Exhibit No.:	
Issue(s):	Ameren Transmission System Planning; Need, Reliability, and Operational Benefits; Alternatives Considered
Witness:	Justin Davies
Type of Exhibit:	Direct Testimony
Sponsoring Party:	Ameren Transmission Company of Illinois
File No.:	EA-2025-0087
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MISSOURI PUBLIC SERVICE COMMISSION

FILE NO. EA-2025-0087

DIRECT TESTIMONY

OF

JUSTIN DAVIES

ON

BEHALF OF

AMEREN TRANSMISSION COMPANY OF ILLINOIS

St. Louis, Missouri
December, 2024

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DIRECT TESTIMONY

OF

JUSTIN DAVIES

FILE NO. EA-2025-0087

I. INTRODUCTION AND BACKGROUND

Q. Please state your name and business address.

A. My name is Justin Davies. My business address is 1901 Chouteau Avenue, St. Louis, Missouri 63103.

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

A. I am employed by Ameren Services Company (Ameren Services) as Director of Transmission Planning.

Q. What are your responsibilities as Director of Transmission Planning?

A. Ameren Services' Transmission Planning group provides transmission planning and related services for Ameren Corporation's transmission-owning subsidiaries, Ameren Transmission Company of Illinois (ATXI), Ameren Illinois Company d/b/a Ameren Illinois (Ameren Illinois), and Union Electric Company d/b/a Ameren Missouri (Ameren Missouri). In general, the Transmission Planning group applies the same established Ameren Transmission Planning Criteria and Guidelines, as filed with FERC, across all of the electric transmission-owning utilities. As Director of Transmission Planning, I am generally responsible for the conceptual design and optimum development of those utilities' electric transmission systems, which I refer to collectively as the "Ameren Transmission System."

Q. Please describe your educational and professional background.

A. I graduated from Bath University in 1995 with both a Bachelor of Engineering and Master of Engineering in Electrical and Electronic Engineering. I have held a Professional Engineering License in the State of Missouri since 2001.

I have 27 years of electric utility experience, working as an electrical engineer for London Electricity and the City Utilities of Springfield, Missouri before starting with the Ameren family of companies in 2002. For the majority of my career at Ameren, I have worked in Ameren Services' System Protection group, designing control schemes, setting relays, and performing fault analysis across the entirety of the Ameren electrical system, including the generation, transmission, and distribution functions. In 2015, I accepted the position of Supervisor of Transmission System Protection, supervising System Protection engineers. In 2019, I became the Manager of Transmission Planning, which evolved into my current role as Director of Transmission Planning, leading a team of engineers performing transmission planning for the entire Ameren Transmission System.

In 2021, in addition to my role at Ameren Services, I became an adjunct instructor at Washington University teaching Power Electronics to junior and senior year college students.

Q. Have you previously testified before the Missouri Public Service Commission?

A. Yes. I have provided testimony on behalf of ATXI in Commission Docket EA-2024-0302.

II. PURPOSE OF TESTIMONY AND EXHIBITS

Q. Are you familiar with the electric transmission project for which ATXI is requesting Commission approvals in this proceeding?

A. Yes. ATXI, the Missouri Joint Municipal Electric Utility Commission (MJMEUC), and Ameren Missouri are working together to build a more reliable and resilient energy grid for the future, and to construct, acquire, and operate certain transmission assets as part of the Northern Missouri Grid Transformation Program (the Program), which is described in the direct testimony of ATXI witness Mr. Shawn Schukar. The Program encompasses the Missouri jurisdictional portion of 3 of the 18 Multi-Value Projects (MVPs) approved by Midcontinent Independent System Operator, Inc. (MISO) as part of its Long Range Transmission Planning (LRTP) Tranche 1 Portfolio incorporated into the 2021 MISO Transmission Expansion Plan (MTEP21). This proceeding concerns one of those projects, the Denny-Zachary-Thomas Hill-Maywood (DZTM) Project (the Project or DZTM Project), which constitutes the second phase (Phase 2) of the Program and is largely designed to be operated in conjunction with the other two Projects. These other two projects constitute Phase 1 of the Program and are the subject of pending Docket EA-2024-0302.

The DZTM Project includes the construction of slightly over 200 miles of new 345 kV transmission lines with three transmission line segments across ten Missouri counties: DeKalb, Daviess, Grundy, Sullivan, Adair, Knox, Lewis, Marion, Macon, and Randolph. The first new line segment will run approximately 102 miles or 107 miles (depending on the configuration option approved) from ATXI's new Denny Substation in DeKalb County to ATXI's existing Zachary Substation near Kirksville, Missouri (the DZ Segment). The DZ Segment consists of two configuration options: a single circuit option (the DZ Single Circuit Option), which will mostly be

routed along existing or planned Associated Electric Cooperative, Inc. (AECI) transmission line corridors; or a double circuit option (the DZ Double Circuit Option), which will rebuild a section of an existing AECI 161 kV transmission line in a double circuit configuration and build a greenfield section in a double circuit configuration with a planned AECI 161 kV transmission line, in order to collocate the new 345 kV circuit on a single set of structures for the vast majority of the DZ Segment.

