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VIA ELECTRONIC DELIVERY

March 28, 2025

Mr. William Seuffert
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place E, Suite 350
St. Paul, Minnesota 55101

Re: ***In the Matter of the Application for a Certificate of Need for the Mankato-Mississippi River Transmission Project*;**
Comments by the Midcontinent Independent System Operator, Inc.;
Docket No. E002/CN-22-532

Dear Mr. Seuffert:

The docket in the above-referenced case provided interested persons the opportunity to comment upon the certificate of need application pending before the Minnesota Public Utilities Commission ("Commission") for approval to construct the Mankato − Mississippi River Transmission Project (or "Project"). I submit comments on behalf of the Midcontinent Independent System Operator, Inc. ("MISO").

As an overview to my comments, the Mankato − Mississippi River Transmission Project will help ensure the ability of the transmission system to meet challenges presented by the on-going and projected transition of generation resources and the need for development of long-term transmission planning solutions. The Mankato − Mississippi River Transmission Project will help realize the benefits identified by MISO and stakeholder review of the Long Range Transmission Planning ("LRTP") Tranche 1 portfolio of projects that were approved by MISO as an important part of the MISO Transmission Expansion Plan ("MTEP"). The MISO analyses of the existing transmission system during the MTEP21 planning cycle identified numerous transmission facilities that will be loaded above safe operating levels or below adequate voltage levels without the Mankato − Mississippi River Transmission Project. The overall system would also be more secure with the addition of the Project, which addresses additional voltage and transient stability limitations. Without the Mankato − Mississippi River Transmission Project, Minnesota and other states in the MISO footprint would not receive the full set of economic benefits that are provided by the LRTP Tranche 1 portfolio.

Background

I am the Director for Cost Allocation and Competitive Transmission within MISO's Transmission Planning Department, which is the Planning Coordinator for the MISO region and prepares the MTEP annually. My office is located at 720 City Center Drive, Carmel, Indiana 46032. I am responsible for directing the teams focused on multiple areas of transmission planning: LRTP business case development, including for the first portfolio of LRTP projects (the aforementioned LRTP Tranche 1 projects); all parts of MISO's competitive transmission process and the "variance analysis" process for after-the-fact review of regionally cost shared transmission projects; MISO's regional and interregional transmission cost allocation; annual MTEP report development; and MISO's seams coordination strategy.

MISO is a not-for-profit, member-based, regional transmission organization ("RTO") providing reliability and market services over approximately 70,000 miles of transmission lines in fifteen states and one Canadian province. MISO's regional area of operations stretches from the Ohio-Indiana line in the east to eastern Montana in the west, and south to New Orleans. MISO is governed by an independent ten-member board of directors.[1]

As an RTO, MISO is responsible for operational oversight and control, market operations, and planning of the transmission systems of its member Transmission Owners ("TOs"). Among many other responsibilities, MISO monitors and calculates Available Flowgate Capability and provides tariff administration for its Open Access Transmission, Energy and Operating Reserve Markets Tariff ("Tariff"),[2] which has been accepted by the Federal Energy Regulatory Commission ("FERC").[3] MISO is the Reliability Coordinator for its regional area of operations, providing real-time operational monitoring and control of the transmission system. MISO operates real-time and day-ahead energy markets based on Locational Marginal Prices ("LMPs") in which each market participant's offer to supply energy is matched to demand and is cleared based on a security constrained economic dispatch process. In addition, MISO operates a market for Financial Transmission Rights, which are used by market participants to hedge against congestion costs, and an ancillary services market, which provides for the services necessary to support transmission of capacity and energy from generation resources to load. MISO is responsible for approving transmission service, new generation interconnections, and new transmission interconnections within MISO's regional area of operations, and for ensuring that the system is planned to reliably and economically provide for existing and forecasted usage of the transmission system. MISO is the Planning Coordinator for its regional area of operations, which includes Minnesota, and

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[1] MISO has nine independent directors, and its Chief Executive Officer fills a tenth seat on the Board.

[2] MISO Tariff, available at: https://www.misoenergy.org/legal/rules-manuals-and-agreements/tariff/.

[3] MISO's Tariff was initially accepted by FERC in 1998, but suspended until subsequently adopted in 2001. *See Midwest Indep. Transmission Sys. Operator, Inc.*, 97 FERC ¶ 61,326 (2001); *Midwest Indep. Transmission Sys. Operator, Inc.*, 97 FERC ¶ 61,033 (2001), *order on reh'g*, 98 FERC ¶ 61,141 (2002). MISO began providing transmission service under its Tariff in 2002.

performs planning functions collaboratively with input from its TOs and other interested stakeholders, while also providing an independent assessment and perspective of the needs of the overall transmission system.

Northern States Power Company, doing business as Xcel Energy ("Xcel Energy"), filed an Application in this docket seeking a certificate of need. Xcel Energy seeks authorization to construct, operate, and maintain the Mankato − Mississippi River Transmission Project facilities. The Mankato − Mississippi River Transmission Project facilities include approximately 130 miles of new 345 kV line and associated facilities in southern Minnesota. The new line will extend between the Wilmarth Substation located in Mankato, Minnesota to the state line with Wisconsin at the Mississippi River. The Project also includes approximately 20 miles of 161 kV transmission line between the North Rochester Substation to an existing transmission line northeast of Rochester, Minnesota. The transmission lines and related facilities were included in the 2021 MTEP analysis. These facilities are an integral part of the LRTP Tranche 1 portfolio of projects that were approved in MISO's 2021 MTEP process.

