copy of my credentials and case experience is attached as Schedule SEL-R-1.

Overview

Q. What is the purpose of your testimony?

A. I will discuss the need for a new 345,000 volt (345-kV) electric transmission line running generally from Palmyra, Missouri, and extending westward to a new substation located near Kirksville, Missouri, and a new 345-kV transmission line extending from the new substation north to the Iowa border, and a 2.2-mile 161,000 volt (161-kV) connector line

1 from the new substation to an interconnection with the existing Adair substation owned by
2 Union Electric Company d/b/a Ameren Missouri (“Project”)¹.

3 Q. Did Staff perform a bottom up analysis on this project, including but not
4 limited to modeling the MISO system with and without this line?

5 A. No, Staff does not have the necessary data to perform such modeling.

6 Q. What analysis did Staff perform?

7 A. Staff reviewed ATXI’s conditional Application and the direct testimony of
8 ATXI witnesses Dennis D. Kramer, James Jontry, David Endorf , the Regional Generation
9 Outlet Study (“RGOS”), the Joint and Coordinated System Plan documentation (“JCSP”), the
10 MISO Transmission Expansion Plan (“MTEP”) 2011 and the MTEP 14 MVP Triennial
11 Review.

12 Q. Do any other Staff witness review need for this Project?

13 A. Yes, Staff witness Daniel I. Beck will look at any effects of the Renewable
14 Energy Standard as well as any effects of the CPP. Staff witness Sarah Kliethermes reviews
15 the modeling efforts of ATXI and MISO.

16 Q. Did ATXI present evidence of need?

17 A. Yes. In summary of why the Mark Twain project is necessary and beneficial
18 to the region, ATXI witness Dennis Kramer stated, “The Project is an integral part of a
19 portfolio of Multi-Value Projects (“MVPs”) that was approved by the MISO Board of
20 Directors in December 2011 as necessary to facilitate the delivery of renewable energy,
21 resolve numerous reliability issues, reduce transmission line losses, and provide economic and
22 efficiency benefits to customers within the MISO footprint.”² In summary as to why the

¹ See ATXI Witness Dennis Kramer Direct Pg. 4, lines 6-18

² ATXI direct witness Dennis Kramer Pg. 5, lines 14-18

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1 Mark Twain project is beneficial to Missouri, ATXI witness Dennis Kramer stated, “When
2 the Project is fully implemented, it will provide additional transmission capacity to facilitate
3 the delivery of renewable energy resources to Missouri, market efficiency benefits as
4 described by ATXI witness Dr. Todd Schatzki, ongoing local economic benefits as described
5 by ATXI witness Dr. Geoffrey Hewings and improved reliability and voltage support to the
6 transmission system in northern Missouri”.³

7 Q. Does Staff recommend the Commission approve the Application?

8 A. Yes. Staff’s analysis indicates that, with the imposition of appropriate
9 conditions, the Application is sufficient to address the Commission’s Tartan criteria.⁴ This
10 testimony is summarized by Staff witness Daniel I. Beck, and the following witnesses address
11 the following elements: Daniel I. Beck addresses applicant qualification as well as need with
12 regard to Renewable Portfolio Standards and other environmental regulations, Sarah L.
13 Kliethermes addresses public interest, David Murray addresses financial ability, Michael L.
14 Stahlman addresses economic feasibility, and I will address need with regard to reliability.

15 **MISO Transmission Planning**

16 Q. What is the function of a regional transmission organization (“RTO”)?

17 A. FERC’s Order 2000 and Order 2000-A identified the minimum functions of an
18 RTO. Applicable to this Application is the function of transmission system planning and
19 expansion.

20 Q. Is the Application the result of RTO-coordinated planning and expansion?

³ ATXI direct witness Dennis Kramer Pg. 5 Line 20- Pg. 6 line 2

⁴ *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):

- 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.

1 A. Yes, the current application is a part of Midcontinent Independent System
2 Operator (“MISO”) Transmission Expansion Plan (“MTEP”) 2011.