The second line segment will be approximately 60 miles in length and will connect the existing Zachary Substation to ATXI's existing Maywood Substation near Palmyra, Missouri (the ZM Segment), routed along existing ATXI transmission line corridors.

The third line segment consists of approximately 44 miles rebuilt on an existing Ameren Missouri 161 kV transmission line from the Zachary Substation to AECI's existing Thomas Hill Substation in Randolph County (the ZT Segment) and will almost entirely be collocated on the same structures with Ameren Missouri facilities.

The Phase 2 DZTM Project includes new transmission lines and support structures. The Program, including the DZTM Project, will ensure continued energy reliability and resiliency for Missouri electricity customers as conventional generation sources wind down or cease operation and renewable and distributed generation sources come online in Missouri and the broader Midwest region. In this proceeding, ATXI is requesting certain approvals for the Phase 2 DZTM Project from the Commission to make Phase 2 a reality and deliver the Program's benefits to Missouri electricity customers.

Q. What is the purpose of your direct testimony?

A. The purpose of my direct testimony is to support ATXI's approval requests regarding the Phase 2 DZTM Project. I, along with other ATXI witnesses and MISO witness Mr. Jeremiah Doner,[1] demonstrate why the Program, including the Phase 2 DZTM Project, is necessary and will serve the public interest by supporting ATXI's provision of reliable and resilient service to Missouri customers. Toward that end, I address three topics. First, I generally explain ATXI's electric transmission systems in Missouri and how Ameren Services Transmission Planning studies and plans for those systems. Next, I explain how Ameren Services Transmission Planning, in coordination with MISO, studied and planned for the Program specifically, including how the Program is needed to mitigate reliability issues in Missouri and how alternatives to the Program were considered. Finally, I explain the transmission system operability and other tangential benefits that the Program will provide Missouri electricity customers.

Q. Are you sponsoring any exhibits with your direct testimony?

A. Yes. I am sponsoring:

- **Schedule JD-D1** – NERC TPL-001-4;
- **Schedule JD-D2** – Ameren Transmission Planning Criteria and Guidelines (3/27/2024, rev. 23); and
- **Schedule JD-D3** – MISO MTEP21 Report Addendum: LRTP Tranche 1 (MTEP21 LRTP Addendum).

[1] It is ATXI's understanding that MISO intends to move to intervene and file the direct testimony of Mr. Jeremiah Doner in support of the Application shortly after ATXI's filing of its Application and direct testimony. All references to the direct testimony of MISO witness Mr. Jeremiah Doner reflect ATXI's understanding of his forthcoming testimony.

Q. Are you offering any legal opinions in your direct testimony?

A. No. Although I provide my lay understanding of certain Federal Regulatory Energy Commission (FERC) and MISO reliability and transmission planning requirements, I am not an attorney and none of my direct testimony is intended to offer any legal opinions.

III. THE AMEREN TRANSMISSION SYSTEM IN MISSOURI

Q. Please generally describe ATXI's electric system in Missouri.

A. ATXI's system in Missouri is made up almost entirely of high voltage 345 kilovolt (kV) electric transmission lines. Although the system does not include a significant amount of lower voltage transmission lines (i.e., 161 kV, 138 kV), it interconnects at certain points to lower voltages for the purposes of delivering energy to Missouri customers in addition to moving large amounts of energy across the Ameren Transmission System.

Q. Please generally describe Ameren Missouri's electric system.

A. Ameren Missouri's system is located in Missouri and generally traverses central and eastern Missouri, where Ameren Missouri serves electric distribution customers. Ameren Missouri's electric system comprises two functional levels, each with its own unique design and operating characteristics for planning and operating purposes: (1) a transmission system, which is a networked system of primarily 345 kV, 161 kV, and 138 kV transmission lines and related facilities; and (2) a distribution system, which is made up of sub-transmission level facilities (69 kV and 34.5 kV) and the distribution level facilities (12 kV and 4 kV) that ultimately deliver electricity to most end use customers in the State. (A limited number of large industrial customers, who require large amounts of energy, are served directly from transmission or sub-transmission facilities.) Ameren Missouri's sub-transmission system includes both networked facilities—that is,

multiple lines operating in parallel with more than one simultaneous path of energy flow to where the energy is consumed (or the "load")—and radial facilities—that is, a single source with one path of the energy flow to the load.