Purpose and Scope of These Comments

The purpose of these comments is to generally describe the planning functions performed by MISO, including the development of MTEP. I also provide a summary of findings regarding the Mankato − Mississippi River Transmission Project based on MISO's analyses and discuss the integration of the Project into MISO's regional transmission plan. I explain how the LRTP Tranche 1 portfolio, including the Mankato − Mississippi River Transmission Project, reliably and economically supports a wide range of energy policies and generation scenarios. I explain how the benefits of the portfolio have been defined and confirmed. I will refer to the benefits of the Mankato − Mississippi River Transmission Project and the benefits of the 2021 Multi-Value Project ("MVP") portfolio. MVP is a transmission project type within the MISO Tariff. The 2021 MVP portfolio is commonly referred to as the LRTP Tranche 1 portfolio. I will refer to the "MISO Midwest MVP Cost Allocation Subregion" (or "Midwest Subregion") in these comments. This region, which includes Minnesota, refers to MISO's Central and North Regions that begins in Missouri and extends northward (and bounded by Michigan in the east and eastern Montana in the west). This identification of a subregion within the MISO footprint is relevant to responsibility for costs associated with the LRTP Tranche 1 portfolio of which the Mankato − Mississippi River Transmission Project is a part.

The Mankato − Mississippi River Transmission Project is part of the LRTP Tranche 1 portfolio, a MISO report concerning which is discussed in the Application for this docket ("MTEP21 Report Addendum," Appendix G-1 in the Application).[4] The portfolio was approved

[4] A copy of MISO's publicly available MTEP21 Report Addendum that discusses the LRTP Tranche 1 portfolio is also available at: https://cdn.misoenergy.org/MTEP21%20Addendum-LRTP%20Tranche%201%20Report%20with%20Executive%20Summary625790.pdf. The MTEP21 Report Addendum is comprised of an Executive Summary and a Tranche 1 Portfolio Report, and refers to a project as "Wilmarth – North Rochester – Tremval " that encompasses the instant Project (the LRTP project extends from the Wilmarth Substation in Minnesota to the Tremval Substation, the latter of which is located in Wisconsin).

by the MISO Board of Directors on July 25, 2022, as part of MISO's MTEP21 process. This approval was based on a set of reliability, economic, and public policy analyses conducted between 2020 and 2022 that documented the reliability benefits of the Mankato − Mississippi River Transmission Project and the combined reliability, economic, and public policy benefits of the full LRTP Tranche 1 portfolio.

The Mankato − Mississippi River Transmission Project provides a high voltage transmission path that increases the reliability of the regional transmission system while enhancing the ability of the Minnesota transmission system to meet local load serving needs. The Mankato − Mississippi River Transmission Project is part of the LRTP Tranche 1 portfolio that, as part of the MISO regional plan, will deliver economic benefits in excess of costs under a future system scenario, known as "Future 1,"[5] that is guided by assessments of future conditions that include federal, state, and individual utility energy policies. Tranche 1 provides a robust transmission network that supports a broad range of generation and policy futures. Support for the Mankato − Mississippi River Transmission Project, as a planned part of LRTP Tranche 1 portfolio, is described further in these comments and is summarized as follows:

1) MISO Regional Transmission Planning and MVP Planning Process
   MISO's regional planning process ensures continued system reliability in a least cost manner while considering a series of potential future policy and economic conditions. These comments discuss the high-level goals and key considerations of the MISO planning process, as well as the planning process utilized to define and justify the projects in the MVP portfolio.

2) Reliability Planning Considerations
   MISO's analyses ensure that load has access to reliable energy. These comments discuss the key criteria applied in MTEP reliability analyses and the importance of each of these factors in maintaining a safe and reliable supply of energy to end-use customers.

3) Reliability Project Justification
   The Mankato − Mississippi River Transmission Project was justified based on the ability of the Project to resolve reliability issues within and surrounding Minnesota. These comments discuss the reliability benefits of this Project and explain why the Project alternatives were not selected.

4) Economic and Public Policy Considerations
   The MISO planning process assessed benefits of the LRTP Tranche 1 portfolio under the Future 1 economic and public policy scenario. These comments elaborate on the structure of these analyses.

5) Economic and Public Policy Portfolio Benefits
   The Mankato − Mississippi River Transmission Project, as part of the overall LRTP Tranche 1 portfolio, provides economic benefits in excess of

[5] Future 1 is extensively discussed in the MTEP21 Report Addendum (Appendix G-1 in the Application).

its costs while enabling compliance with public policy requirements such as renewable energy mandates. These comments discuss the economic benefits of the LRTP Tranche 1 portfolio as a whole. I also discuss the ability of the portfolio to enable existing public policies, along with a wide variety of other potential future generation options.

6) Regional System Planning and MVP Policies

The projects in the LRTP Tranche 1 portfolio (an MVP portfolio), including the Mankato − Mississippi River Transmission Project, have been incorporated in the MISO transmission plan and subsequent analyses. These comments discuss the cost implications of the Project and the near-term impacts of a failure to approve the Project.