3 Q. What requirements must a RTO satisfy regarding planning and expansion?

4 A. As stated at pages 485-486 between footnotes 591 and 592 of FERC Order No.
5 2000, December 20, 1999, FERC Docket No. RM99-2-000:

6 We reaffirm the NOPR proposal that the RTO must have ultimate
7 responsibility for both transmission planning and expansion within its region
8 that will enable it to provide efficient, reliable and non-discriminatory service
9 and coordinate such efforts with the appropriate state authorities. In carrying
10 out this overall responsibility, the Commission has concluded that the NOPR's
11 three separate requirements for RTO planning and expansion must also be
12 satisfied or, in the alternative, the RTO must demonstrate that an alternative
13 proposal is consistent with or superior to these three requirements.
14 Specifically, an RTO must satisfy the requirement to: (1) **encourage market-**
15 **motivated operating and investment actions for preventing and relieving**
16 **congestion**; (2) accommodate efforts by state regulatory commissions to
17 create multi-state agreements to review and approve new transmission
18 facilities, coordinated with programs of existing Regional Transmission
19 Groups (RTGs) where necessary; and (3) file a plan with the Commission
20 with specified milestones that will ensure that it meets the overall planning
21 and expansion requirement no later than three years after initial operation, if
22 the RTO is unable to satisfy this requirement when it commences operation.
23 [Emphasis added]

24 Q. What is MISO’s regional planning process?

25 A. In summary, MISO’s “Transmission Planning” section of its Frequently Asked
26 Questions document on its internet website explains as follows at pages 22-23:

27 RTO planning functions include the provision of long-term
28 Transmission Service, Interconnection Service, and regional planning. These
29 services are provided collaboratively with member TOs [Transmission
30 Owners], consistent with the Transmission Owners Agreement. MISO is
31 registered with NERC as a Planning Authority and, as such, fully evaluates
32 and plans for the reliability of the transmission system in accordance with
33 NERC’s planning standards. MISO develops an annual regional expansion
34 plan based on expected use patterns and analysis of the performance of the
35 transmission system in meeting both reliability needs and the needs of the
36 competitive bulk power market, under a wide variety of contingency
37 conditions.
38

1 This analysis and planning process integrates into the development of
2 the regional plan among other things:

- 3 • Transmission needs identified from Facilities Studies carried out in
4 connection with specific transmission service requests.
- 5 • Transmission needs associated with generator interconnection service.
- 6 • Transmission needs identified by the Transmission Owners in connection
7 with their planning analyses in accordance with local planning processes to
8 provide reliable power supply to their connected load customers and to
9 expand trading opportunities, better integrate the grid and alleviate
10 congestion.
- 11 • Transmission planning obligations of a Transmission Owner imposed by
12 federal or state laws or regulatory authorities.
- 13 • Plans and analyses developed by the Transmission Provider to provide for a
14 reliable transmission system and to expand trading opportunities better
15 integrate the grid and alleviate congestion.
- 16 • Identification, evaluation, and analysis of expansions to enable the
17 transmission system to fully support the simultaneous feasibility of all Stage
18 1A ARRs [Auction Revenue Rights].
- 19 • Inputs from the Planning Advisory Committee.
- 20 • Inputs, if any, provided from state regulatory authorities having jurisdiction
21 over any of the Transmission Owners and by the Organization of MISO
22 States.

23
24 The development of the regional plan is undertaken in an open and
25 transparent planning process as prescribed by FERC Order 890, which
26 provides multiple opportunities for all stakeholders to review and provide
27 input into the plan. These FERC planning principles also require close inter-
28 regional planning coordination with neighboring systems and are
29 accomplished via the joint operating agreements included as rate schedules to
30 the MISO Tariff. Periodic inter-regional plans are developed that ensure that
31 the systems of MISO members are not negatively impacted by the planning
32 decisions of nearby entities.

33 Planning for the reliable interconnection of new generation, of both
34 affiliated and independent power producers is provided for by MISO as the
35 Transmission Provider. System impact and Facilities Studies are conducted
36 collaboratively with the impacted Transmission Owners and adhere to the
37 local planning criteria of those owners, as well as to national and regional
38 planning criteria under the NERC umbrella.⁵

39 Q. Has MISO modeled plans specifically related to wind integration?

⁵https://www.misoenergy.org/Library/Repository/Communication%20Material/About%20Us_FAQ/TransmissionPlanningFAQ.pdf

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1 A. Yes. MISO, with help from state regulators and industry stakeholders,
2 conducted the Regional Generation Outlook Study. The RGOS was conducted with the
3 following objectives⁶:

- 4 • Analyzing and planning for each state's renewable portfolio standards.
- 5 • Setting goals for meeting load-serving entities' renewable portfolio standards.
- 6 • Balancing distribution of wind zones to consider local desires, optimal wind
7 conditions and distances from load.
- 8 • Providing consumers with energy solutions at the least-possible cost.
- 9 • Identifying transmission expansion starter projects.