Q. How do the Ameren Missouri and ATXI transmission systems interrelate?

A. Both systems are integral parts of the broader networked transmission system that comprises the grid within MISO's expansive footprint, which includes a portion of the grid in Missouri, as explained by MISO witness Mr. Doner. Further, ATXI's and Ameren Missouri's transmission systems are planned, designed, and operated in an integrated manner. Historically, the Ameren Transmission System was planned and designed to move large quantities of electric energy from centralized transmission-connected bulk generation sources to Ameren Missouri's distribution system. It was also planned and designed to move electric energy between neighboring utility transmission systems through networked flows.

Q. You said the Ameren Transmission System was "historically" planned in that manner. Is the historical planning approach changing?

A. Yes. The MISO region is experiencing a changing and diversifying energy resource mix, including renewables, as explained by ATXI witness Mr. Schukar and MISO witness Mr. Doner. While the Ameren Transmission System will continue to serve its historical purpose, now the systems are also being planned and designed to move energy from more distributed resources, including distribution-connected renewable generation sources, to where the energy is needed.

Q. You indicated that the ZT Segment of the Phase 2 DZTM Project will be rebuilt on an existing Ameren Missouri 161 kV transmission line. What electric facilities does Ameren Missouri own and operate today in the area of the ZT Segment of the Phase 2 DZTM Project?

A. Ameren Missouri owns and operates 161 kV transmission facilities along the route for the ZT Segment of the DZTM Project (from ATXI's Zachary Substation to AECI's existing Thomas Hill Substation) that AXTI is proposing in this proceeding. Ameren Missouri's 161 kV transmission line along the ZT Segment will be rebuilt as a double circuit configuration, and the new 345 kV circuit will almost entirely be collocated on the same structures with Ameren Missouri's facilities. ATXI witness Mr. Molitor describes those facilities. As explained by other witnesses in this proceeding, ATXI is requesting Commission approval in this proceeding to construct, own, and operate new high voltage transmission facilities (namely a new 345 kV line and new supporting structures) to be co-located and co-operated with Ameren Missouri's existing 161 kV transmission circuit between the Zachary Substation and the Thomas Hill Substation. Co-location of new transmission facilities along existing transmission corridors generally promotes efficient and cost-effective transmission construction because it reduces the need to route transmission facilities in new, or "greenfield," areas, which also reduces the number of new landowners impacted by the transmission facilities.

Q. Will any other segment of the DZTM Project include double circuit structures and collocated facilities?

A. Possibly. As I noted above, the DZ segment includes both single circuit and double circuit configuration options identified, respectively, as the DZ Single Circuit Option and the DZ

Double Circuit Option. As discussed in more detail by ATXI witness Rudis, if the Commission were to condition the grant a Certificate of Convenience and Necessity (CCN) for the DZTM Project on use of the DZ Double Circuit Option, then the DZ Segment would include a section with rebuilt double circuit structures along the route of an existing AECI 161 kV transmission line and a section with greenfield construction in a double circuit configuration along the route of a planned AECI 161 kV transmission line, with the new 345 kV circuit co-located on a single set of double circuit structures for the vast majority of the DZ Segment.

IV. TRANSMISSION SYSTEM PLANNING

A. Planning Generally

Q. Generally, how does Ameren Services Transmission Planning undertake planning for the Ameren Transmission System?

A. Ameren Services Transmission Planning continuously and rigorously studies and plans the Ameren Transmission System to ensure that the interconnected system remains adequate, efficient, reliable, and cost effective for Missouri electricity customers. At a high level, that means studying and planning the system to comply with established transmission planning standards and requirements. The North American Electric Reliability Corporation (NERC), which is the FERC-certified Electric Reliability Organization, for example, has established FERC-approved Transmission Planning (TPL) requirements. Those requirements include, among others, NERC standard TPL-001-4, which was applicable for the design of the DZTM Project and recently revised to TPL-001-5, which sets out minimum Transmission System Planning Performance Requirements and is intended to "establish Transmission system planning performance requirements within the planning horizon to develop a Bulk Electric System (BES) that will

operate reliably over a broad spectrum of System conditions and following a wide range of Contingencies." See NERC TPL-001-4, attached as **Schedule JD-D1**. Ameren Services Transmission Planning studies and plans the Ameren Transmission System to ensure continuing compliance with NERC TPL standards and, to my knowledge, the Ameren Transmission System has not experienced any period of noncompliance with those standards.

Q. Are there other established standards and requirements that Ameren Services Transmission Planning plans the Ameren Transmission System to comply with to ensure an adequate, efficient, reliable, and cost-effective system?