MISO Regional Transmission Planning

Regional planning at MISO is performed in accordance with several guiding documents. The Agreement of Transmission Facilities Owners to Organize the Midcontinent Independent System Operator, Inc., a Delaware Non-Stock Corporation ("Transmission Owners Agreement" or "TOA") includes the planning framework that describes the planning responsibilities of MISO and its transmission owning members.[6] MISO's responsibilities include the development of the MTEP in collaboration with transmission owners and other stakeholders. MISO also adheres to the nine planning principles outlined in FERC Order No. 890.[7] In so doing, MISO provides an open and transparent regional planning process that results in recommendations for expansion that are reported in the MTEP. FERC Order No. 1000 furthered the planning principles outlined in FERC Order No. 890 and included the requirements to plan for public policy and for coordinated inter-regional planning and cost allocation.[8]

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6 *See* MISO Transmission Owners Agreement (TOA), Version: 36.0.0 Effective: 7/29/2020, Appendix B, Section VI, publicly available at: https://misodocs.azureedge.net/miso12-legalcontent/Rate_Schedule_01_-_Transmission_Owners_Agreement.pdf.

7 *Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, FERC Stats. & Regs. ¶ 31,241, *order on reh'g*, Order No. 890-A, FERC Stats. & Regs. ¶ 31,261 (2007), *order on reh'g and clarification*, Order No. 890-B, 123 FERC ¶ 61,299 (2008), *order on reh'g*, Order No. 890-C, 126 FERC ¶ 61,228 (2009), *order on clarification*, Order No. 890-D, 129 FERC ¶ 61,126 (2009). "The Transmission Provider's planning process shall satisfy the following nine principles, as defined in the Final Rule in Docket No. RM05-25-000: coordination, openness, transparency, information exchange, comparability, dispute resolution, regional participation, economic planning studies, and cost allocation for new projects." Order 890-B, Attachment K.

8 *Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities*, Order No. 1000, 136 FERC ¶ 66,051 (2011), *order on reh'g*, Order No. 1000-A, 139 FERC ¶ 61,132 (2012), *order on reh'g and clarification*, Order No. 1000-B, 141 FERC ¶ 61,044 (2012).

Consistent with these planning principles, the objectives of the MTEP process are to (i) identify transmission system expansions that will ensure the reliability of the transmission system that is under the operational and planning control of MISO, (ii) identify expansion that is critically needed to support the reliable and competitive supply of electric power by this system, and (iii) identify expansion that is necessary to support energy policy mandates in effect within the MISO footprint. MISO's MTEP report provides assessments of resource adequacy, analyses of various energy policy scenarios, and the development of long-term resource forecasts based on those scenarios.

MISO uses a "bottom-up, top-down" approach in developing the MTEP plan. The "bottom-up" portion relies on the ongoing responsibilities of the individual TOs to continuously review and plan to reliably and economically meet the needs of their local systems. MISO then reviews these local planning activities with stakeholders and performs a "top-down" review of the adequacy of, and appropriateness of, the local plans in a coordinated fashion to most efficiently ensure that all of the needs are cost-effectively met. In addition, MISO, together with stakeholders, considers opportunities for improvements and expansions that would reduce consumer costs by providing access to new, low-cost resources that are consistent with and required by evolving legislative energy policies.

MISO's planning process examines congestion that may limit access to the most efficient resources and considers improvements that may be needed to meet forecasted energy requirements. Stakeholders from each MISO member sector, including state regulatory authorities, public consumer advocates, environmental representatives, end use customers, and independent power producers, among others, are engaged to develop a wide range of future system scenarios that are guided by assessments of possible future state and federal energy policy decisions. These possible future scenarios and energy polices ("Futures") form the basis for forecasts of generation resources and load that would be economical and consistent with member plans and policy. Transmission needs are then assessed, and plans developed to reliably and economically deliver the necessary energy from generation resources to load.

The MTEP consists of the many individual projects or portfolios of projects that are recommended by the MISO staff to the MISO Board of Directors. In accordance with the TOA, approval of a MISO MTEP by the Board of Directors certifies the MTEP as MISO's plan for meeting the transmission needs of all stakeholders, subject to any required approvals by federal or state regulatory authorities.

There are numerous considerations in planning for a regional transmission system; however, two considerations are crucial. First, the reliability of the transmission system must be maintained. That is, the transmission system must be able to withstand disturbances (generator and/or transmission facility outages) without interruption of service to load. This is achieved, in part, by assuring that disturbances do not lead to cascading loss of other generator or transmission facilities.

Second, the transmission system must be adequately planned to be able to accommodate load growth and/or changes in load and load growth patterns, as well as changes in generation and generation dispatch patterns without causing equipment to perform outside of its design capability. Additional considerations include planning the transmission system to address constraints that

limit market efficiency and provide for expansions that enable energy policy mandates to be achieved.

Long Range Transmission Planning Process

The LRTP process, including its stakeholder process, focuses on the development of robust solutions that address future reliability challenges posed by the continuing trend towards increasing levels of carbon-free weather-dependent generation resources. Long-range planning provides a comprehensive, forward-looking assessment of future needs based on a range of anticipated future conditions that identify the regional transmission expansion needed to maintain reliable performance, cost efficient energy delivery, accessibility to resources, and flexibility in fuel mix.