10 MISO also was involved with the Joint Coordinated System Plan. "The Joint
11 Coordinated System Plan 2008 ("JCSP'08") analysis offers a conceptual regional
12 transmission and generation system plan for a large portion of the Eastern Interconnection in
13 the United States. Most of the major transmission operators in the Eastern Interconnection
14 contributed to the development of the JCSP."⁷ The JCSP "looks at two scenarios that expand
15 transmission and generation opportunities between 2008 and 2024— a Reference Scenario and
16 a 20% Wind Energy Scenario in support of the U.S. Department of Energy's Eastern Wind
17 Integration and Transmission Study."⁸

18 MISO states that its "Multi-Value Projects" ("MVP") portfolio "will deliver
19 reliability, public policy and economic benefits across the system. MISO's energy zones are
20 designed to optimize wind generation placement and to minimize distance to other fuel
21 sources such as natural gas. When connected to the overall grid by the MVP projects, the
22 zones will enable access to low-cost energy for the entire MISO footprint."⁹

⁶ <https://www.misoenergy.org/Planning/Pages/RegionalGenerationOutletStudy.aspx>

⁷ <https://www.misoenergy.org/Planning/Pages/StudyRepository.aspx>

⁸ https://www.misoenergy.org/Library/Repository/Study/JCSP/JCSP_Report_Volume_1.pdf, Pg. 1

⁹ <https://www.misoenergy.org/Library/Repository/Communication%20Material/One-Pagers/MVP%20Benefits%20-%20Total%20Footprint.pdf>

1 MISO states that its “Value Proposition” reflects that its “continued efforts in regional
2 planning enables more economic placement of wind resources in the region. Economic
3 placement of wind resources reduces overall capacity needed to meet required wind energy
4 output.”¹⁰

5 MISO States in its MTEP 2011 that “The proposed Multi Value Project (MVP)
6 portfolio will create a regional network that provides reliability, public policy and economic
7 benefits spread across MISO, such as

- 8 • Reliability benefits: The proposed MVP portfolio mitigates approximately 650
9 reliability violations for more than 6,700 system conditions, increasing the
10 transmission system’s robustness under normal operation and extreme events.
- 11 • Public policy benefits: The proposed MVP portfolio enables the delivery of 41
12 million MWh of renewable energy.
- 13 • Economic benefits: The proposed MVP portfolio provides benefits in excess of the
14 portfolio cost under all scenarios studied. These benefits are spread throughout the
15 system, and each zone receives benefits of at least 1.6 and up to 2.8 times the costs
16 it incurs.
- 17 • Qualitative benefits: The proposed MVP portfolio provides a number of additional
18 qualitative benefits. For example, the transmission will support a variety of
19 generation policies through utilizing a set of energy zones which support wind,
20 natural gas and other fuel sources
- 21 • Job creation: The construction of the proposed MVP portfolio will create between
22 17,000 and 39,800 direct jobs, or between 28,400 and 74,000 total jobs, including
23 construction, supplier and downstream impacts.”¹¹

24 **Reliability Benefits**

25 Q. What reliability benefits does MISO claim the Mark Twain Project provides?

26 A. MISO states “The new 345 kV lines from Ottumwa to West Adair to Palmyra
27 will provide an outlet for wind generation in the western region to move toward the more
28 densely populated load centers to the east. In addition to providing a wind outlet, the new
29 lines will provide reliability benefits by mitigating a number of contingent outage events

¹⁰ <https://www.misoenergy.org/Library/Repository/Communication%20Material/One-Pagers/One%20Pager%20-%202014%20Value%20Proposition.pdf>

¹¹ <https://www.misoenergy.org/Library/Repository/Study/MTEP/MTEP11/MTEP11%20Report.pdf>, Pg. 1

1 during peak and shoulder periods, where the wind generation component is much higher. The
2 addition of the 345 kV lines and step down transformer at West Adair is especially effective
3 in resolving 161 kV line overloads on the lines out of West Adair and preventing the loss of
4 the generation at West Adair during certain NERC Category C events¹². This project will
5 mitigate two bulk electric system (BES) NERC Category B thermal constraints and five
6 NERC Category C constraints. It will also relieve three non-BES NERC Category B and two
7 NERC Category C constraints.”¹³

8 Q. Does Staff agree?

9 A. Assuming the same level and location of wind as modeled, yes Staff agrees
10 this project would mitigate and/or relieve the NERC Category B and NERC Category C
11 constraints as was stated by MISO.

12 Q. Mr. Kramer states “It will also increase reliability in the Northeast portion of
13 Missouri, including the Kirksville area.”¹⁴ Does Staff agree?