A. Yes. Ameren Services Transmission Planning studies and plans the Ameren Transmission System to comply with both NERC Standards and also its own established Ameren Transmission Planning Criteria and Guidelines, as filed with FERC. The most recent version of those Planning Criteria and Guidelines are attached as **Schedule JD-D2**. Those criteria and guidelines not only mandate compliance with the federally required minimum performance parameters, like the NERC TPL standards, but also additional performance requirements that are specific to the Ameren Transmission System. For example, consistent with the NERC Transmission Planning Standards and Ameren's Criteria and Guidelines, Ameren Services Transmission Planning regularly studies and plans for, on typically 2-, 5-, and 10-year horizons, both steady state scenarios, which include voltage and thermal studies, and stability scenarios, which include dynamic studies for angular stability and transient voltage recovery. Ameren Services Transmission Planning also conducts short circuit studies. Additionally, Ameren Services Transmission Planning studies and plans for, again on typically 2-, 5-, and 10-year horizons, baseline performance and performance under sensitivities (such as a higher load level as would be

expected during summer peaks or winter storm events) to ensure the continued reliability of the Ameren Transmission System.

Q. Does Ameren Services Transmission Planning coordinate with other stakeholders to plan for the continued reliability of the Ameren Transmission System?

A. Yes, and this is critical because of the interconnected nature of the transmission grid. Most notably, Ameren Services Transmission Planning coordinates with MISO, the Regional Transmission Organization (RTO) that serves as the Ameren transmission-owning utilities' NERC Reliability Coordinator. MISO witness Mr. Doner describes MISO, its role in ensuring the reliability of the transmission grid within its expansive footprint, and its regional transmission planning role. As Mr. Doner explains, MISO performs its own recurring studies and planning for the grid within its footprint, which includes portions of Missouri. Among other efforts, that planning includes MISO's annual Transmission Expansion Plan process, or "MTEP." The MTEP specifically and continuously assesses, via an iterative and stakeholder informed process, the reliably of the MISO transmission grid, including the Ameren Transmission System. Ameren Services Transmission Planning actively participates in the annual MTEP process on behalf of the Ameren transmission-owning utilities. MISO also periodically performs broader system studies targeted to address specific regional transmission concerns. The Long Range Transmission Planning (LRTP) process that Mr. Doner discusses is an example of such a study. It was prompted by the changing energy fleet in MISO. Ameren Service Transmission Planning also actively participates in these processes as well.

Q. Does Ameren Services Transmission Planning participate in MISO in any other ways?

A. Yes. For example, Ameren Services Transmission Planning, along with other Ameren Services personnel on behalf of the transmission-owning utilities, participates in a variety of MISO committees, such as MISO's Planning Advisory Committee and Planning Subcommittee. And Ameren Services Transmission Planning attends other MISO meetings, such as Subregional Planning Meetings (SPMs), which are held periodically throughout the transmission planning cycle. MISO conducts SPMs to discuss potential transmission projects. MISO presents information on planned upgrades and additions to the MISO transmission grid at these meetings, with active participation by MISO Transmission Owner members (TOs) and other stakeholders, including state regulatory staff.

Q. Generally, what is Ameren Services Transmission Planning's role in MISO's recurring transmission planning processes like the MTEP?

A. To ensure the reliability of the Ameren Transmission System, Ameren Services Transmission Planning is necessarily actively involved in MISO's ongoing planning processes, working with other MISO TOs in numerous ways. For example, Ameren Services Transmission Planning submits the results of its own studies and plans for upgrades or expansions of the Ameren Transmission System to MISO as part of the annual MTEP process. This is referred to as bottom-up planning. MISO, as the NERC Reliability Coordinator, reviews those plans in conjunction with plans submitted by other MISO TOs and conducts its own analyses to identify synergies among plans. MISO works with the TOs, including Ameren Services Transmission Planning and other stakeholders in an open and iterative manner to confirm the validity of proposed projects, develop

other corrective solutions, and study potential alternative remedies to address system problems, whether identified by TOs as part of their planning processes or by MISO as part of its own. MISO also consolidates the individual plans of its transmission owners where additional benefits can be achieved through coordination of transmission improvements. Ameren Services Transmission Planning works with MISO and other stakeholders toward this end too.

Q. Generally, what is Ameren Services Transmission Planning's role in the regional studies that MISO undertakes?

A. MISO's regional planning utilizes a top-down planning process that is an iterative, open, and stakeholder informed process. At a high level, when studying and planning for large scale transmission projects, like MISO's regionally beneficial Multi-Value Projects (MVPs), MISO conducts its own engineering analyses to identify transmission issues and potential solutions to address the regional transmission issues. MISO's analyses are presented to the transmission owners and other stakeholders. Transmission owners, including Ameren Services Transmission Planning (on behalf of Ameren Illinois, Ameren Missouri (AMMO), and ATXI), conduct their own analyses to assess the impact of the proposed solution on the transmission system. Transmission owners and other stakeholders can then submit to MISO a recommended set of solutions to mitigate identified transmission issues. MISO selects the portfolio of projects to meet the MISO MVP criteria in the tariff, develops the business case, and ultimately the MISO Board of Directors approves the projects within the annual MTEP.