Regional transmission projects identified in the LRTP process are MVPs whose costs are regionally or sub-regionally shared. An MVP is a type of transmission project developed by MISO and stakeholders that was accepted by FERC in 2010.[9] The MVP is a project that must be (i) evaluated as part of a portfolio of MVPs whose benefits are spread broadly across the MISO footprint and (ii) must meet at least one of the following criteria, as stated in Attachment FF of the MISO Tariff:[10]

a. Criterion 1. A Multi-Value Project must be developed through the transmission expansion planning process for the purpose of enabling the Transmission System to reliably and economically deliver energy in support of documented energy policy mandates or laws that have been enacted or adopted through state or federal legislation or regulatory requirement that directly or indirectly govern the minimum or maximum amount of energy that can be generated by specific types of generation. The MVP must be shown to enable the transmission system to deliver such energy in a manner that is more reliable and/or more economic than it otherwise would be without the transmission upgrade.
b. Criterion 2. A Multi-Value Project must provide multiple types of economic value across multiple pricing zones with a Total MVP Benefit-to-Cost ratio of 1.0 or higher where the Total MVP Benefit -to-Cost ratio is described in Section II.C.7 of this Attachment FF. The reduction of production costs and the associated reduction of LMPs resulting from a transmission congestion relief project are not additive and are considered a single type of economic value.
c. Criterion 3. A Multi-Value Project must address at least one Transmission Issue associated with a projected violation of a NERC or Regional Entity standard and at least one economic-based Transmission Issue that provides economic value across multiple pricing zones. The project must generate total financially quantifiable benefits, including quantifiable reliability

9 *Midwest Independent Transmission System Operator, Inc*., 133 FERC ¶ 61,221 (2010), PP 1, 3, *order on reh'g,* 137 FERC ¶ 61,074 (2011) ("MVP Rehearing Order"), P 1.

10 MISO Tariff, Attachment FF, Section II.C.

> benefits, in excess of the total project costs based on the definition of financial benefits and Project Costs provided in Section II.C.7 of Attachment FF.

The Tariff also requires that (1) MVPs must include transmission facilities at a voltage of 100 kV or above and (2) the total capital cost of the transmission project must be at least $20 million.[11]

The MVP cost allocation process was refined as part of the LRTP initiative that was filed with, and accepted by, FERC in 2022.[12] The initiative included subdividing the MISO footprint into two subregions – the Midwest Subregion and the MISO South MVP Cost Allocation Subregion ("South Subregion"). The Tariff provisions that provide for these subregions recognize that benefits from an MVP portfolio may be widespread and yet mostly contained within geographic subregions in the midwestern and southern portions of the MISO footprint. The LRTP Tranche 1 portfolio is a collection of eighteen (18) transmission projects whose benefits are mostly spread across the Midwest Subregion of the MISO footprint.

As early as 2002, in a process that would lead to approval of the first MVP portfolio in 2011, MISO began to conduct studies to investigate the regional transmission required to provide value to MISO stakeholders while responding to a growing desire for renewable energy in the MISO footprint. As time and analyses continued, renewable mandates were passed by an increasing number of states in the MISO footprint. At the same time, the MISO Interconnection Queue for generators saw a substantial increase in queued requests, and the study results for those generators continued to show the need for more large-scale transmission projects. These factors led to the definition of an MVP project type, and they also led to the ultimate analysis and approval of the 2011 MVP portfolio.

The need for further development of the high voltage transmission system to facilitate the integration of renewable generation resources accelerated after the 2011 MVP portfolio was approved. Subsequent to approval of the 2011 MVP portfolio, the MISO footprint had a major change with the addition of MISO South in 2013 (*i.e.*, south of Missouri). At the start of the LRTP initiative in 2021, MISO recognized this change and provided an additional option for subregional cost allocation for MVP portfolios under its Tariff.

The LRTP Tranche 1 portfolio is a group of transmission projects distributed across the Midwest Subregion that will enable the reliable delivery of increased levels of renewable generation and provide for economic benefits in excess of the portfolio costs to the Midwest Subregion, primarily by reducing generator production costs and allowing for more economic resource and transmission investment decisions. The portfolio, which includes the Mankato − Mississippi River Transmission Project, was approved for implementation by the MISO Board of Directors as part of MTEP 21. Each project within the LRTP Tranche 1 portfolio approved by the MISO Board of Directors was evaluated as part of the LRTP Tranche 1 portfolio. Each project was determined to be a necessary component of the portfolio that would together provide benefits

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11 MISO Tariff, Attachment FF, Section II.C.3(d) & (e).

12 *Midcontinent Independent System Operator, Inc*., 179 FERC ¶ 61,124 (2022), P 1.

that broadly span the MISO Midwest Subregion, and meet at least one of the criteria stated earlier to be classified as an MVP.

In conducting its RTO planning responsibilities, MISO undertook a multi-year planning process aimed at developing regional transmission plans to address the increasing transition from conventional dispatchable coal and natural gas generation in the Midwest to weather-dependent generation sources, such as wind and solar, in a manner that lowers total delivered wholesale energy costs. The MISO Futures analysis examined reliability, economic, policy, and technological impacts on resource changes and established future planning scenarios to be evaluated for regional transmission expansion needs. These future scenarios were used to identify a number of focus areas across the Midwest Subregion for evaluating potential transmission solutions. Reliability studies were performed to identify area thermal and voltage issues and the transmission projects that provided the most effective mitigation. The projects were further consolidated into a proposed LRTP Tranche 1 portfolio to meet overall regional planning objectives.

MISO worked with stakeholders, including Xcel Energy, to identify potential transmission expansions that provided future benefits for the MISO Midwest Subregion. These potential expansions were then intensively studied through MISO's open and transparent stakeholder process.