14 A. Yes. For northeast Missouri, including Kirksville, this project would maintain
15 voltage levels if certain NERC Category C contingencies were to happen under certain system
16 conditions¹⁵.

17 **Regional Transmission System Benefits**

18 Q. What regional transmission system benefits has ATXI proposed this project
19 will provide?

20 A. Mr. Kramer states “The Project is an integral part of a portfolio of Multi-Value
21 Projects (“MVPs”) that was approved by the MISO Board of Directors in December 2011 as

¹² “NERC Category C events are events resulting in the loss of two or more elements,”
http://www.nerc.com/files/TPL-001-0_1.pdf Pg. 4

¹³ <https://www.misoenergy.org/Library/Repository/Study/MTEP/MTEP11/MTEP11%20Report.pdf>, pg. 31

¹⁴ ATXI direct witness Dennis Kramer Pg. 11, Lines 9-10

¹⁵ <https://www.misoenergy.org/Library/Repository/Study/Candidate%20MVP%20Analysis/MVP%20Portfolio%20Analysis%20Full%20Report.pdf>, Pg. 31

1 necessary to facilitate the delivery of renewable energy, resolve numerous reliability issues,
2 reduce transmission line losses, and provide economic and efficiency benefits to customers
3 within the MISO footprint.”¹⁶

4 Q Does Staff agree?

5 A. While I can only speak to the reliability issues and the ability to facilitate the
6 delivery of renewable energy, yes this project improves the reliability of the system as
7 modeled and, when paired with the Illinois River Project, will provide an avenue of 345 kV
8 transmission lines along the Ottumwa-Sugar Creek path that may be used to move renewable
9 energy.

10 **MISO Study Concerns**

11 **Qualitative Benefits Concerns**

12 Q. Does Staff have concerns about the project described in the Application based
13 on the results and/or assumptions of the analysis performed by MISO or on behalf of MISO
14 with regard to the qualitative benefits as outlined by MISO?

15 A. Yes. As was stated earlier, MISO, along with RTOs and other entities created
16 the RGOS and the JCSP’ 08. These studies were carried out during the mid- to late-2000’s
17 with the RGOS study being issued on November 19, 2010, and the JCSP for 2008. During
18 this same time, there were four wind generators in Missouri Zone C area¹⁷ asking MISO for
19 an interconnection agreement. The four wind generators were given the project numbers
20 G744, G698, G578, and G448.

21 Project G448 was withdrawn without performing any of the necessary studies to be
22 able to obtain an interconnection agreement. The Final System Impact Study for project

¹⁶ Kramer Direct Pg. 5, line 14-18

¹⁷<https://www.misoenergy.org/Library/Repository/Study/RGOS/Regional%20Generation%20Outlet%20Study.pdf>, Figure2.3-1 Pg. 18

1 G578 determined that there were constraints in the load flow analysis as well as the
2 deliverability analysis that would require transmission upgrades or the generator would be
3 deemed “zero MW deliverable”.¹⁸ The Final System Impact Study for projects G698 and
4 G744 analyzed two scenarios; (Scenario 1) connection to the Adair-Appanoose 161 kV
5 transmission line or (Scenario 2) connection to a new Thomas Hill-Ottumwa 345 kV line
6 (regional plan). Due to the several constraints identified in Scenario 1, the study focused
7 primarily on Scenario 2. According to the System Impact Study Report, “The results of the
8 regional plan indicate that there are two elements identified as injection related constraints.
9 These two constraints would need mitigation prior to the interconnection of the generators. In
10 addition, two network upgrades would be required to meet Ameren’s¹⁹ local planning
11 criteria.”²⁰

12 The proposed Thomas Hill-Ottumwa 345 kV line was later changed to the Mark
13 Twain Line. MISO stated in MTEP 2011:

14 An alternative was to incorporate an additional 345 kV line from West Adair
15 to Thomas Hill. While improving reliability in the area, the addition would not
16 improve the distribution of benefits within MISO. Thus the alternative was
17 removed, and the proposed project was recommended.²¹

18 The four proposed wind farms ultimately withdrew from or were suspended in the queue, so
19 questions arose as to if the 345 kV line from Thomas Hill-Ottumwa was needed.

20 At this time, one of these projects (G744²²) has withdrawn from the queue
21 with a second (G578²³) in suspension. Due to the status of these projects, it is

¹⁸ https://www.misoenergy.org/_layouts/MISO/ECM/Redirect.aspx?ID=29546, *Final G578 System Impact Study Report* Pg. 42

¹⁹ Ameren On Behalf of Its Transmission Owning Affiliates, Including Ameren Missouri, Ameren Illinois, and Ameren Transmission Company of Illinois.