Q. You indicated that Ameren Services Transmission Planning typically studies and plans for the transmission system on 2-, 5-, and 10-year horizons. Why the long horizons?

A. Both Ameren Services Transmission Planning and MISO regularly study transmission performance at these horizons and even longer ones. That is accepted and standard industry practice because significant electric transmission infrastructure projects have a construction lead time of several years. Thus, a project to resolve an anticipated reliability issue and ensure the continued reliability of the grid must be identified early enough to construct the mitigation plan *before* the reliability issue occurs. Longer planning horizons also allow Ameren Services Transmission Planning sufficient time to continue to study a reliability issue to determine if the issue remains year-over-year, which can avoid premature identification of a mitigation project. Further, in the event the issue persists, advanced planning permits Ameren Services Transmission Planning time to develop an optimal mitigation plan, submit the plan to MISO, and, once approved by MISO, proceed with engineering, design, regulatory approvals, and, finally, the multifaceted construction processes, including construction and outage scheduling, contractor solicitation, vegetation management, and land rights acquisition, if needed, required to implement a transmission project.

Q. Is transmission planning ever conducted over a longer horizon?

A. Yes, necessarily. As explained by MISO witness Mr. Doner, as part of MISO's LRTP process and other initiatives that prompted MISO to identify and approve the LRTP Tranche 1 Portfolio transmission expansion plan, MISO studied the transmission grid within its footprint over an even longer period—20 years into the future. This is because the shift in the energy fleet is happening now in the MISO region and that shift (and its repercussions for the grid) will

continue well into the future given Midwest states' and utilities' clean energy plans and goals. As Mr. Doner explains, its members' shifting energy portfolios and plans were the impetus for MISO's LRTP and MISO's other initiatives to study, plan for, and ensure that the transmission grid within its footprint has sufficient capacity and otherwise remains reliable as traditional, centralized generation sources wind down or cease operation and more decentralized renewable generation sources connect to the grid. I explain Ameren Services Transmission Planning's role in MISO's LRTP process, and in planning for the Program and Phase 2 DZTM Project specifically, further below.

Q. Do you have any other comments in this regard?

A. Yes. I would note that I am generally aware of a recent FERC Order No. 1920 in a rulemaking that will require regional grid operators and public utility transmission providers throughout the country to engage in long range planning that reflects at least a 20-year time horizon, which was employed in the MISO LRTP process, as I discussed above.[2] It is my general understanding that the rulemaking was prompted by the need to conduct transmission planning on a sufficiently forward-looking basis to meet transmission needs driven by changes in the resource mix and demand. In other words, while transmission planning has historically been conducted on 2-, 5-, and 10-year horizons, and I believe that it will continue to be so conducted, FERC and stakeholders recognize that longer planning horizons are also appropriate. Ameren Services Transmission Planning continues to study the implications of Order No. 1920, which is over 1,000 pages long.

[2] *Federal Energy Regulatory Commission. Building for the Future Through Electric Regional Transmission Planning and Cost Allocation*, Docket No. RM21-17-000, Order No. 1920 (issued May 13, 2024). E1 | RM21-17-000 | Federal Energy Regulatory Commission (ferc.gov).

B. Planning for the Phase 2 DZTM Project

Q. The Phase 2 DZTM Project resulted from several MISO planning initiatives. Did Ameren Services Transmission Planning play a role in any of those particular initiatives?

A. Yes. Ameren Services Transmission Planning, on behalf of the Ameren transmission-owning utilities, has been an active participant in MISO's LRTP planning processes since those processes began. The LRTP studies are ongoing as MISO plans for additional tranches of LRTP projects necessary to continue to address the changing energy fleet and customer demand. Ameren Services Transmission Planning also provided input to and participated in other related planning initiatives, including MISO's development of the updated Futures, which informed the LRTP planning processes.

Q. What was Ameren Services Transmission Planning's involvement with development of the updated Futures?

A. Ameren Services Transmission Planning participated, on behalf of the Ameren transmission-owning utilities, in the regular MISO meetings for the Resource Adequacy Group and provided feedback to MISO on the updated Futures through the TO sector stakeholders group.