This intensive process began with analyses of the challenges expected from the future resource transition and the need for long-term transmission planning solutions, and included discussions around the MVP cost allocation process in a number of MISO stakeholder forums that reached final MISO Board approval in July 2022. MISO conducted over 200 internal and stakeholder meetings, the latter of which included 200-300 attendees at each meeting to develop a final set of reliability, economic, and public policy assessments.

The overall goal for the LRTP Tranche 1 portfolio analyses was to design a transmission portfolio that takes advantage of the linkages between local and regional reliability and economic benefits to ensure a reliable and economic electric market. The portfolio was designed using reliability and economic analyses, applying a Future developed through the stakeholder process to determine a robust portfolio.

The LRTP Tranche 1 portfolio analyses evaluated the expected future conditions on the MISO regional transmission system. MISO's analyses found that the Mankato – Mississippi River Transmission Project will be needed in order to ensure the continued reliable operation of the regional transmission system, including the Xcel Energy transmission system, while meeting the expanding role of renewable generation resources in the Midwest Subregion. In addition, MISO's analyses show that the LRTP Tranche 1 portfolio of projects that include the Mankato – Mississippi River Transmission Project provides additional connectivity across the transmission system, reducing congestion and enabling access to a broader array of resources by customers in Minnesota. These improvements will increase market efficiency, competitive supply of energy, and will provide economic benefits to retail electric consumers well in excess of the LRTP Tranche 1 portfolio costs. The LRTP Tranche 1 portfolio represents a holistic solution for delivering these benefits when considering generation, transmission, and other factors under expected future conditions.

Reliability Planning Considerations

Determining whether a transmission system has capacity sufficient to meet projected power flows while maintaining required voltage levels and stability requires an engineering evaluation of the system as a whole, as well as an evaluation of critical individual system components (transformers, lines, switchgear), under both normal and contingency conditions (conditions where one or more system components are out of service). Power system simulation models are developed for use in these analyses. Projected power flows for each major component during peak loading conditions are checked to ensure that rated capacities are not exceeded. Voltage levels are also checked to ensure that they are maintained at, or above, the minimum levels required for safe and reliable operation of the system for end-use customers. The model system is tested for both generator and voltage stability following disturbances defined by the North American Electric Reliability Corporation ("NERC").

There are several reasons that it is necessary to provide capacity to meet projected power flows while ensuring that voltage levels are maintained. First, overloaded equipment or transmission voltages outside of specified tolerances threaten the transmission system's ability to continue to provide adequate and reliable service to its customers. Overloaded equipment can fail and cause brownouts and blackouts as well as potentially dangerous operating conditions. Voltage violations may cause relays or other voltage sensitive equipment to operate improperly. In addition, overloads reduce the service life of equipment and tend to increase the probability of component failure.

It is also necessary to ensure that system stability is maintained. Certain conditions could cause a generating unit to lose synchronism with the rest of the system or cause system voltages to decline rapidly in an uncontrolled manner. These severe contingencies, while unlikely, must be tested to ensure that the transmission system is strong enough to prevent a loss of system stability, or to allow protective systems to act in order to regain control of the system. Without these measures in place, such disturbances could both physically damage generation stations and affect the secure and reliable operation of wide areas of the interconnected transmission systems of the State and of the nation.

MISO plans its transmission system in compliance with NERC, regional entity, and the transmission owning members' planning standards or criteria. In addition, planning practices are dictated by FERC Order Nos. 890 and 1000, as mentioned earlier. MISO implements these practices through its governing and informational documents, including Attachment FF to MISO's Tariff, the TOA, and MISO's Business Practices Manuals ("BPM").[13]

As a summary concerning the scope of FERC planning processes, Order No. 890 is primarily concerned with ensuring that transmission planning takes place in an open and transparent environment where stakeholders to the planning process are engaged in and have opportunities to provide input and comment on the development of local as well as regional transmission plans, and this need for transparency was reinforced in FERC Order No. 1000. The

[13] *See* MISO's Business Practices Manual, Transmission Planning, BPM-020-r30, publicly available at: https://www.misoenergy.org/legal/rules-manuals-and-agreements/business-practice-manuals/.

planning process also addresses economic and regulatory policy considerations in addition to the NERC standards for reliability. There are also requirements aimed at ensuring coordination with neighboring planning regions and proper cost allocation.

Reliability and Project Justification

A detailed reliability analysis using powerflow simulations was conducted to identify transmission system equipment loadings and voltages with respect to safe equipment design tolerances. The MISO reliability analyses included steady state analysis of thermal loading and voltages as well as system stability. NERC's Transmission Planning reliability standard ("TPL") is applicable to transmission planning and governs planning requirements to ensure reliable transmission system performance. The TPL standard addresses system performance under conditions ranging from normal operation (no contingency) to more extreme events that result in the loss (*i.e*. "outage" or "contingency") of many transmission elements. While criteria established by the TPL standard are used to evaluate acceptable performance, the objectives of MISO's LRTP process incorporate reliability and economic value that go beyond the minimum compliance requirements in the TPL standard.

MISO's steady state analysis included 10-year and 20-year models, described in the MTEP21 Report Addendum,[14] and monitored all system elements operated at 100 kV and above within the MISO Midwest Subregion as well as tie lines to the South Subregion and neighboring transmission systems. Category P1 - P7 contingency events from the NERC TPL standard were analyzed for the transmission system impacts within the MISO Midwest Subregion. All system elements where the worst loading was 95 percent or higher of the emergency rating were flagged as potential issues. A proposed transmission project was determined to be effective in resolving constraints if the worst overload decreased by 5 percent and was below 100 percent of the emergency rating after the addition of the transmission project.