²⁰ https://www.misoenergy.org/Library/Repository/Study/Generator%20Interconnection/GI-G698_G744-SIS_Report.pdf, Pg. 15

²¹ <https://www.misoenergy.org/Library/Repository/Study/MTEP/MTEP11/MTEP11%20Report.pdf>, Pg. 31

²² 150 MW wind farm in Schuyler County, Missouri

²³ 300 MW wind farm in Adair County, Missouri

1 unknown at this time whether the Thomas Hill-Ottumwa 345 kV line will be
2 needed.²⁴

3 Q. What is Staff's concern?

4 A. As one of its primary functions, the current Mark Twain Project line will
5 perform much of the same function as the once proposed Thomas Hill-Ottumwa 345kV line.
6 Since there were questions as to the need of the Thomas Hill-Ottumwa line if the wind
7 projects did not develop in Missouri Zone C area, much of the Mark Twain Project may not
8 be physically necessary if that area of Missouri is not developed with wind.

9 **Wind Development**

10 Q. Has wind developed in Missouri Zone C area?

11 A. No. As previously stated, projects G744, G698, G578, and G448 all have been
12 withdrawn from the MISO generation interconnection queue. There was one additional
13 project, H038, which entered the interconnection queue in 2010, but has since been
14 withdrawn. Regarding the Tartan criterion for need, it is not necessary to show an essential or
15 indispensable need for something to meet that criterion. There must be a showing that the
16 public interest would be served by the provision of the item. Thus, regarding the granting of a
17 CCN relying in part on the development of wind energy in Missouri in general or in an area
18 approximately near to the Mark Twain Project itself, it is not essential or indispensable to
19 show that the Mark Twain Project will result in the development of wind energy in Missouri
20 in general or in an area approximately near to the Mark Twain Project itself so long as it can
21 be shown that the public interest would be served by the granting of the CCN justifying its
22 cost.

²⁴https://www.misoenergy.org/Library/Repository/Study/Generator%20Interconnection/GI-SPA-2008-NOV-Missouri-SIS_Report.pdf, Pg. 23

1 **Storm Restoration Plan**

2 Q. Does ATXI have disaster and/or storm restoration or recovery plans?

3 A. Yes. ATXI has provided a copy of its storm restoration plan.²⁵

4 **Recommendation for Mark Twain Project**

5 Q. What is Staff's conclusion with regard to the MVP process for the Mark Twain
6 project?

7 A. The MVP process is a collaborative process that takes stake holder input from
8 market members, transmission owners, and transmission customers. While there are concerns
9 with the details of the MVP process for the Mark Twain project, ultimately those concerns do
10 not rise to the level of finding there is not sufficient need for the project. The term "need"
11 does not mean "essential" or "indispensable", but that a service would be cost justified²⁶.

12 Q. Does Staff recommend that conditions be imposed on any authorization of
13 ATXI's receipt of a CCN to build and operate the Mark Twain Project as described in the
14 testimony of Staff witness Daniel I. Beck?

15 A. Yes. Staff witness Daniel I. Beck is presenting all of Staff's recommended
16 conditions in his rebuttal testimony.

17 Q. Does this conclude your rebuttal testimony?

18 A. Yes.

²⁵ ATXI response to Staff Data Request No. 20.

²⁶ State ex rel. Intercon Gas, Inc. v. Pub. Serv. Commission of Missouri, 848 S.W.2d 593, 597 (Mo. Ct. App. 1993)

SHAWN E. LANGE

PRESENT POSITION:

I am a Utility Engineering Specialist III in the Engineering Analysis Section, Energy Unit, Utility Operations Department, Regulatory Review Division.

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 Engineer-in-Training in the State of Missouri. I have spoke at NCDC's workshop on alternative climate normals.

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
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

Case Number	Utility	Testimony	Issue
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
EA-2014-0223	Complaint of Noranda Aluminum	Rebuttal	Weather Normalization
EA-2014-0207	Grain Belt Express CCN	Rebuttal	Safety Interconnection Studies
		Surrebuttal	Environmental Impacts
ER-2014-0258	Union Electric Company d/b/a Ameren Missouri	Staff Report	Variable Fuel Costs Net System Input
ER-2014-0351	Empire District Electric Company	Staff Report	Variable Fuel Costs Net System Input
ER-2014-0370	Kansas City Power & Light Company	Staff Report	Variable Fuel Cost Net System Input
		True-up Direct	Variable Fuel Costs LaCygne In-service