Q. How did Ameren Services Transmission Planning participate in the LTRP planning processes?

A. MISO's LRTP planning processes, and Ameren Services Transmission Planning's involvement in them, were multi-stepped and iterative. As MISO witness Mr. Doner explains, MISO began with the first phase of the LRTP study by developing indicative roadmaps, or hypotheses, of potential transmission expansions throughout the MISO region, including solutions that would be required to enable updated Future 1 alone. The roadmaps were contemplated by

MISO planning staff as extensions of the existing grid that would provide for logical connections that could increase connectivity, close gaps between subregions, and support a more resilient grid by enabling more transfers of bulk power flows. Related, MISO and Ameren Services personnel discussed potential future projects that could address known congestion, mitigate expected potential future reliability issues, increase capability to move power from more remote generation resources, and enhance capability to serve load.

Q. What happened next?

A. Using MISO's models in 2021 Q4 and 2022 Q1, Ameren Services Transmission Planning studied potential transmission solutions that would better address transmission issues compared to MISO's initially proposed transmission expansion plan. Ameren Services Transmission Planning identified projects that would mitigate reliability issues, reduce congestion, and bring economic benefits to customers in Missouri. Ameren Services Transmission Planning also studied alternatives. Specifically, Ameren Services Transmission Planning performed numerous powerflow analyses to assess the Ameren Transmission System's capability to deliver energy reliably from the new mix of generation resources to the load forecasted under MISO's updated Future 1 models, per applicable NERC TPL standards and the Ameren Transmission Planning Criteria and Guidelines. Ameren Services Transmission Planning then tested several configurations to determine transmission solutions that would mitigate the regional reliability issues identified during those analyses while limiting the impact on additional landowners. Ameren Services Transmission Planning submitted a portfolio of integrated projects in Missouri, Illinois and Iowa to MISO for consideration in MISO's November 2021 solution window. Ameren Services Transmission Planning also submitted the results of its power flow analyses, which

identified reliability issues, including multiple thermal overloads on the Ameren Transmission System in Missouri and recommended projects to mitigate issues.

Q. What occurred next?

A. Again, in November 2021, Ameren Services Transmission Planning provided the results of its studies to MISO as well as proposed transmission solutions that improved on MISO's indicative maps and would enable Future 1. At the same time, other transmission owners and stakeholders also submitted potential mitigations to MISO, some of which were potential additional projects or alternatives to the transmission facilities MISO had identified. MISO performed its own independent analyses, which confirmed many of the Ameren Services recommended solutions were necessary and should be part of the first phase, or "Tranche 1," of the approved LRTP transmission expansion plan to provide reliable and economic delivery of energy from the new mix of generation resources to the load.

Q. What did MISO do with those proposals?

A. MISO ultimately determined a set of efficient and cost-effective transmission solutions: the LRTP Tranche 1 transmission expansion plan, which is a portfolio of integrated, regionally beneficial projects identified for cost allocation purposes as 18 MVPs. The Missouri portion of the portfolio, which is the Missouri portions of 3 of those MVPs, comprises the Program. MISO witness Mr. Doner discusses this further in his testimony. In addition to the reduction in overloads, the Missouri portion of the LRTP Tranche 1 plan will increase Missouri's transfer capability, which in turn improves the flow of energy within the State as well as the import and export capability throughout the broader MISO Midwest Subregion.

Q. Please summarize the result of MISO's LRTP planning processes.

A. MISO, in coordination with Ameren Services Transmission Planning and other transmission owners, determined that the LRTP Tranche 1 Portfolio transmission expansion plan, the Missouri portion of which is the Program, is necessary to continue to provide for the reliable and economic delivery of energy from the new mix of generation resources to the load under Future 1. As such, and as explained by Mr. Doner, the MISO Board of Directors approved the LRTP Tranche 1 Portfolio, and ATXI is obligated to construct the Missouri portion of the plan.[3] Further, based on the analyses of available alternatives, MISO determined the LRTP Tranche 1 Portfolio, including the Program, is the optimal means of accomplishing the LRTP study's objectives and addressing the service and reliability needs in Missouri both now and in the future. In other words, MISO determined that the Program (which includes the Phase 2 DZTM Project) as designed represents the best combination of engineering feasibility, cost, efficiency, and mitigation of impacts to land use, residents, and the area surrounding the Program.

V. NEED FOR, ALTERNATIVES TO, AND BENEFITS OF THE PROGRAM AND THE PHASE 2 DZTM PROJECT

Q. Is the Program necessary and beneficial for Missouri customers from a transmission planning perspective?

A. Yes, the Program, including the Phase 2 DZTM Project, are necessary and beneficial to Missouri customers from a transmission planning perspective.

[3] The Missouri portion of 2 of the 3 MVPs constituting the Program were subject to MISO's Competitive Developer Selection Process. On October 27, 2023, MISO chose ATXI to be the Selected Developer for the FDIM Project. Phase 2 of the Program is the DZTM Project; and on April 2, 2024, MISO also chose ATXI to be the Selected Developer for the DZTM Project.