To develop the steady state models, MISO created snapshots of stressed system conditions under a Future 1 resource expansion in the 10-year and 20-year timeframe. These scenarios, or base cases, varied based on season of the year, time of the day, load level, and coincident availability of renewable resources. Those models encompassed Summer Peak (day and night), Spring/Fall Light Load (day and night), Fall/Spring Shoulder Load, and Winter Peak Load (day and night). Load levels for each of those model periods apply the Futures load forecast in a manner consistent with the regular MTEP process. Generation additions and siting assumptions were consistent with the Future 1 data set developed in collaboration with stakeholders. MISO then used the modeled scenarios to test the impact of the LRTP Tranche 1 portfolio. A full list of models with their corresponding assumptions can be found in the MTEP21 Report Addendum.[15] Transmission topology was developed by adding the transmission upgrades previously approved in the MTEP regional planning process and projects identified by MISO in prior MTEPs as expected to be needed to meet NERC reliability standards.

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14 *See* MTEP21 Report Addendum, pg. 19.

15 *See id.*

The Mankato − Mississippi River Transmission Project establishes an additional west to east connection between renewable generation resources and the Twin Cities load center, which helps to relieve reliability constraints on the 345 kV and 115 kV transmission facilities in the southeastern portion of Minnesota. During periods of high renewable generation output in Minnesota and Iowa, the increased flows cause congestion on existing 345 kV and 115 kV transmission facilities along the parallel path. The project also reinforces the connection to load centers in Wisconsin, relieving thermal overloads to reduce congestion and helping to improve voltage stability for transfers to the east.

Steady state thermal and voltage analysis shows that the Mankato − Mississippi River Transmission Project relieves 21 thermal overloads and 2 steady state voltage issues for N-1 contingency events[16] as well as 41 thermal overloads and 55 voltage issues at nearby facilities in the southwest portions of Minnesota resulting from N-1-1 contingency events.[17]

The highest N-1 overloads addressed by the Mankato − Mississippi River Transmission Project are as follows:

- Scott County 345/115 kV Tr #1,
- Wilmarth 345/115 kV Tr #10,
- Wilmarth 345/115 kV Tr #9,
- Murphy Creek – Hayward 161 kV line,
- Helena – Sheas Lake 345 kV line,
- Wilmarth – Sheas Lake 345 kV line,
- Chub Lake 345/115 kV Tr #1,
- Wabaco – Rochester 161 kV line, and
- Austin – Murphy Creek 161 kV line.

The highest N-1-1 overloads addressed by the Mankato − Mississippi River Transmission Project are as follows:

- Air Lake – Chub Lake 115 kV line,
- Scott Tap – Pike Lake 115 kV line,
- Chub Lake 345/115 kV Tr #1,
- Murph Creek – Hayward 161 kV line,

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16 An "N-1" event includes NERC TPL Category P1, P2, P4, P5 and P7 contingencies and means that the grid experiences the outage of a single transmission line, transformer, generator or common transmission structure. An "N-1-1" event includes NERC TPL Category P3 and P6 contingencies and means that a sequence takes place consisting of an initial loss followed by another loss of a single line, cable, transformer, or generator.

17 The different values for the number of thermal and voltage violations in these comments from the description contained in the MTEP21 Report Addendum results from further review and validation after the MTEP21 Report Addendum was posted. Table 4-2 of the Application relies upon results stated in the MTE21 Report Addendum.

- Riverwood – Burnsville 115 kV line,
- Austin – Murphy Creek 161 kV line,
- Scott County 345/115 kV Tr #1,
- Wilmarth 345/115 kV Tr #10,
- Wilmarth 345/115 kV Tr #9,
- Byron – Pleasant Valley 161 kV line,
- Kenrick – Ritter Park 115 kV line,
- Swan Lake – Stock Tap 115 kV line,
- Riverwood – Black Dog 115 kV line,
- Chub Lake – Kenrick 115 kV line,
- Wabaco – Rochester 161 kV line,
- Dakota Heights – Ritter Park 115 kV line,
- Red Rock – Safton – 115 kV line, and
- Blue Lake – Scott County 345 kV line.

Approximately 63 unique N-1 and 734 unique N-1-1 contingencies resulted in issues that are relieved by the incorporation of the Mankato – Mississippi River Transmission Project into the transmission system. The excessive N-1 loading resulted from the loss of 345 kV facilities around Wilmarth and Scott County areas, while excessive N-1-1 loading occurred for loss of 345 kV facilities in the Chub Lake and Wilmarth areas.

There are other reliability benefits that result from the LRTP Tranche 1 portfolio in aggregate. Each project in the portfolio mitigated specific overloads across the MISO Midwest Subregion. In addition, the LRTP Tranche 1 portfolio as a whole mitigated overloading on 436 facilities including many severe overloads over 125 percent that could cause cascading or system instability, as documented in the MTEP21 Report Addendum.[18] The LRTP Tranche 1 portfolio also provides increased transfer capability to address voltage stability concerns in northern Minnesota, Wisconsin, and the northern Missouri Corridor.

MISO evaluated four alternative projects to the Mankato – Mississippi River Transmission Project listed below:

- Adams - North Rochester 345 kV double circuit which was effective in relieving overloading on parallel facilities but not effective in resolving Twin Cities loading,
- Colby – Adams 345 kV provided little reliability value on its own, with mostly localized relief, and was not effective in reducing Twin Cities loading,
- Huntley – Pleasant Valley 345 kV combined with a double circuit rebuild between Pleasant Valley and North Rochester 345 kV line resolved many of the same 345 kV overloads as Mankato – Mississippi River Transmission Project with higher Adjusted Production Cost savings, but those saving were insufficient to justify the higher cost of the alternative, and

[18] *See* MTEP21 Report Addendum. The figures summarize reports in tables that begin on page 25.

- Adams to Genoa to Hill Valley 345 kV was effective in relieving constraints in northeast Iowa and Southern Wisconsin but did not address the Minnesota-Wisconsin voltage stability interface or ties into load centers.

The Environmental Impact Statement Scoping Decision ("Scoping Decision") issued on December 2, 2024 mentions two proposed changes to the facilities that originated from non-technical commentators: i) reduction of the voltage for a portion of the transmission line from 345 kV to 230 kV ("230 kV Proposal")[19] and ii) addition of a new substation at Chester Junction and the elimination of new 161 kV transmission lines ("Chester Junction Proposal").[20]

The 345 kV line segment that is the subject of the 230 kV Proposal was studied by Xcel Energy for purposes of this docket at "161 kV, 115 kV, 69 kV, and 34.5 kV voltages as alternatives."[21] The 230 kV Proposal seems to have no rationale other than suggesting another sub-345 kV facility where all other lower voltage facilities fail to provide additional net benefits. A 230 kV circuit would not provide sufficient capacity to address the reliability issues identified in the LRTP study. The cursory evaluation of this alternative by the submitter is based on erroneous calculations and neglects to apply the system performance criteria specified by industry standards. Furthermore, new facilities rated at 230 kV would introduce a new transmission voltage to the area and necessitate the added cost of additional transformation facilities to convert 230 kV voltage to either 161 kV or 345 kV.

The Chester Junction Proposal was also reviewed by Xcel Energy.[22] The Chester Junction Proposal would establish a new substation with a 345/161 kV transformer that would alter the reliability performance characteristics of the system from the original design. An additional 345 kV connection into the 161 kV transmission system would provide a stronger source that increases flows on the 161 kV facilities and could introduce new post-contingent overloads that would require mitigation. The proposed substation addition would, "when paired with a second outage, cause[ ] existing 161 kV lines to overload. To address these overloads, three 161 kV lines would need to be rebuilt to a higher capacity."[23] The Chester Junction Proposal alters the scope of the original Project by establishing new connection points on the 345 kV and 161 kV networks and would necessitate additional transmission investment and costs.

Interconnection requests for new generation in MISO's 2022 Interconnection Queue cycle, which kicked off interconnection studies in March 2023, assumes that the LRTP Tranche 1 portfolio will be made part of the existing transmission network. Those interconnection requests could be negatively impacted if the LRTP transmission projects such as the Mankato − Mississippi River Transmission Project are delayed or denied. This queue cycle includes 7.5 gigawatts

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19 Scoping Decision, pg. 7 (December 2, 2024).

20 *Id*.

21 Xcel Energy Response to Comments Regarding EIS, pg. 8 (August 28, 2014) ("Xcel Responsive Comments").

22 Xcel Responsive Comments, pgs. 6-8.

23 *Id*. at pg. 8.

("GW") of new generation resources in Minnesota[24] that is needed to help meet future decarbonization goals. In the absence of the LRTP Tranche 1 portfolio, the generating capacity that achieves commercial operation from the 2022 Interconnection Queue cycle may encounter substantial curtailment of output due to unresolved transmission constraints that could also result in higher energy costs and carbon emissions or create risks of unserved energy if a significant amount of generating capacity is trapped behind these constraints. These situations would be mitigated by completion of the Mankato − Mississippi River Transmission Project and other projects from the LRTP Tranche 1 portfolio.

Generation interconnection studies prior to the 2022 Interconnection Queue cycle were conducted before the LRTP Tranche 1 portfolio was included in MISO's transmission system base case, but may still identify new transmission projects from the LRTP Tranche 1 portfolio as mitigation for issues caused by the proposed generation interconnection requests. Operation of added generating capacity could be contingent on construction of LRTP projects if the proposed mitigation in a queue study was the same end-to-end project as an approved LRTP Tranche 1 project. Prior queue cycles that comprise 33 GW of generating resources are the subject of on-going negotiations of generation interconnection agreements ("GIA") and 59 GW of generating resources are under study in the MISO Midwest Subregion.[25] Some of this generating capacity may be dependent on LRTP Tranche 1 transmission development in order to secure GIAs.

Economic and Public Policy Considerations

The LRTP Tranche 1 portfolio justification was based upon an initial "least regrets" Future 1 Scenario that is described in the MTEP21 Report Addendum.[26] The assumed Future 1 uses the plans stated in utility integrated resource plans and most, but not all (*i.e.* eighty-five percent), of aspirational utility plans stated in utility announcements and state goals/preferences. The load growth in the Future 1 Scenario is assumed to continue along recent trends. The Future 1 assumptions reflect existing economic conditions, including a small increase in electric vehicle adoption with an annual energy growth rate of 0.5 percent and an annual demand growth rate of 0.6 percent over the next 20 years.