Q. Please summarize the main reasons the Program is necessary and will be beneficial to Missouri customers from a transmission planning perspective?

A. The Program is designed to accommodate the changing nature of the future grid and addresses both identified thermal and voltage-instability issues in Missouri as I explain later in my testimony. The Program will also enable new generation and facilitate transfers into and out of Missouri, reducing the overall Adjusted Production Cost (APC) for our customers. In addition, MISO found the Program will improve the overall voltage profile of the state, reducing the need to add reactive power resources.

Q. Does the Program, including the Phase 2 Project, address the thermal issues in Missouri identified in the Future 1 models?

A. Yes. The LRTP study assessed the northern Missouri transmission corridor, which begins in Orient, Iowa, travels south to Fairport, Missouri, and then generally east to Meredosia, Illinois. The result of that study identified MVPs 9 through 11:

Northern Missouri Corridor

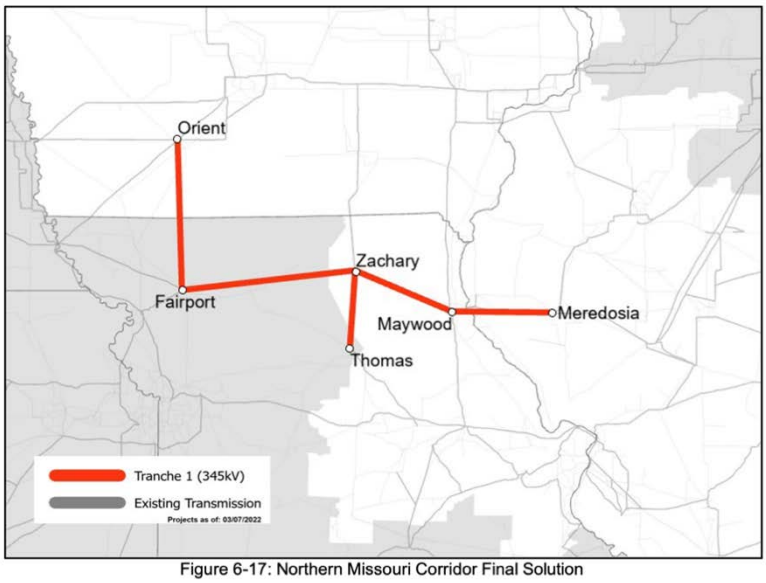

Figure 6-17: Northern Missouri Corridor Final Solution

Projects:
Orient – Fairport – Zachary – Maywood – Meredosia 345 kV
Zachary – Thomas 345 kV

MTEP21 LRTP Addendum, p. 44; **Schedule JD-D3**, p. 58. MISO explained that this corridor relieves loading on transmission elements in Iowa, Missouri, and Illinois. Specifically, MISO identified these resolved issues:

> The Missouri Corridor addressed thermal issues (Figure 6-18). Facilities mitigated by the Missouri Corridor are listed in Table 6-8. For this metric, a constraint was considered relieved if its worst pre-project loading was greater than 95% of its monitored Emergency rating, its worst post- project loading was less than 100% of its monitored Emergency rating, and the worst loading decreased by greater than 5% following the addition of the project.

- 14 issues resolved in Missouri and Illinois
- 5 issues resolved in Iowa

MTEP21 LRTP Addendum, p. 44; **Schedule JD-D3**, p. 58. MISO specifically identified the following thermal issues in Missouri that MVPs 9 through 11 resolved:

Monitored Facility	Area	% Loading	
		Base + West LRTP*	+ IA to MI Project + MO Projects
Overton 345/161 kV Transformer	AMMO	109	97
Overton – Sibley 345 kV Ckt. 1	AMMO	102	88
Huntsdale – Overton 1 161 kV Ckt. 1	AMMO	101	91
California 161 kV Bus 1 – Overton 2 161 kV Ckt. 1	AMMO	98	88
Huntsdale – Perche Creek 161 kV Ckt. 1	CWLD	97	87
McBaine Bus #2 – McBaine Tap 161 kV Ckt. 1	AMMO	97	85
Maurer Lake 161 kV Bus 1 – Carrollton 161 kV Ckt. 1	AMMO	96	70
California 161 kV Bus	AMMO	95	85

MTEP21 LRTP Addendum, pp. 45-46; **Schedule JD-D3**, pp. 59-60.