The primary economic benefits for the LRTP Tranche 1 portfolio stem from its reinforcements that enable reliable and efficient delivery of energy from low cost, regionally sited renewable resources to economically serve load in Minnesota and throughout the MISO footprint. The portfolio of projects will result in enablement of significant renewable resources to support meeting energy requirements and renewable goals of members.[27] The LRTP Tranche 1 portfolio provides for a more cost-effective regional build-out of generation resources rather than a greater amount of locally sited generation that would be required without greater transmission development (*i.e.* due to local transmission limitations). MISO's analysis of benefits shows that

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24 *See* https://www.misoenergy.org/planning/resource-utilization/GI_Queue/gi-interactive-queue/.

25 *Id.*

26 *See* MTEP21 Report Addendum, pgs. 11-12.

27 *Id.*, pg. 49.

the portfolio achieves resource investment savings of $17.5 billion (2022 dollars) in 20-year present value terms. Additionally, the increased transmission capacity alleviates congestion for a more efficient dispatch of the energy market by allowing these lower cost renewable resources to displace more costly conventional resources to meet energy needs. These congestion and fuel savings represent $13.1 billion (2022 dollars) in 20-year present value benefits, which would vary based on the period over which benefits are calculated, discount rates applied, and assumptions about growth rates of energy and demand.

Other economic benefits were identified by MISO through its LRTP process. MISO's analysis of benefits identified additional value that is related to avoided transmission investment that reflects cost savings from facility upgrades or rebuilds not needed as a result of LRTP Tranche 1 portfolio, reduced resource adequacy needs that captures capital cost savings from deferred resource investment, avoided risk of load shedding that represents the value of protecting load from disruption due to severe winter weather events, and decarbonization that reflects carbon cost savings as a result of lower emissions. These financially quantifiable savings provide an additional $6.7 billion to $23.6 billion (2022 dollars) in 20-year present value benefits (depending upon future conditions) that are made possible by the LRTP Tranche 1 transmission investment.[28]

When compared to the present value of the revenue requirements for the LRTP Tranche 1 portfolio, the portfolio produces total benefits of between 2.6 and 3.8 times the costs on a present value basis over 20 years, under Future 1. The low to high range stated in the MTEP21 Report Addendum reflects different assumptions regarding the value of lost load and the cost of carbon emissions.[29] When these system-wide benefits were evaluated for their distribution across the Midwest Subregion, benefits to cost for Zone 1 amounted to between 2.8 and 4.0 times the portfolio costs. Zone 1 is comprised of MISO member companies within Minnesota, Montana North Dakota, South Dakota, and western Wisconsin.

Regional Impacts and Policies

LRTP Tranche 1 project costs are recovered from MISO transmission customers based on their *pro rata* usage of energy in the Midwest Subregion. This recovery methodology is implemented in Attachment MM of the MISO Tariff.[30]

The LRTP Tranche 1 projects were approved by the MISO Board of Directors on July 25, 2022. These projects are part of a portfolio of projects that together form a new MVP portfolio. The Mankato − Mississippi River Transmission Project timeline designated by MISO places the transmission project in-service during 2030.

The purpose of the very extensive planning functions of MISO is to involve all stakeholders in a process that will derive the most cost-effective expansion plan that will meet local and regional needs for reliability, optimize access to economic generation resources, and deliver other important values that benefit the ultimate consumer and society. The MTEP process designs a very complex

28 *See* MTEP21 Report Addendum, pgs. 54-67.

29 *Id.*, Executive Summary, pg. 4.

30 *See* MISO Tariff, Attachment MM, Multi-Value Project Charge ("MVP Charge").

transmission system that will serve both short- and long-term needs of the Bulk Electric System ("BES") in a coordinated manner. The inability to construct a key element of the regional expansion plan, especially a high voltage element such as the one proposed in the Application that is designed for both reliability and its economic attributes, could result in the loss of the economic benefits provided by the Project and the need to develop less optimal solutions to reliability concerns. The revised plan would likely have a negative economic impact on portions of customers located in the Midwest Subregion.

The result of not constructing the Mankato − Mississippi River Transmission Project would be the inability of the existing transmission system to reliably deliver power in support of the expanding set of renewable energy generators and the failure to realize the other benefits offered by the LRTP Tranche 1 portfolio. For southern Minnesota in particular, the risk of not being able to reliably meet all load requirements increases without the Mankato − Mississippi River Transmission Project. As described within these comments, the MISO analyses of the LRTP projects identified numerous transmission facilities that will be loaded above safe operating levels or below adequate voltage levels without the Mankato − Mississippi River Transmission Project. The overall result would be a transmission system that would also be less secure, with additional voltage and transient stability limitations. In addition, without the Mankato − Mississippi River Transmission Project, Minnesota and the other states in the MISO footprint would not receive the full set of economic benefits that is provided by the LRTP Tranche 1 portfolio.

Conclusion

The facilities proposed by Xcel Energy would provide substantial reliability, economic, and public policy benefits to Minnesota. These facilities also fit well as a component of the MISO regional plan for the continued development of a reliable and economic regional transmission system.

Sincerely,

/s/ Jeremiah Doner

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CERTIFICATE OF SERVICE

A true and correct copy of the Comments by the Midcontinent Independent System Operator, Inc., on this 28th day of March, 2025 has been efiled by posting the same on eDockets in the above-referenced docket. The Comments have also been served on the Service List on file with the Minnesota Public Utilities Commission.

/s/Adriana Rodriguez
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