Q. Did MISO consider alternatives to this part of the LRTP Tranche 1 plan?

A. Yes. During development of the LRTP Tranche 1 Portfolio, MISO considered multiple alternatives both to the 18 individual MVPs and to the aggregate, integrated portfolio, as explained by MISO witness Mr. Doner. For MVPs 9 through 11 comprising the Northern Missouri Corridor, 5 alternatives were evaluated. However, as MISO explained, each solved fewer contingencies than MISO's Northern Missouri Corridor plan:

> Segments of the Missouri corridor were considered separately, the full Missouri path (Orient – Fairport – Zachary – Maywood – Meredosia 345 kV / Zachary – Thomas 345 kV) is a better solution, with 19 issues addressed by the full path compared to:
>
> Zachary – Thomas – Maywood – Meredosia, resolves 11 issues
> Thomas – Zachary, resolves 4 issues
> Zachary – Maywood, resolves 6 issues
> Zachary – Maywood – Meredosia, resolves 9 issues
> Zachary – Maywood – Thomas, resolves 5 issues

MTEP21 LRTP Addendum, p. 46; **Schedule JD-D3**, p. 60.

Q. How would these reliability benefits be addressed if the Program, including the Phase 2 DZTM Project, was not constructed?

A. Ameren Services Transmission Planning would perform annual assessments pursuant to NERC Planning standards and Ameren Transmission Planning Criteria and Guidelines and identify projects to mitigate the reliability issues. The cost of those projects, however, would be charged to Missouri customers 100%.

Q. In addition to mitigating the reliability issues that you discussed, are there other ways in which the Program, including the Phase 2 DZTM Project, will benefit Missouri specifically?

A. Yes. The Program and its Phase 2 DZTM Project will enhance the Ameren Transmission System's performance.

Q. How will the Program, including the Phase 2 DZTM Project, enhance system performance?

A. Having these additional transmission facilities creates more paths for energy to flow. This provides more options to allow maintenance or to recover from changes on the power system such as loss of a transmission line or multiple lines, a sudden change in load, or a sudden change in generation output. The NERC Transmission Planning Standards and the Ameren Transmission Planning Criteria and Guidelines consider numerous contingencies including multiple outages. Having these additional transmission facilities creates a more robust system that is better able to serve load during a contingency. Additionally, this program is an integral part of a

portfolio that is intended to work together to make the transmission system in the Midwest perform as needed.

Q. Will the Program, including the Phase 2 DZTM Project, address any voltage concerns?

A. The Program and its Phase 2 DZTM Project improve the overall voltage profile of the Ameren Transmission System. They can help power delivery, in addition to increasing transfer levels from East-West/West-East. Moreover, the projects address voltage instability in Missouri, as MISO determined. MTEP21 LRTP Addendum, p. 46; **Schedule JD-D3**, p. 60.

Q. Are there other system related benefits?

A. Yes. The Program and its Phase 2 DZTM Project create a more robust system, which will improve system reliability and resiliency during extreme weather events.

Q. Please explain.

A. Increasingly frequent extreme weather events may challenge system reliability. As an example, in February 2021, much of the U.S. experienced historical, extremely cold weather that caused generator outages and high loads which stressed the transmission system in multiple RTO regions, including MISO's. MISO reported on the event in "The February Arctic Event, February 14-18, 2021, Event Details, Lessons Learned and Implications for MISO's Reliability Imperative." While the Program and its Phase 2 DZTM Project were not designed to address the specific circumstances of the February 2021 event, MISO's report states that these and other transmission emergencies caused by the February 2021 event "are a stark reminder of the need to continue transforming to ensure the MISO Region is ready for the current and future challenges

facing the industry." (Report, p. 5.) The report concludes that "[e]xtreme weather events like the February 2021 cold weather emphasize not only the necessary steps but the urgency with which we must move." (Report, p. 4.) Expanding the transmission capacity within the MISO region as the LRTP Tranche 1 Portfolio transmission expansion plan, including the Missouri portion comprising the Program, does enhance the operational flexibility of the grid and resource sharing across areas, and thus improves the ability of the system to respond to future extreme weather events.

VI. CONCLUSION

Q. Does this conclude your direct testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Ameren Transmission Company of Illinois for a Certificate of Convenience and Necessity under Section 393.170.1, RSMo. relating to Transmission Investments in North Central Missouri.	))))))	File No. EA-2025-0087

AFFIDAVIT

1. My name is Justin Davies. I am the Director of Transmission Planning for Ameren Services Company, which is a subsidiary of Ameren Corporation and an affiliate of Ameren Transmission Company of Illinois, the Applicant in the above-captioned proceeding.

2. I have read the above and foregoing Direct Testimony and the statements contained therein are true and correct to the best of my information, knowledge, and belief.

3. I am authorized to make this statement on behalf of Ameren Transmission Company of Illinois.

4. Under penalty of perjury, I declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/ Justin Davies
Justin Davies
Director of Transmission Planning for
Ameren Services Company

On behalf of Ameren Transmission
Company of Illinois

Date: December 11, 2024